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**INTERNATIONAL FEDERATION
FOR HOME ECONOMICS**

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International Journal of Home Economics

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Special Issue of the International Journal of Home Economics

This is a Special Issue of IJHE, dedicated to the topic *Rapid response and lockdown learnings—Home economics, the global pandemic 2020, and beyond*. In June 2020 in IJHE Issue 13(1) there was a call to authors to submit papers for this Special Issue. Below is a segment of the Call for Papers:

The effects of the pandemic have been felt globally. Typical responses to control the impact and spread of the virus have included closure of shops, transport systems and borders; handwashing campaigns; modification to schooling; home confinement; and new social and physical distancing boundaries. Regional approaches have differed greatly, as has the goal, such as “flattening the curve”, while others have made policy decisions with a view to achieve “herd immunity”, and in some cases, confusing mixed messages with little specific or sustained policy implementation. The true consequences of COVID-19 may not be known for years to come.

The IJHE Editor, Professor Donna Pendergast, along with guest co-editor Dr Jay Deagon, welcome contributions from members and non-members about all aspects of home economics and consumer studies. It will particularly focus on innovation and good practice, supported by an evidence base, in one or more of the phases of response—crisis, adaptation and opportunity—in addressing issues of relevance to the field, including, but not limited to:

- Food and nutrition—access, choice, affordability, quality, kitchen gardens and safety of food
- Equity and access, opportunities and barriers
- Home economics education
- Mental health and wellbeing for individuals, families and communities
- Habits and habitats—behaviour and attitude change

We are pleased to share with you 14 papers that have successfully achieved full peer review in this Special Issue. This collection of papers provides an insight into the profession of home economics at a time of unprecedented impact in our world.

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Home economics, the COVID-19 global pandemic and beyond

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Abstract

As the world continues to pivot in response to the disruptive influences of the COVID-19 pandemic, our everyday lives are suspended in a liminal space—no longer completely familiar and lacking predictability; but not yet reconstituted to the new normal, indeed not knowing when and what that might be. We are in a transition space. In this paper, we explore the impact of the pandemic on those domains most familiar to home economics—individual, family and community—and look at key interfaces where home economics literacy has the potential to contribute to shaping our future, including: the notion of home; food literacy; financial literacy; social and emotional wellbeing; and building sustainable futures. Finally, we present a visual story of the Special Issue of the International Journal of Home Economics dedicated to the COVID-19 pandemic, to determine what home economists are focussing on at this time of global crisis.

Introduction

The 11th March 2020 is a date that signifies a change that has affected all of humankind in ways that we could not imagine. It was on this day the World Health Organization [WHO] (2020a) officially declared the viral infection emanating from a novel coronavirus and previously named COVID-19, a global pandemic. Up until that time, it had been characterised as a public health crisis. Three months later, on 2 June 2020, the records reveal 6,361,612 Coronavirus (COVID-19) cases with 377,150 deaths, and 2,900,072 recoveries recorded in 216 countries (Worldometer, 2020). A year later to the exact day—2 June 2021—there have been 171,962,456 cases, 3,576,847 deaths and 154,475,855 recoveries in 220 countries (Worldometer, 2021). These numbers are regarded as being an underestimation due to a range of factors including: a lack of efficacious tests and testing equipment; the need to prioritise rapid responses to the crisis; lack of confidence in the accuracy of statistical reporting; among a wide variety of other factors.

The death rate around the world is not consistent, reflecting a range of contextual impacts such as: management approaches, access to resources, and geopolitical forces. Hence, the pandemic does not impact equally globally, as visually represented in Figure 1, which displays the death rate per million in countries around the world.

Timeline to a pandemic

There are a number of significant dates that serve as key markers in the unfolding COVID-19 pandemic to date, as presented in Figure 2.

The pandemic has had a dramatic effect on the global community, not least of which is the unambiguous confirmation of the fragility of human life and the inadequacies of our capacity to respond to the scale and persistence of this challenge. As the scientific knowledge about the novel coronavirus deepens, the ability to put in place appropriate behavioural, social and medical responses

Pendergast, D., & Deagon, J. R. (2021). Home economics, the COVID-19 global pandemic and beyond. *International Journal of Home Economics*, 14(2), 2-15.

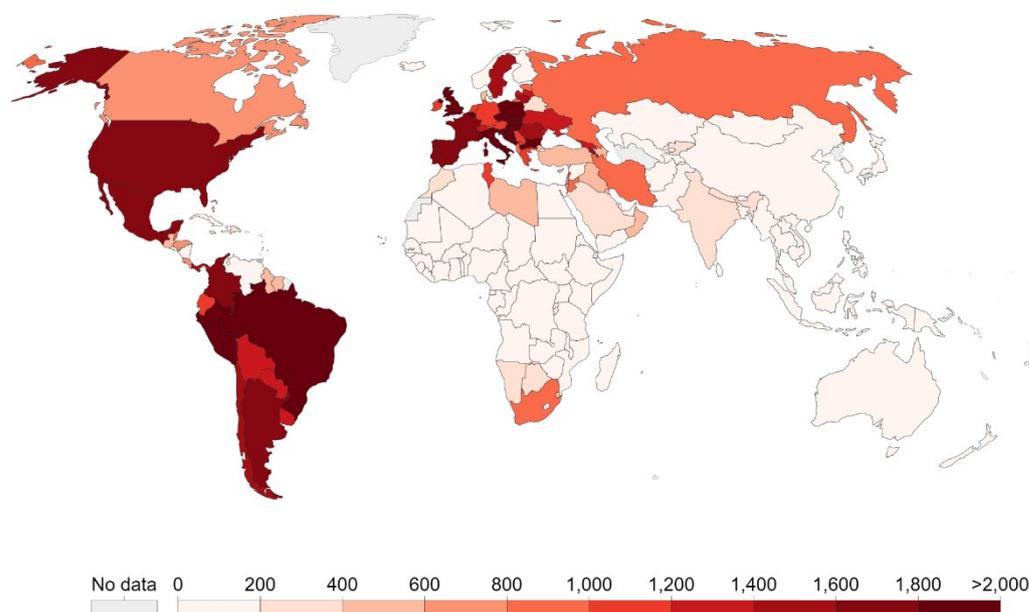
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is also evolving. Behavioural responses including: wearing personal protective equipment (PPE) such as masks, face shields and gloves; frequent deep handwashing; wiping down surfaces with alcohol; and maintaining a physical distance to remain outside the range of aerosol droplet exchange, offer the first and most accessible level of defence. These are also disruptive to everyday living and have required short- and long-term restrictions and lockdowns in hotspots. A hotspot is identified when a growing number of people in a specific location are found to be exponentially catching the virus via locally acquired transmission. In particular, hotspots occur in high density population areas such as airports, certain suburbs or residential facilities for the elderly. Regardless, as mutant forms of the virus quickly evolve, the need for vaccination that lessens the intensity of the viral impact and builds immunity, particularly herd immunity, is the only conceivable way to imagine a future that may see features of our past life return.

Cumulative confirmed COVID-19 deaths per million people



Limited testing and challenges in the attribution of the cause of death means that the number of confirmed deaths may not be an accurate count of the true number of deaths from COVID-19.



Source: Johns Hopkins University CSSE COVID-19 Data

CC BY

Figure 1 Confirmed COVID-19 deaths per million people by country

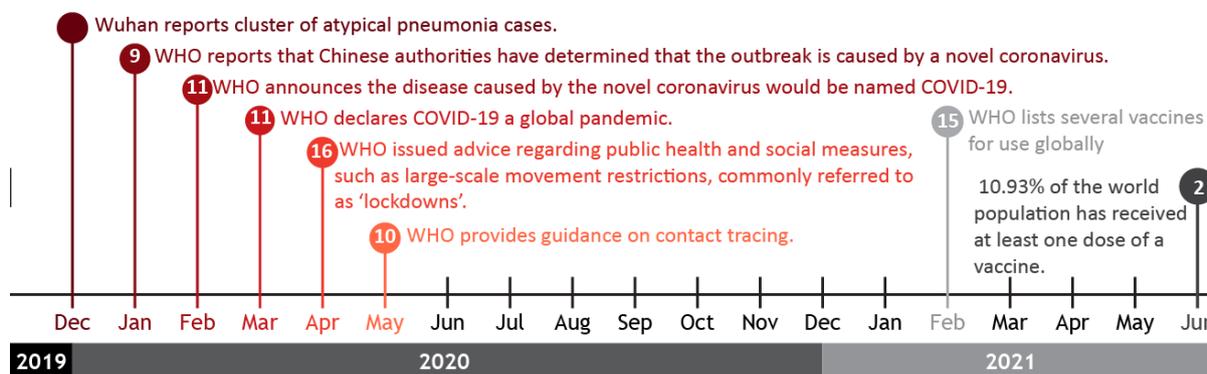


Figure 2 Key dates in the COVID-19 pandemic (Developed from Mathieu et al., 2021; WHO, 2021a).

Liminality: The transition phase

During an event such as this unprecedented pandemic, it is an important moment to capture current reactions, responses and research. According to Harris and Dakin (2020), it is imperative to ensure rapid innovation is underpinned by quality principles and features careful evaluation to enable “organisations to capture and evaluate these learnings: to identify what has worked, what has utility going forward, and what could or should be discarded” (p. 3). Phases of response are typically: crisis, adaptation, and opportunity. But it is not quite as simple as these three steps, given the breadth, depth, and comprehensiveness of the impact of the pandemic on every aspect of our lives. The loss of partitions separating what are typically binaries such as: home and work; private and public; home and school; leisure and work;—the list goes on—calls for a different way to understand the current scenario.

Bell (2021) provides a powerful way of potentially understanding our novel experience of the pandemic and the major transitions that are featured, and in so doing, potentially providing a way to make sense of the pandemic. Bell describes three phases typical of transition:

- Rituals to separate (leaving the world we care about)
- Liminal space (in between; crossing over; threshold; a waiting space; opportunity for transformation)
- Space of reincorporation (what are the new rituals).

The rapidity of the response to the pandemic meant that some of the rituals to separate were not fulfilled and this has the potential to impact long-term. We have moved from the liminal to an extent, and we are currently shaping the space of reincorporation. So this is where we can focus our energies as individuals, communities, and professionals. But first it is important to gain an understanding of the liminal space in which we co-exist at this time, as we struggle for signs that reincorporation might commence. Hints that reincorporation will not lead to a return to ‘normal’ but to a ‘new normal’ are increasingly apparent, and while the promise of vaccinations and achieving herd immunity are now common conversations around the globe, the reality that behavioural change is required to maintain a reasonably safe community is perceptible. The new normal is likely to feature regular vaccinations, continued mask wearing, social distancing and mandated space allowances, recording activities and contact tracing when outbreaks occur, and other recommended behavioural modifications, such as intense handwashing, avoiding shaking hands, and intentional cleaning of surfaces.

The infodemic: intersections between behaviour change and information literacy—facts and falsehoods

Forced or imposed behaviour change can be a distressing event for anyone. To take control of the pandemic, health agencies have called for some simple-to-implement strategies. Authorities are asking people to socially distance, wear PPE, increase frequency and intensity of hygiene practices and get vaccinated. These requests are not “new” per se, but because of the fast acting and serious health consequences of COVID-19, public health messages through television and social media have become pervasive. Observations of media commentary to health directives have seen mixed public reactions on a continuum of proactive to contemporaneous. Considering public divisiveness, it is important to acknowledge how “official” pandemic health messages are constructed, disseminated and received by the public. Public health messages are typically informed by application of behaviour change theory (Nutbeam, 2000), for example, in Australia, Albert Bandura’s Social Cognitive Theory underpinned smoking cessation advertising and seatbelt wearing mandates.

Individual behaviour change is one of the hardest aspects of health and wellbeing to tackle. Complex factors contribute to up-take or resistance to a forced or imposed request for behaviour change (Nutbeam, 2000). Several mechanisms for changing behaviours are used to alter health behaviours. In their review of scientific literature relating to infectious diseases Weston et al. (2020) identified some of the more prominent theoretical models used to impact behaviour change including attitudes and beliefs about infectious diseases, vaccinations and health intervention strategies. They identified theoretical models used to include the Health Belief Model, Theory of Planned Behaviour, and Protection Motivation Theory; as the most common, followed by the Precaution Adoption Process Model, Extended Parallel Process Model, Theory of Reasoned Action, and Social Cognitive Theory (Weston et al., 2020). Regardless of the theoretical modelling used to enact behaviour change, the individual is the one ultimately responsible for the requested/required changes in behaviour. On the

face of it, the health directives are simple requests but are expounded by complex circumstances and sometimes, polarised points of view.

In the case of the pandemic, individuals have been forced by government agencies into their homes, directed to change habits, and discouraged from close human contact. Many aspects of a “normal” everyday life were disrupted. Some people may feel that the impositions are an attack on personal freedoms. Some people may, or may not, trust authority. Some people believe in science, some do not. Consequently, the prevalence of half-truths or incorrect information, particularly spread via social media, has hampered efforts to disseminate factual health messages. The WHO has coined the phrase “infodemic” defined as “overabundance of information—some accurate and some not—that occurs during an epidemic” where too much information released at inappropriate times can “lead to confusion and ultimately mistrust in governments and public health response” (WHO, 2021b). In addition, the United Nations Educational, Scientific and Cultural Organization (UNESCO) defines:

- Disinformation: information that is false and deliberately created to harm a person, social group, organisation or country;
- Misinformation: information that is false but not created with the intention of causing harm; and
- Mal-information: information that is based on reality, used to inflict harm on a person, social group, organisation or country (UNESCO, 2021a).

In an effort to increase *information and media literacy*, and limit conspiracies and unhelpful information, UNESCO developed seven education modules for journalists, health professionals, and other interested people. Their handbook contains strategies for fact checking, social media verification, and combating online abuse. Although these modules were released prior to the pandemic, because of political and journalistic influences of the time, stopping the spread of dis-, mis- and mal-information is just as important in COVID times. This is evident because the WHO also has Coronavirus Question and Answers; and Mythbusters webpages (WHO, 2021b). Furthermore, social media outlets, such as Twitter and Facebook started to display public notices on social media posts that are known to be factually incorrect, misleading or harmful to public interest.

An important feature of the home economics academy is the value of embedded critical thinking. Deagon (2014), for example, explored this area using Descartes’ *method of doubt* as a critical thinking and self-evaluation tool for Home Economists. We are encouraged to proactively teach students to critically evaluate information and check our facts—this has always been important because of our provision of accurate food and nutrition information and advice. To counteract doubt and uncertainty, education about critical thinking and media literacy may create new ways of thinking about the pandemic for professionals and for society.

Impact on the individuals and families in everyday life

The impact of COVID-19 on everyday life has forced change onto the whole human population. As the pandemic unfolds, people are experiencing grief and loss, not only for loved ones who have succumbed to the disease, but grief and loss of “normal” everyday life. Close interpersonal contact with other humans is a fundamental requirement for positive health and wellbeing outcomes. Isolation is known to cause, perpetuate and exacerbate mental health issues. Rates of trauma stress, anxiety, and depression have increased because of the pandemic where every aspect of our lives has been impacted and we are still figuring out what the priority consequences will be (O’Connor et al., 2020). For example, it is becoming apparent that the prevalence of burnout, hypervigilance and dissociation have had serious mental health consequences for frontline health workers (Miguel-Puga et al., 2021). All of the rapid changes and confronting scenes have complex consequences for individuals and families. We may not truly understand the consequences for years to come.

Home Economists are frontline workers and because we work closely with individuals and families, we will bear witness to the impacts of the pandemic. While uncertainty can cause fear; crises can also form the basis of hope (Deagon & Pendergast, 2014). The multidimensional and multidisciplinary lenses that we utilise in home economics, may enable us to identify innovative solutions to support people through this transition phase to the new normal. There have been many moments during the pandemic when people felt the need to contribute in positive ways. For example, social media posts with altruistic messages that wearing face-masks are a part of being in a civil society where it is everyone’s responsibility to look after those who are elderly or immunocompromised. Face-masks

were in high demand. In response, sewing of face-masks and home economics skills became a news feature (Smith, 2020). Home economics conversations enjoyed a spotlight, with people confined to home and with newfound time reverting to activities such as baking sourdough and sewing, and in so doing revitalising conversations about the values and the value that underpins home economics (Brady & MacCallum, 2021; de Zwart, 2020).

Financial literacy

The impact of the pandemic on global finances has been profound. Petersen and Bluth, (2020, p. 1) use the phrase “pandemonics” to describe the effect of the coronavirus pandemic on the global economy, predicting a global economic crisis that is extensive in scope and impact, and likely to lead to the collapse of some economies. When economies collapse, so too do individuals’ finances. The loss of reliable, paid work has been experienced by many. The pandemics’ impact on income, however, is not homogenous. For instance, direct impacts have been caused to some through loss of income due to premature deaths, workplace absenteeism, and reduction in productivity, leading to factory closures and the like (Pak et al., 2020). Furthermore, some industries can manage with relocation of work from home, such as office based employment, however other types of employment such as tourism, hospitality and transport cannot continue to operate during lockdown and are severely impacted by reduced numbers. The need for capabilities to manage finances and financial literacy in this situation is demanding, including the family budget (Yuesti et al., 2020), and overall family wellbeing depends on having the financial literacy to cope in unpredictable and challenging circumstances. A study conducted by Yuesti et al. (2020) of family financial literacy during the pandemic led to the recommendation that financial literacy—especially during times of crisis—must be improved in schools and universities. Home economics has a strong focus on financial literacy.

Individual and family wellbeing

A study conducted by the World Health Organization (2020b) in 130 countries reveals an accelerated demand for mental health support, coupled with a diminished capability to provide for these needs without enhanced financial commitment. According to the authors of the report, “the pandemic is increasing demand for mental health services. Bereavement, isolation, loss of income and fear are triggering mental health conditions or exacerbating existing ones. Many people may be facing increased levels of alcohol and drug use, insomnia, and anxiety” (n.p.). Another recent study reveals that 4 in 10 adults report symptoms of anxiety or depressive disorder compared to 1 in 10 prior to the pandemic. Wellbeing is impacted in a range of ways, with direct impacts exhibited with difficulty sleeping (36%) and eating (32%) and with substance abuse increase (12%) (Panchal et al., 2021).

Furthermore, the impact on the social and emotional wellbeing of young people is increasingly concerning. A nation-wide survey of more than 2,200 young people aged 15-25 in Australia revealed that 40% felt the pandemic had impacted their confidence to achieve future goals and 51% felt their mental health had deteriorated during the pandemic (Headspace, 2020). This might not be surprising when the effects of the pandemic on schooling and education are considered. UNESCO estimates that over 1.5 billion learners, representing 91 percent of the world’s school population, was affected at the peak of the COVID-19 crisis (UNESCO, 2021b). Concerningly, UNESCO (2021c) has declared that “over 100 million additional children will fall below the minimum proficiency level in reading as a result of the health crisis. Prioritizing education recovery is crucial to avoid a generational catastrophe” (n.p.). The loss of class time for some young people has been extensive, with some missing more than a year of classroom learning time due to school closures. Home economics has at its core a focus on individual and family wellbeing and is a learning subject in many schools globally. The potential to contribute to the educational recovery agenda is one that home economists are keen to embrace.

Value and place of home

In order to manage the public health crisis that is the global pandemic, social distancing and isolation have been crucial behavioural strategies, with the home the centerpiece as the sanctuary. This has meant that at key times, the majority of the world have experienced home lockdown, with literally billions of people living, working and schooling from home, many for extended periods of time. With recent trends in modern homes towards open-plan living, reduced kitchen sizes, smaller gardens and outdoor spaces for children, the pandemic has disrupted these trends and pushed home designing trends to increase the size and number of home office spaces; better IT services with faster speeds,

greater capacity and enhanced cyber security; more closed zones; kitchen sizes increasing to accommodate a store of food and the ability to prepare food. There has also been a revival in home cooking and food-related hobbies such as bread and jam making (de Zwart, 2020). These trends reflect a disruption to the expected future direction for home plans, with the pandemic as the catalyst. Alongside these adaptations, the value of the home as a place for work and social connection has also increased. Indeed, the challenge of getting workforce members to return to their workplace has been significant for some enterprises, with employees struggling with anxiety and resistance (Gezici Yalçın & Düzen, 2021). The ability to avoid travel, and an unwillingness to utilise public transport, has exacerbated this trend. This reinvention of the home as a place of sanctuary, safety and retreat is repositioning the value of the home in our psyche, alongside the design of the home. Home economics contributes to many aspects of these pivots, from effective design to the repositioning of the value of home in our community.

A global frame for a global challenge: Home Economic Literacy Model (HELM)— Shaping the future

While home economics curriculum differs around the world (Pendergast, 2012), there is a shared theoretical and philosophical base and set of core practices that bind home economics curriculum globally (Pendergast et al., 2013). In 2008 the *IFHE Position Statement—Home Economics in the 21st Century* (IFHE, 2008, p. 1) explicated this global framing of the profession by committing to the position that as a curriculum area, home economics...

...facilitates students to discover and further develop their own resources and capabilities to be used in their personal life, by directing their professional decisions and actions or preparing them for life.

This therefore means that by engaging in home economics curriculum, individuals are enabled to develop capabilities to enhance personal empowerment to act in daily contexts. These contexts are diverse and may include: food, nutrition and health; textiles and clothing; shelter and housing; consumerism and consumer science; household management; design and technology; food science and hospitality; human development and family studies; and, education and community services (IFHE, 2008).

Delving into the global framing of the profession enabled by the *Position Statement* (IFHE, 2008) reveals that home economics is a “field of study and a profession, situated in the human sciences that draws from a range of disciplines to achieve optimal and sustainable living for individuals, families and communities” with content that “draws from multiple disciplines, synthesizing these through interdisciplinary and transdisciplinary inquiry” (p. 1).

The *Position Statement* clarifies that there are four areas of practice:

- as an *academic discipline* to educate new scholars, to conduct research and to create new knowledge and ways of thinking for professionals and for society
- as an arena for *everyday living* in households, families and communities for developing human growth potential and human necessities or basic needs to be met
- as a *curriculum area* that facilitates students to discover and further develop their own resources and capabilities to be used in their personal life, by directing their professional decisions and actions or preparing them for life
- as a *societal arena* to influence and develop policy to advocate for individuals, families and communities to achieve empowerment and wellbeing, to utilise transformative practices, and to facilitate sustainable futures (IFHE, 2008, p. 1).

It also specifies three essential dimensions:

- a focus on fundamental needs and practical concerns of individuals and family in everyday life and their importance both at the individual and near community

levels, and also at societal and global levels so that wellbeing can be enhanced in an ever changing and ever challenging environment

- the integration of knowledge, processes and practical skills from multiple disciplines synthesised through interdisciplinary and transdisciplinary inquiry and pertinent paradigms, AND
- demonstrated capacity to take critical/ transformative/ emancipatory action to enhance wellbeing and to advocate for individuals, families and communities at all levels and sectors of society (IFHE, 2008, p. 1).

In order to visually represent the deep connection between the four areas of practice and the three essential dimensions, Pendergast (2015) created the concept of the Home Economics Literacy Model (HELM), as presented in Figure 3 describing the co-dependence of the areas of practice and essential dimensions as the warp and weft that together form the pointy end of the field of study we know as home economics.

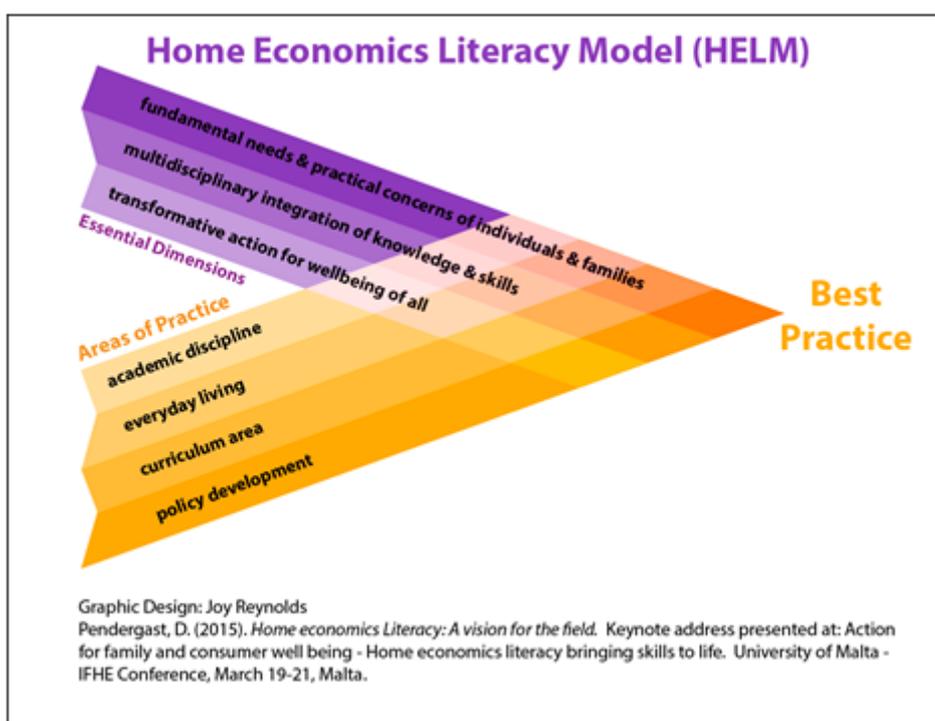


Figure 3 HELM—Home Economics Literacy Model (Pendergast, 2015)

The *Position Statement* preempted the importance of home economics at times of crisis, pointing to the profession as “constantly evolving”, with “new ways of performing the profession”. Indeed, the *Position Statement* emphasises that “[T]his is an important characteristic of the profession, linking with the twenty-first century requirement for all people to be ‘expert novices’, that is, good at learning new things, given that society is constantly and rapidly changing with new and emergent issues and challenges” (IFHE, 2008, p. 1).

The *Position Statement* points to the disciplinary diversity of home economics “coupled with the aim of achieving optimal and sustainable living”, this therefore “means that home economics has the potential to be influential in all sectors of society by intervening and transforming political, social, cultural, ecological, economic and technological systems, at glocal levels. This is driven by the ethics of the profession, based on the values of caring, sharing, justice, responsibility, communicating, reflection and visionary foresight” (IFHE, 2008, p. 1).

The value of the HELM at this time of the global pandemic, is in providing a tool that can be activated for members of the profession to proactively look to ways to shape the future, given this moment of crisis. To do this is to activate the HELM by looking at the intersections, made possible by completing the domains and capturing the possibilities. Using the tool developed by Pendergast (2015) and represented in Table 1 to highlight the role of home economics when focusing on wellbeing during isolation in the pandemic, provides an exemplar of this approach.

Table 1 Example of the Essential Dimensions and the Areas of Practice of Home Economics in the context of the COVID-19 global pandemic—A focus on wellbeing during isolation

Wellbeing during pandemic social isolation	Needs of individuals & families	Multidisciplinary integration	Transformative action
Academic Discipline	Incorporate an understanding of social and emotional wellbeing as a core of home economics academic learning	Identify a range of home economics disciplinary fields that contribute to building wellbeing - for example, food and nutrition, individual and family relationships, creativity	Provide virtual workshops to engage individuals and families in ways that enhance their social and emotional skills, building efficacy and self-regulatory behaviours
Everyday Living	Utilise knowledge and skills to ensure there is a safe and comfortable home environment with adequate resources, including social networks, in place	Utilise the range of multidisciplinary understandings to remain well informed and empowered to make changes as required to meet everyday living demands	Empower individuals to make decisions about their own and others wellbeing and to seek support and assistance when required
Curriculum Area	Develop curriculum that examines and develops an understanding of social and emotional wellbeing	Incorporate content from a range of knowledge bases (e.g. psychology, medical health experts) to ensure the development of a multifaceted understanding of wellbeing	Empower students to practice the implementation of wellbeing strategies through a range of practical applications
Society & Policy	Access information and policy documents for individuals and families	Consider the breadth of policies related to individual and family wellbeing that are impacted by the pandemic	Provide strategic advice to shape policy as an advocate on a government committee

The range of impacts from the pandemic of deep relevance to home economics are vast, including areas such as:

- Food and nutrition—access, choice, affordability, quality, kitchen gardens and safety of food;
- Equity and access, opportunities and barriers;
- Home economics education;
- Mental health and wellbeing for individuals, families and communities;
- Habits and habitats—behaviour and attitude change

For these and many other aspects of home economics, the engagement of the HELM can enable a visible process for shaping the future needs and directions of the profession, in the context of the wellbeing of the individual and the family. Indeed, using the HELM tool, it is reasonable to conceptualise the ways in which a home economics education framework has the potential to contribute to leading proactively in the COVID-19 global pandemic—see Table 2 for some ideas.

Table 2 Example of the Essential Dimensions and the Areas of Practice of Home Economics in the context of the COVID-19 global pandemic—A focus on home economics education

Home Economics education as a lens for acting proactively to the COVID-19 global pandemic	Needs of individuals & families	Multidisciplinary integration	Transformative action
Academic Discipline	Use systems, ecological and holistic frameworks to study complex factors that impact on the unique needs of individuals and families	Apply a systematic process to critically analyse a range of data, information and knowledge sources to inform research and practice	Compile and disseminate critically analysed information in plain language for general audiences
Everyday Living	Apply the principles of autonomy and self-determination to assist individuals and families to identify and create solutions for their own unique needs and challenges	Learn and teach to use unfamiliar technologies	Embed multiple literacies (food, health, financial) into all age education programs.
Curriculum Area	Develop authentic assessment tasks with scaffolded activities that have real-world impact	Engage whole of community to implement best practices such as construction and maintenance of kitchen gardens and use of that produce in cookery lessons	Provide opportunities for students to engage with their glocal communities
Society & Policy	Increase and maintain media presence including media releases, blogs, podcasts, interviews, research papers, conference presentations	Work in multiple spaces outside of traditional home economics environments including government, hospitals, military, industry, commercial and private practices	Participate in community and advocate equality, equity and accessibility to resources and promote the SDGs

Silver linings from the pandemic

Perhaps the global pandemic may serve as a trigger for a renewed valuing of the profession of home economics. This is not without precedent. In 2010, in the *Journal of the American Medical Association*, an article entitled “Bring home economics back” argued that the field offered hope for dealing with the first-world obesity plague leading to a public health crisis (Lichtenstein & Ludwig, 2010). This led to a renewed interest and opportunity to focus on the benefits of home economics education and the contribution it makes to society. As Pendergast noted in 2015, triggers that lead to renewed attention are often unexpected, pointing to

[T]he public plea by Lichtenstein and Ludwig (2010) *to bring home economics back*, unexpected at the time though it was, points again to the need to privilege education which focuses on wellbeing and which develops not only knowledge, but the ability to apply this knowledge in theoretical and practical ways. Change is often triggered by a spark, often from an unexpected source (p. 3).

There is little doubt that the pandemic was unexpected, its effects widespread, and the effects profound.

The pandemic has shone the spotlight on some of the key aspects of home economics, including, the importance and need for individual and family capability in the domains of:

- value and place of home as a sanctuary
- wellbeing (a holistic understanding of spiritual, social, physical, mental, economic, occupational, intellectual and environmental domains)
- food preparation and particularly food literacy
- financial literacy
- sustainable futures

The International Federation for Home Economics highlighted a particular area of concern in a news release for World Population Day, 11 July 2021. The news release is presented in Box 1, and spotlights the health and wellbeing of women and girls with risks that are of particular relevance for this group.

Box 1 International Federation for Home Economics Press release

The *International Federation for Home Economics* (IFHE) and its members join 2021 World Population Day celebrations on 11 July to focus attention on the toll COVID-19 takes on health and wellbeing of women and girls.

- The global crisis has hit almost every household and community, but not everyone is affected equally. Women and girls' health and wellbeing is at risk in many ways:
- Women who represent the largest share of front-line health workers are disproportionately exposed to the coronavirus.
- Disrupted supply chains impact the availability of contraceptives and heighten the risk of unintended pregnancy.
- Sexual and reproductive health services are being sidelined and gender-based violence is on the rise.
- Women disproportionately work in insecure labour markets, are harder hit by the economic impacts of COVID-19 and risk falling into poverty.
- Women's unpaid care work has increased as a result of school closures and the increased needs of older people.

IFHE globally advocates for home economics education as a key factor to ensure health and wellbeing. Formal and informal home economics education include all sexes, provide knowledge on how to responsibly manage resources and strengthen the position of women who are predominantly heads of households. The *International Federation for Home Economics* (IFHE) and its members are committed to continuing this work, putting the brakes on COVID-19 and contributing to the achievement of the UN Sustainable Development Goals.

Source: IFHE Press Release, 5 July, 2021

The Special Issue of the *International Journal of Home Economics*, 14(1) serves as an artefact of the ways in which the home economics community has responded to the COVID-19 pandemic, and it features many of the elements aforementioned in this paper, which could be mapped against the HELM. In order to explore the details of the 14 papers published in response to the call for this Special Issue, Voyant Tools available at <https://voyant-tools.org/> is utilised to create visualisations which enable quantitative exploration of qualitative data (text) with confidence and replicability, and visualisation outputs are produced that are easy to analyse and interpret (Hetenyi et al., 2019).

The corpus of the journal has just under 84,000 words and 14 peer-reviewed papers. The word cloud presented in Figure 4 displays the terms scaled in proportionate size in the visualisation according to their frequency in the Special Issue.

The top 30 most frequently used terms and their frequency is presented in Table 3. Notable is the most frequently occurring word in this Special Issue is learning (628), followed by food, home, and teaching. Also in the top ten are teachers and teacher. If teaching, teacher, and teachers are combined the total is 1130 occurrences, by far the most frequent word stem in use. Indeed, most of the top ten words are related in some way to the pedagogical enterprise, with the exception of food, home, COVID and pandemic.

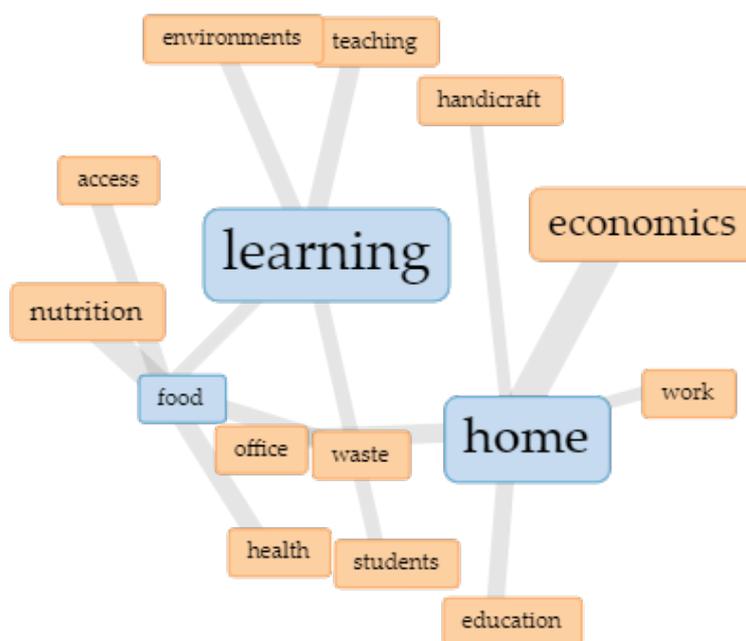


Figure 5 Links between major terms used in the IJHE COVID-19 Special Issue

What this link chart shows is the three top terms and the other terms that link most frequently to them. *Learning* links with: *environments*, *teaching*, *students* and *food*. *Home* links with: *economics*, *work*, *education*, *office* and *handicraft*; and *food* links with: *nutrition*, *health*, *access* and *waste*.

Given this call for papers for the Special Issue of the *International Journal of Home Economics* drew these 14 papers, this analysis reveals the emphasis of those papers, providing a folksonomy of the field at this unique time in our world history. The concept of *folksonomy*, a term coined by Vander Wal to reflect people-generated taxonomy (Pink, 2005), was first introduced to the home economics literature in 2010 (Pendergast, 2010) and is the use of tag clouds or word frequency clouds emerging from the content being analysed to form classifications relevant to a topic. In this case, the folksonomy of the profession related to this call for papers on the Special Issue topic of the global pandemic.

Conclusion

Our collective social reality has been tested by the pandemic. Ensuring that home economics across all essential dimensions reflect the needs of today's society is highly important. Gentzler's (2012) assertion that home economics is "ever timely, forever complex" holds fast. The positive impacts that home economics has in improving the quality of life and wellbeing of individuals, families and communities is sometimes *too obvious to see* (Deagon & Pendergast, 2019). The contributors to this Special Issue have made home economics visible by shining a light on our skills, capacity to adapt rapidly and work effectively within multiple spaces. The profession demands us to be mindful of our personal actions, our influence on other people, and the quality of the relationship that we have with our life sustaining Earth home. The coronavirus pandemic has highlighted that although we may be physically disconnected, the profession itself affords us connectedness. With an estimated 50,000+ Home Economists globally, we are empowered, knowledgeable and skilled professionals with a strong collective voice. Our profession remains ever relevant.

Author biographies

Professor Donna Pendergast is Dean of the School of Education and Professional Studies at Griffith University. Donna works at state and federal levels in education policy shaping including as: a member of the Board of the Australian Institute for Teaching and School Leadership (AITSL); Chair of the Teacher Education Expert Standing Committee of AITSL; Chair of QELi; Chair of the Queensland Council of Deans of Education (QCDE) and Deputy Chair of the Australian Council of Deans of Education (ACDE). Donna is the recipient of the Vice Chancellor's Research Supervision

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Dr Jay Deagon is the Senior Lecturer of Home Economics in the School of Education and the Arts at Central Queensland University. Jay is an Executive Committee Member (Pacific Region) of the IFHE. Her research projects include cookery skill training with severely marginalised women in Kathmandu, Nepal; and food literacy work with rural and remote women in Queensland, Australia. Jay is the founder of the social media network HomeEcConnect that promotes home economics as a vehicle for empowering individuals, families and communities to make ethical and sustainable choices. Jay has received five CQUniversity commendations for Student Voice Distance Educator of the Year.

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Application of hybrid learning interventions in advancing food and nutrition pedagogy in UAE and beyond through Culinary Science to sustain human health and wellbeing

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Abstract

Suboptimal nutrition remains a crucial threat to public health globally, and most importantly in UAE. During the last decade, UAE has experienced a significant decrease in home-based food preparation and a paradigm shift towards ultra-processed foods. Consequently, the impacts of undernutrition, malnutrition, and overnutrition have been evidenced by a surge in nutrition-based diseases such as obesity, diabetes mellitus, and cardiovascular diseases. Such contexts have generated a growing interest in nutrition pedagogy as an approach to promote science-based culinary interventions to improve food choice, cooking, and eating habits. Proponents of food and nutrition pedagogy emphasise the need to espouse a pedagogical model and approach that incorporates Arab and westernised ingredients plausible. Vernacular recipes have blossomed into a project that is both pedagogical and research-driven around the UAE contextualised culture. Incorporating westernised recipes would make the nutrition pedagogy adaptable to modern westernisation. Although researchers have always argued for or against classroom and online learning as independent entities, this research hypothesises that hybrid learning, where classroom and virtual learning overlap one another (Dubec, 2017), is the new and innovative approach to Culinary Science in engaging students and to promote culinary skills for more excellent human health and wellbeing in UAE. This research aimed to determine the significance of a hybrid learning intervention in promoting food and nutrition pedagogy in the UAE and establish special requirements and conditions for the successful application of hybrid learning in the pedagogy. Ecological System Theory and Fourth Generation Activity Theory (4GAT) were used to guide this study. Questionnaires were distributed to n = 60 Home Economics teachers, out of which n = 24 responses were received. Inferential analysis of the responses received has shed light on factors that affect the application of hybrid learning in advancing food and nutrition pedagogy, as determined by this study. Various factors influenced the fluidity, pedagogy, and social support aspects of food and nutrition, especially in the presence of COVID-19 pandemic.

KEYWORDS: HYBRID LEARNING, CULINARY SCIENCE, PEDAGOGY, CULINARY SKILLS, VERNACULAR RECIPE, COVID-19

Introduction

Background of the study

Like many other countries globally, the United Arab Emirates (UAE) faces challenges with nutrition education at the secondary school level where the need Home Economics can be pivotal to educate the nation. The country has also registered considerable population growth in recent years, which has been corresponding with its economic growth. The growth has generated a change in lifestyle

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and consumption patterns, which has seen a drastic reduction in home-based food preparation and a paradigm shift towards processed foods. Thus, as much as the country still suffers from undernutrition and malnutrition, it is overnutrition that has affected the country the most. An increasing number of UAE citizens are consuming more foods than their bodies need. Junk foods have become a common feature in the country as more people switch from healthy eating to eating processed foods in the past years. The food and nutrition problems experienced in UAE and beyond generates an opportunity for Home Economics teachers to explore new ways to access homes with the importance of Home Economics learning via new technological platforms. The shift also generates the need to focus on the development of culinary skills, especially among young people. This study hypothesises that hybrid learning is a better approach to be used in public and private schools in dispensing knowledge on food and nutrition.

The need for Culinary Science and Nutrition Education in UAE

The evidence of over-nutrition in the UAE can be seen in the increase in nutrition-based diseases such as obesity, diabetes mellitus, and cardiovascular diseases. According to Global Nutrition Report (2020), “The United Arab Emirates is ‘off-course’ to meet all of the global nutrition targets for which there was sufficient data to assess progress” (Para 1). The report establishes that while the prevalence of obesity in the Middle East and North Africa (MENA) averages at 8.7% for women and 6.0% for men, the prevalence of obesity in UAE is 41% for adult women and 27.5% for adult men, which is exceedingly high (Global Nutrition Report, 2020). The case of obesity in the UAE is a sufficient example to showcase that the country has indeed made little progress towards dealing with diet-related non-communicable diseases (NCDs).

As such, there is a need to create mass awareness on nutrition to promote science-based culinary interventions. Such an initiative will help people make appropriate food choices, prepare home-based foods, and develop healthy eating habits (Schuster, 2012). Eating habits in the UAE has changed over the last years, that the country has been undergoing an economic transformation (Eslick & Abdeljaber, 2020). The country’s population has largely become either middle-class or wealthy. Consequently, many people find it easy to buy ready-made food instead of cooking for themselves in their homes. Additionally, the nanny culture is growing in UAE. Many Emiratis and expat families hire maids or nannies to take care of home chores, including cooking and caring for children (Sanderson, 2019). In most cases, they are less skilled in the appropriate choice of foods and cookery, which expose children to greater health risks.

As a remedy, there are ongoing discussions on proposing a new food and nutrition pedagogy that incorporates the Arab and westernised ingredients. Home Economics should be integrated into public schooling to educate students on how to be holistic consumers (Aburime & Uhomoihi, 2010). There are local recipes that can be combined with the westernised recipes to produce modern foods that are both tasty and healthy. Incorporating Culinary Science and Nutrition Education into the UAE school syllabus is a pragmatic approach to ensure a long-lasting change in the population’s eating habits.

Culinary Science and Nutrition Education (CSNE) is a field of study that concentrates on the functions of ingredients in various foods and food products not only to improve the taste but, most importantly, to escalate food safety and health benefits. CSNE pedagogy is designed to reinforce and enhance knowledge on scientific principles and processes of handling and preparing food. It instils knowledge on food quality and safety, food processes and engineering, food chemistry analysis, and general culinary skills.

Establishing the appropriate food ingredients to utilise in preparing foods, macronutrients and energy balances, viscosity, colour, pH, moisture content, texture, flavour, taste, and food appearance, which are skills attainable through CSNE, is critical in ensuring that prepared foods are not only safe but generally acceptable to consumers (Nolen, 2017). Thus, propagating food preparation skills through CSNE, which is a branch of Home Economics is critical in promoting understanding of the science behind foods and beverages in an effort to enable culinary experiences that are safe, creative, delicious, and consistent, especially in UAE, where nutrition-based non-communicable diseases continue to be major threats.

Pedagogical techniques used in UAE

Implementation of CSNE, or Home Economics in general, in UAE calls for an appropriate examination of the pedagogical technological instruments or platforms used to dispense educational contexts, knowledge, and skills in the country. According to Yu et al. (2017), safety, engagement, and connectedness are critical elements of a school's environment for students to learn. These factors are critical contributors to learners' achievements and are linked with higher grades and scores. A study by Berkowitz et al. (2016) revealed that in addition to having skilled and excellent teachers to teach subjects, having a positive school environment that is characterised by strong attendance, positive relationship between students, extensive engagements of parents and peers, and minimal engagement in risky behaviours could escalate learning achievements and narrow achievement gaps.

Until the outbreak of the COVID-19 pandemic, UAE has been primarily dependent on face-to-face learning that demands that learners and teachers be in the same location at a specific time to promote curriculum dispensation. The onset of the pandemic generated extraordinary circumstances that for students, teachers, parents, schools, and government regulators, igniting the need for an alternative to face-to-face learning (Esllick & Abdeljaber, 2020). In early 2020, schools in UAE made a mandatory shift to online learning to continue the 2019/2020 academic year (Esllick & Abdeljaber, 2020). Since then, the Ministry of Education (MoE), in collaboration with the private sector, has made efforts to establish stringent protocols that would allow students to return to physical classrooms, albeit the pandemic. On August 16, 2020, the UAE's MoE made an announcement that distance learning would be available and optional to all. The ministry proclaimed;

Parents have been allowed to freely choose between their children's mode of attendance, face to face at school or through distance learning, for the first term, to achieve stability within the school community and to ensure the safety of our students, while meeting the requirements of physical distancing (Mansoor, 2020, Para 4).

The proclamation by UAE's MoE, as supported by other studies, indicates that distance learning technology cannot fully replace face-to-face learning despite its widespread adoption. In the words of Cochrane et al. (2020), the coronavirus pandemic has intensified the awareness of digital tools and their role in education, but the next world should not be the one where schooling is purely defined by distance learning. Researchers agree that online teaching cannot provide some of the benefits of face-to-face learning, taking into consideration the low level of active interaction associated with it (Cochrane et al., 2020; Leslie, 2014). The contentions between face-to-face learning and distance learning have led to the development of hybrid learning.

Hybrid learning

Hybrid learning has emerged as one of the leading methods of delivering education to modern-day students. This method of learning combines the benefits of face-to-face instruction and technology-based learning (Tamim, 2013). Hybrid learning is an educational model where the instructor delivers live instructions both in the classroom and remotely at the same time (Kabongo, 2020). Generally referred to as synchronous instruction, this model of instruction dispensation also utilises asynchronous online learning elements such as pre-recorded instruction videos and online exercises that support face-to-face classroom sessions (Zhou & Yao, 2017).

The goal of hybrid learning is to enrich the learning processes by blending face-to-face learning and online learning to stimulate their benefits and overcome their weaknesses (Yamazumi, 2008). The adoption of hybrid learning is attached to numerous benefits; increased flexibility of learning experience, more synchronous communication opportunities, increased freedom of independent academic exploration, and more efficient use of financial and academic resources to foster learning objectives (Parkes et al., 2011). More flexible learning schedules, teaching modes, student engagements with learning materials, collaboration and communication among peers and with instructors are more attainable if learners are granted the opportunity to choose between in-person class attendance and remote class attendance while attaining the same quality of instructions (Aburime & Uhomibhi, 2010; Yamazumi, 2008). With hybrid learning, students can learn from the location of their choice, develop deeper asynchronous discourse with their peers, and revisit materials whenever they wish to.

A history of hybrid learning and its application in food and nutrition pedagogy

Although virtual or blended learning, as it is known today, has blossomed with the invention of computers and the worldwide web, its foundation dates back to the early 19th century when the term *distance education* surfaced (Tandoh et al., 2014). In the 1840s, Sir Isaac Pitman introduced distanced learning by sending shorthand texts and assignments to his students via mailed postcards (Kabongo, 2020). He could then require the students to send the assignments back via mailed postcards for grading and correction (Tandoh et al., 2014). Even though computers and mobile devices had not been conceptualised during this time, Pitman's distance learning turned to be a success.

The concept of distance learning would proliferate with the invention of mainframe computers in the 1960s and 1970s (Pappas, 2015). Although the mainframes were rarely used in schools, organisations used them to train their employees without face-to-face indulgence. Notable systems such as Plato were used as platforms to facilitate the training process. Employees could simply log in to the system and access training information. In the 1970s and 1980s, TV-based technology was used to support live training through video networks (Pappas, 2015). Learners were able to physically interact with their peers while watching their instructor on TV. Their questions and concerns could then be addressed by mail. The use of CD-ROMS to deliver more interactive learning experiences through learning management systems (LMS) became popular in the 1980s and 1990s (Pappas, 2015).

The innovation of web-based instruction in 1998 instigated a rapid change towards online learning (Tandoh et al., 2014). People and households began purchasing personal computers on a large scale. The use of graphics, videos, and sounds became more immersive with the invention of browsers increasing connection speed and offering greater interactivity (Parkes et al., 2011). Although efforts during the early 2000s were on developing a general paradigm shift towards e-learning, gradual improvements and changes have showcased the need to blend face-to-face instruction and technology-driven learning both synchronously and asynchronously to improve learning outcomes (Hrastinski, 2008; Leslie, 2014; Nazarenko, 2014). With the hybrid system, instructors can interact with their students both physically and remotely, share instruction materials remotely, perform laboratory experiments through video demonstrations, and can organise online and physical assessments (Astudillo et al., 2020).

Various elements form part of the synchronous and asynchronous aspects of hybrid learning. Table 1 below lists some of the elements of the synchronous and asynchronous aspects of hybrid learning. Tsiflikiotis et al. (2017) note that the elements of hybrid learning are just mere tools that cannot contribute to successful learning outcomes without proper consideration of social and environmental factors. He exclaims further that in addition to the hybrid learning elements, factors such as a comprehensive learning management system, well-defined syllabuses, clear learning objectives, good communication, and consistent aesthetics are absolutely necessary.

Table 1 Synchronous and asynchronous elements of hybrid learning

Elements of Hybrid Learning	
Synchronous	Asynchronous
Face-to-face/Online Meetings	Study of materials
Webinars	Working with technical guidelines
Discussions	Complimenting lessons/Tests
Consultations	Working in groups/subgroups
Tests & Quizzes	Preparation of Reports

Thus, it is proper to say that teaching Home Economics, or CSNE, to be specific, requires extensive consideration of various pedagogical factors and how they can be improved through hybrid learning interventions (Schuster, 2012). The rapid change in technology affects how people learn in schools and foresee the need for extension educators on nutrition programs to stay abreast of technological trends and how the changes impact their pedagogical deliveries (Hadijah and Shalawati, 2019). As Mugliett (2009) emphasise, ICT integration in Home Economics increases teachers' confidence in sharing ideas and providing feedback concerning learning outcomes. The researcher also argued that

as teachers continue to interact in an asynchronous learning environment, what matters most is the “how-to” knowledge when diffusing innovation into practice. These hybrid elements are summarised in Figure 1.

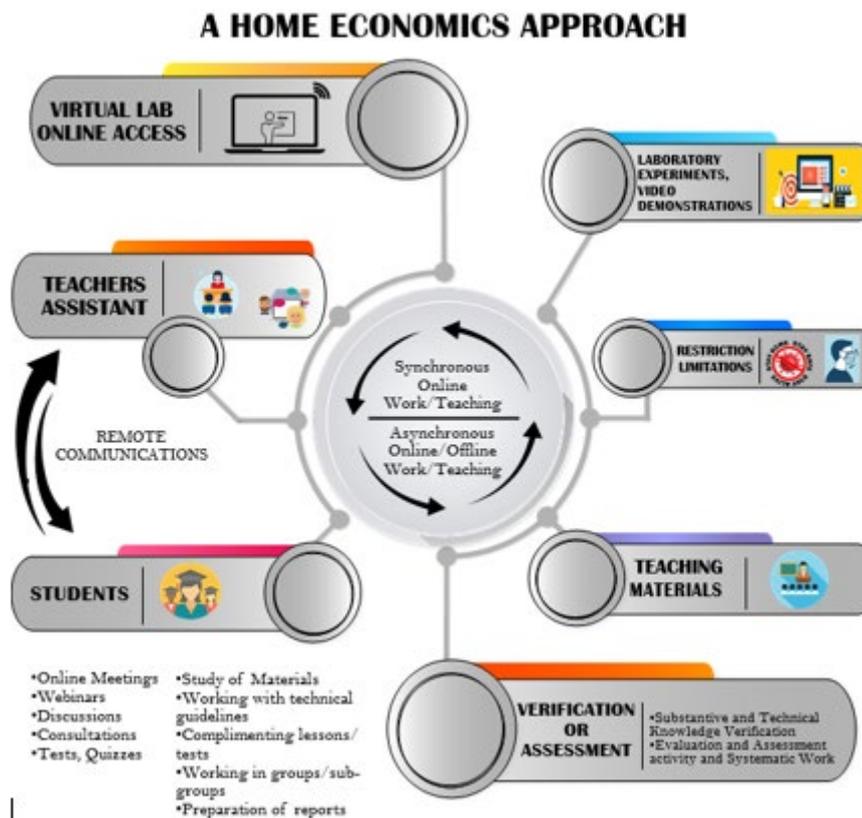


Figure 1 A Home Economics approach during COVID-19

As touch screen and videoconferencing technologies become ubiquitous, their application in fostering food and nutrition education through virtual learning, mobile learning, and the visual web becomes absolutely necessary. Pendergast et al. (2012) in *Creating Home Economics Futures* emphasise that there is no doubt the internet is changing the way people work, live, and play and that the digital age provides the opportunity to reconsider the impacts and influence of Home Economics on modern societies through developments in communication technologies. Education systems need to utilise multimodal means (physical and virtual meetings, texts, visual images, audios, and videos) to advance food and nutrition pedagogy to promote sustainable human health and wellbeing (Pendergast et al., 2012). Figure 1 showcases a model on how hybrid learning elements could be developed into a Home Economics approach.

Statement of the problem

Proper food and diet is a primary determinant of sustainable health and wellness. However, attaining proper diets and healthy foods is increasingly becoming a challenge, especially in a world where fast foods and processed foods have become the new normal. The consequences of the paradigm shift from homemade food to processed and fast foods are evident. Cases of nutrition-based non-communicable diseases are increasing at an alarming rate. UAE is specific has one of the highest rates of these diseases in the MENA region. It is important that the MoE put forth the need to develop a Home Economics curriculum that enables CSNE in UAE public and private schools as a mandatory subject. UK is way ahead with this as Cookery and Nutrition are compulsory in all UK schools since 2014 (Rutland & Turner, 2020). Conventionally, the country has been dependent on face-to-face interventions. The outbreak of COVID-19 has seen it make a drastic paradigm shift to distance learning. This study presupposes that going forward, the country will need to adopt comprehensive hybrid learning systems, especially in advancing food and nutrition education. The study tests this presumption and determines approaches for hybrid learning integration. It is, however, important

that the country understands the importance to prepare a workforce to overcome such barriers and to implement an infrastructure where UAE citizens are prepared to teach Home Economics to future children within the Emirati as they the most precious wealth in the country on Health and Wellbeing through the use of practical lessons. However, this could only be achieved with the right technological advances making them available to teachers.

Purpose of the study

This research determines the significance of a hybrid learning intervention in promoting food and nutrition pedagogy in the UAE and establishes special requirements and conditions for the successful application of hybrid learning in the pedagogy. Further, this study focuses on hybrid learning interventions in promoting food and nutrition education in the UAE. Introducing Home Economics in the country's syllabus can help cultivate human health and individual wellbeing. The UAE has been experiencing suboptimal nutrition over the past years. The challenges of nutrition remain a significant threat to public health in the country that can best be addressed through appropriate approaches to pedagogical interventions. Home Economics, of which food and nutrition is part, is a practical subject that weaves together approaches that integrate scientific knowledge from the different school subjects to help students gain a broader perspective, thereby helping develop integrative thinkers with interdisciplinary skills needed in today's world.

Research questions

- Is hybrid learning intervention significant in promoting food and nutrition pedagogy in UAE?
- What special requirements are necessary for the successful application of hybrid learning in the food and nutrition pedagogy?
- What conditions are necessary for the successful application of hybrid learning in the food and nutrition pedagogy?

Literature review

Theoretical review

Ecological System Theory

The ecological system theory advanced by Bronfenbrenner (1977) as cited in Soyer (2019) holds that the environment of an individual child is a nested arrangement of structures in which one is contained within the next. These structures include microsystem, mesosystem, exosystem, macrosystem, and chronosystem (Soyer, 2019). They are interrelated in such a way that the influence of one structure on an individual child's development is hinged on its relation with the other structures.

The microsystem forms the first and innermost structure. It involves things that have direct contact with the child within their immediate environment. These may include school peers, parents, teachers, siblings, religious organisations, and health services. The relationship that exists between an individual child and their environment within this structure is bio-directional in which they can be influenced by other people within the environment, and they can also influence others within the same environment (Tudge et al., 2016). Similarly, a child's reaction to individuals within the same environment can influence how they are treated in return. Through all these, the interactions within this specific structure are always personal and are essential in fostering and supporting an individual child's development. At this level, an individual's food choices may be influenced through mechanisms such as role modelling, social support, and social norms.

The mesosystem forms the second structure and involves the interaction between the different elements within a child's microsystem. Such can include the interaction between an individual's peers and siblings as well as between parents and teachers. For instance, if a teacher communicates to a child's parent, the interaction will definitely influence a child's development like their ability to examine their own values with respect to the food system as well as the adeptness of an individual learner to comprehend multiple values and perspectives that exists within the food system, which may include diverse cuisines (Soyer, 2019). On the same note, the theory asserts that a child's positive development highly depends on good relations among the different elements within their microsystem, while a soaring relation of these elements negatively impacts a child's development.

The exosystem forms the third structure and involves other formal and informal social structures, which do not themselves contain the child but indirectly influence an individual child as they affect one of the microsystems. Examples of these include the mass media, the parent's workplace, and the parent's friends. Such form an environment outside the child's experience and that does not involve them directly but still affect their development (Tudge et al., 2016). It influences the proficiency of an individual learner to generate an astute understanding of the larger socio-political context and other factors like the diversity that shapes the food system as well as shape their comprehension of multiple values and perspectives that exists within the food system, which may include diverse cuisines.

Likewise, the macrosystem forms the fourth and second last structure and include elements like food marketing, social norms, food production and distribution systems, agriculture policies, and economic price structures (Soyer, 2019). An element like social norm may include ethnicity, wealth, and socio-economic status. For instance, the specific culture with an individual child's environment may influence an individual child's beliefs and perception regarding the food and nutrition system within their environment. Compared to the first three structures, it does not major on the specific environment of one child but rather the existing society and culture through which the child is interacting with.

Lastly, the chronosystem forms the fifth and last structure and involves the environmental changes that a child may encounter within their lives and may influence their development. Such can include major life transitions and historical events like the recently witnessed COVID-19 pandemic that devastated almost all sectors across the globe. Other examples may include a child starting school or parents moving to a new house, or getting divorced. Such may influence a) the adeptness of an individual to comprehend multiple values and perspectives that exists within the food system, which may include diverse cuisines; b) the proficiency of an individual to generate astute understanding of the larger socio-political context and other factors like the diversity that shape food system; and c) the capacity for individuals to enhance their commitment towards generating a sustainable food system in a just manner. The following diagram summarises the ecological system theory.

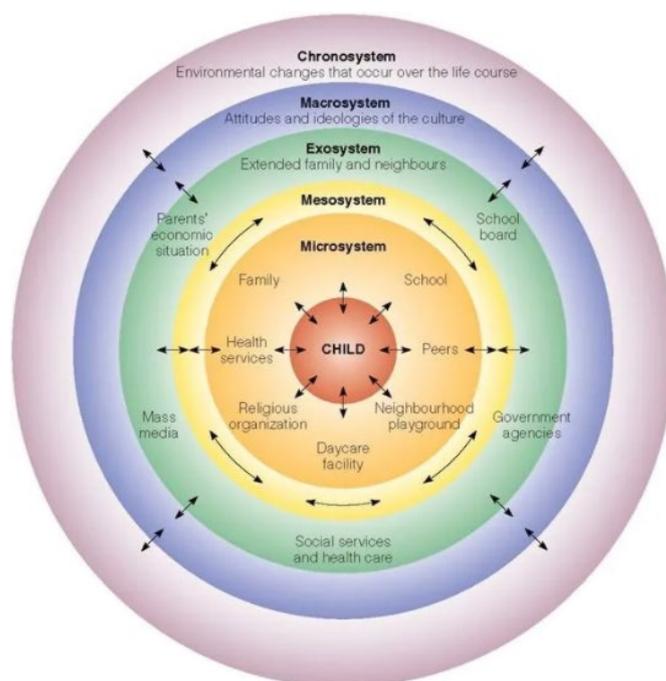


Figure 2 Bronfenbrenner's Ecological Systems Theory Adapted from Guy-Evans (2020)

Fourth Generation Activity Theory-4GAT

Activity theory provides an interdisciplinary approach that is highly effective in understanding the learning process from all social and human sciences, including economics, sociology, psychology, philosophy, engineering, and medicine (Spinuzzi & Guile, 2019). By incorporating all these branches of human and social sciences, activity theory helps in answering four essential questions: a) who are

the subjects involved and how are they defined and located; b) why do they learn and what drives them to make an effort; c) what do they learn, including the content and expected learning outcomes; d) how do they learn including the essential actions and the learning process.

The theory has been in place for a considerable period of time and has evolved over the ages into four generations. At the core of the fourth-generation activity theory (4GAT) is the exploration of the complexity of structures and organisations that have bloomed through digital media. As advanced by Engeström (2001), it is in place to handle “mycorrhizae activities.” Such activities include structures that may be impossible or difficult to bound and close, while in the real sense, they are not elusive or indefinite. Examples of such activities may include the spread of religious extremism in regards to food consumption. Both create patterns of objects and subjects that resist the explicit organisation observed in the meditational triangles in third-generation activity theory.

The 4GAT is advanced with a view to solving two sets of problems in the community. These include peer and social production as well as the networked organisation of labour and production. Regarding the peer and social production strand, the 4GAT contextualises it as a collaboration of individuals across or outside organisations and which the boundaries and structures of activity systems seem to gradually lose their value (Wiser et al., 2019). Through this, it seeks to address problems such as hacking in education and the viable ethical grounds such can be considered an offence as well as what form of relationship among the actors can be applied to avoid such. As a result, 4GAT seeks to address runaway objects that can be effectively managed by a single stakeholder.

On the other hand, while solving the problems due to the networked organisation of labour and production in food and nutrition systems, 4GAT highlights the essence of the information system in solving problems. As a result, it aims at reframing the notion of objects to account for more expansive objects, as in the case of information science, towards enhancing the effectiveness of CSNE in society. Apart from these two sets of problems, there are several other problems that 4GAT seeks to address, and they include social capital and its influence on Home Economics. Some other problems include motivation, emotion, and identity of individual learners within the field of CSNE (Wiser et al., 2019). All these are applicable within the learning environment, especially those that involve the integration of different teaching and learning techniques, as in the case of blended learning. The application of different elements of 4GAT within the hybrid learning system always ensures effectiveness and efficiency as it offers a structured approach of identifying any form of obstacles that may arise within the CSNE together with the conventional techniques that can be applied to eliminate such.

The two theories project numerous factors that might impact a child’s learning processes and outcomes. From the ecological system theory, family and school are the most important microsystems that impact the learning process. At the exosystem level, government agencies and school boards have a greater fundamental role compared to others in ensuring that learning processes are streamlined to meet national and international standards. In addition to these, it is admissible that there are various cultural ideologies and attitudes as well as environmental changes that influence a child’s learning processes (Tudge et al., 2016). It is therefore important to assess and question each of these factors to determine how their specific elements impact learning outcomes, specifically with Home Economics in mind. 4GAT condenses and simplifies the factors formulated in ecological system theory into four fundamental questions aimed at understanding the subjects and their locations, what motivates them to learn, what they learn, and how they learn (Wiser et al., 2019). In this sense, it can be transposed that factors that influence learning processes can be categorised into three classes; fluidity, pedagogy, and social and emotional support. Fluidity generally concerns external factors that impede or streamline the learning processes. For instance, the outbreak of COVID-19 has greatly hindered face-to-face interactive instruction and made online-based learning and hybrid learning absolutely necessary. Fluidity is subject to various factors, such as the adoption of the right technology, incorporation of digital tools and resources, leadership, and professional development (Jaspers & Madsen, 2019). Pedagogy incorporates numerous factors that are directly involved in teacher-student interaction. Such factors might consist of teachers’ competency, proper organisation of instruction materials and resources, student’s preparedness to learn, balancing teaching techniques and methods, and customisation of learning activities and match specific learners’ needs, amongst others (Newby, 2018). Social and emotional support incorporates collaboration between learners and students and the active involvement of parents amongst others. This study attempts to test and rank these factors amongst others to determine their relevance in promoting the adoption of hybrid learning to advance food and nutrition pedagogy in UAE.

Empirical review

Impacts of hybrid learning interventions on food and nutrition pedagogy

As identified by Butz and Stupnisky (2017), the nature and scope of hybrid learning are quite extensive, especially in higher education and corporate setting. The study also identified that the existing diversity among individuals and communities and the different manners in which they apply blended learning present a significant challenge in generating a comprehensive definition of the same. However, the study identified three common grounds from which hybrid learning can be explained. These include a) the use of traditional learning approaches together with web-based online approaches; b) the combination of both media and tools like textbooks integrated into an e-learning environment and c) the integration of different learning approaches irrespective of the technology used.

On the same note, Woodhouse et al. (2015) also tried to solve the ambiguity surrounding the definition of hybrid learning by projecting it as a mixture of instructional modalities, delivery media, instructional methods, and web-based technologies in ensuring effective learning environment. The instructional modalities identified by the study include self-paced learning, web-based learning, and onsite learning, while the delivery media advanced on the same include classroom sessions, internet, web-based courses, PowerPoint slides, books, videos. Likewise, instructional methods advanced by the study include technology-based sessions and face-to-face sessions. Similarly, web-based technologies may include both synchronised and asynchronised elements like online courses, virtual classrooms, chat rooms, and blogs (Rocamora et al., 2019). Further, the study also identified some specific factors that influence the choice of blend that is used. Some of the factors include the nature of the course content and learning outcome goals, the characteristic of individual students and their learning preference, the applicable teaching style, and the teacher's experience as well as online resources.

Butz and Stupnisky (2017) identified that hybrid learning is highly sensitive to the different learning strategies hence can be tailored to meet the specific needs and preferences that exist among individual students and instructors in ensuring a highly effective learning process that creates value to all stakeholders. The study also identified that hybrid learning encourages collaborative learning in which both the students and their instructors can work on some projects remotely from their comfort zones. Such a mode of learning requires the use of relatively advanced technology by both the educator and the students. Likewise, the study also identified that blended learning is also essential in promoting intercultural awareness by both educators and students. This forms an integral part of the learning process in a globalised contemporary world where individuals from diverse cultures and with different backgrounds freely interact in a productive manner. The study further advanced that blended learning is cost-effective since both educators and students do not need to do the actual travelling to educational settings or schools to affect the learning process. However, López Núñez et al. (2020) objected to the cost-effectiveness of blended learning, considering that in most cases, it involves the integration of different technologies innovatively. The acquisition and maintenance of the necessary technologies involved are always costly and may not be sustainable in some cases.

Flowers and Swan (2015) performed a study to establish the efficiency and effectiveness of hybrid learning in New Zealand secondary schools. Among the findings established generated from the study include extended flexible interaction between the educator and the students during the learning process, increased confidence and improvement in ICT skills among the stakeholders, development of independent learning skills, and the development of self-management and higher-order thinking skills among students. All these were quite similar to the specific impacts of blended learning advanced by Woodhouse et al. (2015). Some additional impacts of hybrid learning advanced by the study include the professional growth of individual teachers and the improvement of school infrastructure to suit the necessary infrastructural development in the contemporary world.

In a study done to explore the impact of blended learning within the healthcare profession, Liu et al. (2016), observed that hybrid learning provides an effective alternative approach in the education sector. This arises from its utility in synthesising the viable attributes in both the e-learning framework and traditional learning framework. As a result, the use of blended learning has witnessed a considerable growth rate in the contemporary world. Some of the impacts of hybrid learning highlighted by the study are its ability to transcend space and time boundaries and improve the level

of convenience derived from this sort of learning. The study also identified that hybrid learning promotes collaborative and individualised learning. Additionally, through the use of interactive media multimedia, it provides up-to-date information that can also be re-used (Leahy et al., 2015). However, it also identified that blended learning results in negative impacts like learners feeling of isolation in a virtual environment and costs emanating from continuous costs of platform maintenance and high costs involved in maintaining multimedia materials.

Through all these, there are several studies that have been conducted in light of the significance of hybrid learning, especially in the highly volatile contemporary world's environment. Its sensitivity to different learning approaches and teaching techniques and mechanisms is essential in ensuring a highly effective learning process in a manner that creates value to all stakeholders. Hybrid learning also encourages a collaborative learning process in which both the learners and the educators cooperate closely to ensure a high-quality learning process regardless of their physical distance between them. Similarly, it also promotes intercultural awareness, which is crucial in the highly globalised contemporary world. Some additional impacts of blended learning include professional growth among individual teachers, provides an avenue to improve the existing school infrastructure to suit the demands and needs of the learning environment in the 21st century, and the development of independent learning skills. Though such impacts of hybrid learning have been observed by several studies, there are just handful of studies that have advanced the impacts of hybrid learning interventions on food and nutrition pedagogy. As a result of this, the study is set to be the first, if not among the few studies to explore the impact of hybrid learning interventions on food and nutrition pedagogy and specifically within the UAE.

Requirements for application of hybrid learning

In an attempt to generate the value of hybrid learning to the society, Ibáñez et al. (2012) first identified its primary principles, which include a) a careful integration of both face-to-face learning and online instructional components; b) innovative utilisation of technology in a learning environment; c) reconceptualisation of the learning paradigm; and d) sustainable evaluation and assessment of hybrid learning. Through all these, the first principle is primarily in place to help in enriching the benefits of all stakeholders involved and successfully attain the diverse student needs and preferences. The second principle illustrates the manner in which technology should be applied in a pedagogically appropriate way and in creating and maintaining a socially viable and highly interactive learning environment. The third principle is essential in incorporating new and emerging pedagogies and learning theories like activity theory and constructivism. It also helps in identifying new challenging roles among students and instructors during their interaction. Lastly, the fourth principle is in place to ensure that the required quality standards and effectiveness within the education environment are achieved in a manner that creates value to the whole society.

Zhang et al. (2020) notes that for effective execution of hybrid learning, there must be a general need for such among the stakeholders with an existing view that it offers a superior value proposition than any other learning approach. This forms a vital factor in the effectiveness of hybrid learning, especially in the contemporary world where technology dictates much of the proceedings in different sectors in which all stakeholders must realign their systems and procedures to meet the specific technical requirements within their environment to maintain relevancy. The necessity for hybrid learning in the contemporary world, especially among developed nations, is further presented by the evolution witnessed within the demographic structures. The emergence of the Millenials, technology enthusiast generations highlights the need for all education sectors to reorganise their systems and procedures in a manner that creates value to the current dominating population. Through this, the study highlighted the need for ensuring close consideration of the characteristics of existing demographic structures as well as technological trends before advancing hybrid learning in a specific learning environment.

Similarly, Ukil et al. (2020) largely concurred with the essential requirements advanced by Zhang et al. (2020). However, the study highlighted some additional elements that must be put in place before applying hybrid learning within a learning environment. Some of these include a clear and precise definition of the mission and vision to be achieved within the learning environment and the level of resources available within a specific learning environment. In regards to a clear definition of vision and mission, the study reported that these present the long-term goals and objectives to be achieved within the learning environment. And as such, by defining them precisely, the stakeholders will be in a position to evaluate whether they can be effectively realised through the use of blended learning.

On the other hand, in light of the level of resources available within the learning environment, the study claimed that it considered both infrastructural development and competency among educators as a fundamental strategic framework. Hybrid learning can only be effectively applied in areas with infrastructural development to ensure efficiency and effectiveness. Likewise, regarding competency levels among instructors, the study highlighted the need for individual educators to be able to smoothly interact with different technologically enhanced systems, including web-based educational technology. In case such is not the case, individual educators need to go through proper training to enhance their competency levels. The study concluded that with the enhanced infrastructural systems and increased competency levels among individual educators, there is a need for educational establishments, especially schools to embrace hybrid learning to ensure they remain relevant while delivering services to current and future generations.

Additionally, Yu et al. (2017) also advanced the need to consider the three essential questions before executing a hybrid learning. These included a) who will be leading; b) who will be participating; and c) in what intensity will technology be used. Regarding the first question relating to who will be leading, it is essential to consider the specific stakeholders who will lead the entire learning process. Factors to be considered may include the philosophy that guides their lives as well as their life aspirations and motivations. On the same note, in regards to the second question relating to the participants, it is essential to take into consideration individual participants since hybrid learning is most effective when it is customised to accommodate the explicit needs of an individual student. The specific characteristics like their needs and preferences must be primarily considered before choosing a viable hybrid learning model to ensure and enhance the efficiency and effectiveness of the model (Assaad et al., 2018; Lin, 2008). Further, on the last question relating to the level of intensity in which technology will be applied, there is the need to be clear on the ratio at which both traditional learning and e-learning mechanisms will be applied. Through all these, clarity and close consideration of elements involved among stakeholders is also key in ensuring effective integration of hybrid learning hence must be prioritised.

Conditions necessary for application of hybrid learning in food and nutrition pedagogy

Literacy in food and nutrition is an essential avenue to sustainable human health and the general wellbeing of the world's population. As advanced by Hadjerrouit (2012) and Reiher (2012), there are two sets of knowledge within the framework of food literacy. These include functional and critical knowledge. Functional knowledge primarily involves a broad set of skills that may pertain to food identification as well as mental, physical, and emotional effects of food to an individual, together with the basic abilities related to food. On the other hand, critical knowledge basically allows individuals to perform actions related to food and to reflect on their relationship to the broader food system. The study also advanced the following four critical food literacy objectives that a learning system must be able to impart among learners. These include 1) the ability of an individual to examine their own values with respect to the food system; 2) the adeptness of an individual to comprehend multiple values and perspectives that exists within the food system, which may include diverse cuisines; 3) the proficiency of an individual to generate astute understanding of the larger socio-political context and other factors like the diversity that shape food system; and 4) the capacity for individuals to enhance their commitment towards generating a sustainable food system in a just manner.

Ezeonwu et al.(2014) also advanced that professionals within the food and nutrition sector should possess the appropriate skills and knowledge necessary to plan, manage, prepare and eat culturally appropriate and healthy foods. They should be able to generate a widespread understanding of the different elements involved in the food system, including their local cuisine relatively to those from other cultures in a globalised contemporary world. They should also be able to elicit appropriate change within the food and nutrition system whenever necessary. These form some of the essential factors that must be considered before integrating hybrid learning within the food and nutrition sector.

In a study aimed at exploring the viable conditions that are necessary for the application of hybrid learning, Spring et al. (2019) also concurred with the observations made by Hadjerrouit (2012). At the core of the study's assertion was the need to generate a widespread and more enhanced understanding of an individual's socio-political environment. The study further advanced that in as much as food and nutrition is considered a more private affair, that is not the case for professionals in this area. They should be able to understand the macrosystem within their environment to ensure

appropriate planning of all elements involved. This should not only be aligned towards understanding the political environment and factors related to it like food insecurity but also incorporate other essential environments like the cultural environment. Learners should be able to understand factors like local cuisine within their cultural environment and how they relate with other cultures within the highly globalised contemporary world. Understanding local cuisine is essential, ensuring sustainable human health and the general wellbeing of the population involved through proper planning, management, preparation, and eating.

Shukla et al. (2017) also highlighted that an education system used in food and nutrition pedagogy should be able to ensure a well-structured learning process that takes into account the specific characteristics involving needs and preferences among individual learners. It should also be able to ensure seamless interaction between the primary stakeholders involved to increase their level of understanding through enhanced creativity and collaboration. The system implemented should also be able to enhance the level of information and knowledge management by ensuring increased processing, storage, and retrieval of information. The study noted that all these could be effectively realised from the application of hybrid learning within food and nutrition pedagogy.

Methodology

Overview

Discussion on hybrid learning is increasingly becoming common, especially with the onset of the COVID-19 pandemic. This study sought to establish how hybrid learning is relevant in advancing food and nutrition pedagogy, mainly in UAE and elsewhere, and to establish requirements and conditions necessary for its successful application. This section of the study is a succinct description of the methodological approaches and strategies employed in attaining the purpose of this study. The research design, samples, research instruments used, procedures, and data analysis approaches have been described.

Research design

An exploratory research design has been adopted to guide this study. The design aims at examining problems that have not been extensively studied and lacks thorough investigation (Robson & McCartan, 2016). Thus, its goal is to develop a deeper understanding of an existing phenomenon or problem without necessarily deducing a conclusive result. Hybrid learning is a concept that has surfaced in many countries, including the UAE, and is given prominent importance primarily after the outbreak of the COVID-19 pandemic; hence its applications and implications remain a phenomenon. The goal of a researcher, in this case, is to try gaining familiarity with the concept and its application in food and nutrition pedagogy and acquire new insights into it (Hammersley & Atkinson, 2007). As Costley and Fulton (2018) explain through the grounded theory, the role of an investigator is to examine the veracity of existing facts that lies within the problem under investigation. Data collected are then presumed as objective facts that a researcher can use to develop or verify theories and what they imply. Therefore, exploratory research design, also referred to as the grounded theory approach, is fit for this study since it will guide the development of a theoretical framework for the effective application of hybrid learning in advancing food and nutrition pedagogy.

Participants

This study targeted primarily UAE teachers who teach subjects related to food and nutrition. In the process of collecting data, it was realised that there were only a handful of Culinary Science teachers in the UAE, which prompted the need to collect data from other Culinary Science teachers around the globe. A total of 60 questionnaires were sent out to prospective participants through a JISC online survey link. A total of 24 Culinary Science teachers participated in the survey. Hence the response rate was 40%. Among those who responded, 16 were UAE teachers. The data collection process was limited by time and resources, making access to larger samples difficult. A convenience sampling technique was used to recruit the participants. The researcher recruited participants based on their availability, accessibility, and willingness to participate (Shi, 2007).

Research instruments

Data was collected primarily through an online questionnaire. The questionnaire was designed and distributed to participants using Jisc Online Surveys (Joint Information System Committee). The questionnaire was designed into four critical parts, including demographic information, teachers' preparedness towards hybrid learning interventions, hybrid learning interventions and food and nutrition education, requirements for successful application of hybrid learning in food and nutrition education, and conditions necessary for the successful application of hybrid learning in food and nutrition. The questionnaire was designed based on various concepts and theories as described under the background section and literature review section of this study. Each participant managed to answer all the questions in the questionnaire. The questionnaire had different types of questions which included yes/no questions, five-point Likert scale questions, demographic questions, multiple-choice questions, and open-ended questions (Robson & McCartan, 2016).

Research procedure

The data collection process began with the recruitment of participants and the designing of the online questionnaire. A link to the survey (Jisc Online Surveys) was then generated and distributed to the participants. The Jisc Survey system would then anonymously record every response provided by the participants in tables and provide a basic analysis of the survey outcomes (Swain, 2016). Summarised data in Excel sheets were then downloaded for further and deeper analysis.

Data analysis

Although the survey was used for both deductive and inductive purposes, most of the questions were fixed and had a fixed list of responses that the participants could select from. The fixed nature of the survey implied the use of quantitative data analysis tools in data analysis (Abbott, 2016). SPSS v25 (Statistical Package for Social Sciences version 25) was used as a tool to analyse the data. Descriptive and inferential results were then generated to guide the conclusions and implications of the study. Coefficient alpha was used to test the internal consistency of the data to determine reliability.

Results and discussions

Results

This section of the study contains both the descriptive and inferential statistical results attained after performing an analysis using SPSS. A total of 24 participants successfully completed the survey, out of which there were only two men (8.3%), with the majority (21) being women (87.5%). The remaining 4.2% representing one person, chose not to say their gender. The characteristics of the participants varied significantly by age, educational achievements, period serving as a teacher, and current teaching roles, as evidenced in Tables 2, 3, 4, and 5. More than 45% of the teachers who participated in the survey were aged between 45 and 50. Again 54.2% of the participants were Bachelor's Degree holders. 20.8% were Master's Degree holders while 12.5% held Professional Degree holders. The majority of the participants (37.5%) had been teachers for more than 20 years by the time this study was undertaken. 20.8% had been teachers for less than three years. These statistics imply that the participants were skilled and experienced to inform this study.

Table 2 Characteristics of participants by age (What is your age?)

Age	Frequency	Percent	Valid Percent	Cumulative Percent
Below 20	1	4.2%	4.2%	4.2%
21-25	2	8.3%	8.3%	12.5%
26-30	1	4.2%	4.2%	16.7%
31-35	1	4.2%	4.2%	20.8%
36-40	1	4.2%	4.2%	25.0%
41-45	5	20.8%	20.8%	45.8%
46-50	6	25.0%	25.0%	70.8%
51-55	1	4.2%	4.2%	75.0%
56-60	3	12.5%	12.5%	87.5%
61-65	1	4.2%	4.2%	91.7%
66-70	1	4.2%	4.2%	95.8%
Above 70	1	4.2%	4.2%	100.0%
	24	100.0%	100.0%	

Table 3 Characteristics of participants by age educational achievement

What is the highest degree or level of school you have completed? If currently enrolled, highest degree received	Frequency	Percent	Valid Percent	Cumulative Percent
Bachelor's Degree	13	54.2%	54.2%	54.2%
Doctorate Degree	1	4.2%	4.2%	58.3%
High School Graduate	1	4.2%	4.2%	62.5%
Master's Degree	5	20.8%	20.8%	83.3%
Professional Degree	3	12.5%	12.5%	95.8%
Vocational Training	1	4.2%	4.2%	100.0%
Total	24	100.0%	100.0%	

Table 4 Characteristics of participants by age by experience

For how long have you been a school teacher?	Frequency	Percent	Valid Percent	Cumulative Percent
0-2 years	5	20.8%	20.8%	20.8%
12-14 years	1	4.2%	4.2%	25.0%
18-20 years	4	16.7%	16.7%	41.7%
3-5 years	2	8.3%	8.3%	50.0%
6-8 years	2	8.3%	8.3%	58.3%
9-11 years	1	4.2%	4.2%	62.5%
> 20 years	9	37.5%	37.5%	100.0%
Total	24	100.0%	100.0%	

Table 5 Characteristics of participants by teaching role

What is your current teaching role?	Frequency	Percent	Valid Percent	Cumulative Percent
Assistant Principal	2	8.3%	8.3%	8.3%
Class teacher	1	4.2%	4.2%	12.5%
Food and Nutrition Consultant	1	4.2%	4.2%	16.7%
Food technician	1	4.2%	4.2%	20.8%
Head of Food and Nutrition Dept	4	16.7%	16.7%	37.5%
HE/Hospitality/Food & Nutrition teacher	2	8.3%	8.3%	45.8%
LSE	1	4.2%	4.2%	50.0%
Retired Teacher	1	4.2%	4.2%	54.2%
Head of Science	1	4.2%	4.2%	58.3%
Second Level Teacher	1	4.2%	4.2%	62.5%
Food Preparation and Nutrition	1	4.2%	4.2%	66.7%
Teacher of Food	7	29.2%	29.2%	95.8%
Tourism and Hospitality	1	4.2%	4.2%	100.0%
Total	24	100.0%	100.0%	

Inferential statistics

Reliability

The reliability test was completed through the determination of Cronbach's alpha, also known as coefficient alpha. Cronbach's alpha measures internal consistency or how well a test or tool measures what it ought to measure. Generally, an alpha becomes acceptable only if it is at least 0.7. Alphas greater than 0.9 generally have excellent internal consistency. A reliability analysis undertaken for this study generated an alpha of 0.716, implying an acceptable internal consistency.

Table 6 Reliability statistics

Cronbach's α	N of Items
.716	24

- Is hybrid learning intervention significant in promoting food and nutrition pedagogy in UAE and beyond?

The first question that this study was interested in uncovering was whether hybrid learning interventions could significantly promote food and nutrition pedagogy in UAE and beyond. During the analysis, it was perceived that approaching the independent variable (hybrid learning interventions) from a holistic approach would be quite perverse and invalid since various factors can form part of hybrid learning interventions. As (Williamson & Johanson, 2017) exclaimed, a variable need to be in its simplest terms to generate a more objective and conclusive outcome. Therefore, individual hybrid learning interventions mentioned in the questionnaire were used as independent variables. The interventions mentioned in the questionnaire were (1) The Ministry of Education in collaboration with schools is responsible for promoting, supporting, and modelling creative and innovative thinking and inventiveness on food and nutrition using digital tools and resources as a way of advancing learning outcomes, (2) Scientific culinary skills can be promoted by engaging students in exploring real-world food and nutrition issues and solving authentic nutrition problems using digital tools and resources, (3) Culinary Science teachers should model collaborative knowledge construction by engaging in learning with students, colleagues, and others in face-to-face and virtual environments, (4) Schools should design or adapt relevant learning experiences that incorporate digital tools and resources to promote student learning and creativity, and (5) Teachers should customise and personalise learning

activities to address students' diverse learning styles, working strategies, and abilities using digital tools and resources.

For better presentation, these factors were condensed into the following variables; (1) Innovative thinking and inventiveness, (2) Students' engagement, (3) collaborative knowledge construction, (4) incorporation of digital tools and resources, and (5) customisation of learning activities. A linear regression analysis to determine how each of these hybrid learning interventions affect food and nutrition pedagogy in UAE and beyond generated the results in Table 7. The analysis was done at a significance level of 0.05.

Table 7 Regression Results

Coefficients ^a	Unstandardised Coefficients		Standardised Coefficients	t	Sig.
	B	Std. Error	Beta		
Model 1 (Constant)	.288	.295		.975	.344
Innovative thinking and inventiveness	.260	.046	.419	5.662	.000
Students' engagement	.135	.048	.246	2.796	.013
Collaborative knowledge construction	.134	.075	.130	1.777	.095
Incorporation of digital tools and resources	.226	.079	.261	2.860	.011
Customisation of learning activities.	.169	.079	.121	2.152	.047

a. Dependent Variable: Food and nutrition pedagogy

From the results presented in Table 7, only one of the five factors did not project a significant effect on food and nutrition pedagogy. Collaborative knowledge construction generated a p -value of 0.95 ($p > 0.05$), implying its insignificance. In terms of the level of significance in promoting food and nutrition pedagogy, innovative thinking and inventiveness proven to be more significant ($p = 0.000$) consequently followed with the incorporation of digital tools and resources ($p = 0.011$), students' engagement ($p = 0.013$) and customisation of learning activities ($p = 0.047$).

- What special requirements are necessary for the successful application of hybrid learning in the food and nutrition pedagogy?

The second question that this study aimed at finding and ranking responses on the special requirements necessary for successful application of hybrid learning in food and nutrition pedagogy. From the literature reviewed in the previous sections, six-core special requirements were found to be of significance in ensuring successful application of hybrid learning in food and nutrition pedagogy: Leadership, professional development, the right technology, teaching models, a balance between face-to-face methods, and online-based methods, and streamlined organisation of contents and resources. The next step was to rank these requirements with respect to their level of importance. A 1-10 scale (where 1 meant *unnecessary* and 10 *very necessary*) was used to enable the participants to rank the requirements. Measures of central tendency, including mean and standard deviation, were used to perform the ranking. The result in Table 8 was obtained. From the Table, it is evident that all the factors included were very necessary for the successful application of hybrid learning in the food and nutrition pedagogy (all means are greater than 8).

Table 8 The requirements

Descriptive statistics	N	Min	Max	M	SD
Leadership	24	6	10	8.71	1.517
Right Technology	24	8	10	9.71	.624
Professional development	24	5	10	9.37	1.245
Teaching Models to be adopted	24	6	10	8.50	1.319
Balance between traditional face-to-face method and online-based methods	24	5	10	8.62	1.377
Streamlined organisation of contents and resources	24	5	10	8.79	1.444
Valid N (listwise)	24				

- What conditions are necessary for the successful application of hybrid learning in the food and nutrition pedagogy?

In addition to the requirements, this study projected that some specific conditions are fundamental in applying hybrid learning in food and nutrition pedagogy. Seven conditions, as mentioned in Table 9, had been predetermined through the literature reviewed. Again, the conditions were rated on a 1-10 scale. The results in Table 9 were obtained.

Table 9 The conditions

Descriptive statistics	N	Min	Max	M	SD
Teacher literacy and competency in food and nutrition	24	6	10	9.46	1.103
Students' /Learners' preparedness to learn	24	5	10	8.92	1.501
Availability of physical kitchens or cooking labs	24	4	10	8.75	1.726
Virtual cooking labs	24	1	10	7.08	2.827
A supportive school administration	24	8	10	9.29	.859
School-teacher-student collaboration and engagement	24	8	10	9.38	.875
Parental Involvement	24	2	10	7.83	2.140
Valid N (listwise)	24				

Discussion

The adoption of hybrid learning techniques is increasingly becoming the new normal, especially in a COVID-19 infested world. Although countries such as UAE have perceived the need to shift towards online-based learning, they also realise that a complete paradigm shift is not only unattainable but also impractical and less productive. As research shows and as discussed in prior sections, hybrid learning has a role in promoting engagement, the use of course materials and resources, and deeper and more effective learning outcomes. The results in this study confirm that hybrid learning interventions have a unique place in improving pedagogical outcomes, specifically with respect to food and nutrition pedagogy.

Impacts of hybrid learning interventions on food and nutrition pedagogy

There is a general consensus among researchers and nutritionists that poor diets, malnutrition, and overnutrition are gradually becoming serious threats to human health and wellbeing and that addressing the problem is central to improving individual wellbeing and development, escalating socio-economic growth, and attaining the Sustainable Development Goals (SDGs) (World Health Organization, 2006). However, low- and middle-income countries rarely focus on addressing diet and nutrition challenges, especially during middle childhood and adolescence (World Health Organization, 2006). As a consequence, children and young adults mature with little or no knowledge concerning sustainable food choices and culinary practices, which eventually imperil their health and wellbeing. This presents a missed opportunity to set up institutionalised systems to address or prevent diet and malnutrition problems (Leahy et al., 2015). Since formal education remains a major priority through which governments spend on school children and adolescents, it is imperative to use this opportunity to promote cost-effective interventions that blend together various aspects of education, nutrition, health, food systems, and technology for more sustainable families and societies. According to (World Health Organization, 2006), school-based food and nutrition education (SFNE) is crucial in building life-long knowledge and skills that would guide individuals and societies towards a more informed life and food and nutrition practices.

It is important to note that ensuring the fluidity of the education system is core to continued learning and greater productivity. The robust building of knowledge and skills in food and nutrition is difficult to attain without a streamlined fluidity in the learning process. However, the fluidity of the learning process is subject to various factors. For instance, the outbreak of COVID-19 crippled conventional face-to-face learning and raised the need for an urgent paradigm shift towards blended and online learning. This study has established four hybrid learning interventions critical in responding to factors that deter fluidity in the learning process; (1) innovative thinking and inventiveness, (2) students'

engagement through both face-to-face technique and distance learning technique, (3) incorporation of digital tools and resources, and (4) customisation of learning activities to meet learning needs. As Woodhouse et al. (2015) exclaimed, the changing educational environment requires a mixture of instructional modalities, media, methods, and technologies across all pedagogical deliverables, without which education will suffer in the face of technology. Needless to say, the social changes, as catalysed by the outbreak of COVID-19, demands the innovativeness and inventiveness of education stakeholders, which would allow teachers and students to interact both physically and virtually. Despite this, teachers involved in this study reported numerous challenges with respect to the four factors mentioned in this section. For instance, the teachers highlighted the lack of technical facilities such as visualisers, projectors, stable internet, and insufficient knowledge in using platforms such as Google Classrooms, Microsoft Teams, Zoom, and Moodle for pedagogical instructions. From the responses, the ability to appropriately balance face-to-face techniques and online-based techniques is generally lacking. Some teachers also shared their fears concerning the threats posed by COVID-19, which limited their preference for face-to-face learning at that particular point in time.

Requirements for application of hybrid learning in UAE and beyond

Effective application of hybrid learning interventions is subject to numerous pedagogical factors. As Ibáñez et al. (2012) had identified, the core principles that drive pedagogical outcomes through a hybrid learning intervention consists of a careful integration of both face-to-face learning and online instructional components, innovative utilisation of technology in a learning environment, the reconceptualisation of the learning paradigm, and sustainable evaluation and assessment of hybrid learning. These aspects clearly emphasise the need for the right technology to weave together face-to-face learning with online-based learning. Zhang et al. (2020) also underlined the need for a strategic proposition that clearly identifies and works towards the attainment of institutional missions, goals, and visions. Such strategic propositioned are tied to the nature of the leadership and its ability to consolidate various operations, tactics, and strategies in order to advance learning outcomes. As quoted in Mugliett (2009), “The pedagogic context should enable teachers to understand how to use ICT in the classroom and to consider how ICT can support and enhance pupil learning as a natural part of the work in the classroom.” In this sense, teachers need to be well informed of the teaching models they adopt, the contents and resources they use to advance pedagogy, and the blending of teaching methods to improve teaching outcomes. This study assessed and ranked such factors amongst others. It was evident that key requirements to effective application of hybrid learning in supporting pedagogical dispensation consist of the following; (a) right technology ($M = 9.71$, $SD = 0.624$), (b) professional development ($M = 9.37$, $SD = 1.245$), (c) streamlined organisation of contents and resources ($M = 8.79$, $SD = 0.1444$), (d) leadership ($M = 8.71$, $SD = 1.517$), (e) Balance between traditional face-to-face method and online-based methods ($M = 8.62$, $SD = 1.3777$), (f) teaching models to be adopted ($M = 8.50$, $SD = 1.319$). In the study, teachers felt very isolated, lack of training, lack of adequate PPE, hard to cope with social distancing as students are always in need of help and assistance during practical activities. Teachers reported problems with flexibility in adapting technology, which they found very daunting. Teachers rarely made efforts to improve their pedagogical expediency, especially with respect to ICT. These findings indicate that the requirements for the effective application of hybrid learning in the UAE and beyond are yet to be met.

Conditions necessary for application of hybrid learning in food and nutrition pedagogy in UAE and beyond (social and emotional support)

According to Reiher (2012), advancing knowledge in food and nutrition requires the development of both functional and critical knowledge that would enable them to integrate concepts of local and broader food systems to generate a deeper understanding of food and nutrition dimensions and systems. In specific, the researcher pointed out some of the conditions he deemed fit for pedagogical advancement, including 1) the ability of an individual to examine their own values with respect to the food system; 2) the adeptness of an individual to comprehend multiple values and perspectives that exists within the food system, which may include diverse cuisines; 3) the proficiency of an individual to generate astute understanding of the larger socio-political context and other factors like the diversity that shape food system; and 4) the capacity for individuals to enhance their commitment towards generating a sustainable food system in a just manner. In this respect, learners should be supported by their microsystem in identifying how socio-economic factors impact and model their food choices. Society has always perceived technology to be having a relative advantage; hence should be used in schools to advance collaboration, engagement, teamwork, and the general

knowledge dispensation process (Mugliett, 2009). This study determined that the specific conditions worth considering in applying hybrid learning in food and nutrition education consists of teacher literacy in food and nutrition ($M = 9.46$, $SD = 1.103$), school-teacher-student collaboration and engagement ($M = 9.38$, $SD = 0.875$), a supportive school administration ($M = 9.29$, $SD = 0.859$), students' preparedness to learn ($M = 8.92$, $SD = 1.501$), Availability of physical kitchens or cooking labs ($M = 8.75$, $SD = 1.726$), parental involvement ($M = 7.83$, $SD = 2.140$), virtual cooking labs ($M = 7.08$, $SD = 2.827$). In addition to these outcomes, these studies established that teachers are very concerned about their low professional relationship and engagement with their students especially owing to COVID-19 policies. This made it hard for the teachers to address their students' academic needs.

The following chart summarises and ranks the requirements and conditions with respect to their means, as presented in Table 8 and Table 9.

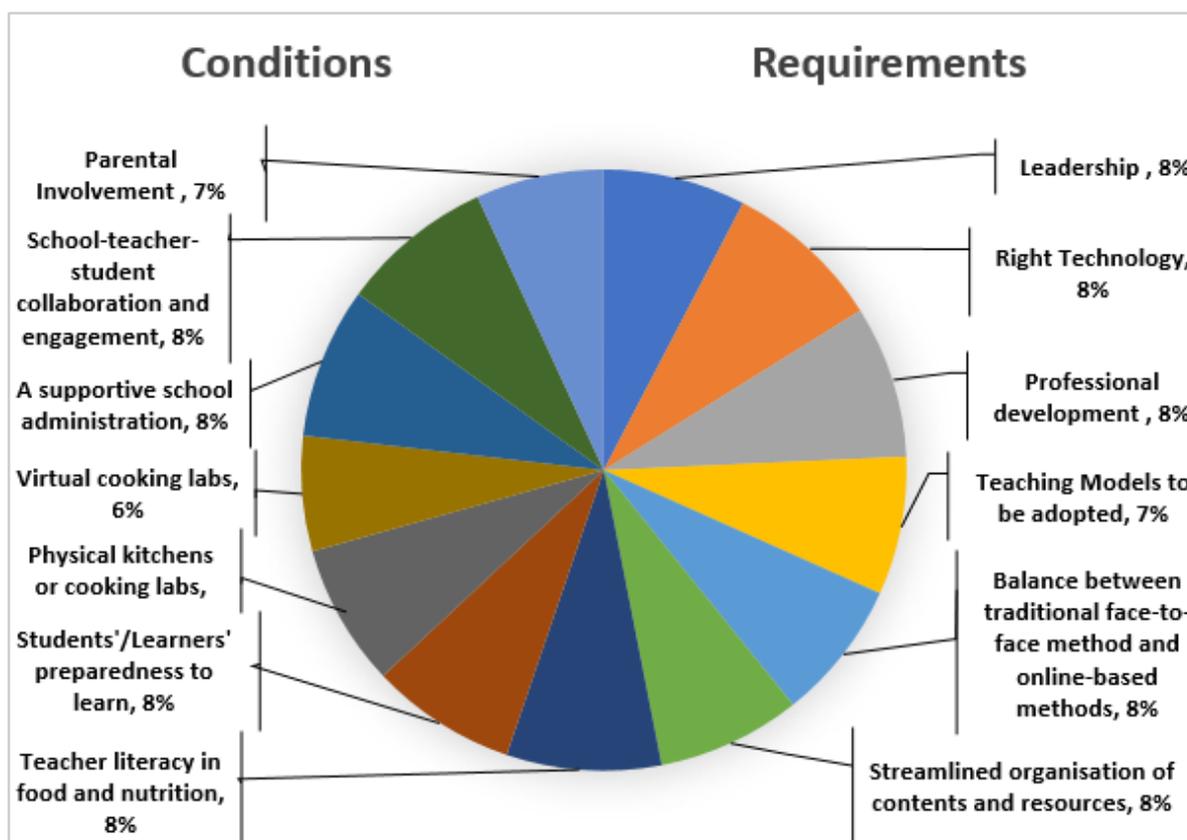


Figure 3 Requirements and conditions affecting the application of hybrid learning

Conclusions

The goal of this study was to explore hybrid learning as a contemporary approach necessary for advancing food and nutrition pedagogy in UAE and beyond. Using the ecological system theory developed by Bronfenbrenner and the 4GAT theory, it was possible to determine specific factors that influence the learning process. The two theories postulated shared the idea that learning is not only a matter of innate abilities but is also subject to myriad social and environmental factors. In this study, numerous factors that are likely to affect the learning process, especially in a world where technology is increasingly becoming the new normal, have were assessed. The study's objectives were threefold. First, it aimed at determining if hybrid learning interventions are significant in promoting food and nutrition pedagogy in UAE and beyond. Four key hybrid learning interventions shortlisted for this analysis: innovative thinking and inventiveness, students' engagement, collaborative knowledge constructions, incorporation of digital tools and resources, and customisation of learning activities. It was established that four of these factors could significantly promote food and nutrition pedagogy: innovative thinking and inventiveness, students' engagement, incorporation of digital tools and resources, and customisation of learning activities. Despite the

significance of these hybrid learning interventions, the reports provided by the teachers involved in the study signified that they were generally missing in learning institutions. Teachers found it difficult to use blended learning techniques and complained of slow and unstable internet speed, lack of tech facilities to support hybrid learning, insufficient knowledge in using tech resources to advancing pedagogical instruction, and rigidity towards adapting to technology. Such difficulties greatly affect the fluidity of the learning process, making it difficult to adapt to the paradigm shifts towards technology.

Second, this study aimed at determining and ranking various requirements for the successful application of hybrid learning in food and nutrition pedagogy. It was established that the most important requirement is the adoption of the right technology followed by consistent professional development for the teachers, robust leadership, an appropriate balance between face-to-face methods and online-based methods, and teaching methods adopted were also deemed necessary. The requirements as determined in this study calls for the need for schools and other educational institutions to offer technical support, without which the application of hybrid learning in advancing food and nutrition pedagogy will flop. Teachers' slow take-up of technology also presented itself as a significant challenge in the application of hybrid learning. Teachers shared the difficulties they experience with creating online content and engaging with their students both synchronously and asynchronously. This generates the need for well organised professional development specifically with respect to ICT integration and use in pedagogical processes.

Finally, the study focused on establishing conditions that are necessary for promoting the application of hybrid learning in advancing food and nutrition pedagogy. Teacher literacy on food and nutrition was found to be the most important condition, followed by close collaboration and engagement among school administration, teachers, and students. The three areas that were tested in this study led to a formulation of a model to guide the effective application of hybrid learning interventions in advancing food and nutrition pedagogy.

Implications

This study generated numerous implications. First, the educational establishments, in collaboration with schools, have a responsibility to promote, support, and model creative and innovative thinking and inventiveness on food and nutrition through the use of digital tools and resources to advance learning outcomes. Second, students' engagement in exploring real-world food and nutrition issues and solving authentic nutrition problems using both conventional and technological techniques should be supported. Third, the school has a responsibility to incorporate appropriate digital tools and resources to support the learning process and creativity. Fourth, teachers ought to assess their students' learning styles, working strategies, and abilities and customise the learning process in a manner that best addresses these differences. Additionally, there are various requirements and conditions that are necessary for promoting the effective application of hybrid learning in advancing food and nutrition pedagogy, as outlined in the formulated model.

It is important to delineate that the relevance of the hybrid learning interventions as determined in this study is not limited to the context of UAE but are also applicable to other countries across the globe. The role of education systems and establishments across the globe in promoting, modelling and supporting creativity and innovativeness is undebatable. Education systems across the globe must always scale up their game to ensure that learners are exposed to real-world issues and problems and not just the local aspects of them so as to develop a worldview approach to those problems. As COVID-19 continue to ravage societies, the integration of technological options to conventional learning methodologies is fundamental in guaranteeing the goals of contemporary education systems. Even as the world shift towards the new paradigm where online-based learning and hybrid learning are becoming new normals, teacher literacy, students' preparedness to learn, supportive school administrations, collaboration and engagement, and parental involvement will still continue to underpin learning, thus, a shift towards hybrid or online-based learning can never to fully sufficient unless appropriately supported with robust leadership, the right technology, professional development and appropriate teaching models.

This study was limited by a small sample size, which reduces reliability. However, it is also important to note that people engaged in the study were professionals with greater insight into hybrid learning and food and nutrition fields. Future research should expand the sample size and expound on how the model formulated in this study can be used to further CSNE in all schools.

Author biography

Denise Buttigieg Fiteni is currently living in the Capital City of UAE known as Abu Dhabi. She is the Healthy School Lead for Aldar Academies. She has taught in various school contexts in different countries such as Malta, Italy, UK and UAE. She is a frequent guest speaker on nutrition, food science, family and consumer-related topics. She is an Advanced Skills Teacher, a certified Food Scientist, a certified Culinary Scientist (IFST-USA) and an active member of The Nutrition Society (UK) as a registered Public Health Nutritionist.

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Food and health teachers' experience of online teaching of a practical school subject during the initial Corona lockdown

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Abstract

When the Norwegian authorities closed all schools with immediate effect on March 12th 2020 due to Coronavirus, teachers had to find new strategies for educating their pupils online. Food and health are a compulsory subject in Norwegian primary and lower secondary schools, where the main focus is on practical cooking lessons. We hypothesised that practical subjects like food and health would be difficult to perform online. Therefore, we aimed to investigate how food and health teachers carried out their teaching and evaluated the pupils in this challenging situation.

A short online survey was developed. An invitation to respond was sent by email to all primary and lower secondary schools containing a link to the survey. The survey included questions about the teachers' digital tools, how they communicated with the pupils, and how pupils documented their work.

A total of 817 food and health teachers responded, and 710 of them completed the full survey. After excluding teachers who had only answered the demographic questions, we ended up with 751 participants. Most teachers taught food and health in 5th-7th grade (44%) and 8th-10th grade (51%). Only 5 % were teaching at 1st-4th grade. 86% of the respondents were women. The most widely used teaching tool used for online teaching was videos found on the internet, closely followed by digital learning platforms. Regarding documentation of the pupils' work, photos and log were most frequently used. Written communication in digital platforms and video conference was the most preferred tools for keeping contact with the pupils. Although most of the teachers stated that they had changed a lot on both their planned teaching and teaching practice, the majority did not find the teaching, follow-up nor assessment of the pupils too challenging, and most of them were satisfied with their teaching.

KEYWORDS: FOOD AND HEALTH, HOME ECONOMICS, CORONA LOCKDOWN, TEACHER EXPERIENCE, COVID-19

Introduction

The infectious and deadly Coronavirus, also known as COVID-19, was first known from an epidemic outbreak in the Chinese city of Wuhan in December 2019. As the virus spread rapidly to other countries, the World Health Organization (WHO) assessed on March 11th, 2020 that COVID-19 could

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be characterised as a pandemic (WHO, 2020). This statement resulted in an almost immediate country lockdown all over the world, including Norway.

As a contagion prevention measure against the threatening Corona-pandemic, Norwegian authorities closed all the country's schools with immediate effect on Thursday, March 12th, 2020. Consequently, both teachers and pupils had to stay at home and communicate through the school's digital platforms or other communication channels. Overnight, all teachers had to switch to digital teaching and several digital learning platforms with subscription schemes provided open access to schools during the lockdown as an aid to the teachers. This caused a kick-start to digital teaching for all subjects, including practical aesthetical subjects like food and health (FH). There is reason to believe that schools' sudden closure was an abrupt transition for teachers who previously did not use digital tools in their teaching to a significant extent.

The compulsory Norwegian school subject FH (formerly Home Economics) is typically taught in a school kitchen where pupils cook, while the teacher guides and observes the pupils in groups and tastes their food (Beinert et al., 2021). A previous study conducted in Norway revealed that only 56% of FH teachers used digital tools in their teaching practice before the lockdown. Also, 45% of the teachers who reported using digital tools, used it less than once per month. Hence, digital tools are not widely used among FH teachers in Norway. Furthermore, when exploring the use of a flipped-classroom approach, only 14 % of the teachers reported using flipped-classroom in the same study (Beinert et al., 2020). Flipped classrooms often include pupils watching videos or recorded lectures at home before class, followed by problem-solving, interaction or other active learning methods in class afterwards (Bergmann & Sams, 2012). Such an approach can stimulate more student activity and creativity in a school subject that is typically teacher-led and recipe-driven (Veka et al., 2018).

Although there are good instructional videos on the web or in digital learning platforms, showing how to cook, it is difficult for the FH teacher to assess the pupils' cooking without seeing what they are doing at home and without tasting the result. Therefore, we aimed to investigate how food and health teachers carried out their teaching and evaluation in this challenging situation.

Method

A short survey was developed in the software program SurveyXact®, containing 16 questions about demographics and FH teachers' experiences with teaching and evaluating in the subject through digital tools (Table 1). There were both closed and open-ended questions, and for several questions, it was possible to choose multiple answers.

Table 1 An overview of questions and categories, with explanation to some of the questions in the survey on online teaching in food and health

Questions	Categories	Explanations
Age	1. < 30 year 2. 30-39 year 3. 40-49 year 4. 50-59 year 5. > 60 year	
Sex	1. Women 2. Men 3. Other	
Teaches food and health at	1. Primary school, level 1-4 2. Primary school, level 5-7 3. Lower secondary school, level 8-10	Multiple answers possible Level 1-4 is age 6-9 Level 5-7 is age 10-12 Level 8-10 is age 13-15

Questions	Categories	Explanations
What teaching aids do you use for your home-teaching in food and health?	<ol style="list-style-type: none"> Digital learning platforms. State which Videos found online (not from digital learning platforms) In-house instructional videos Real-time teaching (video meeting) Other (specify) 	Multiple answers possible In this context, digital learning platforms were thought of as platforms were different teaching aids like videos, assignments, digital textbooks etc. meant for teaching food and health were available. No examples or explanation was given in the questionnaire
What did the pupils do to document their work?	<ol style="list-style-type: none"> Took pictures of practical cooking at home Made a video Received confirmation from parents Wrote log Created blog Other (specify) 	Multiple answers possible
To what extent did you change your originally planned teaching? <ul style="list-style-type: none"> Original syllabus Originally planned teaching method Planned recipes Planned workload 	<ol style="list-style-type: none"> Did not change Changed slightly Changed to some extent Changed a lot Changed everything / almost everything 	
How did you keep in touch with your pupils?	<ol style="list-style-type: none"> Video conferencing Email Written in schools digital platform Other (specify) 	Multiple answers possible
Who did you get help and advice from on the occasion of digital teaching?	<ol style="list-style-type: none"> Management / administration Colleagues Other teachers on social networks Family/friends Was not offered help Did not need help Other (specify) 	Multiple answers possible
How do you feel that home education in food and health has become?	Scale from 1 to 7 where 1 is <i>very bad</i> , and 7 is <i>very good</i>	
To what extent do you feel this has been a challenge: <ul style="list-style-type: none"> Follow-up of pupils Assessment of pupils' work Digital implementation Other 	<ol style="list-style-type: none"> Has not been a challenge Been a bit challenging Neither Been quite challenging Been very challenging 	Possible to give comments to all questions. The comments are not explored here
Do you want to return to the same form of teaching in food and health education as before the corona closure when the schools reopen, and the pupils are allowed to return?	<ol style="list-style-type: none"> Yes, continue as before Will change something in the form of teaching Completely/ almost completely change my teaching 	
If you want to change food and health education, what will be the biggest change compared to previous education?	Open text field	This question is not explored here
To what extent do you feel you have learned something?	Scale from 1 to 5 where 1 is <i>learned a lot</i> and 5 is <i>not learned anything</i> .	

Questions	Categories	Explanations
To what extent have you received new impulses?	Scale from 1 to 5 where 1 is <i>got many new impulses</i> and 5 is <i>got no new impulses</i> .	
To what extent has the experience made you more creative?	Scale from 1 to 5 where 1 is <i>much more creative</i> and 5 is <i>not become more creative</i> .	
Are there other experiences you want to share?	Open text field	This question is not explored here

With a link to the survey, an invitation to participate was sent by email to the principals at Norwegian primary and lower secondary schools on April 23rd, 2020, requesting to forward the invitation to the schools' FH teachers. A mailing list with the contact info of principals of all Norwegian primary and lower secondary schools deriving from a previous survey (Beinert et al., 2020), was used in the present study. It turned out that many of the schools had new principals, and some schools had been closed permanently. Norway has also had many municipal and county coalitions since the address list was last used. This resulted in many unsuccessful inquiries, which meant that the addresses had to be searched online to distribute the survey to all schools. The schools reopened for 1st-4th class pupils on April 27th, 2020, and on May 12th, all the pupils were allowed back. The opening for the oldest pupils resulted in the search for missing addresses being terminated since it was assumed that the teaching would, somehow, return to normal practice. Thus, 147 missing mail addresses were not searched for.

The invitation mail was initially sent to 2,821 mail addresses; however, we do not know precisely how many of the initial inquiries were rejected. Today there are 2,799 schools, of which 2,538 are public schools in Norway (Utdanningsdirektoratet, 2020b). Many private schools (international) do not have FH on their curriculum. Some public schools are located in small communities with few pupils; thus, classes are merged across grade levels. These schools do not teach FH every year, and many of them reported that they did not teach the subject in the school year 2019-2020. According to The Norwegian Directorate for Education and Training, there is no available information about how many of such schools there are in Norway (private communication). As for the new counties and municipalities, Norway went from 19 counties in 2019 to 11 counties in 2020 and from 422 to 356 municipalities (KS, 2020).

The survey was anonymous, and FH teachers gave their consent by participating in the survey. Ethical approval was given by the Faculty of Health and Sports Sciences ethics committee at the University of Agder, Norway. The survey met the requirements of the General Data Protection Requirements (GDPR).

The statistical software IBM SPSS 25.0 was used for the data analysis. The results are presented as frequency with percentages, using descriptive statistics and cross-tabulation for multiple response sets. Statistical significance was set to $p < 0.05$. P -value is stated only if statistical significance is found.

Results

A total of 817 FH teachers responded, and 710 of them completed the full survey. Some of the respondents reported technical problems with the survey one day, which may be the reason why not all respondents completed the survey. A total of 66 respondents (53 women, 12 men and one "other sex") had only answered two or three of the first questions (age, sex, and which grade they were teaching) and were excluded, leaving 751 teachers in the analyses (Figure 1).

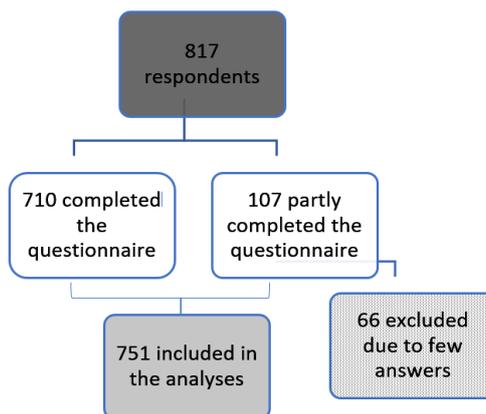


Figure 1 Flowchart showing the inclusion and exclusion of respondents in the analyses of the survey on online teaching in food and health

Demography

Most of the teachers (58.4%) were in the age range 40-59 years, and the majority (50.6%) were teaching at lower secondary school (8th-10th grade). The vast majority were women (86.3%) (Table 2). Since only two people identified themselves as “other sex”, these were not included in further analyses where gender differences were concerned. The analyses did not reveal any major differences between the age groups (data not shown).

Table 2 Demographic characteristics of the participants of the food and health teachers participating in the digital home-schooling survey

	Women		Men		Other		Total	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>N</i>	%
Sex	648	86	101	13	2	0	751	100
Age	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>N</i>	%
<30	71	11	13	13			84	11
30-39	130	20	24	24	1	50	155	21
40-49	198	31	29	29			227	30
50-59	189	29	22	22	1	50	212	28
60+	60	9	13	13			73	10
School level	<i>n</i> *	%						
Grade 1-4	34	5	9	8	1	33	43	5
Grade 5-7	310	44	50	44	1	33	360	44
Grade 8-10	356	51	56	49	1	33	413	51

**n* counts higher than the total due to the possibility to work at more than one level

percentages have been rounded off to whole numbers

Handling of online teaching

The teachers reported using several different approaches in their digital teaching. Videos from the Internet and digital learning platforms (e.g., Salaby and Matopedia) were used as approaches most often (23.7 and 21.7% respectively). Other teaching tools were reported by 28% of the teachers (Table 3). More men than women reported using other teaching tools (36.3% and 26.7%, respectively). Examples of “other teaching tools” are recipes for food that pupils were to make at home and written theoretical homework delivered on the school’s digital platform. It also turned out that digital learning platforms were listed under “others” and that digital tools, such as iPad, and digital communication tools, such as Teams and Skype, were listed under digital learning platforms. This

suggests that many teachers did not understand the question and what was meant by digital learning platforms (explained in Table 1). Real-time teaching was used more often at grade 8-10 (19.3%) than at the lower grades (10.6 % at grade 5-7 and 5.5% at grade 1-4). In-house instructional videos were the least used approach (11.2%) (Table 3).

The most common way for the pupils to document their work at all school levels was to take pictures of their work (40.3%) and writing a log (25.1%) (Table 3).

The preferred method of keeping contact with the pupils was by written messages through the schools' digital platform (44.2%) and by video conferences (33.8%) (Table 3).

When asked where they received help and advice from on the occasions of their digital teaching, 36,6% of the teachers referred to other colleagues. Only 13.2 % stated that they got help from their management (Table 3).

Table 3 Food and health teachers' handling of online teaching, at different school levels, during the Corona lockdown

	Grade -4		Grade 5-7		Grade 8-10		Total		
	n =	%	n =	%	n =	%	N = 751	%	
Teaching aid used	43	5.3	360	44.1	413	50.6	749	99.7	
Digital learning platforms	13	17.8	146	23.4	187	20.7	346	21.7	
Videos found online	17	23.3	144	23.1	218	24.2	379	23.7	
In-house instructional videos	14	19.2	67	10.8	98	10.9	179	11.2	
Real-time teaching	4	5.5	66	10.6	174	19.3	244	15.3	
Other	25	34.2	200	32.1	225	24.9	450	28.2	
How pupils documented their work								N = 737	98.1
Pictures	35	42.7	325	43.7	390	37.6	749	40.3	
Video	9	11	58	7.8	134	12.9	201	10.8	
Parents confirmation	9	11	78	10.5	83	8	14	9.1	
Log	17	20.7	186	25.1	264	25.5	467	25.1	
Blog	2	2.4	2	0.3	13	1.3	17	0.9	
Other	10	12.2	93	12.6	153	14.8	256	13.8	
Contact with pupils								N = 727	96.8
Video conference	19	26.8	221	33.8	281	34.4	521	33.8	
Email	12	16.9	69	10.6	92	11.2	173	11.2	
Written in digital platform	28	39.4	289	44.2	365	44.6	682	44.2	
Other	12	16.9	75	11.5	80	9.8	167	10.8	
Where teachers got help								N = 725	96.5
Management	7	11.9	62	11.2	103	15	172	13.2	
Colleagues	16	27.1	190	34.4	270	39.2	476	36.6	
Teachers at social networks	10	16.9	94	17	96	14	200	15.4	
Family/friends	2	3.4	25	4.5	30	4.4	57	4.4	
Not offered help	5	8.5	42	7.6	52	7.6	99	7.6	
No need of help	16	27.1	119	21.6	110	16	245	18.9	
Other	3	5.1	20	3.6	27	3.9	50	3.8	

Most teachers reported extensive changes, both concerning their planned syllabus, teaching method, planned recipes, and workload (Table 4).

Challenging

While most of the teachers did not find pupils' follow-up too challenging, about 30% found it challenging or very challenging (Figure 2a). Approximately the same result was seen for the question of evaluation of pupils' work (Figure 2b). When asked if digital implementation had been challenging, approximately 13% answered in the affirmative. Most FH teachers did not find it very challenging (Figure 2 c).

Table 4 To what extent food and health teachers changed their originally planned teaching during Corona lockdown

	Women		Men		Total	
	<i>n</i>	%	<i>n</i>	%	<i>N</i>	%
Changed syllabus	633	86.8	96	13.2	729	100.0
Did not change	13	2.1	2	2.1	15	2.1
Changed slightly	44	7.0	5	5.2	49	6.7
Changed to some extent	175	27.6	28	29.2	203	27.8
Changed a lot	220	34.8	31	32.2	251	34.4
Changed everything / almost everything	181	28.6	30	31.3	211	28.9
Changed teaching method	<i>n</i>	%	<i>n</i>	%	<i>N</i>	%
Did not change	7	1.1	0	0.0	7	1.0
Changed slightly	15	2.4	2	2.1	17	2.3
Changed to some extent	93	14.7	10	10.4	103	14.1
Changed a lot	274	43.3	41	42.7	315	43.2
Changed everything / almost everything	244	38.5	43	44.8	287	39.4
Changed recipe	<i>n</i>	%	<i>n</i>	%	<i>N</i>	%
Did not change	28	4.4	1	1.9	29	4.0
Changed slightly	39	6.2	7	7.3	46	6.3
Changed to some extent	137	21.6	19	19.8	156	21.4
Changed a lot	176	27.8	29	30.2	205	28.1
Changed everything / almost everything	253	40.0	40	41.7	293	40.2
Changed workload	<i>n</i>	%	<i>n</i>	%	<i>N</i>	%
Did not change	17	2.7	3	3.1	20	2.7
Changed slightly	83	13.1	14	14.6	97	13.3
Changed to some extent	247	39.0	29	30.2	276	37.9
Changed a lot	157	24.8	29	30.2	186	25.5
Changed everything / almost everything	129	20.4	21	21.9	150	20.6

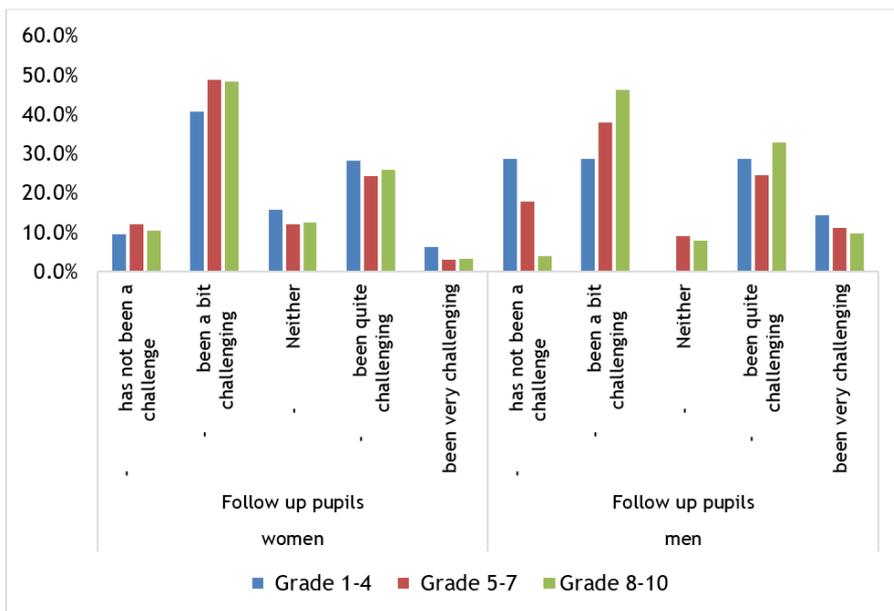


Figure 2a How challenging food and health teachers found the follow up of their pupils during Corona lockdown

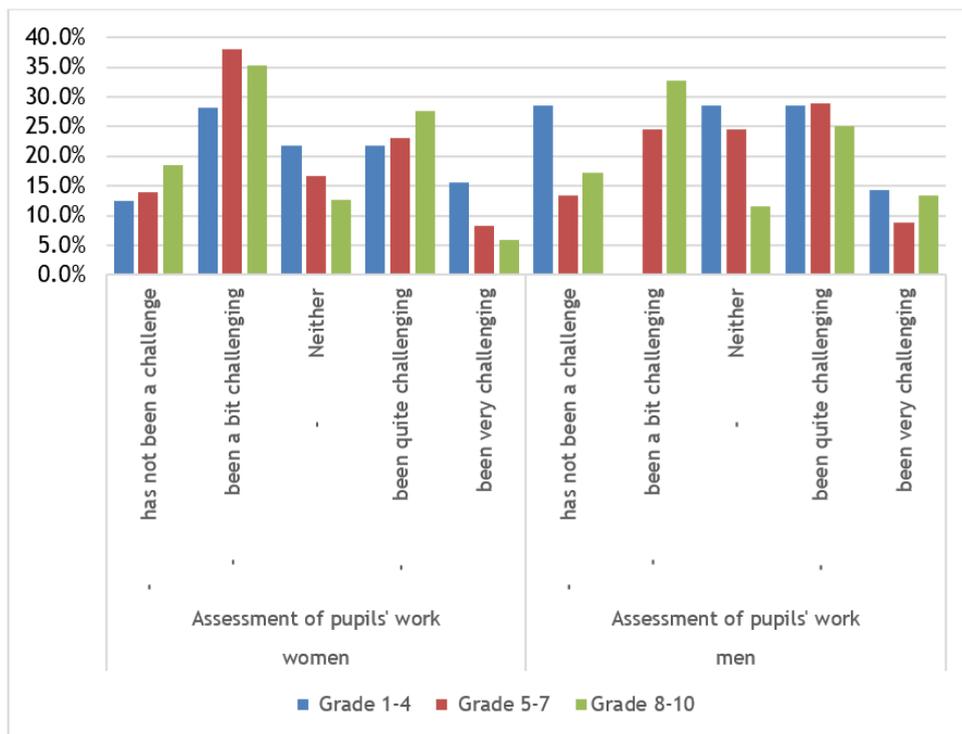


Figure 2b How challenging food and health teachers found the assessment of their pupils work during Corona lockdown

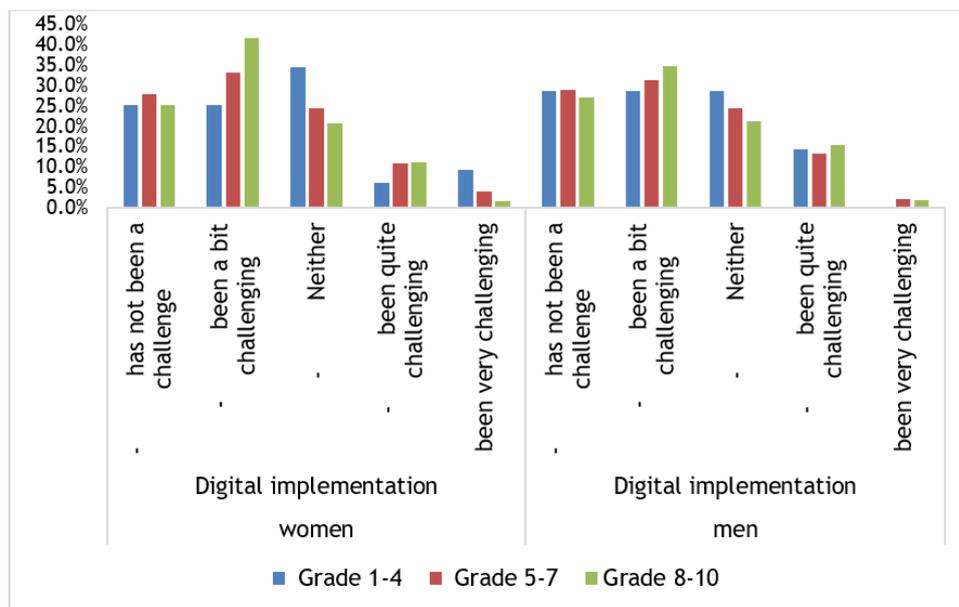


Figure 2c How challenging food and health teachers found digital implementation of teaching during Corona lockdown

Satisfaction

The response to the question “How do you feel the teaching has become” was largely positive for both male and female teachers, although men had a slightly higher score in both the lower and upper part of the scale (Figure 3).

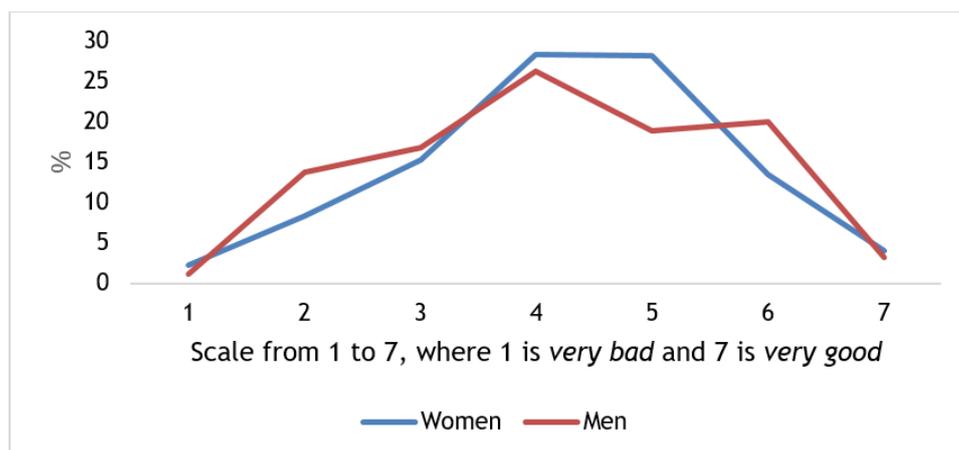


Figure 3 Number of female and male food and health teachers (in percent) that felt their teaching became good during Corona lockdown, in a scale from 1 to 7

Just over half (52%) of the teachers reported wanting to go back to their usual way of teaching when the schools reopened, and 42% said they would change some or all (6.3%) of their teaching approaches. More men claimed they would continue like before (64%), and more women wanted to change some (43%) or all (7%) of their teaching (Figure 4). The difference between male and female teachers was statistically significant, $p = 0.03$.

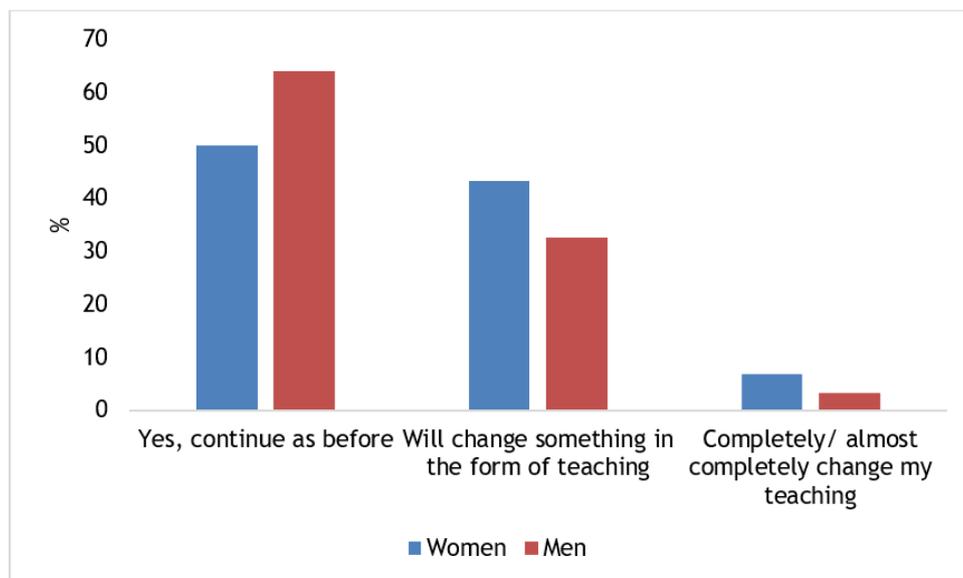


Figure 4 Number of female and male food and health teachers (in percent) that wants to change their teaching after Corona reopening of schools

When asked if they felt they had learned more, gained new impulses or become more creative, the majority of teachers answered at the positive end of the scale (Figure 5). However, the female teachers seem to be more positive than the male teachers, and there was a statistically significant difference both for becoming more creative and learnt something ($p = 0.07$ and $p < 0.05$).

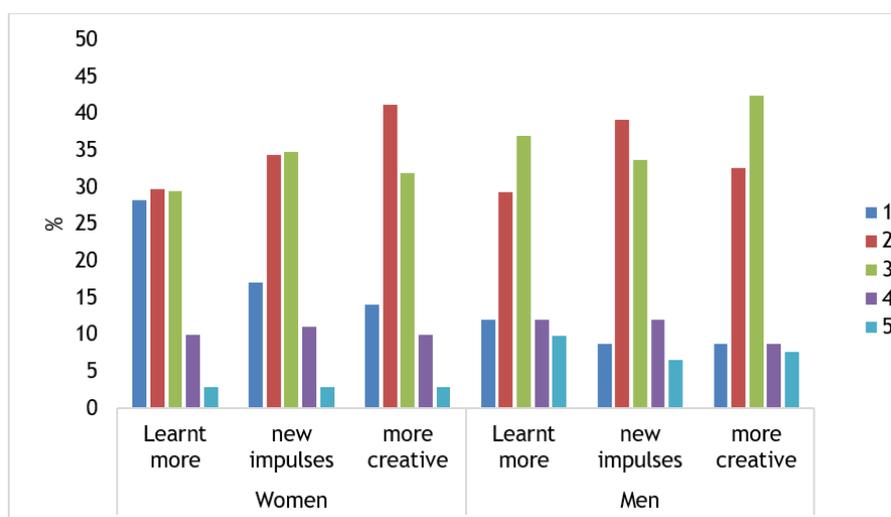


Figure 5 Number of female and male food and health teachers (in percent) that feel they have learnt more, got more impulses, or got more creative because of the Corona lockdown. Scale from 1 to 5 where 1 is a lot more and 5 is not at all

Discussion

In this study, we found that teachers used different approaches when teaching FH during the initial Corona lockdown. Videos from the internet or digital learning platforms were often used. However, most teachers used “other teaching tools” where written assignments and practical assignments seemed to be the most common approach. However, the open comment fields have not been systematically reviewed, so it is difficult to state how much practical assignments and how much written assignments were given. Some comments suggest that some teachers mainly gave written assignments because households may not be required to buy ingredients for cooking. In a recent study, Beinert et al. (2020) found that there has been a mismatch between time spent on practical

cooking lessons and nutrition theory. If there has been a greater focus on theoretical assignments during the lockdown, this may have helped to reduce this mismatch.

The use of more theoretical assignments were also seen in a study performed in five EU-member states (Carretero Gomez et al., 2021). The EU-study interviewed, amongst others, teachers in primary and secondary schools, and thus corresponds with the participants in this study. The teachers reported to omit content that was difficult to teach remotely; however, what content this was, is not mentioned (Carretero Gomez et al., 2021). Practical subjects were not mentioned in particular in the report, but due to the nature of such subjects one may speculate that the practical teaching of these subjects was omitted.

In a large study, implemented by the International Labour Organization (ILO) in collaboration with the United Nations Educational, Scientific and Cultural Organization (UNESCO) and the World Bank, on technical and vocational education and training from several different countries around the world, they also reported that focus was mainly on theoretical classes during the lockdown (ILO, 2021). The ILO-study was conducted at the same time as the current study. Although this study looked at the challenges of primary school teachers and the ILO-study looked at the challenge of practical subjects in higher education, it is seen that teachers met many of the same challenges and used many of the same approaches to solve the challenges, regardless of school level.

Of practical tasks, different types of housework were often mentioned, which is no longer part of the curriculum for food and health (Utdanningsdirektoratet, 2006, 2020a). This may suggest that all FH teachers do not know the syllabus properly, which could possibly be due to the relatively low formal education level among Norwegian FH teachers in general (Perlic, 2019).

However, several of the teachers stated that they gave the pupils recipes for the food they were to make at home. With the use of videos, such an approach becomes a variant of the flipped classroom (Bergmann & Sams, 2012): The pupils watch an instructional video beforehand and then make the dish themselves afterwards. The use of in-house instruction videos was relatively low, which means that the instructions on the videos are given by other than the teacher and may not necessarily be hands-on what the pupils are supposed to learn. As such the typically teacher-led practice in FH classes (Veka et al., 2018), may have been more individually pupil-driven. During a normal FH class, the cooking usually takes place in groups, under the teacher's expert guidance, which is difficult to accomplish when the pupil cooks in their own home. Some teachers reported the use of real-time teaching. It does not appear from the survey whether real-time teaching was used for practical cooking lessons, but it would, of course, be a possibility if the teacher wanted to guide the pupils through the cooking.

A contrast to the answer to the use of real-time teaching (15%) is the answer to how teachers kept in touch with their pupils. Just over a third (34%) reported using video conferencing to stay in touch. Video conferencing could also be used for real-time teaching. However, in this context, teachers probably referred to short meetings where they gave messages and where the pupils could ask questions, and did not see it as real-time teaching as such.

The pupils documented their work mainly through photography of the end product and by writing a log. In this way, the teachers could see the result of the work, and the pupils could report on difficulties, how the food tasted and so on. This may also be the reason why only 33% of the teachers reported that the evaluation of the pupils was challenging. The problem with such documentation is that the teacher cannot see, taste, touch or smell the result himself, for example, whether the buns were hard as stones, or whether they tasted too salty. Secondly, the teacher cannot be completely sure that it is the pupil who has made the food; they may, for example, have photographed the result of the parents' cooking. For teachers in the lower secondary school, this can make it challenging to set grades since the pupils can more easily cheat themselves into a better grade than if they were to cook in the school kitchen in front of the teacher. Pupils do not receive grades at primary school level; therefore, the evaluation problem will not be challenging in the same way. However, lower secondary school teachers did not report differently on challenges in evaluating pupils' work than teachers in the lower school levels.

Both the beforementioned EU-study and the ILO study reported monitoring students performance and evaluation of students as difficult (Carretero Gomez et al., 2021; International Labour Organization et al., 2021). The ILO-study emphasised in particular that the dissemination of practical skills in

distance education constitutes a special challenge for technical and vocational education (International Labour Organization et al., 2021), and practical subjects such as FH in primary and lower secondary school can be compared with this. In 2006, Norway implemented a new national curriculum in which digital competence was given the status of the fifth basic skill in Norwegian primary and lower secondary schools (Utdanningsdirektoratet, 2006); hence, the use of digital tools in teaching should not be a problem for most teachers. However, there is a difference between using tools in ordinary teaching and suddenly having to complete all teaching digitally. In addition, Beinert et al. (2020) showed in their study that FH teachers did not extensively use digital tools. Therefore, it is somewhat surprising that not more teachers, even among the oldest age groups (data not shown), found digital implementation too challenging. However, this is good news considering the new curriculum implemented from the autumn of 2020(6), where there is a greater emphasis on digital competence than the previous curriculum. In addition to the general focus on digitalisation in schools (Kunnskapsdepartementet, 2017), more emphasis will also be placed on digital technology in all practical subjects onwards (Kunnskapsdepartementet, 2019). As a result of this pandemic, the use and implementation of digital technology in all subjects may have been boosted (Federici & Vika, 2020). Interestingly, most FH teachers used other colleagues and not their administration when in need of help with digital teaching and assessment. This may suggest the need for didactical rather than technical discussions were the main concern.

The use of other colleagues and sharing good practices was also reported in the EU-study (Carretero Gomez et al., 2021) and the ILO-study (ILO et al., 2021), and both studies point to the need for future teachers to receive better training in how to perform distance teaching in a good way.

The next step is to find the best way to use digital tools in FH classes to enhance pupils' learning, including more flipped classroom approaches or other learning methods, including digital tools.

Strengths and limitations

To our knowledge, this is the only survey examining FH teachers' challenges during the first Corona lockdown in Norway. The results give us a valuable picture of how the teachers handled this challenge and their experience of how teaching, follow-up and assessment of the pupils went when everything was done digitally and remote. Another strength is that a large number of FH teachers from all over the country have responded, which makes the study more representative of this group of teachers. Interestingly, another Norwegian study where both teachers, pupils and caregivers were questioned about their experience of schooling during the lockdown found that teachers had become more creative in their way of teaching (Bubb & Jones, 2020), which is similar to what we found.

Our results also correspond with the results of Federici and Vika (2020), who in their survey have asked similar questions to teachers in general, and school leaders in Norway.

However, it is clear from the results that some of the survey questions were not clear enough, which leads to uncertainty about some of the answers. The time pressure to get the survey out before the schools reopened is the main reason why the survey was not better processed before sending, and also the reason why we took the shortcut by using an existing mailing list when sending out the invitations. The latter turned out to lead to a lot of extra work and probably a lower response rate.

Another weakness of the survey is that there are self-reported results from the teachers, and we do not get the pupils' or parents' views on how the teaching has been. This might have given us a more in-depth understanding of how everyday school life was during the closure (Bubb & Jones, 2020).

Conclusion

This survey results show that most FH teachers coped with the abrupt transition to digital teaching reasonably well. They found new ways to teach the subject using the school's digital platform and various digital tools. Most FH teachers were relatively happy with their teaching, and about 50% said they would make changes to their teaching when they return to a more normal school day. One may assume that the "crash introduction" in digital teaching has helped raise digital competence among both the FH teachers and their pupils. However, we do not know anything about the quality of teaching, and as other international studies have pointed out, the study shows that teachers were not well enough prepared to start with distance teaching, and that teacher education should put

more focus on this in the future. Educated teachers should be offered continuing education courses to better provide students with distance teaching in the future school.

In order to gain more in-depth knowledge of how the food and health teachers experienced their digital-everyday-life, the answers in the open text fields should be analysed. The survey does not provide answers to how the pupils' learning and level of knowledge in the subject may have changed and should therefore be explored in future research.

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Indigenous Australians and COVID-19: Highlighting ongoing food security issues

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Abstract

Food insecurity issues in Australia existed before the pandemic commenced. It is well documented that people might experience food insecurity for a range of reasons, including lack of access to adequate nutritious food or difficulty in accessing cooking facilities, and storage, along with income level. Recent research in Australia demonstrates that Indigenous peoples experience food insecurity at a high rate proportionately to non-Indigenous people. The pandemic highlighted these issues and played out in a range of ways through lock downs, along with community and regional travel restrictions and state and territory border restrictions. Indigenous peoples in numerous communities faced food and product shortages, geographic isolation, and price hiking in time of need. During the course of 2020 as the pandemic commenced and was brought under management by governments throughout Australia, Indigenous communities responded to the crisis to protect themselves and to meet their needs. The Indigenous story of responding to the pandemic in Australia sits alongside the broader Australian response as a lesson for all people.

KEYWORDS: FOOD SECURITY, FOOD SOVEREIGNTY, COVID-19, INDIGENOUS AUSTRALIA

Introduction

Aboriginal and Torres Strait Islander peoples (collectively termed *Indigenous* peoples) have lived on the lands and waters known as Australia for over 65,000 years (Clarkson et al., 2017). During this time, they developed complex and sustainable socio-cultural practices that have endured countless environmental changes over the course of human history. Over 250 languages and 800 dialects were spoken by numerous Indigenous Nations and clans across the continent before the arrival of European peoples in 1788 (AIATSIS, 2021). It is important to understand that in the past, as now, each Nation is sovereign and autonomous with developed holistic knowledge systems that informed and continue to inform interactions with kin, local environments, and surrounding groups.

Many Indigenous peoples today continue to identify with their local affiliations based on place and language but are also connected as a culturally diverse larger Indigenous group with many common understandings and shared lived experiences. Despite misconceptions that most Aboriginal peoples— or those deemed “authentic” or “legitimate”—live in remote or regional settings (Fredericks, 2013), the largest population of Indigenous peoples in Australia reside in urban areas (Biddle, 2018).

European arrival in 1788 had devastating impact on the systems that had sustained Indigenous populations for thousands of years, which ensured a secure and continuing supply of food, water, and resources, as well as its equitable distribution amongst all peoples. There is little doubt that the impact of colonisation is pervasive, widespread and ongoing (Moreton-Robinson, 2020; Smith, 2013;

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Wolfe, 1999, 2006). Despite this, Indigenous peoples throughout Australia continue to resist oppressive governing structures via practicing, reviving, and adapting their cultures in ways that exhibit self-determination and demonstrate unceded sovereignty. It is upon this backdrop that we discuss the state of food security for Indigenous peoples in Australia today.

In this paper, we consider what food security is and highlight its connection with self-determination, sovereignty, and Traditional Knowledge Systems (TKS). We discuss how food insecurity—although affecting Indigenous peoples in different ways—is felt throughout the country in remote, regional, and urban locations. Our focus then turns to how issues pertaining to accessing healthy and affordable food is addressed in three governmental inquiries conducted over the last two decades. We consider how Indigenous peoples have responded to the challenges posed to food supply and access, with specific reference to COVID-19. In our conclusion we emphasize that food insecurity—whilst exacerbated by the pandemic—is not new, and that meaningful systemic reforms are needed to empower and resource Indigenous communities so that they may inform, oversee, and implement effective and culturally appropriate policies, as they did before European arrival (Martin & Mirraboopa, 2003).

How to approach food security in settler-colonial Australia

The effects of colonisation are ongoing (Smith, 2013; Wolfe, 1999, 2006) and have manifested in Australia through disparate outcomes across health, employment, education, poverty, social justice, and other “gaps” (Australian Government, 2020; Dick et al., 2008). Food insecurity for Indigenous peoples is the product of a continuing colonial regime that seeks to explicitly or inadvertently disempower and disadvantage Indigenous populations (Moreton-Robinson, 2004). It is the result of wider systemic inequalities that speak to numerous concerns relating to housing, homelessness, employment, access to land, investment opportunities, industrial relations, race-relations, self-determination, and sovereignty... amongst others. We argue that food insecurity warrants deeper reflection on how Indigenous peoples, cultures, knowledges and agency is valued within decision-making processes in industry, politics, policy-making and social interactions more broadly.

Addressing food insecurity however is not a simple matter of addressing “service delivery” alone. Rather, it speaks to the need for major systemic and structural reform (Fredericks & Bradfield, 2021). The failure to provide equitable and affordable access to healthy food and essential services—particularly during COVID-19—reflects Indigenous peoples’ wider disempowerment and exclusion. Furthermore, food insecurity highlights a governmental neglect to commit to establishing, maintaining, and financing the structural mechanisms needed to empower Indigenous communities so that they may implement culturally appropriate strategies that address social disparities.

Until the continuing power-relations of settler-colonialism are confronted by non-Indigenous peoples and governments, in a meaningful way, white settler populations will continue to reside in what Fanon (1965, p. 39) describes as a “well-fed” “easy going” town that remains blind to the fact that its prosperity is built on the oppression and disregard of others who live in “a crouching village, a town on its knees, a town wallowing in the mire”.

Mindful of presenting Indigenous communities through a deficit lens, we wish to iterate that the so-called “hungry town” is not the product of Indigenous peoples’ lack of will or capability to prosper, for Indigenous peoples were well-fed with sustainable access to resources for thousands of years prior to European invasion (Angeles, 2005; Browne, Lock et al., 2020). Nor is it the result of Indigenous peoples’ inability to work within an introduced western social system. Indigenous peoples have long remained adaptive and innovative to social and environmental change.

The hungry town where many Indigenous peoples reside remains a “crouching village...on its knees” (Fanon, 1965, p. 39) for it is beholden to the stranglehold of a governing and social system that continuously stunts Indigenous self-determination, innovation, and participation. To address food insecurity, the systemic compartments that contribute to its prevalence must first be identified and its very function reimaged so that Indigenous peoples can control, shape, and reform policies and praxes in ways that are responsive and respectful to Indigenous peoples’ needs and cultures (Browne, Gilmore et al., 2020).

Contextualising food security

Food security refers to the ability to consistently source, produce, purchase and consume healthy foods at affordable prices that ensures nutrition and positive health outcomes for all members of society (Osbourne et al., 2013). The now disbanded Council of Australian Governments defined food security as “the ability of individuals, households and communities to acquire appropriate and nutritious food on a regular and reliable basis using socially acceptable means” (ANAO, 2014, p. 11). The degree to which a person experiences food insecurity is shaped by numerous socio-economic determinants, which often inform and feed into one another (Bowden, 2020). The location and degree of remoteness in which one lives for example can exacerbate the problem. This is further heightened by issues such as poor income; lack of housing, infrastructure, food storage and food preparation facilities; insufficient access to transportation; and negligible management of stores and service delivery, amongst others. While often interpreted as a regional or remote issue, food insecurity is something that affects Indigenous people nationwide, including those living in urban localities (Fredericks, 2013). Temple and Russell (2018) for example observe how English-speaking Indigenous populations in both remote and non-remote Australia often have similar experiences of food insecurity.

Although *food security* serves as an umbrella term, covering the contributing factors that shapes a person’s ability to access and afford healthy foods, for Indigenous populations, security is deeply embedded with issues of *sovereignty* and *self-determination* (Grey & Patel, 2015). Food security is therefore often discussed in terms of *food sovereignty*. Grey and Patel (2015, p. 434) highlight that for Indigenous peoples, food security is embedded in politics of place and time, reflective of “longer struggles against exploitation and colonization”. Like many aspects of settler colonialism and its continuing impact on Indigenous populations, food security remains an under-researched topic with minimal measures of analysis and evaluation (Barber & Jackson, 2017). One explanation for this is that to speak of food security within an Indigenous/ settler-colonial context is to speak of the wider impact of imperialism, unceded Indigenous sovereignty and self-determination. This would ultimately require the dominant white colonial power structures to be relinquished in favour of governing structures that are controlled and overseen by Indigenous peoples (Lyons et al., 2021).

Food security for Indigenous peoples requires *sustainable development* where connections to the environment, place, kin and culture are maintained, whilst Indigenous knowledges, innovation and ingenuity are embraced (Markham & Kerins, 2020). Food security necessitates forward thinking that builds the infrastructure and capacity needed to not only safeguard access to healthy foods, but build the framework needed to ensure community control and prosperity well into the future.

Addressing food security additionally means considering how traditional knowledges and practices may be used as means to manage the environment and create additional food sources that supplement diets, improve nutritional intake, cares for Country/land, and creates businesses that may potentially increase Indigenous employment and economic gain. The *bush foods* market, for example, is currently estimated as being worth 20 million dollars, yet only 1% of the industry is represented by Indigenous-led and -run companies (Mitchell & Becker, 2019). This statistic alone signals the exploitation of Indigenous peoples and demonstrates how many are systemically excluded from profiting from their very own cultural knowledge, traditions and intellectual property (Robinson & Raven, 2017).

Indigenous knowledge and frameworks however are not limited to what is often categorised as *traditional* or *cultural* (e.g., *traditional foods*, see Fredericks & Anderson, 2013) but are applicable to wider governance structures pertaining to all sectors of society—from food regulation to housing, social justice, health and education. Indigenous led industries and businesses—which are controlled, overseen and delivered by Indigenous representatives—must be created, and Indigenous people empowered with the resources needed to implement their autonomy and agency. This is the cornerstone of building effective policy. Developing food policy through an Indigenous lens therefore has the potential of creating unique approaches that are long-term, sustainable, and creates additional opportunities in employment and positive outcomes in health.

International law and governing bodies such as the United Nations’ Food and Agriculture Organization (FAO Council, 2004) recognise food security as a fundamental human right. Declarations such as the United Nations Declaration on the Rights of Indigenous Peoples (2007) aim to protect this. Davy (2016) however reminds us that a human-rights approach to food security must not lose sight of the fact

that such rights are pre-existing and inherent to Indigenous peoples, regardless of international law. Indigenous peoples' rights, laws, and customs have ensured equitable and sustainable access to foods long before European arrival. Like sovereignty itself, Indigenous peoples have never ceded such rights. In order to address food insecurity, existing Indigenous rights and practices must be acknowledged and incorporated within all policies and dialogues.

Statistics and impact of food insecurity

Food insecurity has wide implications that flows through entire Indigenous populations. A study based in the capital cities of Darwin and Adelaide comparing the price of food baskets in urban and remote stores in the Northern Territory and the state of South Australia found that products from remote locations cost an average of 60% more (Ferguson, O'Dea et al., 2018). While in the state of Queensland, one third of all Indigenous peoples have faced food insecurity at some point in their lives (QAIHC, 2020). Nationally, 20% have run out of food within the last 12 months (QAIHC, 2020). Only 8% of Indigenous people meet the recommended daily intake of vegetables, and 54% eat the recommended amount of fruit (Lee & Ride, 2018).

Studies show that socio-economic factors such as employment, welfare dependency, and the amount of disposable income available primarily drive food insecurity. In 2008, as part of the Australian Government's Close the Gap Initiative, a target ensuring that by 2018, 90% of Indigenous families could access a healthy food basket for no more than 25% of their disposable income was recommended (Dick et al., 2008; Lee & Ride, 2018). This was ultimately rejected by the government (Lee et al., 2009; Lee & Ride, 2018). In many cases, problems relating to the affordability of food is increasing with some Indigenous peoples paying up to 80% of their entire income on food alone. Price differentials in both remote and urban stores have gotten worse over the last four years, despite the issue's increasing exposure (Ferguson, O'Dea et al., 2018). Wider socioeconomic determinants, governmental policies, inferior infrastructure, profiteering, and a systemic failure to listen and respond to the needs of Indigenous communities all impede on Indigenous peoples' capacity to access healthy and affordable food.

Women—single mothers in particular—are often hardest hit, as their limited income is spread to cover numerous costs and expenses for entire households. In a study assessing the determining factors behind food choices in a remote Indigenous community in Northern Australia, Brimblecombe and her colleagues (2014, p. 396) observe how “one participant saw sole female parents as particularly vulnerable to food insecurity because of reduced social networks and limited access to income”. Their study presents a case for the promotion of traditional food practices and cultural sharing as a means to maintain social networks that reflect Indigenous worldviews, and are managed by Indigenous peoples in accordance with their needs and customs. Prioritising Indigenous agency and community engagement in food programs—whether gathering traditional foods on Country/land or establishing community-driven initiatives in urban setting—builds connections that provides a support base that empowers and dignifies participants through establishing a setting in which cultural and social ties are maintained.

Evaluations of food insecurity are often based in regional communities where limited access to food and inflated prices are commonly attributed to a variety of determinants, including freight costs, surcharges, and infrastructure. While these all contribute to the prevalence of food insecurity, “the hungry town” is equally present within urban Australia. Urban food insecurity continues to be an overlooked and under-researched topic. Although not as substantial as in remote locations—where residents may travel hundreds of kilometres to regional centres to source affordable foods from larger supermarket chains (van Barneveld et al., 2020)—issues such as lack of public transportation and access to cars continues to be a problem in urban settings. Browne et al. (2009) note that urban planning and the locations of many supermarkets makes accessing food a difficult and at times costly venture. Housing, overcrowding, inadequate infrastructure, and need to share resources are also contributing factors of food insecurity, in both regional and urban settings (Lowell et al., 2018).

Financial strain, unemployment and homelessness all influence Indigenous peoples' ability to access food, as well as the types of food they choose. Processed, pre-packaged, and fast foods are often cheaper and more convenient. One Indigenous parent in an urban setting expressed that she could go to a local food takeaway shop where she could “feed at least five kids for \$20. That's five kids fed. Whereas if I was to prepare a meal it would cost me more to make a meal with the right stuff” (Browne et al., 2009, p. 5). Whilst education about nutrition is an important aspect of addressing

food insecurity, it alone will not reverse negative outcomes pertaining to Indigenous health and the consumption of unhealthy diets (Davy, 2016). In many cases—such as the mother who opts to feed her family at a fast-food chain—choice is driven by financial necessity and not a lack of knowledge of what foods are most nutritious. Investments in education and awareness campaigns alone—which do not work in conjunction with other approaches that address the systemic drivers of food insecurity—have shown little evidence of effectiveness. In essence, government sponsored education campaigns often present an image of responsive government action, whilst at the same time placing blame on Indigenous peoples should it fail.

Reports and Inquiries addressing Food Security

Due to continued activism and campaigning by Indigenous community-controlled health organizations, researchers, and members of the wider community, food security and its impact on the “gaps” plaguing Indigenous communities have received increased attention over the last two decades. This has contributed to the publication of three government-sponsored reports: *Eat Well Australia* (National Aboriginal Torres Strait Islander Nutrition Working Party, 2001); *Everybody's Business* (Debus, 2009); and the more recent *Inquiry into food pricing and food security in remote Indigenous communities* (Standing Committee on Indigenous Affairs, 2020).

Spanning over two decades, each enquiry has targeted specific areas. *Eat Well Australia* was tailored towards nutrition and food choices, *Everybody's Business* centred on remote community stores, whilst the recent enquiry into food insecurity arose out of claims of price-gauging in remote community stores during COVID-19. Each report however has consistently exposed the same social determinants and policy limitations that drive food insecurity and have made similar recommendations that seek to empower local Indigenous communities and cut through systemic barriers.

Consistent in all the reports' findings are the need for streamlined national approaches that would create the frameworks necessary to develop, implement, and monitor supply and access to healthy foods. Coordinated responses across all levels of government, communities, and service providers, is commonly cited as a means of addressing the systemic and socioeconomic determinants that drive Indigenous peoples' choices and ability to access and consume healthy foods (see also Rogers et al., 2018). National approaches—such as developing national food and nutrition guidelines—can help define common terms of references and standardize responses in ways that can be monitored and evaluated.

The reports consistently cite the need for greater Indigenous control and participation through capacity building and increasing the Indigenous workforce via governance training, career pathways, increasing the number of Indigenous nutritionists, dietitians and health specialists, broadening access to grants and funding, creating a competitive job market, and ensuring an equitable marketplace through initiatives such as national licensing schemes.

Indigenous steering committees and working groups are envisioned as appropriate bodies to liaison with local communities as they would ultimately oversee the implementation of policy and be accountable to and represented by community members. Such mechanisms however must be long-term, well-resourced, financed, bounded by agreements, and trusted by local community members (see Ferguson, O'Dea et al., 2018). Structural, socioeconomic, and environmental factors such as housing, sanitation and infrastructure are also acknowledged within each report, as are logistical barriers in regards to freight, transportation and the cost of supply.

COVID-19 has presented numerous challenges for Indigenous peoples in terms of food security, highlighting the same social determinants as reported in past enquiries. In some cases, the pandemic has exposed a failure to effectively implement past recommendations (a failure also observed before the pandemic, see Hudson & Hudson, 2010). In others, establishing bodies such as the Food Security Working Group have proven effective in developing and delivering culturally appropriate responses. The pandemic, however, has ultimately highlighted that when provided with the autonomy and resources needed, Indigenous peoples are the most capable of confronting and addressing the challenges they face (Power et al., 2020).

Food Security during COVID-19

Amidst the outbreak of COVID-19, there was genuine concern over the potentially devastating affect the virus could have on Indigenous peoples in Australia and worldwide. In response, governments identified Indigenous communities as “vulnerable populations” whom were “high risk” of succumbing to the spreads of virus. Some governments enacted special measures and restrictions directed towards Indigenous peoples with aim of keeping communities safe. Indigenous populations are tragically aware of how pandemics and introduced diseases—to which they have limited immunity—can have on ethnic groups. Historically, it has eradicated entire language groups, leaving many languages and cultures decimated (Fredericks, Holcombe et al., 2020; Holcombe, 2018). COVID-19 further highlights this threat and, in many cases, such as for Indigenous populations in the USA, Canada and Brazil, it has been Indigenous peoples and other minority groups who disproportionately fall victim to its spread.

In March 2020, Ward and Agostino (2020) noted the need for an immediate response by Indigenous communities, which was promptly answered by Indigenous led community health organizations, local councils, and community leaders. Providing some reassurance, they wrote, “the Aboriginal Community-Controlled Health services sector has mobilised and is leading an advisory group alongside Governments and is meeting regularly to work on a management plan specific to the Aboriginal and Torres Strait Islander populations” (Ward & Agostino, 2020). Whilst the government spoke of Indigenous peoples’ vulnerabilities, there was an overwhelming sentiment within community that their response would be delayed, unresponsive to local needs, or altogether non-existent. In order to address the imposing threat, action to protect Indigenous communities, particularly elders, had to be immediate and community driven.

In a radio interview for the Australian Broadcasting Corporation the following month (April, 2020), the CEO of the National Aboriginal Community Controlled Health Organisation (NACCHO), Pat Turner, spoke of the heightened necessity of securing an adequate supply of healthy foods and essential items for Indigenous communities during the pandemic (Turner, 2020). Access to fresh and nutritious food being vital to boost Indigenous peoples’ immune system, particularly for Elders and within communities where health is already compromised and experiences with food insecurity prevalent (Temple & Russell, 2018). Diet is a signification determinant of one’s susceptibility to disease (Brimblecombe et al., 2018). Turner expressed her disappointment of the government’s neglect to take preventative action to address issues concerning healthcare and food access, stating in the broadcast that “the pre-planning wasn’t done to ensure ready access to healthy and affordable food... Our people need access to fresh produce and they need, now more than ever, healthy food to keep their immunity system up” (Turner, 2020, 13:48)

COVID-19 merely exacerbated a pre-existing issue (Kent et al., 2020) and exposed a wider neglect and failure of governmental accountability in delivering basic human rights (Davy, 2016). It has been driven by what Bowden (2020) describes as *transitory* short-term shocks, such as environmental factors and the unforeseen circumstances associated with the pandemic as well as *chronic* shocks, such as socioeconomic determinants including income, housing, or poverty.

The establishment of the Aboriginal and Torres Strait Islander Advisory Group on COVID-19 provided an essential mechanism that facilitated communication between communities and governments. Whilst an effective tool to navigate and direct governmental policy and responses to where it was most needed, the advisory group were simply reiterating pre-existing problems pertaining to the supply and distribution of essential items and services that had already been brought to the government’s attention.

Alongside preventative measures such as community lockdowns, restrictions on movements, and border closures, came numerous pressures on community services, which significantly affected food delivery and supply chains (Power et al., 2020). Upon announcement of community lockdowns, many Indigenous peoples from regional and urban areas returned to their remote home communities, adding additional strain on services that are already underfunded, under-resourced and operationally fragile. NACCHO estimates that demand on local stores increased by 20 to 30% during the pandemic.

An influx of additional bodies would have also impacted overcrowding (Chenhall & Senior, 2018)—something that already affects 53% of Indigenous households in the Northern Territory alone. This, alongside increased demand on electricity and inadequate infrastructure can potentially inform what

foods residents consume. As many houses have inadequate food preparation facilities, or electricity to power essential items such as refrigerators, people may be more inclined to opt for unhealthy takeaway or prepacked foods (Bryce et al., 2020). Only 6% of houses in Indigenous communities in Queensland have the entire recommended infrastructure and utensils for safe food storage and preparation (Lee & Ride, 2018); 20% of houses in very remote Northern Territory have no food preparation facilities at all.

Peoples' return to Country/land in remote and regional communities however has had some positive physical and mental health outcomes. Anthropologist Jon Altman amongst others (Altman, 2020; Moodie et al., 2020; Smith et al., 2020) have noted how being on Country has provided opportunities to source traditional foods, which has resulted in maintaining relational and cultural ties to kin and the land. In addition to this, traditional foods have numerous nutritional benefits, often being high in fibre, protein, polyunsaturated fat and slowly digestible carbohydrates (Australian Indigenous HealthInfoNet, 2020; Ferguson et al., 2017; Lee & Ride, 2018).

Foods, sourced through fishing, hunting, and gathering, are often used to supplement Indigenous peoples' diets, particularly in remote locations (Bowden, 2020). Although they are unlikely to form the entirety of a person's diet, they nonetheless remain a necessary component of Indigenous cultural identity and provides an additional food source that can alleviate some financial burden and provide cultural and economic opportunities (Angeles, 2005). Brimblecombe (Brimblecombe et al., 2014) and her colleagues highlight how integrating understandings of traditional food systems with the contemporary food environment is an effective way of educating Indigenous populations on nutrition, as it situates the conversation within a specifically Indigenous context. Additionally, it offers solutions that are culturally appropriate and relevant to local settings (Cubillo et al., 2020; Ferguson, O'Dea et al., 2018).

Despite the benefits of sourcing and consuming traditional foods, its practice does not negate the reality that Indigenous peoples' access to food remains reliant on the supply chains formed by community stores and service providers. A range of factors drastically affected such supply chains during COVID-19. The prevalence of panic buying in urban areas and general awareness of the fragility of supply chains provoked some communities to implement ad hoc responses in preparation for worst-case scenarios. The Cape York shire for example converted their visitor accommodation centre into a space that could act as both an additional hospital ward and storage facility to stockpile food (Shoebridge, 2020). Panic buying highlighted a disconnect between remote areas and urban/regional centres where hoarding and mass purchasing of essential items caused major disruptions to supply chains (Smith, 2020). In response, major supermarkets imposed purchase limits to ensure equitable distribution of food. While such restrictions were an effective measure to prevent mass purchases, it had a significant unforeseen consequence for those living in remote communities.

Due to the inflated price of food in remote community stores, residents can travel hundreds of kilometres to the nearest regional supermarket in order to stockpile food to last several weeks or months (Fredericks, Bargallie et al., 2020; van Barneveld et al., 2020). Purchase limits due to panic buying and restrictions on movement due to lockdowns prevented this from happening. The inability to access and purchase cheaper food in large quantities not only created greater financial burden on consumers, but also generated greater demand on what is often the only store serving a community (Power et al., 2020). Community stores therefore had to face both the added pressures associated with COVID-19, as well as the barriers and challenges faced on a daily basis.

Food security therefore is beholden to a range of environmental and circumstantial events that informs the availability and affordability of food (Bowden, 2020). This was particularly the case for the community of Walgett in New South Wales whose only supermarket burnt down in 2019 (Furlong & McCutcheon, 2020). Whilst a temporary replacement store was set up, its smaller size and constraints on supply chains meant that only 26% of its ordered stock was received during the pandemic. This was a common occurrence throughout the pandemic. The community store on Mornington Island (Standing Committee on Indigenous Affairs, 2020, p. 59) for example posted a sign informing its customers that:

Due to the coronavirus many items in the shop are temporary not available. That means that when we do an order [half] of what we order does not come in on the barge. This will continue until the end of June. We will do what we can to get as much as we can for the community.

The situation in Walgett worsened when a prolonged drought caused salt to leach into the drinking water supply, placing further demand on bottled water, a popular item amongst panic buyers in populated areas (Furlong & McCutcheon, 2020).

Panic buying, reactionary responses by supermarkets to impose purchase limits, and the Australian government's decision to lockdown communities without adequate Indigenous consultation all signify breaks in communication and highlight a disconnect between policy makers and local communities. Failing to communicate with Indigenous communities and representative organizations meant that many were caught off guard and were therefore under-resourced in making the preparations needed to respond to the lockdowns and mitigate some of the consequences of doing so. For example, the local council in Davenport, South Australia, was given little notice and were still making arrangements to ensure sufficient supply of food when restrictions on movement were announced (Marie et al., 2020). The CEO of the community council, Lavene Ngatokorua, spoke of how mechanisms for the supply of food and essential services needed to be in place before lockdowns were imposed and that they found themselves in a position where they had to make urgent negotiations with major supermarkets to ensure their community had access to food (Marie et al., 2020).

Other communities such as Wilcannia, New South Wales, called for greater police support to enforce lockdown measures (Marie et al., 2020). Anxieties about travellers passing through the region stemmed from both fear that the virus would spread as well as out of concern that travellers would purchase food that was already in limited supply. The community of Cherbourg in the state of Queensland, like many other communities, quickly mobilised to set up checkpoints to monitor and restrict movement, whilst the local council imposed special measures to ensure that food was delivered, accessible, and affordable to residents (southburnett.com.au, 2020). All however did not support lockdowns and roadblocks. In April 2020, in Davenport, South Australia, Adnyamathanha Elder Malcolm McKenzie was arrested after protesting lockdown restrictions and the requirement that residents attain a permit to enter or exit their community (Lysaght, 2020).

It must be acknowledged that Australia's dehumanising protectionist laws of past, which controlled all aspects of Indigenous peoples' lives (Wilson, 1997)—segregating populations along lines of race, restricting their movements, treating Indigenous peoples as dependent wards of the state, and effectively turning missions into prisons—remains in the living memory of many Indigenous peoples today. Punitive implementation of restrictions without following the correct culturally appropriate protocols has the potential of provoking deep seeded intergenerational trauma (Atkinson, 2002). As Atkinson (2002, p. 66) highlights “the name and function of ‘protector’ by the state is itself another form of abuse”. Such a history cannot be ignored when policies that enact restrictions on movement and necessitates permits are justified as acts of “protection”.

Some residents of Davenport likened community lockdown to the mission days. Our concern here lies not in the debate over whether community lockdowns are necessary, but rather in the lack of communication and coordination between different sectors of the government, public officials, police force, and their consideration of communities' wishes and concerns. Whilst advisory groups such as the Aboriginal and Torres Strait Islander Advisory Group on COVID-19 are effective in terms of guiding national discourses pertaining to federal policy, mechanisms that ensure local communities are consulted and included in decision-making processes, on a grass roots level, must be strengthened (Browne, Gilmore et al., 2020).

Throughout the pandemic philanthropic endeavours led by community-organizations and large chain supermarkets ensured that communities had some continued access to food during lockdowns. Various initiatives saw food donated, food vouchers distributed, and emergency measures implemented to ensure supply chains remained open (Smith et al., 2020). Although alleviating some of the pressures associated with food insecurity, the degree to which such initiatives were successful varied from location to location.

Philanthropy alone however cannot address the underlying issues that drive food insecurity (O'Kane, 2020). Where some communities were able to negotiate agreements with larger supermarkets, others struggled. While we welcome such measures, in order to make lasting systemic change, support must be ongoing and built into frameworks and agreements that empower local communities in ways that enable them to source and distribute food at affordable prices and in accordance to the community's needs.

COVID-19 has demonstrated to industry that both they and Indigenous representative bodies are capable of entering partnerships and sharing resources for mutual benefit and common interest. One major supermarket for example came to the realization during the pandemic that they have “the framework and the capacity to be able to work directly to supply retailers and support remote communities” (Standing Committee on Indigenous Affairs, 2020, p. 26). Through sharing their supply chains, remote community stores may potentially gain access to cheaper foods via larger companies, who may take on a role as distributors. In some cases, community stores are already forced to purchase goods from larger supermarkets to meet community demand but do so at retail prices. Sharing pre-existing distribution centres and establishing new ones in regional locations may provide greater access to stock, whilst also reducing logistical expenses like freight.

Many have documented the systemic disadvantages that smaller community stores face when having to navigate complex contracts with wholesale providers (Brimblecombe et al., 2017; Ferguson, O’Dea et al., 2018). In some cases, community stores are unable to compete or gain access to the resources, concessions, and subsidies offered to larger competitors. One factor driving the exorbitant cost of food in remote locations is local store’s inability to purchase cheaper generic brands or buy products in bulk. Entering into partnerships with large supermarket chains who can grant remote stores access to their suppliers and distribution networks—could potentially lead to the purchase of cheaper goods and sharing of resources.

Conclusion—A hunger for reform

In the opening of the paper we referred to Frantz Fanon’s (1965) depiction of the “well-fed” settler town. A town built on the exploitation and dehumanization of Indigenous peoples, who conversely occupy a “hungry town”, “starved of bread, of meat, of shoes, of coal, or light” (Fanon, 1965, p. 39). The hunger that Fanon speaks of is both literal and figurative. It is a literal hunger, as Indigenous peoples are disproportionately affected by food insecurity informed and maintained by numerous socio-economic determinants and ongoing systemic failings to produce effective and responsive food policy. The hunger however is also figurative. Indigenous communities, organizations, representative bodies, and activists continue to demonstrate their tenacity and endurance in demanding self-determination, enacting sovereignty, and placing increasing pressure on governments to ensure their greater participation in decision-making processes. This form of hunger will never subside.

Throughout this paper, we have given an overview of the prevalence of food insecurity for Indigenous peoples in Australia. Although COVID-19 has exacerbated many issues relating to securing and accessing an affordable and healthy food basket, it has merely exposed a pre-existing problem that has been known for a long time. Our analysis of the three government inquiries that have investigated food security has highlighted how awareness of the issue, and the actions deemed necessary to address it, are well documented. Recommendations pertaining to monitoring and evaluating food pricing; addressing freight costs; promoting greater competition; improving infrastructure, housing and utility services; addressing overcrowding; building capability and increasing the Indigenous workforce; improving knowledge of nutrition, amongst others, are consistently documented in all reports. This is acknowledged in the latest 2020 inquiry that conveys its regret at having to conduct yet another report.

The consistent inability to adequately implement the recommendations made and effectively address ongoing concerns relating to food security, points to a systemic failing where communication and the transference of knowledge and resources between local communities, service providers, and governments often breaks down. COVID-19 exposed such breaks in communication but also highlighted local communities’ capability to quickly mobilise and identify what actions are needed to keep communities safe. Indigenous representative bodies such as the Aboriginal and Torres Strait Islander Advisory Group on COVID-19, the coalition of the peaks, and numerous community-controlled services, continue to demonstrate Indigenous peoples’ capability in leading community-driven responses to ongoing crises. COVID-19 has further highlighted this.

The problem therefore lies not in a lack of awareness of the prevalence of food insecurity but rather in the absence of structural mechanisms that would translate the actions and responses Indigenous peoples deem necessary into policy. In their submission to the latest government inquiry, NACCHO (2020, p. 22) expressed that “we are concerned that we continue to receive anecdotal reports of price increases in remote communities”. NACCHO is calling for greater monitoring, evaluation, sharing of data, but most importantly greater accountability and structural change.

Indigenous led reforms such as those proposed by the Uluru Statement from the Heart, State Treaties, and other inquiries like the Queensland Productivity Commission's investigation into service delivery, all propose new ways of navigating policy and decision-making processes. Unanimously, Indigenous peoples are demanding greater participation within the very socio-political structures that govern their lives. Calls for the Australian Government to support the Uluru Statement from the Heart (Davis, 2018; Fredericks & Bradfield, 2020) and an Indigenous Voice to Parliament (Davis, 2020; Fredericks & Bradfield, 2020) would provide a mechanism that allows Indigenous peoples to present advice and guidance that is both rooted in lived experience and translatable to national strategies (Browne, Gilmore et al., 2020). This is essential to effectively address the numerous socio-political determinates that drive food insecurity in a culturally appropriate and holistic manner.

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Dr Abraham Bradfield is a research assistant with the Office of the Pro-Vice Chancellor (Indigenous Engagement) at The University of Queensland, Australia. Completing his PhD in 2018 in Anthropology and Social Sciences (UNSW) his research explores topics relating to colonisation, decolonisation, identity and the intercultural. He remains committed to developing and implementing morally responsible research that challenges colonial power structures and encourages new habits of thought and praxis.

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Living in the Corona age: A *new normal* perspective of Japanese home economics

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Abstract

The spread of COVID-19 has forced Japanese into major changes to our daily lives. This study brings to light issues hidden in the consciousness and behaviour of Japanese as they confront this new normal, and examines the critical role of Home Economics. By carefully examining related articles (published March-September 2020) from four representative Japanese newspapers, this study aims to understand the actual conditions of life under this new normal.

In both relevant work and non-work topics addressed in said articles, we find few instances where home economics' life-oriented approach is adopted. We warn of the dangers inequality and social exclusion pose for maintaining social inclusivity and safeguarding human rights. As specialists in future proofing, we propose that it is our social role to stimulate discussion towards creation of a humanistic new normal centred on community and individual wellbeing.

KEYWORDS: COVID-19 PANDEMIC, NEW NORMAL, NEWSPAPER CONTENT ANALYSIS, HOME ECONOMICS FUTURE PROOFING, SDGs

Introduction

The COVID-19 pandemic is forcing a profound transformation of our lives. The international community, which until recently promoted *connection* across national boundaries, has seen countries suddenly close their borders, with governments encouraging citizens to refrain from travelling abroad and instead *shelter at home*. Unfortunately, the philosophy at the core of home economics, which stresses human interaction and exchange and has allowed the discipline to foster wellbeing through cooperation and collaboration among peoples, seems to have been drowned out by a wave of *social and physical distancing* strategies.

Further, chronic problems as poverty, inequality, and marginalisation that societies have been grappling with for decades has exacerbated by the critical situation produced by COVID-19 and the overall shock of the pandemic even worse. The United Nations' well-known Sustainable Development Goals (SDGs) were created to help countries overcome crises based on fundamental principles such as justice, equality, the expansion of opportunities and inclusion. These tenets should be the guiding force of the international community as it works to overcome the challenges posed by COVID-19.

To ensure that the society of the future is more desirable and sustainable than that of the past, the *ways of overcoming* that we are now implementing are of great significance. In discussions in the

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search for a better path through which to overcome many social and lifestyle challenges brought by the scourge of Corona, problems are often overemphasised and people tend to seek to solve these problems. However, it is more important while overcoming the crisis, to forecast the future for achieving the wellbeing we seek beyond the Corona catastrophe. This study maintains that home economics is uniquely qualified to explain these points and offer solutions based on them; its input is thus absolutely important at this crucial time.

Objectives

In Japan, there are growing social awareness such as a rise in individuals who never marry, an increase in the number of single-parent households, and elderly people living alone. The percentage of unmarried persons at age 50 is 23.37% for males and 14.08% for females and has increased rapidly in the last 20 years (National Research Institute of Population and Social Security, 2018). The percentage of single-person households among the elderly (those aged 65 and over) is increasing, with 13.3% of males and 21.1% of females in single-person households. These rates are expected to increase in the future (Cabinet Office, 2020).

In the workplace, employment is becoming more fluid and unstable. The percentage of non-regular employees in the workforce was 20% in 1990, increased to 37% in 2017 (Ministry of Health, Labour and Welfare, 2018).

Also, the number of unemployed and those without adequate schooling is rising. It is estimated that 710,000 (2.1%) of those aged 15 to 34 are neither doing housework nor attending school, and 541,000 are *hikikomori*, or deeply socially withdrawn (Cabinet Office, 2018).

Japan is also characterised by a high suicide rate among children and youth, with suicide being the leading cause of death among Japanese aged 10-39. In fact, looking internationally, among developed countries only in Japan is suicide the leading cause of death among young people aged 15-34 (Ministry of Health, Labour and Welfare, 2019). Further, among all OECD countries, Japan shows the highest percentage of individuals who do not interact with those outside of the family, another serious social problem (OECD, 2005).

We would assume that COVID-19 has made life even more difficult for these persons who have weak social ties. And comparing 2020 with 2019, we find an increase in the unemployment rate, especially among non-regular workers, and a rise in the percentage of welfare recipients. Further, there has been a 40% increase in the suicide rate among the younger generation—the largest year-on-year rise ever recorded—especially among female high school students, where the increase has been a startling 90% (Ito, 2021).

This social context deeply informed the present study. We began our research not only wanting to understand what challenges Japanese had begun facing in their daily lives from the earliest stages of the pandemic but also out of a desire to participate in the process of constructing a more humane *new daily life* for all. It should be noted, that our study was conducted during the very early stages of the pandemic, when there was no prior research on how the COVID-19 was forcing changes in people's daily lives. The results of a review of the Japanese home economics literature yielded but one related study—on food recipes (Ioki, 2020).

From the abovementioned perspective, we examine below how the *new daily life* or *new normal* (terms that will be used throughout this study) have been depicted in major Japanese newspapers—still a highly influential form of mass media—while also clarifying key issues latent therein. In order to understand what may be disappearing from people's lives, and what is required to realise a safe, humane and prosperous new daily life, this study uses the information gathered to grasp the current situation and flow of public opinion; it then reexamines key issues in terms of home economics. Finally, this study takes up the role and necessity of *future proofing* which, as the IFHE describes it in its *Position Statement—Home Economics in the 21st Century* (IFHE, 2008, n.p.), is the “process of trying to anticipate future developments, so that action can be taken to minimise possible negative consequences, and to seize opportunities.”

Methodology

Research Design

Newspaper content analysis was selected as the key methodology of this study. Within the major democracies, including Japan, leading newspapers are widely accepted as a medium that accurately conveys general social conditions. Even with the sudden Corona crisis, we found this approach to be reliable and effective. Indeed, newspaper content analysis is already being conducted at a scholarly level in order to understand not only social conditions under the pandemic but how various publics are receiving and internalising information about said social conditions (Amann et al., 2021).

Data collection

Four representative newspapers in Japan, Mainichi, Asahi, Yomiuri and Nikkei (morning and evening editions) were referenced (see Table 1).

Table 1 Referenced newspapers

Newspaper	URL
Asahi News Paper digital	https://www.asahi.com/
Mainichi News Paper digital	https://www.mainichi.com
Nikkei News Paper digital	https://www.nikkei.com
Yomiuri News Paper digital	https://www.yomiuri.co.jp/

Keyword searches of articles (excluding pieces based on personal opinion, such as editorials) were conducted; from the articles selected and sampled, an attempt was made to grasp and understand actual living conditions under the new normal.

The target periods (time frames) for newspaper analysis were: Articles published between March 1 and July 15, 2020 (the so-called first wave of COVID-19 in Japan) and between July 16 and September 15, 2020 (the second wave).

In this survey, the period around the time of the first wave, that is, March 1 to July 15, 2020, when the greatest emergency response was required and information was changing quickly and frequently, will be called the *first half*. The period around the time of the second wave, from July 16 to September 15, 2020, will be called the *second half*.

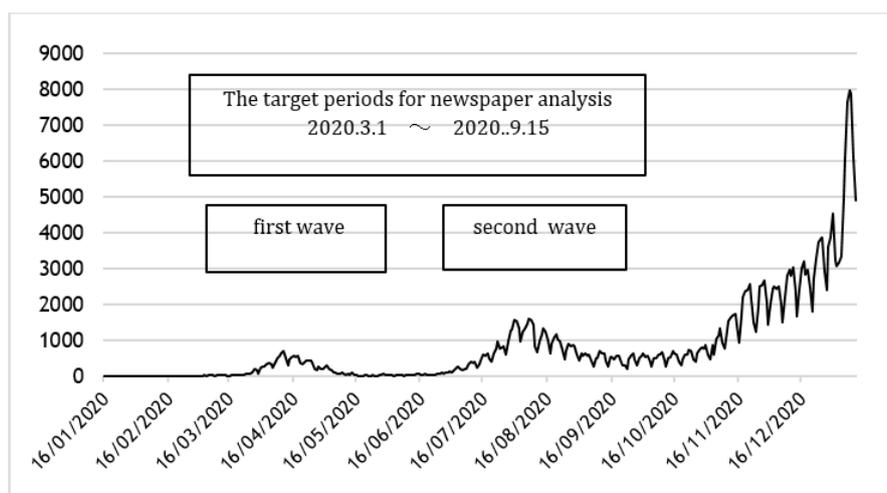


Figure 1 Changes in the number of infected persons

Procedures

Determining main keyword

In deciding on the main keyword for this study, terms which relate to conditions of life under the Corona pandemic—where a new conventional wisdom and adjustments to a new state of affairs are required—were selected. These phrases are *new daily life*, *new common sense*, and *new normal*, and together with *new lifestyle* were included in the preliminary search, or investigation (total number of instances:1,874; period of publication: March 1 -30, 2020).

The term *new lifestyle* was coined by the government in response to the spread of new coronavirus infections, and refers to behavioural changes the authorities have sought to promote such as avoiding crowded (dense) places, wearing masks, and washing hands. In addition, the terms *new common sense* and *new normal*, originally introduced at the time of the Lehman Shock to describe the shift in the global economic system, have been adopted by government and media to describe current social imperatives and policy directions. Lastly, the term *new daily life* has come to be used more comprehensively to describe possible new ways of living post-pandemic.

The search results for the five newspapers are shown in Figure 2. As can be seen, there were significant differences in rates of occurrences for each keyword among the five sources. Although the keyword with the quantitatively highest rate of occurrence across all sources was *new lifestyle*, we decided to use *new (novel) daily life* as our main key term as it showed the least deviation (was most non-biased) across the five sources. As mentioned above, *new lifestyle* has often referred to specific daily rules (mask-wearing, avoiding crowds, handwashing, etc.) and so was deemed unlikely to point to the deeper issues we wish to clarify in this paper.

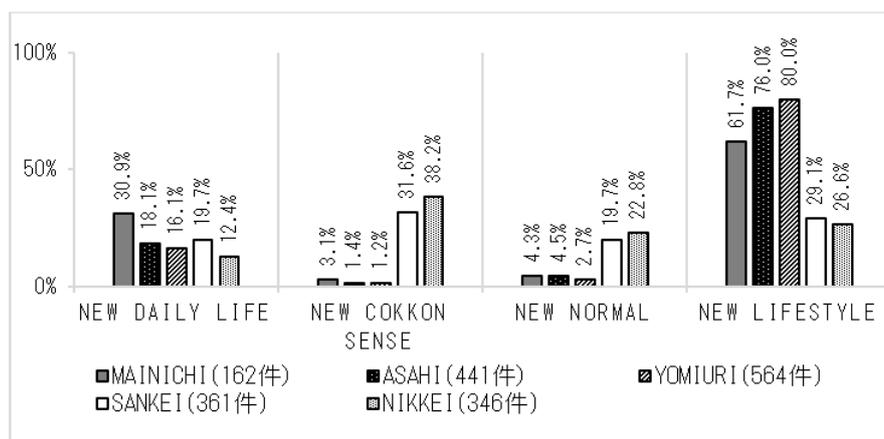


Figure 2 Main keyword candidate search results

Determining sub-keywords

Articles that produced a hit along *main keywords x each horizontal axis keyword* (or sub-keyword) were targeted and analysed (total number of instances: 2,918; period of publication: March 1st-June 30th), examining how each text that addressed Japan's *new daily life* under Corona. The selection of sub-keywords was based on the SDGs, that is: *no poverty*, *zero hunger*, *good health and wellbeing*, *decent work and economic growth*, *quality education*, and so on. In order to select the sub-keywords, we extracted key concepts that are important for or relate to human wellbeing—such as the valuing of unpaid work, care for the aged, childcare and domestic work, steady employment and good jobs, workers' rights, safe working conditions, social, economic and political inclusion, and access to public space for all—and then selected sub-keywords as derived from these concepts. The sub-keywords are delineated below in Figure 3.

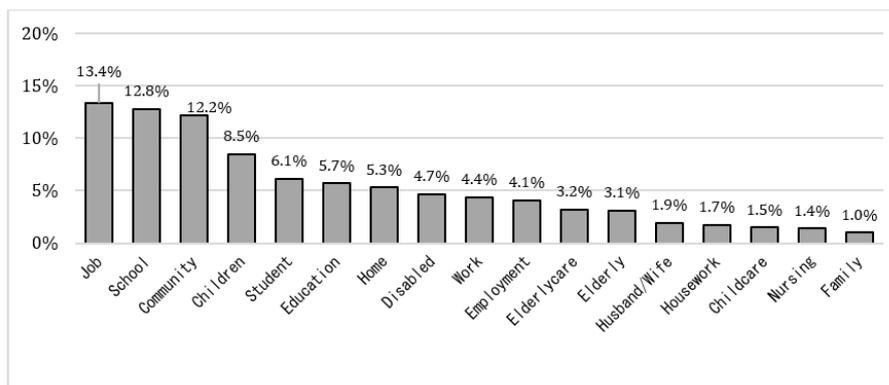


Figure 3 Sub-keyword Search Results

Examining article searches of the five newspapers for the 17 possible horizontal sub-keywords (as shown in Figure 3), *job*, *school*, *community* and *children* had the highest rates of occurrence, followed by *student*, *education* and *home*. Sub-keywords reflective of socially disadvantaged persons, as well as the care they require—for example, *elderly*, *disabled*, *elderly care* and *nursing*—had low rates of occurrence.

Next, the contents of newspaper articles containing each of the sub-keywords were checked. We read through the articles containing each sub-keyword and decided not to include in the analysis those articles whose thrust differed from the concerns and points we set out to understand in this paper. For example, while there was frequent use of the words *school* and *students*, this was largely done in the context of reviewing timetables and policies for opening and closing schools. Similarly, *community* was often addressed in the context of mapping the progression of the virus. In short, such content did not provide the required perspective on how the pandemic is fundamentally reshaping the daily lives and concerns of individuals, families, and communities. Lastly, articles that included the words *job* and *employment* usually discussed the pandemic, and post-pandemic life, from an economic efficiency perspective; thus, these terms too were ultimately rejected.

After careful scrutiny, for the sub-keywords used in this survey we selected *children*, *work*, and *home*, *family* and *housework* for the abovementioned reasons. For *home*, *family* and *housework* we decided to include *home*, *family*, *housework*, and *childcare* in the list of sub-keywords. Every article we analysed contained the main keyword plus at least one of these sub-keywords.

Analysis

The total number of the articles

The total number of hits based on searches using the main keyword *new daily life* were: first half time period, 148; second half period, 23.

Comparing the number of hits in the first half, which corresponds to the period of the first wave of the COVID-19 epidemic, with the second half, or the period corresponding to the second wave, we find the number of hits for the latter is remarkably small even though differences in the two research periods were taken into consideration.

These results are contrary to the hypothesis that the social situation and severity of challenges in daily life would have become more intense, complex, and diverse, and thus that the number and kind of articles we would find in the second half would correspond to this trend.

Articles on *Children* under the *new normal* or *new daily life*

The content of the articles can be broadly categorised as follows: Articles on *children's stress* and *protecting children in their daily lives* during the pandemic; articles written to *support and encourage children to adjust to the pandemic*; articles that address *changes in children themselves*, *work-life balance*, *alienation*, and *diversity*; and a category simply called *others* (see Table 2).

There were three articles each on *children's stress* for the first and second halves. The content included these issues: changes in the rhythm of life with schools closed; stress due to the increase in safety rules; and the inability of children to engage in previously routine practices such as club activities; lack of exercise.

In the first half, there were 19 articles on *protecting children's daily lives*—the most frequently occurring topic regarding children—while there were five in the second half. Breaking these numbers down further, in the first half 12 articles were related to schools, that is, on protecting children's basic right to learn and the need to pay close attention to safety-preserving measures such as staggered school attendance and avoidance of the *Three Densities*, and on why common school practices such as providing lunches and having students take care of animals are essential for children's development and should be continued. Five articles were related to school closures due to the emergency declaration.

Table 2 Articles on *Children under the new normal or new daily life*

Content	Period	First Half	Second Half
Children's stress		3	3
Protecting children in their daily lives		19	5
• Issues related to school activities		(7)	(2)
• Issues related to school closures		(5)	(0)
• Issues other than school		(7)	(3)
Supporting and encouraging children to adjust to the pandemic		10	1
• Relating to grandparents		(3)	(1)
Changes in children themselves		1	1
Work-life balance		4	0
Alienation		3	1
Diversity		1	0
Other topics		6	2
Totals		47	13

Seven of these articles were related to places and relationships other than school: libraries, parks, ensuring sound public transportation, and making outdoor play an integral part of children's daily lives.

The second most common type of article focused on *helping children adjust to the pandemic* with ten articles in the first half, one in the second half. Of these, articles on children's connection to grandparents were found three times in the first half and once in the second half. The content included references to: online educational materials, delivering school cheerleading songs, motivating children, gifts from grandparents, and interaction in general.

There was one article in each half about *changes in children themselves*. One described how children had begun to cook for themselves while school was closed, and another addressed how remote learning is being practiced in the countryside, a development which seems to be having a positive impact on both the children and larger communities involved.

There were four articles on *work-life balance*, which took up: how it has become easier to balance work and family life now that both spouses are teleworking; the considerable damage school closures have done to housework and employment; and the increased burden that remote work places on women. There were three articles on *marginalisation*, which addressed: bullying of children who had moved from high COVID-19-infected areas to new, less impacted places; harassment of cars with out-of-prefecture license plates (over fears occupants might be bringing in the virus); and discrimination against families of medical professionals. One of the *diversity* articles was about a woman who divorced due to accumulated effects from the Coronavirus.

As can be seen from the above, many of the articles on children under the new normal showcase families making efforts to adapt to the sudden changes to daily life—changes such as the closure of schools, parks, and public facilities, as well as restrictions on movement—to protect children’s rights and to support their development, even under the current situation with various limitations. It is clear that, as a result of the pandemic, the importance and role of the family has increased even further. At the same time, there are indications that the enhanced degree to which children’s wellbeing is influenced by their families or family situations may now pose even greater risks than before.

Articles on work under the new normal or new daily life

The total number of articles on *work* under the new normal is 24. Interestingly, there were hits only in the first half, during the first wave; for the second wave there are no cases (see Table 3).

The most frequently found theme was *Questioning the future direction of social change under the new normal*, with 19 hits. Most of these articles were about the importance of further social reform from a macro perspective, that is, in terms of: economic policy, the need to stimulate demand, and the need to reform the way we work by using IT. However, these articles did not mention specific details regarding how to conduct such reforms.

Table 3 Articles on work under the new normal or new daily life

Content	Period	First Half	Second Half
Questioning the future direction of social change under the new normal		19	0
Proposals and expectations for new ways of working		5	0
• The new normal is not a return to the (pre-Corona) status quo.		(2)	
• (including specific proposals)		(3)	
Total		24	0

Among them, there were some pieces suggesting that a new normal does not involve returning to a previous lifestyle, but rather moving toward a different kind of society that embraces newly created values; however, the number of such cases was exceedingly small, at just two. There were also three articles that addressed specific proposals on issues such as telework, promotion of the digitalisation of society, and possibly shifting from an extremely centralised national structure, where economic and political life, and so on, is over-concentrated in Tokyo, to a more decentralised arrangement.

Other articles in this category equated *new daily life* with the process of suppressing the Corona pandemic and returning to the previous way of life. The gist of these particular articles was the need to return to “normal” economic levels.

Another category is *new ways of working*, or *looking forward to new ways of working* from workers’ perspectives. Here there were five articles, the themes addressed being: advantages of remote, online, and telecommuting work, changes in the means of commuting, and proposals to incorporate agriculture into daily life.

In contrast, there were no articles that looked at the harsh realities many working Japanese face, such as disparate treatment between regular and non-regular employees, nor any pieces that addressed social marginalisation and discrimination in general.

Articles on home, family and housework under the new normal or new daily life

The total number of articles on *home, family and housework* under the *new daily life* was 32 for the first half and 9 for the second. The trend regarding numbers of articles for each half was thus the same as with other topics.

In terms of content, the most frequently found articles looked at *specific activities under the new daily life*, focusing on changes occurring in daily lifestyles under the new normal. There were 16 such articles in the first half, 3 in the second (see Table 4).

Here, a more diverse picture of daily life is found: family outings, shopping, new connections with local vendors, the state of the local hair salon, the reopening of an amusement park, and so on.

Table 4 Articles on *home, family and housework* under the *new normal* or *new daily life*

Content	Period	First Half	Second Half
Suggestions and expectations for life under the new normal		4	3
Specific activities under the new normal		16	3
Dementia		1	0
Alienation/isolation		3	0
Others		8	0
Total		32	9

There were *suggestions and expectations for a new way of life under the new normal* that addressed what should be done and how society might reform itself (found in four and three cases, respectively). In these pieces, we find a point of view that values differences among individuals, close community cooperation, and which expresses hope for progressive change in work and lifestyle, and gender roles in the home, so that both men and women can bring their specific abilities into active social engagement for the benefit of all.

Among all the articles reviewed in this study, there was one about a family with a parent who has dementia. The piece describes how people with dementia and their families are struggling to cope with the new normal, where the sudden change in the surrounding environment has been particularly distressful. There were also three articles about alienation and isolation. Issues discussed include the use of force to compel “correct” behaviour in the wake of the government declaring a state of emergency; discrimination against medical personnel and their families; and school bullying (the piece describes how the child of a family which moved in from an outside prefecture was called *Corona Prefecture* at school).

For the category of *other* there were articles that touch upon household chores and home life (eight cases in the first half, two in the second), but these were not the main themes of the articles.

As mentioned above, the content of the articles relating to family life did showcase efforts and creative means by Japanese to cope with being suddenly forced to live with self-restraint while facing geographical restrictions on movement. And although small in number, we do see articles which address social problems such as the hardships of families caring for elderly members, prejudice towards medical professionals, and bullying and discrimination against people who have moved from areas where the infection has spread.

Discussion

Period covered in this study: The first and second waves of the pandemic

It was assumed that during the second wave, when the situation became even more serious, and an increase in the numbers of infected people could be grasped statistically, we’d also find an increase in the number of relevant articles. However, the evidence does not show this to be the case. Indeed, the fact that there are only a few articles referring to the new normal in the second wave seems significant. What this might be telling us?

The first and second halves of this survey differ in important ways. During the former, when Japan was suddenly at the mercy of a poorly understood pandemic, people were nonetheless getting a clear sense of the new normal through the fresh experiences of remote work and staying at home, even if they were being compelled to adapt to change.

During the latter period, however, when the second wave hit, these experiences that once felt fresh became routine, while many found themselves dealing with new and different challenges, one after another. This led many Japanese to become fully occupied with how to get through the present, how to cope with a new daily life. But this approach, pushed along by major media, is limiting and perhaps

even shortsighted. In becoming narrowly concerned with their own plights, many have lost sight of the need to join with others to actively and cooperatively build the new normal that is rapidly descending upon us.

All this suggests that addressing how we overcome this crisis is the key to making the new normal—which will continue to pose challenges to us even after the pandemic has waned—as desirable as possible. We cannot live just by scrambling to address this or that problem of daily life as it arises. Discussion of what is essential for a desirable new normal should begin as soon as possible, as part of the process of overcoming the crisis, and not be put off until conditions become stabilised. In this regard, future proofing has a significant role to play.

Mass media, as seen through newspaper content, does not reflect the actual changes caused by COVID-19 in the daily life of Japanese people

When we line up newspaper content against figures for key social indicators of this period—for example, indicators for the economy, unemployment, suicide, physical abuse and domestic violence, and so on, we find there are no corresponding references in the newspaper articles reviewed. Nor did we find discussion on overcoming the challenges of inequality, disparity, and marginalisation—long deep-rooted problems in Japanese society—in order to create a new normal that guarantees safety, fairness, opportunity, rights, and inclusion. In many articles, the discussion is simply about going back to the way of life that existed pre-Corona. Thus, based on our research, the actual change now occurring and deepest challenges Japanese people will face are not being reflected in this key part of the mass media.

Necessity of developing arguments that consider the circumstances and diversity among people

As mentioned earlier, the newspaper articles analysed in this study were very limited in their focus on diversity. As such, they give the false impression that it is possible and good for Japanese to adapt by moving simultaneously, in the same direction, all towards a similar goal. However, social injustices such as poverty or inequality have been exacerbated by COVID-19.

For instance, in Japan, the higher the education level, the higher the annual income, and the larger the company, more likely people in cities over those in rural areas, as well as regular full-time employees over irregular workers, adopting new work practices such as remotely working from home under the pandemic. There is also a significant gap between urban and rural children in the use of online education (Cabinet Office, 2020).

Making the suggestion of moving uniformly towards some single vision of a new normal is all the more unreasonable. Japan's current situation surely calls for a diverse and multifaceted approach.

Encourage deeper understanding to promote people's wellbeing

To summarise the content of all articles reviewed, the majority address macro social trends such as government policy or economic recovery, despite the fact that the newspaper search taken in this study was for items focusing on various aspects of life under the new normal.

The articles repeatedly point out a significant gap in the level of adaptation to the new normal between companies with and without essential remote work infrastructure (e.g., digitisation). While the same issue applies to ordinary and non-corporate workers, none of the articles addressed the matter from this perspective.

Simply put, some families have access to internet infrastructure necessary for remote work while others do not. Naturally, this difference creates an opportunity gap between the two groups as they try to adapt to the new normal.

An increase in remote work should be a mostly positive development, enabling people to share household chores with family members, choose their most productive environment, and work from home while staying connected to their workplaces. Here, Japan's media should play a more constructive role, disseminating information from the perspective of average working families.

Strengthen services to support households, families and communities

The main stage upon which the new normal will play out is the home. Japan's socio-economic structure is such that families have long been expected to shoulder responsibility—all or in part—for housework, childcare, care for the elderly, and many other demanding tasks, and this burden looks to grow heavier in the future with the addition of remote work, online education, and the like. Wage and income disparities remain a major problem, and so we must make sure that the government does not use a weakening economic base as an excuse to let stagnate support for key social services such as childcare and nursing care.

The newspaper articles show local institutions, which provide the necessary support to individuals, are now largely dysfunctional; community associations, NPOs, children's cafeterias, and school lunches—things people regularly rely on—are either not operating or are closed. Home economics can offer creative solutions that buttress the individual, family, and community, so that families are not isolated but instead connected to local networks of assistance that lessen their burdens.

Through analysis of all of the articles gathered (which, admittedly, are limited in number), this study was able to provide some guidance on how the challenges brought on by the pandemic might be overcome, as well as what kind of more positive, inclusive new normal the Japanese people might move toward. The family, in all its various meanings, will become increasingly important for the wellbeing of the individual. The role of the community in the form of a larger family will also become increasingly important. Society must protect each people's rights and livelihood. The chronic crises of poverty, inequality, and marginalisation that have only been exacerbated can be overcome by a new normal that moves in the direction of promoting the principles of the UN's SDGs: safety, justice, expansion of opportunities, rights guarantees, and inclusion (Figure 4).

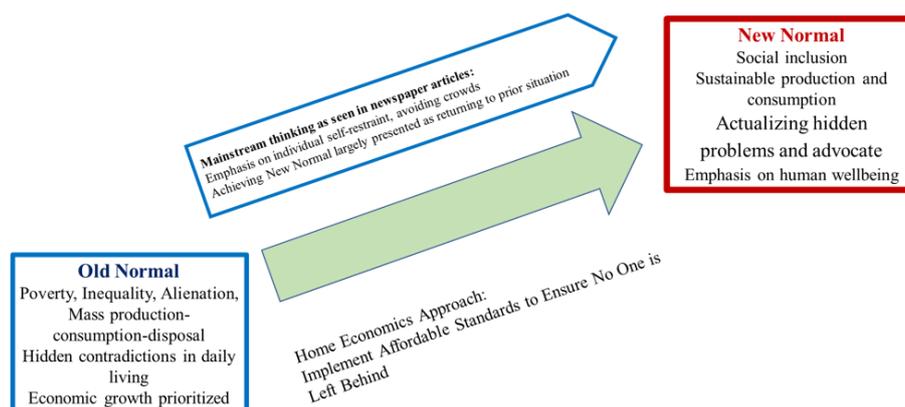


Figure 4 Getting to the New Normal: A Home Economics Approach

Conclusion

Major newspapers are widely recognised to have a legitimate role in the conveying of factual information and in helping readers understand the contexts in which events take place. However, as seen in this study, the press does not fully reflect changes occurring in ordinary people's lives, nor to present the perspectives of average citizens. Under such circumstances, it is difficult for individuals to participate in society proactively. It becomes essential for experts to provide reliable information. Here, home economics has a key role to play

Further, as mentioned above, there is a strong need for sound roadmaps for life under Corona based on careful observation of what is occurring in people's lives. Put another way, it is crucial to present Affordable Standards, from the perspective of experts, that describe what is necessary for people to live safe, secure and prosperous lives going forward. This process should involve incorporating the SDG principle of "leave no one behind."

Indeed, we home economics specialists have a key role to play in helping to guide society. We have the practical know-how to gauge the real-life problems and questions people have under the new normal, and to develop and explain effectively, as practitioners of an academic discipline, possible

paths to a new social life *resistant to infectious diseases* that don't constrict the individual, but provide greater freedoms and opportunities for meaningful work and community engagement.

In conclusion, this study has its limitations; it focuses rather narrowly on one medium, major newspapers, and then only for a 6-month period. Further research—studies that address other mediums and/or developments after September 2020—are certainly called for.

Author biographies

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Educating rural households on post-COVID-19 behaviour: A Nigerian Home Economics advocacy

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Abstract

This paper examined the perspectives of Home Economics in educating rural households on the post-COVID-19 behavioural change in Nigeria. COVID-19 pandemic has had a great negative impact on household's especially rural households that have been suffering from poverty, food insecurity, and poor sanitary condition. The onset of this pandemic calls for the readjustment of lifestyles for survival. Educating rural households on post-COVID-19 behavioural change through Home Economics extension advocacy is one way of improving rural livelihoods. The paper outlined the likely future impacts of COVID-19 on rural households. The paper paid special attention to the different strategies that household members in rural communities can apply to daily life experiences with the easing of the lockdown after the pandemic arising from COVID-19. The paper also emphasises the situation of agriculture and food security as well as discussed the implications for rural households. It highlighted strategies for sustaining rural household livelihoods, maintaining food systems and protecting those with impaired vulnerable conditions. This paper also suggested likely household strategy for coping and adapting to the "new normal" and recommended three priorities needed to deal with rural household's lifestyles for post-COVID-19 sustenance.

KEYWORDS: COVID-19, RURAL HOUSEHOLDS, PERSPECTIVES, STRATEGIES, SUSTENANCE

Introduction

Advocacy for families living in rural communities in changing times (COVID-19 era) as a result of the pandemic will require new strategies. These families often can be referred to as rural communities in Nigeria. They may be residing within the environment and possess the potentials to exercise the primary roles in conserving and protecting the land, water, and forests where they habit.

As the building blocks of rural communities, the family is the nexus for the transfer of social and economic behaviour patterns, survival skills, and environmental values across generations. The family represents one of the major ways that human populations organise and adapt to meet goals and needs and communicate values in diverse environmental circumstances (Bubolz, 1991). Significantly, women's activities involving the socialisation of children in the space of the household provide an excellent opportunity for teaching environmental values, attitudes and behaviour to children (Steady,

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1993). As the building block of rural communities, the family is the nexus for the transfer of social and economic behaviour patterns, survival skills, and environmental values across generations. Examples of this transfer abound. Women in Tanzania learn from their grandmothers that trees bring rain, and that cutting large blocks of trees will have a deleterious effect on rainfall. Young girls in India learn to tend livestock from their maternal relatives. In Sudan, Ethiopia, Mozambique, and other countries undergoing long-term stress, indigenous knowledge of survival strategies of various family members are passed on through the generations. In Malawi, family members plant saplings at the death of a relative or friend, preserving and protecting indigenous species on sacred lands. Agricultural skills, conservation techniques, and many other forms of indigenous technical knowledge are handed down from one generation to the next.

Rural people have extensive knowledge about their environments, and about the sustainable use of marginal areas. However, many of these people are being squeezed by a number of interacting processes. Economic and political factors, such as the privatisation of common property resources and inappropriate land-use policies, can negatively impact rural people. Broad demographic changes, such as population growth, resettlement, migration, urbanisation, and movements of refugees, can also impact rural communities. These pressures frequently change the land-person ratio in an area, and place additional pressure on the resource base. People are sometimes forced into shorter-term land-use practices that are not sustainable.

Additionally, newcomers may bring with them land-use practices from their area of origin that are not necessarily to the new environment in which they have resettled.

Rural households often face difficult trade-offs in decision-making about natural resources, as they seek to balance the conflicting demands of managing the surrounding environment with the family's economic survival. For example, privatisation of land may reduce the amount of land that is available to a family for grazing. A decision must be made whether to maintain the same number of animals in poor condition in the smaller area, or to destock the herd, which may result in a loss of household income, savings, security, and status. To support households in facing these trade-offs, innovative new technologies and investments must be generated so as to relieve pressure on the natural resource base. Under conditions of food insecurity in low-income countries, new technologies for crop and livestock management cannot be chosen exclusively for their compatibility with the environment. They must also allow for higher incomes for the rural poor (FAO, 1993).

There may also be difficult environmental trade-offs in balancing industrial and urban growth with sustaining the natural resource endowments available to households in rural areas. There may be increased demands for water, timber, minerals and other raw materials to support national economic growth as well as for rural small and cottage industries. Urbanisation and industrialisation may contribute to deforestation through increased demand for timber for construction or charcoal, to watershed degradation downstream through the deposition of urban and industrial wastes, and to pollution through the concentration of wastes and pollutants. The natural resources available to rural households may be seriously affected by economic growth. Understanding the environmental links between urban and rural areas is an important element in reorienting Home Economics curricula to meet local people's changing educational and information needs.

The National Centre for Disease Control (NCDC) 2019, in collaboration with the National Reference Laboratory, Abuja, Nigeria was equipped with technical and human resources required to handle COVID-19 pandemic in order to ensure the general public stay updated about the global prevention and management strategies against the pandemic. The cosmopolitan nature of Nigeria made it prone to fast spread of COVID-19 virus, hence the high demand for public health measures and advocacy. These emphasize the need to forestall the adherence of COVID-19 protocols by having public health measures and educating rural households on possible coping strategies in Nigeria.

Objectives

The major objectives of this paper are to identify:

- Post-COVID-19 behavioural change among families in Nigeria.
- The challenges of the post-COVID-19 behavioural change among families.
- Ways of educating rural homemakers on the behavioural change on post-COVID-19,

- Examine the place of Home Economics in Nigeria on behavioural change on post-COVID-19 in families.

Home Economics perspective for advocacy

Home Economics is a field of study and a profession situated in the human sciences. It is also known as Family & Consumer Sciences or Human Ecology. It follows an integrated approach and draws from a disciplinary diversity which might include, among others: Food, Nutrition, Health, Textiles and Clothing, Shelter and Housing, Consumer Science, Household Management, Design and Technology, Food Science and Hospitality, Human Development and Family Studies, Education and Community Services. Home Economics brings the focus of households as building blocks of sustainable societies. Addressing complex, interrelated human and environmental problems,

Home Economics aims to achieve optimal and sustainable living conditions for individuals, families and their communities while acknowledging their global interdependence.

Home Economics as a course is primarily concerned with improving the life of individuals and families (Okeke et al., 2011). The family is currently facing a lot of challenges such as: economic lockdown as a result of the Coronavirus pandemic, loss of jobs, economic hardship, poverty, and hyperinflation, and religious clashes (e.g., Boko Haram, and farmer herdsmen clashes). It is, therefore, important that household members be educated on what to expect and how to live life after COVID-19 in the *new normal*.

Challenges of rural households in Nigeria in the face of the pandemic

1. Global health problems as a result of the coronavirus pandemic posit a huge challenge for households whose members are affected; it has also deprived households of economic and social resources and impeded development (WHO, 2020).
2. There has been a decrease in life expectancy and an increase in some of the common killers associated with child and maternal mortality.
3. Vulnerable groups, such as rural women and the elderly, face multi-faceted health issues. They often lack health education, sanitation and hygiene facilities and are exposed to the COVID-19 pandemic.

Strategies for educating rural households in Nigeria on life after COVID-19: A Home Economics perspective

1. Home Economics Education addresses the inter-linkages between food production and food consumption by promoting sustainable production and consumption patterns for more sustainable diets-the key content of Sustainable Development Goal 12. This includes addressing the double burden of malnutrition, as evident in the alarming prevalence of overweight and obesity in children and adults, resulting in huge public health costs.
2. There is an urgent need to teach pre-school and school children and adolescents and their parents and other caregivers about food preparation and healthy eating patterns, recognising that lifestyles are changing and that this information and advice need to be based on the everyday realities of people.
3. Home Economists are conducting research and projects around the world to reduce hunger and prevent malnutrition.
4. Home Economics professionals are educating especially women in sustainable food production and alternative ways of income generation which benefits household food and nutrition security.
5. Training is provided on healthy nutrition, efficient cooking and the need to send children to school.
6. Home Economist professionals are further working on research and education programmes for financial literacy to avoid that families become indebted.

7. They also provide counselling for families to find ways out of poverty and actively support those families that face social exclusion.
8. At a policy level, Home Economics recommends integrating the subject in curricula and making this education available to both sexes, to recognise and value unpaid work; to procure locally sourced and sustainably produced food, both in the private and institutional household.
9. Home Economics as a profession aims at overcoming gender stereotypes with regard to household-related tasks, encouraging all members to engage in food procurement and food preparation equally -promoting these as modern, positive, productive tasks that enhance everyone's wellbeing.
10. Home Economics aims to improve wellbeing and increase the quality of life for members of private and institutional households.
11. Health-related Home Economics research contributes to achieving good health from many angles.
12. Health-related research on Food Security and Nutrition sets the focus on the relation between health and malnutrition, food allergies, the influence of healthy nutrition to longevity or healthy diets.

Household Technology research contributes to the development of secure household devices and clean cook stoves; helping to reduce sickness and death through toxic smoke. Research in hygiene supports private and institutional households (e.g., hospitals, care homes) to avoid infections and improve cleaning processes and food processing with specific attention to vulnerable groups like children, elder people or hospitalised persons. Research in Textiles and Household technology includes textiles used in kitchens, bathrooms, toilets and for medical treatments and develops special textiles and washing processes, aiming to reduce infections through contaminated textiles.

Finally, research in Home Economics Education helps to improve methods for capacity building and to educate household members better and impart knowledge on hygiene behaviour. Practical Home Economics Education plays an important role in improving health and avoiding infectious diseases. Trained in basic Home Economics, heads of households can avoid health risks by respecting basic hygienic behaviour (handwashing, food processing, cleaning) and by learning about safe alternatives to hazardous pesticides or unhealthy cooking stoves. In institutional households, Home Economics professionals ensure the health and wellbeing of people who are not able to take care of themselves. Home Economists follow a balanced approach to increase wellbeing for all household members, taking into account health-related aspects and the psychological and social aspects. Achieve Gender Equality and Empower all Women and Girls Gender equality is a fundamental human right and a necessary foundation for a peaceful, prosperous and sustainable world. Gender equality and empowerment of women and girls start at home. Gender equality in education or employment can only be achieved if behaviour and values are nurtured and shared among household members and then confidently pursued beyond. From a Home Economics perspective, the relationship between household members, the division of work, allocation of resources, decision-making and roles attributed to women are essential factors to reach gender equality. This also means including men and their changing identities into research and action. The vast majority of our field's addressees are women, Home Economists; therefore, they advocate for gender equality in different areas: Unpaid and Domestic Work -Relieve Workload of Women. Home Economics research on household management shows that globally, the major part of unpaid work at home is done by women and includes care for other household members. If women participate in paid work, they are overrepresented in low paid work and receive less than men. Nigerian Home Economists demand thinking of gender roles to relieve women from household and care work, including more active involvement of men and other household members and government support structures to enable this.

Conclusion

The many challenges faced by the rural households in Nigeria due to the coronavirus pandemic have led to poverty, food insecurity, unemployment, herdsman farmer crises, and economic lockdown. This therefore posits the need for adequate advocacy by Home Economics in Nigeria whose aim is to

improve quality of everyday life of individuals that happens to be household members, in order to provide specific strategy towards; understanding the new normal which is (life after COVID-19) and easing the suffering caused by this pandemic; thereby making life easy and comfortable for the rural households in Nigeria after the pandemic.

Recommendation

This paper recommends:

- That Home Economist Extension in Nigeria be reoriented; Home Economics Extension and training programs in Nigeria should be problem-oriented and not be constrained by conventional disciplinary boundaries.
- That rural household members in Nigeria should shape their actions towards more prudent care for environmental consequences.
- That Home Economics should redefine its role concerning rural households around the world, especially Nigeria.

Author biographies

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Patterns of physical activity and eating habits during COVID-19

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Abstract

The purpose of this research was to examine the immediate impacts of quarantine restrictions on movement and dietary patterns in a small community in the southeastern United States. A sample of individuals (N = 209) completed an online survey indicating levels of physical activity and satisfaction with eating habits before and during the COVID-19 quarantine. Of those surveyed, 46.2% of adults indicated physical activity decreased during quarantine, while 53.3% indicated satisfaction with eating habits decreased. Despite these results, individuals did not indicate a desire to change current habits.

An important limitation of this study was a lack of distinction in study design between decreased levels of physical activity (PA) and increased sedentary behaviour (SB). An additional limitation was the design of survey questions to address behaviours affected by the unprecedented COVID-19 pandemic. Future research should include changes to study questions reflecting updated knowledge of COVID-19. This study demonstrated the immediate adverse effects of COVID-19 on habits and attitudes toward behaviour change. Providing participant educational infographics offering healthy lifestyle tips for behaviour change during the COVID-19 pandemic may be of benefit.

Introduction

An extensive amount of literature exists touting the benefits of engaging in moderate-to-vigorous physical activity (PA), limiting sedentary behaviour (SB), and eating a healthy diet for the prevention of chronic disease. While engaging in these habits is essential for health, the global coronavirus disease pandemic (COVID-19) and quarantine restrictions posed challenges for individuals to maintain healthy behaviours. As the virus spread globally, policies of home confinement and self-isolation were imposed to “flatten the curve,” but these restrictions also put individuals at increased risk of developing health problems independent of COVID-19 (Matrajt & Leung, 2020).

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Potential stress induced by quarantine restrictions, compounded by reduced PA and increased caloric intake, could adversely impact the health of individuals immediately and in the long-term. The United States Physical Activity Guidelines for Americans, 2nd edition, recommends that adults should regularly engage in moderate-to-vigorous PA to confer benefits to cardiometabolic health. Individuals should aim for a weekly goal of 150-300 total minutes of moderate intensity PA, 75-150 minutes of vigorous intensity PA, or an equivalent combination of durations and intensities (U.S. Department of Health and Human Services [HHS], 2018). COVID-19 quarantine restrictions potentially changed the time, location, and accessibility for individuals to engage in PA. Mandatory closures of health clubs, parks, and green spaces challenged individuals' efforts to meet recommended PA guidelines (Slater et al., 2020).

In addition to increasing PA, it is important to reduce the amount of time spent in SB. Several organisations, including the American Heart Association, American College of Sports Medicine, Centers for Disease Control and Prevention, and the National Heart, Lung, and Blood Institute have linked SB with a greater risk of all-cause morbidity and mortality (Centers for Disease Control and Prevention, 2019; Lavie et al., 2019; NIH & NHLBI, 2001; Reibe et al., 2018). Most health authorities agree that SB should be limited, but there is little guidance regarding the maximum amount of time individuals should spend in SB daily.

COVID-19 also posed challenges for maintaining a healthy diet. Supply chain disruptions and consumer stockpiling altered traditional eating patterns for individuals and families (Hobbs, 2020). The 2020-2025 Dietary Guidelines for Americans state that to reduce the risk of chronic disease, individuals should follow a healthy eating pattern across the lifespan. The Guidelines recommend shifting to healthier food and beverage choices while focusing on the variety of food consumed, nutrient density, and control of portion sizes (DHHS & U.S. Department of Agriculture, 2020). Under stressful conditions such as COVID-19, the quantity of food consumed tends to increase while the quality of food decreases, conflicting with the recommended dietary guidelines (Mattioli et al., 2020). In a study of how the COVID-19 quarantine affected mental health and eating behaviours, Almandoz et al. (2020) found that 72.8% of adults experienced increased anxiety, 83.6% of adults experienced increased depression, and 61.2% of adults engaged in "stress eating". The present study is consistent with these findings, as participants indicated decreased satisfaction with eating habits during quarantine.

Almost every aspect of daily life was impacted by quarantine restrictions: locations for work and school were changed, churches and community centres were closed, and individuals delayed appointments for routine health care services (Czeisler et al., 2020). The physiological and psychological consequences of the COVID-19 pandemic may not be fully understood for some time. The purpose of this study is to examine levels of PA and satisfaction with eating habits before and during the COVID-19 quarantine, and to assess whether individuals thought it was important to reduce levels of SB or to change eating habits in the midst of the current global health crisis.

Methods

Participants

Upon Institutional Review Board approval participants (N = 209) were selected from a sample of full-time employees of a state university in the southeastern United States. Participants ranged in age from 21 to 72 and were recruited from an employee pool of approximately 2,100 individuals. All recruitment and data collection were conducted virtually via email and using an online survey tool.

Materials

The instrument used in the present study was developed by the researcher to measure diet and physical activity habits and attitudes impacted by the unprecedented COVID-19 global pandemic.

To gauge whether levels of PA were affected by the COVID-19 pandemic, participants were asked to rate their level of PA before and during the on-going quarantine. These responses were scored on a scale of 0 to 10, with 0 being completely sedentary and 10 being extremely physically active. Participants were asked to rate on a scale of 0 to 10 how important it was for them to reduce their current level of sedentary behaviour, with 0 being not at all important and 10 being extremely important.

Assessment of individuals' satisfaction with eating habits was similarly structured. Participants were asked to rate, on a scale of 0 to 10, satisfaction with their personal eating habits before and during quarantine, with 0 being completely dissatisfied and 10 being extremely satisfied. Participants were also asked to rate on a scale of 0 to 10 how important it was for them to change their current eating habits, considering whether dietary patterns had changed during quarantine. Included in the survey were four demographic questions: height, weight, gender, and age, as well as an assessment of change in behaviour related to work habits.

Statistical analysis

Upon data cleaning using a priori criteria to examine missingness and completeness of survey data, a descriptive analysis was conducted to examine the characteristics of the sample. Paired sample *t*-tests were conducted to determine if physical activity scores or scores on satisfaction with eating habits had changed from pre-COVID-19 levels. Statistical significance was set at $p < .05$.

Results

Participant characteristics

A total of 209 adults completed the survey, and had a mean age of 48.43 (12.00) (see Table 1 for participant characteristics).

Table 1 Participant Characteristics (N = 209)

Characteristics	%
Sex, female	
• Female	83
Occupation	
• Faculty	38.3
• Staff	42.2
• Administration	19.4

Physical activity before and during COVID-19 quarantine

A paired samples *t*-test was conducted comparing scores on activity at two different times: before and during quarantine. Scores on activity significantly decreased during quarantine compared to pre-COVID-19 quarantine $t(193) = 2.60$, $p = .01$. (see Table 2).

Satisfaction with eating habits before and during COVID-19 quarantine

A paired sample *t*-test was conducted comparing satisfaction with eating habits at two different times: before and during quarantine. Satisfaction with eating habits decreased significantly when comparing during quarantine to pre-COVID-19 quarantine $t(194) = 2.62$, $p = .009$ (see Table 2).

Table 2 Levels of Physical Activity and Satisfaction with Eating Habits Before and During Quarantine (M ± SD)

	Before Quarantine	During Quarantine
Levels of Physical Activity	5.5 ± 2.2	5.0 ± 2.7*
Satisfaction with Eating Habits	6.1 ± 2.3	5.5 ± 2.6*

Note: * = $p < .05$

Discussion

The purpose of this study was to assess changes in levels of PA and satisfaction with eating habits within a small community of working professionals before and during the COVID-19 quarantine, and to determine whether individuals thought it was important to change these behaviours. The COVID-19 quarantine had a negative impact on health, as evidenced by reduced levels of PA and reduced satisfaction with eating habits compared to pre-quarantine measurements.

This is consistent with the findings of Moore et al. (2020), which demonstrated that Canadian children and youth experienced reduced levels of PA, reduced time spent in outdoor play, and increased time spent in SB during the COVID-19 quarantine. There was a decrease in PA in this sample, and participants indicated only a moderate desire to reduce time spent in SB ($M = 7.65$, $SD = 2.48$).

Stressors that may have led to reduced levels of PA during quarantine included closure of gyms, recreation centres, parks, and green spaces (Slater et al., 2020). Duncan et al. (2020) found that reduced levels of PA were associated with increased levels of stress and anxiety during the COVID-19 quarantine. Many active individuals rely on group motivation offered by friends and trainers at the gym to adhere to PA behaviours, including participation in group fitness classes. Lack of socialisation due to imposed stay-at-home restrictions may have demotivated otherwise active, healthy adults. Time is often indicated as a reason why individuals do not engage in regular PA, with participants citing work, commuting, and household responsibilities as tying up one's schedule (Kendzierski & Johnson, 1993). Over half of the working professionals in the present study (56.3%) indicated that the number of days spent on campus decreased, suggesting the elimination of commute time as part of one's workday. However, a reduction in commute time did not lead to higher levels of PA, suggesting that individuals prioritised other activities in this newly found time.

Satisfaction with eating habits also decreased during the COVID-19 quarantine compared to before the quarantine. While there was a decrease in satisfaction in eating habits, participants did not indicate a strong desire to change current eating habits ($M = 6.33$, $SD = 3.06$).

There are also stressors that may have reduced levels of satisfaction with eating habits and led to the adoption of poorer eating behaviours. In response to quarantine-induced increases in stress and anxiety noted by Duncan et al. (2020), individuals may have engaged in eating to soothe stress. This may have included the incorporation of comfort foods containing higher levels of sugar, fat, and/or salt into their eating regimens (Mattioli et al., 2020). A survey conducted by the International Food Information Council indicated that 32% of American adults engaged in more snacking behaviours during COVID-19 than before the pandemic, and 47% of participants indicated increased consumption of sweets (International Food Information Council, 2020). In the present study, despite an indication of reduced satisfaction with eating habits, individuals were not motivated to change current eating habits, suggesting that comfort foods provided benefits beyond one's concern for physical health, such as preservation of mental health.

An important limitation of this study was a lack of distinction in study design between decreased levels of PA and increased SB. Physical activity is defined by whether an individual meets the minimum recommended PA guidelines of 150 minutes of moderate exercise per week. This is different from reducing time spent in SB. An individual may have a desire to reduce his or her SB while still failing to meet the recommended PA guidelines (U.S. HHS, 2018). Future projects could resolve this issue by making the distinction between PA and SB clearer to participants.

Another limitation to this study was the design of survey questions to address behaviours affected by the unprecedented COVID-19 pandemic. With this pilot study, the researcher worked toward validating the questionnaire; future research should include changes to study questions reflecting updated knowledge of COVID-19.

The long-term effects of COVID-19 quarantine restrictions on physical and mental health may not be known for some time. However, the lack of importance placed on prioritising physical health in the short-term suggests the need for behavioural interventions to increase levels of PA and to adopt healthier eating habits. Such interventions are difficult to develop when the reasons behind the lack of motivation to change are unclear. Researchers must also consider whether behaviours adopted during quarantine will reverse after the global crisis subsides, or if these trends will continue to have long-lasting, negative effects on physical health. When prioritising health parameters in the midst of a global pandemic, absent immediate concerns of acute illness, perhaps individuals and societies place greater importance on mental health at the expense of physical health (Cheval et al., 2020; Duncan et al., 2020). As the world's population continues to cope with the myriad negative consequences of the COVID-19 pandemic, health professionals can support individuals and families by encouraging the adoption of healthier behaviours, whether those behaviours impact physical health, mental health, or both. The accompanying infographic includes recommendations for maintaining and improving physical activity and eating habits as the COVID-19 pandemic continues to affect the day-to-day lives of individuals around the world.

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How flexible is paid work organised in the public sector before and during the COVID 19 pandemic? A qualitative study

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Abstract

Parents' workload is permanently high due to the combination of paid work and unpaid care work for the family. The workload accumulates in the middle phase of life when small children are taken care of and the professional career is being prepared at the same time. Possibilities to make paid work more flexible allows to reconcile paid work and unpaid care work. The study aims to answer the following questions: Before the pandemic, what possibilities had young mothers in the German public sector to making paid work more flexible? Has the organization of it changed during the pandemic? How do mothers assess the change? What kind of organization do they wish for future? The results of the study can help to initiate a family-friendly work organization and personnel policy. In a qualitative research design, five individual cases were analysed by a content analysis.

It was shown (with the exception of case B) that there were no or only limited options for flexibility before the pandemic. All mothers wished to have more possibilities to make their paid work more flexible after the pandemic for combining paid work and family. The positive effects of flexible paid work for mothers became clear across all cases. However case B gave hints to risks because of flexible paid work. Also it became clear how heterogeneous the working conditions in the public sector are. The pandemic-related flexibilization showed that many tasks can be done in the home office, some of them even more efficient. Some employees would expand their volume of paid work if they could work from home. Since these are individual case studies, the results cannot be generalized.

Parents workload is permanently high due to the combination of paid work and care work. The burden results from the fact that the two areas of life compete for time. The workload accumulates in the middle phase of life when small children are taken care of and the professional career is being established at the same time. This time of life is called rush hour of life. A family- and gender-sensitive personnel policy could reduce the rush hour of life. This study shows the status quo of work organization and personnel policy in the public sector in Germany.

KEYWORDS: FLEXIBILITY OF PAID WORK, HOME OFFICE, PUBLIC SECTOR, CARE WORK

Introduction

In Germany, parents' and especially mothers' workload is constantly high due to the combination of paid work, childcare and housework. It leads to stress because of a high demand on time (Bujard & Panova, 2016; Destatis, 2015; Institut für Demoskopie Allensbach, 2012; Jurczyk et al., 2009; Klünder & Meier-Gräwe, 2017; Leopold, 2018; Lewicki & Greiner-Zwarg, 2015; Panova et al., 2017). The task of reconciling family and paid work is stressful for parents of almost every social milieu (Henry-Huthmacher, 2008). The way work is organised in companies, especially due to presence culture and full-time employment, makes it difficult for parents to combine paid work and unpaid care work for the family (Bujard & Schwebel, 2015; Jurczyk et al., 2009; Possinger, 2013). The private sphere is structurally inferior to the commercial sphere, so that family concerns are pushed back. It is the

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parents' task to find a way of dealing with the conflicting conditions (Becker-Schmidt, 2010; Henry-Huthmacher, 2008; Krüger & Levy, 2000). A comparison of European countries showed that Sweden has a large portion of companies with a pronounced family-friendly attitude and family-friendly measures. Compared to other European countries, Germany is considered average regarding the two aforementioned aspects. The study also showed that politics had a direct or an indirect influence thereon in all six European countries examined (Seyda & Stettes, 2011).

The burden currently results from the fact that these two areas of life, paid work and unpaid care work for the family, compete with one another. It currently accumulates in the middle phase of life, when small children need to be looked after and at the same time the professional biography is being established. This phase of life is called *rush hour of life*. It is particularly intense between the ages of 27 and 35, but can be extended to the age range between 25 to 40. Around the age of 30 is a time where the most pressure is assumed. However, not the age of the parents but that of the children is crucial. The rush hour begins with the birth of the first child and decreases again when the youngest child has reached school age (BMFSFJ, 2006; Bujard & Panova, 2016). As the children get older, the parents regain personal free time (Bittman & Wajcman, 2000).

To this day, in Germany, it is mostly mothers who are primarily responsible for care work in addition to their paid work. The more egalitarian the couple divides paid and care work, the more fathers are affected by the rush hour too (Bujard & Panova, 2016; Dechant et al., 2014). Companies can relieve parents by making work more flexible in terms of space and time (Henry-Huthmacher, 2008). Parents must be able to organise their paid work autonomously to really be relieved (Jürgens, 2003).

Aim of the study and methodological approach

On March 16, 2020, guidelines to reduce social contacts were announced in Germany as a result of the COVID-19 pandemic (German Federal Government, 2020). For this reason, employees increasingly worked from home. Taking that as a starting point, the following research questions were explored in this study: What options for making paid work more flexible were available to young mothers in the public service before the pandemic? How much agency do they have to organise their paid work during the pandemic? How do the mothers evaluate the reorganisation? How do they want their paid work organised in the future?

The study followed a qualitative research design that allows for analysing the human being as an object of investigation in his context and his individuality (Lamnek & Krell, 2010). Qualitative social research aims to understand social reality through the eyes of the subjects (Garz, 2007). Five individual cases were analysed. Case studies are the description and investigation of a typical individual case in practice. Rules are to be derived from this example; however, individual case studies are not generally valid. Subsequent quantitative studies can falsify or verify the results. Case studies are predestined for qualitative research approaches because they can uncover connections between different areas of life and make it possible to analyse institutions. They reveal maxims for action that establish institutional structures (Mayring, 2016).

The data for the study was primarily collected through problem-centred interviews (Mayring, 2016). These took place between April 23rd and May 11th in 2020 and were conducted via internet-based videotelephony. In addition, questionnaires were used to collect socio-demographic data and background information for each case. Only mothers whose youngest child had not yet reached school age were interviewed because it was assumed that they had the main responsibility for care work. All participants worked in an organisation of the federal German public service.

The transcribed interviews were processed and examined based on the qualitative content analysis, according to Mayring (2016). The transcripts were examined line by line for passages that contributed to answering the previously research questions. The selected contents were abstracted into categories, so that a category system was created. A category definition was formulated for each category developed. This mainly inductively derived category system was created during a first run of 20 percent of the entire material. It was revised process-wise until a final system was available with which the entire material was coded. The main categories found were *The participants' need for flexibility*, *Advantages / disadvantages for participants through flexibility*, *Advantages / disadvantages for participants through presence in the office*, *Conditions for flexibility*, *Organization of work before and while the pandemic*, *Attitude of the organisation towards flexibility*, and *Advantages / disadvantages for the organisation through flexibility*.

The most important information of the individual cases were bundled in *case summaries*. In the *case structuring*, the cases were presented according to the categories. It is the basis for the *case interpretations*. Finally, the individual cases were compared with each other (Mayring, 2016).

Results

Case summaries

Case A

The participant is 33 years old and is employed in a local organisation of the public sector (full-time, collective bargaining, permanent, management position). Before the pandemic, she worked 39 hrs (office: 39 hrs, home office: 0 hrs), during the social contact restrictions she worked 39 hrs (office: 19.5 hrs, home office: 19.5 hrs). While working from home, she looks after the two-year-old child at the same.

Case B

The participant is 35 years old and is employed in an organisation of federal state level (part-time, collective bargaining, fixed-term, no management position). Before the pandemic, she worked 25 hrs (office: 10 hrs, home office: 15 hrs), during the social contact restrictions, she worked 20 hrs (office: 0 hrs, home office: 20 hrs). Her child is two years old and is looked after by someone else while she is working in the home office.

Case C

The participant is 43 years old and is employed in an organisation of state-level (full-time, civil servant, no management position). Before the pandemic, she worked 40 hrs (office: 40 hrs, home office: 0 hrs), during the contact restrictions, she worked 40 hrs (office: 20 hrs, home office: 20 hrs). The five-, ten- and twelve-year-old children are looked after by her while she is working in the home office.

Case D

The participant is 39 years old and is employed in a corporation under public law (part-time, collective bargaining, permanent, managerial position). Before the pandemic, she worked 29 hrs (office: 29 hrs, home office: 0 hrs), during the contact restrictions, she worked 15 hrs (office: 4 hrs, home office: 11 hrs). At home, she mainly works when the four-year-old child is sleeping or is being looked after by the grandmother on the phone. Sometimes she looks after her child by herself while working in the home office.

Case E

The participant is 33 years old and is employed in a local organisation (part-time, civil servant, no management position). Before the pandemic, she worked 20 hrs (office: 20 hrs, home office: 0 hrs), during the contact restrictions 12 hrs (office: 8 hrs, home office: 4 hrs). The two-year-old child will be looked after by someone else while she is working in the home office.

Case structuring

Case A

Organisation of paid work: Regular, what means *before* the pandemic, participant is given opportunities to make work more flexible in the form of flexible working hours from 7 a.m. to 6 p.m. with compulsory working hours from 8:30 a.m. to 12:30 p.m. and from 1.30 p.m. to 3 p.m., shortened on Fridays. Home office is not welcomed by superiors. Repeated applications by the participant to work from home were rejected on the basis that her reasons for wanting to work from home would be inadequate. The reasons are 1) not being able to adequately accomplish all daily tasks due to disruptions from colleagues and 2) reducing working hours due to the problem of reconciling work and family. These reasons were refused by her superiors citing the following arguments: 1) the fact that home office would be a novelty in the department and that 2) a workstation for working at home office would only be approved if more than one day a week were worked from home, which, however,

cannot be reconciled with the range of her tasks. Usually, she only works in the office, during the social contact restriction, she does not reduce her working hours, instead she chooses to work from home half of the time and looks after her child. In doing so, she can arrange her working hours flexibly to a limited extent, but must be reachable within the usual compulsory working hours. In her provisional home office she has access to her emails, but not to the organisations database. She procures the necessary work documents on the days she works in the office.

Home office—Productivity: The participant can only carry out some of her tasks in the home office. The ones which she can do from home can be fulfilled more reliably and efficiently than in the office, because there are no disruptions from colleagues. As a result, these tasks often remain unfinished while working in the office.

Home office—Advantages for the participant: In the context of her full-time employment, the participant calls it “a personal plus” (Participant comment A122) that she has less commute time and more time with her son.

Need for work flexibility by the participant: After the pandemic, she wishes to be allowed to work from home regularly one day a week. She suggests a division of tasks. Those tasks that can only be fulfilled in the office will be fulfilled there, those that can be fulfilled even more effectively in the home office will be fulfilled there. However, it must be ensured that someone is looked after the child so that she can work effectively and efficiently in the home office. In addition, she needs access to the organisation’s database since collecting the necessary documents in the office is time-consuming: “(...) but I need this access because otherwise it is double the work” (Participant comment A124f).

Home office—Advantages for the organisation: The organisation could benefit from allowing home office, as the participant can fulfil some of her tasks more reliably at home than in the office. In addition, the participant is thinking about reducing her working hours. The possibility to work from home one day a week has a major impact on this decision.

Case B

Organisation of paid work: Usually, the participant is allowed to organise her paid work herself in terms of place and time. In this way, she can determine her working hours independently, taking into account the lecture times and the students’ timetables. If there is nothing against it, she can offer her seminars on the dates she prefers. The student’s timetables require that she is at the university two days a week. She worked exclusively from home and only went to the office every two to three weeks to talk to colleagues and to get new work materials which also were sent to her private address sometimes. Before the pandemic, there was no online teaching and during the lecture-free time, She can also access some of the materials online. As her tasks allow to work from home, under normal circumstances, she mostly works in the home office. For family reasons, she lives relatively far away from the office. During the social contact restrictions, she does not reduce her working hours and works exclusively from home while her child is being cared for.

Home office—Productivity: The participant can complete all her tasks in the home office, although in some cases she notices quality losses compared to working in the office. She reports that personal contact with students and colleagues enriches and simplifies work. She also finds it annoying that there is less storage space available in the home office compared to the office.

Home office—Advantages and disadvantages for the participant: Usually, the large scope for work flexibility allows her to continue doing her job, although she moved away because of a changed family situation. Due to the pandemic, she saves herself the commute. The disadvantage for the participant, however, is that her few days in the office are always very intense due to the many meetings. She is so involved that she hardly has time to eat and she is exhausted in the evening.

Need for work flexibility by the participant: The participant has no further need for flexibility.

Home office—Advantage for the organisation: By giving the participant extensive opportunities to make work more flexible, the organisation can keep her as an employee despite her change of residence.

Case C

Organisation of paid work: Usually, the participant only works in the office. She can organise her paid work autonomously within the compulsory working hours from 6 a.m. to 8 p.m., but the colleagues must ensure that at least one person from the department can be contacted. She has to work at least two hours a day. Despite the great needs of the employees, only a few home office workplaces (with access to the organisation's network) were available before the pandemic. Further expansion was relatively slow, but due to the pandemic, it got sped up. During the social contact restrictions, she does not reduce her working hours but does half of them from her home office and looks after her children at the same time. In the home office, she is not connected to the organisation's network and can neither access its database nor her emails. She works offline with files on her company laptop.

Home office—Productivity: Her tasks sometimes require direct, discursive and creative interaction with colleagues, so that there are limits to spatial and temporal flexibility. As a result, she can fulfil her tasks only to a limited extent during the pandemic-indexed home office. Those tasks that can be fulfilled from home can be fulfilled even more efficiently than in the office because of fewer disruptions.

Home office—Advantages for the participant: The participant and her partner both work full-time and look after their three children. Everyday family life is characterised by a great need for organisation and diverse arrangements. Opportunities to make work more flexible relieve the couple, for example, by saving on commuting time. The regular flexibilization of working hours enables the participant to maintain her workload and to adapt it to private obligations.

Home office—Advantages for the participant: After the pandemic, the participant would like to fulfil her paid work mainly from the office. However, if family obligations require it and no business reasons speak against it, she wishes to be able to work from home but with access to the organisation's network and ensured childcare. In addition, she wishes to extend her working hours to 10 p.m., as she would like to start work again when the children are in bed.

Home office—Advantage for the organisation: The participant can fulfil some of her tasks more efficiently from home office than from office.

Case D

Organisation of paid work: The organisation offers flexible working hours from 6 a.m. to 7 p.m. with compulsory working hours. Regular work from the home office is only permitted in exceptional cases: "(...) that is clearly up to the board of directors" (Participant comment D63). Normally the participant works only in the office due to the lack of alternatives. During the social contact restrictions, she reduces her working hours and works mostly in the provisional home office during regular working hours. She works mainly when her child is sleeping or otherwise looked after it while working. In the home office, she can access the organisation's servers. If she is in the office during the pandemic, she provides herself with files for work at home, which she locks there for data protection reasons.

Home office—Productivity: She can fulfil her activities in the home office without restrictions: "(...) So I am not missing anything that would somehow (...) interrupt the workflow (...)" (Participant comment D139f). She just misses the usual meetings with the other team leaders, for which no virtual alternatives are scheduled.

Home office—Productivity: The participant saves on commuting time (2 hrs per day), which relieves her a lot in everyday life. That's why she now has a lot more time for sports. She expresses that she now has an increased quality of life.

Home office—Advantage for the organisation: The participant repeatedly expresses the desire to be allowed to work from home at least one day a week after the pandemic to save on commuting time. While working from home, her child must be cared for. She mainly wants to work in the office because she appreciates the exchange with colleagues very much.

Home office—Advantage for the organisation: The participant can work more productively at home because she is undisturbed: "(...) that is just plainly noticeable" (Participant comment D181).

Case E

Home office—Productivity: Normally, the participant can work during the flexible working hours from 7 a.m. to 7 p.m., whereby one person from the team must always be present. Spatial work flexibility is seen by superiors “as a personal, burdensome wish of an individual employee” (Participant E360f). There is a pronounced presence culture in the organisation. Even during the social contact restrictions, home office was only granted “(...) if it absolutely has to be, and only as long as it absolutely has to be and then everything goes back to normal” (Participant comment E356ff).

This participant works exclusively in the office. During the social contact restriction, she reduces her regular working hours in favour of childcare. A third of the working hours are done from home during the regular flexible working hours. She has the usual access to programs and many folders. She supplies herself with physical work documents on her days in the office. While she works in the home office, her child is looked after by someone else.

Home office—Productivity: The participant is positively surprised by how well she can work in the home office: “I haven’t missed a lot” (Participant comment E227).

Home office: Advantages for the participant: This participant reports that she can work more effectively at home than in the office because she is disturbed by her colleagues less. The time she saves by commuting relieves her in everyday family life. She also finds it advantageous to be able to provide childcare and paid employment at the same time for short periods if there is no other way (“So you didn’t have to leave everything on the spot”, (Participant comment E30) and to be able to switch quickly between care and paid work: “(...) you can get to work quickly and quickly leave again (...)” (Participant comment E26).

Need for work flexibility by the participant: Despite her positive experience in the home office, the participant has no need to work regularly from home post-pandemic. Her part-time job can be easily combined with her family obligations despite the presence culture. If she would increase her working hours, however, she would like to work partly from home. Nevertheless, she would like to keep the newly set up home office workstation even during the current working hours in order to be able to react flexibly if care and paid work obligations require it. She would also like to have a business telephone so that she no longer has to use her private telephone.

Home office—Advantage for the organisation: For important projects, the participant would like to work additional hours during the week and the weekends if she had a permanent home office workstation and if she was allowed to work from home outside of absolutely exceptional situations. She is currently refraining from doing this and is instead sticking to the regular working hours, as she suspects that flexibility is not desired by her superiors.

Case interpretations*Case A*

Before the pandemic, there were limits to make working time flexible due to the compulsory working hours, and there was no possibility to make it more flexible spatially. In the context of the pandemic, work has been made more flexible in terms of space and time. Post-pandemic, the mother would like to work from home one day a week. It is to be expected that she could fulfil her professional tasks more efficiently, and that she would have more quality time with her son.

Case B

Even before the pandemic, the participant was able to make her paid work largely flexible in terms of both space and time. Usually, the participant was rarely in the office. These days were intense because of a high workload and many appointments. Due to the social contact restrictions, her paid work has been made spatially completely flexible, which results in a loss of quality. She was relieved by the further flexibility, as well as by saving time on the commute. Because of the loss of quality, she still wants her regular work organisation back, with which she has already been able to combine family and work.

Case C

Before the pandemic, making paid work more flexible didn't have "the highest priority (...)" (Participant comment C325f) for superiors of the organisation. It was expanded in the context of the social contact restrictions. The already existing large scope of working time helps the participant to reconcile private and professional obligations. Because of her private obligations, she wishes for increased spatial and temporal flexibility post-pandemic. It is expected that she would be relieved because of the increase in efficiency in paid work.

Case D

Normally, the organisation adheres to a culture of presence. Due to the pandemic, the participant works from home, which is again in quality of life for her. There are clear relief effects. The participant works more efficiently and has more personal time so that she can do sports more often. Post-pandemic, she wishes to be allowed to work from home regularly at least one day a week.

Case E

Both regularly and during the pandemic, the work organisation was "(...) handled restrictively (...)" (Participant comment E355f) by superiors. In the context of her current low working hours, the participant has no need to make her paid work more flexible, although she mentions relief effects. Post-pandemic, she would like to be allowed regularly to organise her work flexibly in order to combine unforeseen care obligations with her paid work.

Case comparison

Although the positive effects of flexible paid work for the mothers became clear in all cases, it was also shown—with the exception of Case B—that there were no or only limited options for flexibility before the pandemic. Post-pandemic, all mothers would like to be able to make their paid work more flexible, either regularly or depending on the situation in daily life, in the context of the compatibility problem. In addition to the positive aspects mentioned, Case B also gives indications of stresses that can arise through the flexibilization of paid work.

It was also shown how heterogeneous the working conditions are in the organisations examined. Since these are individual case studies, the results cannot be generalised.

Summary and outlook

More flexible paid work can relieve parents in the rush hour of life and helps them to maintain a good work-life balance. The five analysed cases showed that for the public sector, there were no or only limited options for making paid work more flexible outside of the pandemic, although there were positive aspects for the organisation as well as positive aspects for the mothers. Some tasks can be done more efficiently in the home office than in the office, as the pandemic-related flexibility showed. Previous company patterns of work organisation should be questioned. They can be replaced by new ones that minimised the stress during the rush hour of life so that parents can provide care for others and themselves. Superiors act as change agents. They should receive practical suggestions for a family- and gender-sensitive personnel policy, be informed and trained. After all, they should act as good role models themselves, in order to break down inhibitions among employees. Politicians should provide the regulatory framework for family-friendly structures in companies. In addition, a high-quality and quantitatively broadly developed infrastructure for childcare should be offered.

Doing so would pave the way to an alternative economic understanding that also allows time for care work, which is too often discredited as unproductive. Home Economics and women's studies, however, have demonstrated the social and economic value of this work (Becker-Schmidt, 2010; Hausen, 2000; Ohrem et al., 2013).

Author biography

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Changing but not compromising home economics teacher education in context of COVID-19

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Abstract

The emergence of COVID-19 disrupted higher education programs including teacher education. At one Canadian university teacher educators responded to the changed circumstances according to two time periods. The initial period of shut-down characterized by an emergency pedagogy and a second period of working up close, but at a distance pedagogy.

The use of self-study as a methodological approach enabled the authors/participants to take an inquiry-based approach to their practice as teacher educators. Two critical incidents were identified as a way to focus on the dilemmas and decisions that were being made about content and pedagogy being employed.

Two home economics teacher educators engaged in collegial dialogue about their observations and shifting practices in their professional practice with teacher candidates since the onset of COVID-19. By focusing on reflective teaching practices as self-study methodology enables engagement with praxis and to recognition of changes in professional practice.

The use of self-study and critical incidents as methodological approaches offers ways to elicit thick descriptions of home economics as a practice orientated profession.

COVID-19 has created challenges in the delivery of professional programs especially in home economics teacher education. While development and engagement with online learning opens up possibilities it has concurrently offered challenges for young professionals developing a professional persona that is practice orientated.

KEYTERMS: COVID-19, PROFESSIONAL PRACTICE, TEACHER EDUCATION, SELF-STUDY, HOME ECONOMICS

Introduction

Vaines (1980) describes home economics as a mission orientated field where the focus is on knowing how and why to do something. This practical orientation means that it is not possible to separate theory from practice. Rather home economics is problem orientated, drawing on knowledge and implementing action to deal with practical, perennial problems (Bubolz & Sontag, 1988; McGregor, 2010; Vaines, 1980, 2004). Drawing young professionals into the field requires induction and socialisation that serves “to orient newcomers to the culture of the profession” (McGregor, 2011, p. 562). Working with pre-service teachers (PSTs) in a teacher education program with home economics as their specialisation requires spaces that provide opportunity “to understand the home economics profession” (McGregor, 2011, p. 562). Within teacher education there is an additional aspect of induction that of being an emerging teacher requiring teacher educators to support the professional persona of becoming a teacher of home economics.

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In the first quarter of 2020 the growing impact and associated concerns of COVID-19 precipitated a number of events including changes in the delivery of teacher education programs from face-to-face to online and distance education modes. While healthcare professionals were being called into action other social systems such as higher education were also drawn into state or national health officer's strategies for managing transmission. The initial responses were fast and typical of an emergency response typified by events and circumstances that are largely unforeseen and requiring immediate action. With time and experience with the new *COVID normal* triage responses were able to move from management of critical work to delivery of teacher education courses in less urgent ways.

Teacher educators in a program graduating home economics teachers have had to utilise the same practical orientation and culture of the field that the PSTs were being inducted into. The capacity of teacher educators to adjust, adapt and innovate highlighted their problem-orientated skills as they coped with ongoing requirements for change. These substantial changes included the ways that classroom contact was facilitated, the way that certifying practica were structured and experienced, the ways learners connected virtually, and the ways individuals built and maintained professional persona. With programmatic changes due to COVID, this paper identified two critical incidents experienced by the teacher educators across ten months beginning in mid-March 2020. It focuses on each event and the responses and impact on teaching and learning with PSTs. Self-study is used as the methodology as it continues the existing reflective practices of the teacher educators and builds on the praxial conversations between the teacher educators and with the PSTs.

Professional practice

According to Macklin (2009) a professional is someone who explicitly focuses on the wellbeing within their work. The International Federation for Home Economics (IFHE) claims that home economics is a professional discipline that is concerned for equity and sustainable practices and therefore has a global reach (IFHE, n.d.). Renwick (2015) has argued that home economics is a profession because of its connection with students, families and communities through food, textile and family studies that builds "capacity for a *future well lived*" (p. 21, original emphasis). Bubolz and Sontag (1988) have noted that as a mission orientated profession focused on creating balance between people and their environments the professional practice of home economists is not static. When teacher educators reflect on their practice they validate their practical knowledge or in Aristotelian terms, engage with *praxis* (Renwick, 2015). It requires ongoing examination and re-examination of professional realities, how these realities are shaped with opportunity to resist restrictive realities that undermine both the practice and professionalism (Mahon et al., 2017) using what Kemmis et al. (2014) describe as practice architectures.

Within our current roles we live a multiple, simultaneous reality as we engage in self-study. We are teachers with both content knowledge of home economics and pedagogical content knowledge of how to teach an interdisciplinary and transdisciplinary subject (Hodelin, 2008). As McGregor et al. (2008) have noted home economics is a field that is adept at developing unique ideas that are subsequently used to inform our practice. We are teacher educators who are engaging in what Loughran calls "complementary aspects of knowledge and practice: teaching about teaching and learning about teaching" (2014, p. 275). We are practitioner researchers because of our engagement in professional learning practices and our dispositions for improving student learning through our shared reflexive dialogues and conversations (Kemmis et al., 2014). This requires a disposition, a willingness to think about practice in different and new ways. Mockler and Groundwater-Smith (2015) point out that for a teacher to improve their teaching practice they rely "on a deep understanding of context, well-honed and utilised professional judgment, and endless engagement in professional dialogue and discourse based on problematization of practice" (p. 30).

As a practice orientated profession teachers of home economics use their content knowledge about food and textiles to build educational experiences that have meaning within the everyday (IFHE, n.d.; Renwick, 2019) of their students' lives. The inter- and trans-disciplinary nature of the home economics field requires practitioners to not to produce something but to also know how and why something is able to be produced in particular ways (Renwick, 2015). This praxial action is infused with ethical considerations with the intention to support, transform and create better lives (Hodelin, 2008; McGregor, 2010).

Teacher education practice

Our daily lives are replete with complex problems in need of resolution using approaches that Smith (2004) describes as pragmatic and integrated. These approaches make use of knowledge that is derived from both experience and theory that in turn inform the practitioner's practical wisdom (Stenberg & Maarandn, 2020). Practical wisdom is deliberative in nature and requires the ability to perceive what is relevant (Stenberg & Maarandn, 2020) in the everyday and therefore is explicitly embraced by home economics teachers (Renwick, 2015).

Therefore, the practice and professional knowledge of teacher educators focused on home economics teaching specialisation requires not only content knowledge about what is being taught but also pedagogical content knowledge about how to teach (Shulman, 2015). This is closely followed by the practical wisdom to know what pedagogical decisions need to be made, how to adapt as needed and to make ethical practice responses (Stenberg & Maarandn, 2020) that is, to engage in praxial action (Renwick, 2015).

In her comparative analysis of teacher education in Canada, USA, Finland, Singapore and Australia, Darling-Hammond notes that the goal in all five countries was to ensure "that each school is populated by effective teachers" (2017, p. 296). The roles of a classroom teacher and teacher educator are not identical. While classroom teachers will have engaged in pre-and in-service education and professional development the same level of role? support does not exist for teacher educators. Thus, teacher educators develop their practice and identity over time through what Dinkelman et al., describes as "a process of becoming" (2006, p. 6) an evolutionary process (Loughran, 2004, 2014). Ritter (2007) comments about one difference between the teacher and teacher educator roles relates to the focus of the teaching. Whereas teachers are focused on conveying subject matter knowledge, teacher educators are focused on how to teach subject matter. Williams and Ritter (2010) note that being a competent teacher in a school context does not automatically translate to being a competent teacher in teacher education. This supports Ritter's (2007) observation "that the process of becoming a teacher educator is far more complex than is typically acknowledged, as it involves modifications to professional identity as well as to pedagogy" (p. 20).

Becoming a teacher educator is a continuation of a professional practice trajectory. It entails understanding about professional identity (Dinkelman et al., 2006) that evolves through transitions from experienced school teacher to novice teacher educator to one with experience but still engaging in learning. Bullock (2009) argues that being a teacher educator requires more than the application of professional knowledge gained as a school teacher. Imparting knowledge gained through experience, re-contextualising that learning for PSTs requires rethinking by the teacher educator (Ritter, 2007) to construct a different pedagogy, one that works in context of teacher education (Bullock, 2009).

According to Mockler and Groundwater-Smith "to posit that good teaching practice exists and can be quantified in a vacuum, decontextualized from students, is a nonsense" (2015, p. 30). The emergence of COVID-19 and the associated lockdowns and efforts to minimize its spread presents as a stark example of this point. While the global response was for higher education to close campuses and cease face-to-face teaching, the majority of institutions reported a switch to distance learning modes (Marinoni et al., 2020; Tesar, 2020), as well as postponing and rescheduling examinations and study terms and semesters (Aristovnik et al., 2020). Aristovnik et al. have also noted that the impact of COVID-19 on higher education students has had an extensive impact on their life, across their academic, work, social and familial domains.

Decisions to continue offering teacher education programs became a balancing act across several concerns identified by Ellis et al. (2020). Keeping a sense of calm was essential to working through constantly evolving advice while also conveying confidence that issues around practicum and enabling students to complete their professional programs in a timely fashion. Concurrently teacher educators needed to change to use online technology with little to no notice (Firebaugh et al., 2010). This shift has meant that teacher educators have needed to explicitly reflect on and reconsider their pedagogical approach as teaching online and in distance mode is a different experience to face-to-face delivery. The impact of COVID-19 and the resultant changes in and to higher education was a critical point in time and has provoked an evolutionary moment in teacher educators' practices.

Self-study and critical incidents

Self-study is utilised by researcher-practitioners to better understand what they do and has been described by Loughran as “a focal point for those pursuing a better knowledge of their particular practice setting and the work of those with a concern for teaching and learning” (2004, p. 9). As an inquiry-based stance self-study provides opportunity for the practitioner to query, probe and investigate their practice (Ovens & Fletcher, 2014) with the explicit intention for personal understandings to enhance and enrich practice (Pinnegar & Hamilton, 2011). While relating the development of self-study, Loughran (2004) underscores its significance as an approach for teacher educators to research their practices. Loughran (2004, 2014) notes that there is no template, instead self-study literature demonstrates a use of a range of methods and reporting styles that reflect the inter-relationship between the practitioner as researcher and their pedagogical and research practices.

In the absence of a defined method it is an assemblage of possibilities. Loughran (2004) offers key features of self-study that has emerged within the field that include a willingness to be vulnerable, seeking alternative perspectives so avoid not seeing assumptions and positionings, and reporting learnings to an audience in ways that they too can learn from the research. Self-study often draws from what Loughran describes as dilemmas, tensions and disappointments. He argues that the practitioner will move on relatively quickly from successes. However, events or critical incidents with unintended and negative consequences as well as outright failures are “picked over” to determine causes for future reference.

Teacher educators juggle numerous dilemmas and decisions in their practice incessantly making choices about content and pedagogy. The professional lives of teacher educators are littered with incidents that become critical incidents when they take on a particular meaning about “underlying trends, motives and structures” (Tripp, 2011, p. 25). By spending time with critical incidents to understand the event from multiple perspectives it offers possibilities for reframing and being in conversation with colleagues and the students offers openness and collegiality (Elijah, 2004). An incident is critical because it questions normality and routine through reflection (Tripp, 2011). However, as Loughran points out being reflexive is not sufficient in and of itself. Self-study makes use of reflective practice when the practitioner engages with a personal journey to develop their professional practice, and is shared, enabling it to “be challenged, extended, transformed and translated by others” (Loughran, 2004, p. 26). This creates praxial conversations about understanding the work in both context and time (Kemmis, 2010) and that supports ongoing improvement.

Higher education responses to COVID-19 including the shutting of campuses and movement to online and distance delivery is an example of a critical incident as was the decision to continue to deliver classes online through the remainder of 2020 and into 2021. The university where this self-study is based was within the final four weeks of the term that had begun in January when the pandemic response started. The initial emergency response was to ensure that the shift focused on the welfare of students and to support them in completing their courses. While students were asked to make allowances for their teachers while they facilitated this shift through a range of cobbled together strategies, the full impact of the workload and associated stress remained largely hidden from students. (Tesar, 2020). With continued remote learning in place, teachers were expected to develop online courses for the summer terms within 2-3 weeks. The capacity of teachers to do this varied as some had considerable experience, others only moderate and a third group with no experience. While forced these circumstances have enabled teacher educators to develop their “knowledge and practice of teaching *and* learning about teaching” (Loughran, 2014, p. 272, original emphasis). This development is subsequently understood through the self-study process.

Methodology

This self-study is at a Canadian university where the authors—Kerry and Joe—work in a teacher education program that includes a home economics specialisation. The PSTs enroll into the Bachelor of Education (B.Ed.) program after completing their undergraduate qualification that includes study in at least two areas of home economics content—family, food and textiles. Until March 2020, the Provincial Teacher Regulation Board (TRB) had not permitted any online learning or online practica options within a B.Ed. program however with the implementation of health measures to manage the spread of COVID-19 this changed. Courses that were in progress were moved into an online format overnight so that the final three weeks of the term could be completed. For secondary home

economics PSTs and their teacher mentors, the sudden shift to online learning took place following the Spring Break in week seven of the 13-week practica. There had been a delay to this action, while awaiting the approval from the TRB to allow a partial online practicum. Faculty were subsequently instructed to prepare their courses to be fully online for the summer terms (May–July 2020) and the winter terms (September 2020–April 2021).

Participants

Both Kerry and Joe are home economists with experience teaching in secondary school contexts and have substantial experience in developing online educational content. They teach into the home economics specialisation at the university within the B.Ed. and the Diploma of Education programs. Included in their role as a teacher educator manages and teaches into national and international online teacher education programs and Joe teaches into the B.Ed. and Diploma of Education programs and is a K-12 Apple Professional Learning Specialist.

Data collection and analysis

During the academic year of 2019-20 both Kerry and Joe were focused on the shift to distance, online learning. While they were facilitating this work with PSTs in the B.Ed. program and practicing teachers in the Diploma of Home Economics program they were engaging in reflective practice and deliberately seeking feedback from their students about their transition and wellbeing. Additionally, the Kerry and Joe connected with each other at various times to share experiences and knowledge about their learnings about teaching under the described circumstances, and to consider the impact on their teaching about teaching (Loughran, 2014). Within these conversations they focused on what they know about online, distance learning both theoretically and practically in seamless rather than fragmented ways. The intention of the conversations was to engage with praxis by applying practical wisdom (Renwick, 2015). These praxial conversations are categorised into two time periods. The initial stage was when public health strategies to manage COVID began in March 2020 and is described as a period typified around an emergency pedagogy focused on effective communication responses. The second stage some six months later, focused on a triage pedagogy, the sorting of possibilities that supported PSTs to engage with the distance, online learning.

The development of the critical incidents was subsequently framed around four questions:

1. What IS the critical incident?
2. What is the response?
3. What concerns are identified for home economics PSTs?
4. How were the teacher educator's concerns, challenges "tested" in conversation with colleagues and the students themselves?

These questions enabled a thick description of each incident, highlighting both the circumstances and complexity of each incident (Bott & Tourish, 2016). The thick description is thus continued in the praxial conversations as it merges both the experiences and interpretation thereby inviting the reader to decide if they would have arrived at the same interpretative conclusion (Ponterotto, 2006).

Self-study—critical incident #1

The immediate shift of in-person university classes and the B.Ed. practica at partner sites after the Spring Break during Summer 2020 for the teacher education program is the first critical incident, prompting an emergency response to re-examine formats and predefined requirements of a practical and professional program. Both Kerry and Joe were responsible for supporting PSTs under these emergency conditions and aid them in navigating unexpected and serious circumstances that affected PSTs' continuation in the second half of the teacher certifying practicum and subsequent coursework. Both teacher educators prioritized PSTs' wellness in addition to the sudden shift from in-person to online coursework. Kerry facilitated a professional development program to support colleagues with little to no experience of online delivery. Joe collaboratively wrote course content and templates that were provided to other faculty who were teaching the same course.

Fortunately, PSTs in the home economics cohort had already completed their classes on home economics content and methods before the pandemic. Joe and the PSTs were able to build on their

existing relationship and re-establish trust, support, and honesty when navigating concerns and worries arising from the university, partner school district, and TRB's response to certifying new teachers during the COVID pandemic. The teacher educator paid close attention to new stressors that PSTs faced (including personal health and wellbeing, family and friends, pandemic data and rise of cases, loss of income, relocation, uncertainties of future employment) as he guided them through a revised second half of their certifying practicum and remaining coursework. At the same time, Joe's own stress related to COVID pandemic was difficult to put aside. He recognized the need to allow time and space for himself to process the details of the pandemic for himself first (Williams & Ritter, 2010). Then there was opportunity to offer the same space and time with PSTs (support through resources, phone conversations and check-ins, consistent liaising between PSTs and their practicum school advisors, flexible due dates during coursework, limited and flexible times for video conferencing).

Once the TRB permitted the university to continue the remaining half of the certifying practicum it prompted PSTs to refocus and create new materials, all in the form of digital content. Joe made use of professional networks, colleagues in the field and other teacher educators to gain a holistic sense of how schools were responding. There was a need to identify what requirements and skills the PSTs would need to engage within their practicum under COVID-19 conditions.

After the practicum the PSTs returned to their university classes, now fully online. In an attempt to balance the course objectives and the learning and personal needs of teacher candidates, Joe dedicated a full class to determine what aspects of course format, activities, and responsibilities were effective and what methods were a hindrance to student learning. Joe gathered feedback from students using a design thinking framework (Razzouk & Shute, 2012) a key aspect of the provincial curriculum to model this transition. Then, Joe shifted coursework and format to a primarily asynchronous model to accommodate the PSTs availability and workload. In addition to feedback during the coursework itself, the Education Students Association authored a letter outlining their concerns after experiencing online coursework from the Faculty and its many departments. Both Kerry and Joe spoke at length about the contents of the letter and subsequent professional development opportunities for academic colleagues that addressed the PSTs' concerns. Joe subsequently debriefed these changes with colleagues and as a result was asked to create a revised online course shell (structure and content) to share with colleagues for the following academic year.

The implications of this critical incident connect to the substantial and immediate shifts experienced by the PSTs during the second half of their revised practicum. Joe worked with teacher candidates to develop digital and creative voices quickly using a multitude of digital tools to convey practical skills. Many PSTs had previously only created one or two small demonstration videos as part of course work. The scaling up to full lessons on new online platforms used in schools, was a substantial learning curve for teacher candidates. It was also a motivation for Joe to create modules for digital storytelling to be included in the following year's curriculum.

Self-study—critical incident #2

Starting a new cohort of home economics teacher candidates in a practical-oriented professional program in distance and online mode rather than in person is the second critical incident. Having experienced the sudden shift with the previous cohort, Joe had some time to reflect, consider the "new" realities and triage for conditions to support PSTs success. These responses included an orientation to the university's learning management system (LMS) and ensuring that the program delivery aligned with the professional culture of home economics education.

Getting to know the new home economics PSTs was a priority for Joe. He started the beginning semester in September 2020, with one-on-one interviews with each PST to gather information their capacity for the practical-oriented content of home economics and skills with digital technology for preparation for online learning. In partnership with the PSTs, Joe crafted a series of learning experiences balancing course objectives around pedagogical content knowledge and practical teaching methods, against home economics skills and content. There was also a need to anticipate the pedagogical content knowledge that the PSTs would require for their practicum under COVID-19 conditions such as the combination of face-to-face classes and online coursework in most school districts. Joe engaged in regular check-ins and conversations with students and colleagues to examine what practices were effective and what teaching strategies would require shifting. He also engaged in regular communication with secondary teachers in multiple school districts who were faced with

shifting timetable, face-to-face instruction, hybrid teaching models, and online-only models of home economics curriculum development. These evolving conversations resulted in a holistic approach to pre-practicum preparation with teacher candidates as the format of the certifying practicum was uncertain.

Most of these PSTs had only just completed their undergraduate program. Their experience of distance and online education was now an accepted aspect of their enrolment however planning was needed on developing home economics pedagogical content under remote and virtual circumstances. Methods courses that previously focused on practical applications of skills, demonstrations, and full-group interaction and simulations required substantial changes. The practical-oriented home economics content was adjusted to include digital content creation. PSTs were encouraged to find their preferred methods for creating and editing home economics digital content. File sharing services were curated by Kerry and Joe using Google Drive to allow the PSTs access to a communal repository of resources.

Both Kerry and Joe have an ongoing pattern of discussing the PSTs' concerns, the teacher educator's pedagogy and classroom practice. Given the implications for teaching emerging professionals in a practical-oriented course this ongoing dialogue aligns with the ongoing reflexive nature of teaching and learning. This was an important practice that was of benefit during the pandemic., especially with home economics content during a pandemic. Prioritizing learners' lived experiences, leveraging pedagogical content knowledge and educational technology in a way that supports learners' creation of educational content that is unique to their identities.

Discussion

The critical incidents described above provide insight into how two specific points in the first ten months of the COVID-19 pandemic were critical incidents in the working lives of two teacher educators specialising in home economics. Both incidents arise due to the practitioners' need to rethink and adjust their work to accommodate changing circumstances in ways that support the PSTs in their classes. The first incident is framed as an emergency pedagogy where in March 2020 the university closed its campus and cancelled face-to-face classes. Literally overnight faculty were required to flip their classes from face-to-face to online, distance delivery under heightened awareness about the seriousness of the emerging. The second critical incident has a less frantic feel since engaging with online, distance education is both predictable and now familiar feel. While still serious management of COVID transmission including changed behaviours such as wearing masks, social distancing, intermittent lockdowns, frequent handwashing and use of sanitisers became increasingly spoken about as the "new normal". The teacher educators still needed to provide a triaged pedagogy due to the continued underlying concerns for transmission, safety and wellbeing that had to be balanced against the students' engagement in a professional program being facilitated under the position of "business as (almost) usual".

Engaging with professional practice through reflection and reflexivity (Pinnegar & Hamilton, 2009) was heightened across the first twelve months of the pandemic. This was evident in four ways. Firstly, there was an early awareness that face-to-face teaching and learning practices would not necessarily translate into the online, distance mode. In fact, it was necessary to critically evaluate previous practices for their suitability for education in a virtual context. There was an inherent challenge to maintain a student-focused curriculum when the online format seemed to privilege a teacher-centered delivery. For example, group work using pen and paper, post it note activities had to be significantly modified or jettisoned. Class or small group discussion remained but initially facilitated in either breakout rooms or as asynchronous written contributions to an online discussion page. Secondly, there was a heightened awareness that the teacher educators needed to provide clear expectations especially about assessments and to use the online platform's feature to consistently communicate with PSTs improved over time. Using the platform's calendar features communicated both what was due and deadlines. When all of the teacher educators facilitated this the PSTs had greater confidence in planning their workflow and where necessary being able to renegotiate due dates when there were clashes. Thirdly, over time teacher educators became confident with the routine features of the online platform. Feedback from the PSTs and in conversation with teachers in schools worked to introduce additional applications that not only provided new student-centered activities while also building PSTs' confidence with the applications so they could use them on practicum. Finally, much of the learning and ability to adjust teaching and learning approaches were possible because of ongoing conversations with both PSTs and colleagues (Elijah, 2004; Pinnegar &

Hamilton, 2011). Open and honest dialogue about successes and failures were freely discussed (Loughran, 2004). There was both an allowance for and expectation of mistakes. Trying things and being open about what wasn't working were permitted as everyone was in the situation of needing to learn to teach in new and different ways.

Loughran (2004) argues that there are four intertwined aspects of self-study that are evident in our work as we adjusted to working under COVID conditions. He describes how self-study is more than reflective practice in that it also requires a preparedness to acknowledge that sometimes "we don't know what we don't know"; a willingness to engage with others to elicit other interpretations and to reframe the experience; and finally, to be prepared to do so as a shared task. Within the descriptions of the critical incidents these four aspects are evident. Teaching into a professional program that previously had been forced to eschew online, distance education as a delivery mode meant that Kerry and Joe were consistently checking and rechecking their strategies.

Concerns being expressed and shared within discussions included inviting students into synchronous classes, offering opportunity for comments both in written into discussion forums and discussed in small group sessions in breakout rooms. Other issues that arose included making learning intentions clear, providing meaningful directions about what was being expected and scaffolding the course shell in consistent and intuitive ways. These practices evolved as the teacher educators shared experiences, problem solving and peer-coaching (Dinkelman et al., 2006; Ritter, 2007). The opinions of the PSTs were actively sought as the teacher educators invited the PSTs into conversations about how to not only use online technologies but also consider which ones support the learning intentions. These conversations served to foreground the professional practices of teachers who engage in praxial conversations with the intention to be better at what they do because they engage with authentic relationships with the PSTs in their classes (Tripp, 2011).

As teacher educators working with PSTs specialising in home economics education the Kerry and Joe were challenged to think about what a practical subject area looks like under COVID conditions. There was an opportunity to underscore the importance of family and community wellbeing and engaging with home economics because of its "knowledge or knowing is for the sake of doing something with the knowledge" (Vaines, 1980, p. 112). The changes in teaching practices were inevitable in transitioning to online, distance mode. Focusing in on setting up strategies for success during the practicum was a key focus. Usually PSTs can predict the practicum experience because of their 16 years + of being in classrooms. However, teaching online brought new and unknown possibilities and dilemmas that could undermine confidence in past experiences. The teacher educators focused on those things that hadn't changed—building meaningful relationships with students and clarity about teaching intentions (Tripp, 2011). Working with teachers in schools the teacher educators were able to ascertain the platforms and apps being used in various home economics classrooms and then initially ensuring that the PSTs were familiar with them and subsequently competent using them.

Conclusion

As Firebaugh et al. (2010) have noted home economics as a field experiences persistent change and as a result it has developed a profession that is capable of enduring, surviving and withstanding while recognising a need to embrace change and evolve. Self-study brings to the fore insider knowledge about understanding practice and how to improve it (Pinnegar & Hamilton, 2009). In doing so it contributes to what Brandenburg terms as "ways of knowing" (p. 24). The praxial conversations between the teacher educators and between the teacher educators and the PSTs offered thick descriptions (Ponterotto, 2006) about pragmatic strategies and doing as best as possible under COVID conditions. They were also imbued with a sense of history in that in the circumstances of COVID and how educators have responded is a history-making circumstance in and of itself (Kemmis, 2010). Brandenburg (2008) argues that connections with others is a key attribute of self-study and the critical incidents described in this paper demonstrate this position.

Responses to managing teacher education programs during COVID have offered insights into possibilities for what future delivery might look like. One implication is that approaches to online and distance delivery of teacher education will become a common feature of programs that had previously eschewed such an approach. A positive aspect of online learning is that the delivery of courses and programs are not restrained to any one location rather geographic barriers have been removed. With more teachers/educators globally now experienced with some form of virtually

education there is a greater awareness that online distance education is not something that can be put online without substantial rethinking of pedagogies (Tesar, 2020).

A second implication arises in the rethinking about the way programs such as a Bachelor of Education provide induction into a practice-orientated profession. As teacher educators it has been necessary to rethink our work inducting home economics professionals in a teacher education program. For other teacher educators particularly, those preparing home economics specialist teachers, there is opportunity to focus on Vaines' (1980) concern that the PSTs both know how and why they need to teach the subject areas' content. There is an ongoing need to identify pedagogical practices that supports learning. That the PSTs understand the interplay of theory and practice, and have the capacity to engage with praxial conversations with their peers whether the program delivery is face-to-face, online or in blended mode.

And finally, there is a need to engage with the problem-orientated nature of the profession. For teacher educators the use of self-study is a way to inquire into their practice with the specific intention for understanding and improvement. The use of critical incidents assists in seeing particular situation or event highlighted and partly removed from the multitude of everyday experience. It is this making of time to notice the everyday in meaningful ways (Vaines, 2004) that is also evident in self-study and critical incident analysis. Both offer ways for educator to notice their practices and support the development of practical wisdom. While there is a looking forward to a post-COVID era it will be about families and communities learning to live with COVID and subsequent outbreaks what will rely on new practical wisdom. Learning from our experiences as educators during a pandemic underscore claims about the practice orientation of the home economics profession.

Author biographies

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Joe Tong is an Adjunct Teaching Professor in the Faculty of Education at the University of British Columbia. He teaches in the Bachelor of Education (home economics) program preparing secondary educators.

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Influence of COVID-19 on changes in dressing behaviours of U.S. adults

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Abstract

The objective of this research was to assess the impact of the currently lived COVID-19 pandemic on dressing behaviours of a cross-section of the U.S. adult population. Participants (N = 844) completed a survey via Amazon Mechanical Turk which evaluated frequency of wearing of eight dressing categories—accessories, informal dress, formal dress, protective dress, hair practices, scent products, appearance enhancement, and make-up (females) prior to and during the pandemic. Physical, emotional and psychological self-care and demographics were also collected. Overall, during the pandemic participants engaged in less dressing behaviours, dressed informal clothing (e.g., jeans, t-shirts) and incorporated protective dress. These findings may support previous research that found consumers purchase of comforting products during times of stress. Further research could include conducting a comparative study where data can be collected including post-pandemic data and data from world-wide geographic regions.

KEYWORDS: COVID-19 PANDEMIC, DRESSING BEHAVIOUR, FASHION THEORY

Introduction

Dress is an important part of daily life and it is greatly impacted by societal events, such as war, natural disasters, and economic depression (e.g., Kim et al., 2011). The COVID-19 pandemic not only has broader impacts on society, but it has had significant effects on daily routines, income losses, socialising, and attention to cleanliness. All of these changes impact dressing behaviour. The COVID-19 pandemic provides an opportunity to examine how consumer behaviour and fashion changes in uncertain times (Murphy et al., 2020). As an expression of society, it is also common for supportive and rebellious dress to emerge during challenging times, such as war-time rationed clothing of the 1940s (Tortora & Marcketti, 2015) or wearing patriotic symbols after 9/11 (Beyerlein & Sikkink, 2008).

There has been some research that has found traumatic societal events, such as 9/11 changed consumer attitudes which affected their consumption behaviour (Dube & Black, 2010). Saiki et al. (2012) found that under perceived stressful conditions women decreased use of accessories, maintaining hair, using fragrances, wearing make-up, and dressing formally. In a follow-up study with men, it was found these participants also neglected their appearances under stressful conditions by wearing less accessories and dressing informally Saiki et al. (2012).

Saiki, D., Kandiah, J., Adomaitis, A. D., & Jones, J. A. (2021). Influence of COVID-19 on changes in dressing behaviours of U.S. adults. *International Journal of Home Economics*, 14(2), 107-122.

The COVID-19 pandemic provides a unique opportunity to understand how a traumatic global event impacts changes in dress habits. Tracking changes in dressing is significant to industry professionals in marketing, designing, and selling clothing. It also can serve as a starting point in predicting future trends. Theoretically, understanding how changes in dress habits due to the pandemic contributes to impression management and fashion theory will be resourceful. The purpose of this study was to assess the initial impact of the COVID-19 pandemic on dressing behaviour of a cross-section of the U.S. adult population.

Related theory

Theories related to this study range from an individual's assessment of their dress, to communication theories or theories that explain interaction with others, and broader societal theories on fashion change. To begin, defining *dress* is pertinent. It is a term that is used to identify all appearance features including apparel (shoes, clothing, bags, etc.) and body alterations (e.g., exercising, make-up, etc.) (Barnes & Eicher, 1997). Concepts that explain the selection of dress include appearance management or the "attention, decisions, and acts related to personal appearance" (Kaiser, 1996, p. 5). It encompasses all dress items and activities engaged in creating an appearance (Lee & Johnson, 2009), such as choosing to wear a particular garment, taking a shower, restricting eating, and exercising.

This study relates to semiotics theory where a sender uses dress to communicate to another sender and then it is interpreted by the receiver of the message (Atkin, 2013; Damhorst, 2001). The viewer's response can impact the wearer. If it is a positive response, then the wearer will likely wear it more often. Meaning associated with dress cues are dynamic, with the receiver and sender negotiating these meanings (Tseïlon, 1992). Other researchers have noted that cultures have certain rules of dress related to attractiveness, level of fashion, and appropriateness to an occasion (Ganley, 2003).

Finally, this study examines the effects of a contextual event (COVID-19) on dressing habits. The context is important in interpreting and communicating through dress (Kaiser, 1996). Events in society, such as the COVID-19 pandemic, have an impact on dressing behaviours that emerge as broader fashion trends. Kaiser et al. (1995) examined what perpetuates change in appearance maintaining that there was a gap in explaining fashion change between individuals and society as a whole. Referencing scholars such as Blumer (1969), who analysed fashion change as a society, Davis' (1985, 1988) concept of ambivalence and the self in the field of semiotics, and Stone's concepts on appearance and the self; Kaiser et al. (1995) identified five principles of fashion change: 1) as society changes confusion or "ambivalence" rises, 2) the greater ambivalence prompts more appearance-modifying products; 3) as these appearance-modifying products increase, then consumers demonstrate greater variation in appearance styles; 4) if appearance styles are high in symbolic ambiguity, then meanings of styles will be negotiated through social interaction adopting meaningful styles, and 5) if these "meaningful styles" do not resolve ambiguity then the style will change. This cycle continually repeats.

Review of literature

The COVID-19 pandemic abruptly changed daily life, having a significant impact on normal routine. The pandemic has prompted questions on maintaining employment, taking care of family, and staying healthy (Discovery Website, 2020). Changes to our daily lives include remote communication rather than face-to-face interactions, increased attention to cleanliness, and working at home. The global pandemic will change consumption behaviour during and after the virus has disappeared. Based on observations from past traumatic events including the 2008 recession and the 1918 influenza pandemic, Solomon (2020) observed that as a result of the pandemic, consumers will buy for gratification. As a result of being locked down, their pent-up demand builds which prompts purchases that enhance a sense of gratification and safety, such as comfort food, online education, and small luxury purchases. In addition, consumers will shop with "agency" or buy to maintain a sense of control, with behaviours such as stockpiling necessary basics (e.g., toilet paper), buying cleaning supplies, and shopping at contactless stores. Thirdly, consumers seek stability and conformity. Thus, purchases are made that inspire feelings of comfort and tradition. For example, disposable fast fashion will be replaced with high-quality clothing that lasts a long time (Solomon, 2020). Beyerlein and Sikkink (2008) examined consumer ethnocentrism, patriotism, time management, and attitude towards the regulation of business and product quality following the terrorist attacks. This study found significant differences in all of these areas. Both consumer ethnocentrism and consumer

patriotism increased as a result of these terrorist attacks. Support was found for American consumers becoming more favourable towards government regulation of business. The terrorist attacks made American consumers care more about product quality than they did before. In addition, consumers may feel more uncertain about their lives, their security and their longevity, so they had higher propensity for time management. Additionally, this trauma caused Americans to consider new priorities, such as putting more emphasis on family and pro-social activities while still trying to remain successful at their jobs. The findings of this research also suggest that the terrorist attacks may have had the opposite effect on American consumers than what the terrorists had originally intended. Rather than tearing the family apart with uncertainty, the family structure was strengthened. Rather than cause chaos in America, Americans learned to value their time more and to manage it better.

There are many examples of dress changes in times of uncertainty. For example, Buckland (2000) later analysed Kaiser's et al. (1995) theory of fashion change applying it to a historical analysis of changes in women's role and the meaning of pants in Akron, Ohio during World War II. The author concluded that as women adopted pants, there was a symbolic ambiguity in their appearance with more pant styles emerging, which prompted negotiations in the meanings of pants and eventual consumer acceptance. Given significant events, such as a pandemic, influences behaviour, the first research question is: **Did dressing behaviours change during the COVID-19 pandemic?**

Neglecting one's appearance is a sign of stress (The American Institute of Stress, 2020). Researchers have found among female college students that high anxiety and stressed personalities tend to participate in frequent appearance monitoring, relieving stress by managing their appearances. Participants with composed personalities managed their appearances as well for social reasons (Johnson et al., 2007). More transient than personality, mood has also been related to dressing style. Female participants in a workplace dress program (McLeod, 2003) reported increased self-esteem upon wearing appropriate workplace dress. Reilly and Rudd (2009) found social anxiety can result from women's lifestyle choices. Specifically, there was a correlation found between anxiety and using slenderising undergarments. There was anxiety also related to dieting. In addition, as anxiety increased, these women were more likely to participate in "nonroutine" procedures, such as purging and breast augmentation. They also found a negative anxiety and weight training and getting a haircut were related. Researchers have examined how perceived stress changed dressing habits. When under stress, these women participated less in dressing behaviours, such as wearing accessories, maintaining their hair, and using perfume. Kandiah et al. (2019) later found that stress affected men in a similar manner. The COVID-19 pandemic likely made individuals more stressed than usual. Given stress is associated with changes in dressing behaviours, the second research question is: **Will stress levels influence changes in dressing behaviour during the COVID-19 pandemic?**

Research on dress and appearance management has also focused on risky behaviours, such as restrictive dieting and exercising too much that lead to poor health (Lennon et al., 1999). For example, Johnson et al. (2014) found, among a sample of mostly females (over 80), that if body comparison is high, and body satisfaction is low, then women were more likely to engage in risky behaviours (extreme dieting, extreme cosmetic procedures). Research supports the notion that dress is often a part of enhancing positive self-image. Han et al. (2020) found among a sample of elderly Japanese adults that there were positive correlations between life satisfaction and appearance management. They used the statement "To what extent are you interested in dressing-up" as a measure of appearance management. This finding was stronger with women when compared with men. Kwon and Kwon (2013) studied multifaceted appearance management or appearance management given an individual's many roles. The authors examined the degree of multifaceted appearance management given gender, ethnicity, and age. They did not find differences in the general sample between men and women, but Caucasian women compared to men did participate in multifaceted appearance management. The results revealed that African Americans had a greater tendency to exhibit this multifaceted appearance management behaviour than Caucasian Americans. As predicted by the researchers, age did not influence the degree of multifaceted appearance management. Research on attention to appearance management is influenced by individual demographics. Therefore, the last research question is: **Will there be a difference among different demographic groups in dressing behaviour during the COVID-19 pandemic?**

Method

After obtaining consent of the study protocol by the University's Institutional Review Board, a multi-item online survey that was approved for face and content validity by three experts was used to assess demographical characteristics and frequency of dressing behaviours of participants. Demographical information included gender, ethnicity, race, age, marital and employment status. Body mass index was calculated using participants' self-reported weight and height. A survey was used that included demographic questions (age, sex, race, ethnicity, region of residence, and employment status). To assess fashion behaviours, 43 item options were grouped in categories: accessories worn (e.g., earrings, watch), informal dress (e.g., t-shirt, sweatpants), formal dress (e.g., suit jackets, dress pants), protective dress (e.g., masks, gloves), hair practices (e.g., hair product, style hair), scent products (e.g., breath freshener, deodorant), make-up (e.g., eye-shadow, blush), and appearance enhancement (e.g., tanning, manicure). Equivalent items were created for male and female respondents (i.e., shirt versus blouse, respectively), but the make-up items were only shown to females. The section on the frequency of dressing behaviours had three options for the participants to respond. These options were: *dressing more during the pandemic—MT*, *dressing same as before—SAB the pandemic*, and *dressing less than before—LB the pandemic*. The survey was made available on Amazon Mechanical Turk (MTurk) during the last week of April 2020, which was six weeks after a national pandemic emergency was declared in the USA. Given the efficiency and pandemic related limitations and lockdowns (French et al., 2020) recently, the Amazon MTurk has been used as a reliable platform for survey dissemination and data collection in several US-based studies. Prior to the completion of the survey, participants were informed about the objective of the study and emphasised that their participation in the research was voluntary and anonymous.

The University's Institutional Review Board approved the study as exempt. Data were analysed using SPSS 25. Frequencies and percentages of responses to demographical characteristics were computed. Responses to dressing behaviours questions were computed as numbers and percentages. Finally, dressing behaviours were stratified by sociodemographic characteristics to assess group differences by using the chi-square test. Statistical significance was established at $p < 0.05$.

Results

Of the 1,023 surveys completed via Amazon MTurk, 844 of the participants were residing in the USA. For this study, only responses for those residing in the USA were used. As shown in Table 1, the mean age for participants was 34.83 ($SD = 11.79$) and mean BMI was 25.58 ($SD = 5.45$). The majority of respondents were female (51.8%) and working full-time (56.8%). Many have been working from home due to the pandemic (62.9%) and few were healthcare workers (14.2%). The plurality of respondents were married (45.6%), and most were living with family members (71.6%). The majority of participants were Caucasians (63.2%), with Asians (22.9%), African Americans (6.6%), and multiracial and other (7.3%) comprising the other categories. The majority were also non-Hispanic (78.0%).

The internal consistency of the scales was measured by Cronbach's α , with the eight fashion behaviour scales ranging from a low of .72 for Informal Dress and Scent Products to a high of .92 for Formal Dress, with a median coefficient of .78. The physical self-care scale had an internal consistency coefficient of .75, Emotional Self-Care scale was .84, and Psychological Self-Care scale was also .84. Three items concerned with fasting, restricted eating, and skipping meals formed a Restrictive Eating Behaviour scale with an internal consistency coefficient of .71. Scale means and internal consistency measures are shown in Table 2.

Table 1 Descriptive Statistics

Variables	N	%
Age	840	100.0%
BMI	801	100.0%
Underweight (< 18.5)	31	3.9%
Normal (18.5-24.9)	405	50.6%
Overweight (25.0-30.0)	231	28.8%
Obese (> 30.0)	134	16.7%
What is your sex?	844	100.0%
Female	437	51.8%
Male	407	48.2%
Your race?	844	100.0%
Asian	193	22.9%
African American	56	6.6%
Caucasian	533	63.2%
Multiracial	38	4.5%
Other	24	2.8%
Your ethnicity?	844	100.0%
Non-Hispanic	658	78.0%
Hispanic/Latino	186	22.0%
Marital status?	844	100.0%
Single	337	39.9%
Married	385	45.6%
Engaged or cohabitating	79	9.4%
Divorced / Widowed	43	5.1%
I live	844	100.0%
Alone	161	19.1%
With family	604	71.6%
With non-family members	79	9.4%
What is your current employment status?	844	100.0%
Not employed	189	22.4%
Part-time	176	20.9%
Full-time	479	56.8%
Have you been working from home during the current, lived COVID-19 pandemic?	844	100.0%
No	313	37.1%
Yes	531	62.9%
Are you a healthcare worker?	844	100.0%
No	724	85.8%
Yes	120	14.2%
Do you usually wear a uniform for your work?	844	100.0%
No	638	75.6%
Yes	206	24.4%
Were you required to participate in video conferencing for work during the current COVID-19 pandemic?	844	100.0%
Never	183	21.7%
Rarely	105	12.4%
Sometimes	285	33.8%
Always	131	15.5%
I am not working	140	16.6%
During past month of Covid-19 pandemic: Felt nervous and "stressed"?	844	100.0%
Never	67	7.9%
Almost never	120	14.2%
Sometimes	289	34.2%
Fairly often	235	27.8%
Often	133	15.8%

Table 2 Scale Descriptive Statistics

Scales (Items)	Cronbach's α	N	M	SD
Accessories (9)		815	-0.37	0.42
Male	0.87	390	-0.35	0.44
Female	0.85	425	-0.4	0.4
Informal Dress (8)		814	0.07	0.41
Male	0.75	389	0.03	0.43
Female	0.69	425	0.11	0.39
Formal Dress (7)		815	-0.57	0.48
Male	0.92	390	-0.51	0.51
Female	0.9	425	-0.63	0.43
Protective Dress (2)		815	0.59	0.57
Male	0.77	390	0.54	0.59
Female	0.72	425	0.63	0.54
Hair (4)		815	-0.38	0.52
Male	0.82	390	-0.33	0.54
Female	0.79	425	-0.42	0.49
Scent Products (4)		815	-0.19	0.46
Male	0.78	390	-0.19	0.5
Female	0.64	425	-0.18	0.41
Make-up (6)				
Female	0.91	425	-0.55	0.48
Appearance (3)		815	-0.46	0.49
Male	0.77	390	-0.43	0.52
Female	0.73	425	-0.48	0.47
Self-Care				
Physical (10)	0.75	844	1.75	0.54
Emotional (10)	0.84	741	1.53	0.61
Psychological (7)	0.84	785	1.78	0.67
Restrictive Eating Behaviour (3)	0.71	844	-0.11	0.55

In a cross-tabulation of stress during the past month due to COVID-19 (low versus high) and gender, an association was found (continuity corrected $\chi^2 = 6.94$, $df = 1$, $p = .008$), with 48.1% of females reporting high stress compared to 38.8% of males. Using independent t -tests to compare the fashion behaviour scales by stress, only Formal Dress showed a difference ($t = 2.47$, $df = 795.47$, $p = .014$) with a larger decline in Formal Dress for those most with high stress (-0.62) compared to low stress (-0.54). Several gender differences were found, however, for Informal Dress ($t = 2.90$, $df = 812$, $p = .004$), Formal Dress ($t = -3.51$, $df = 764.15$, $p < .001$), Protective Dress ($t = 2.31$, $df = 788.14$, $p = .021$), and Hair ($t = -2.50$, $df = 787.41$, $p = .013$). For Informal and Protective Dress, females had higher increases (0.11 and 0.63, respectively) than males (0.03 and 0.54, respectively). The pattern for Formal Dress and Hair showed females with larger declines (-0.63 and -0.42, respectively) than males (-0.51 and -0.33, respectively).

Using a mixed model ANOVA, the fashion behaviours were run separately for each gender while controlling for stress. Only the main effects for fashion behaviours were found for females (*Pillai's Trace* = .76, $F(7,417) = 190.40$, $p < .001$) and males (*Pillai's Trace* = .62, $F(6,382) = 105.23$, $p < .001$). As shown in Figure 1, with zero indicating no change in the behaviour, females showed large declines for Formal Dress (-0.63), Make-up (-0.55), Appearance (-0.48), Hair (-0.42), and Accessories (-0.40), a large increase for Protective Dress (0.63), a decrease in Scent Products (-0.18), and a small increase for Informal Dress (0.11). For males, large declines were found for Formal Dress (-0.52), Appearance (-0.44), Accessories (-0.35), and Hair (-0.33), a large increase for Protective Dress (0.54), a decrease in Scent Products (-0.19), but no change in Informal Dress (0.03) (see Figure 2).

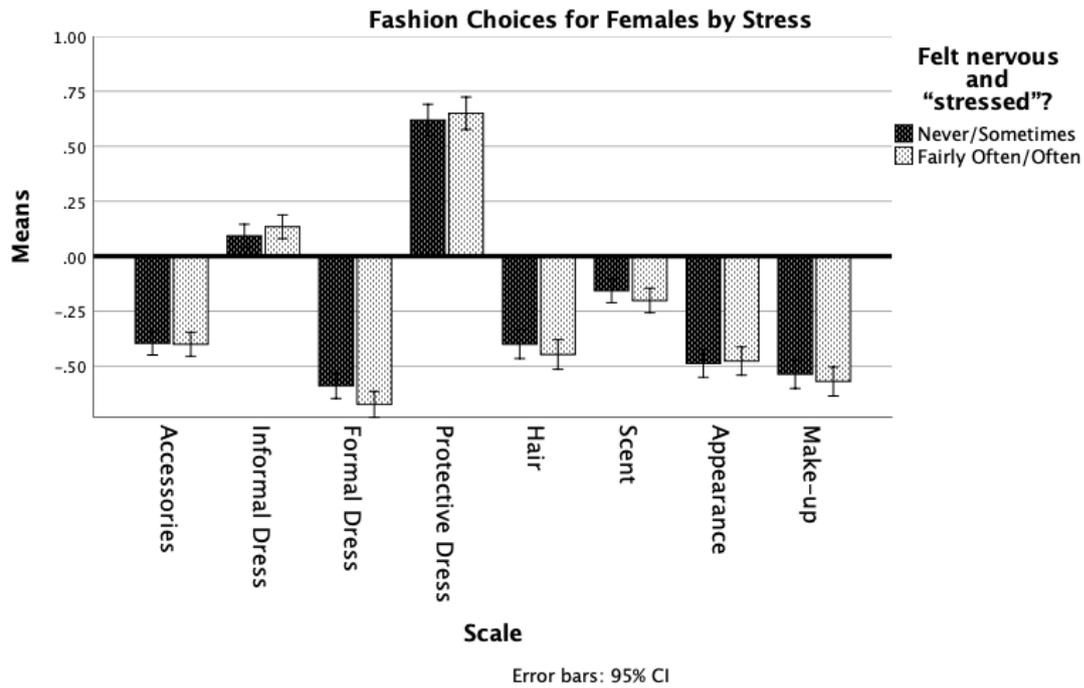


Figure 1 Fashion choices for females by stress levels

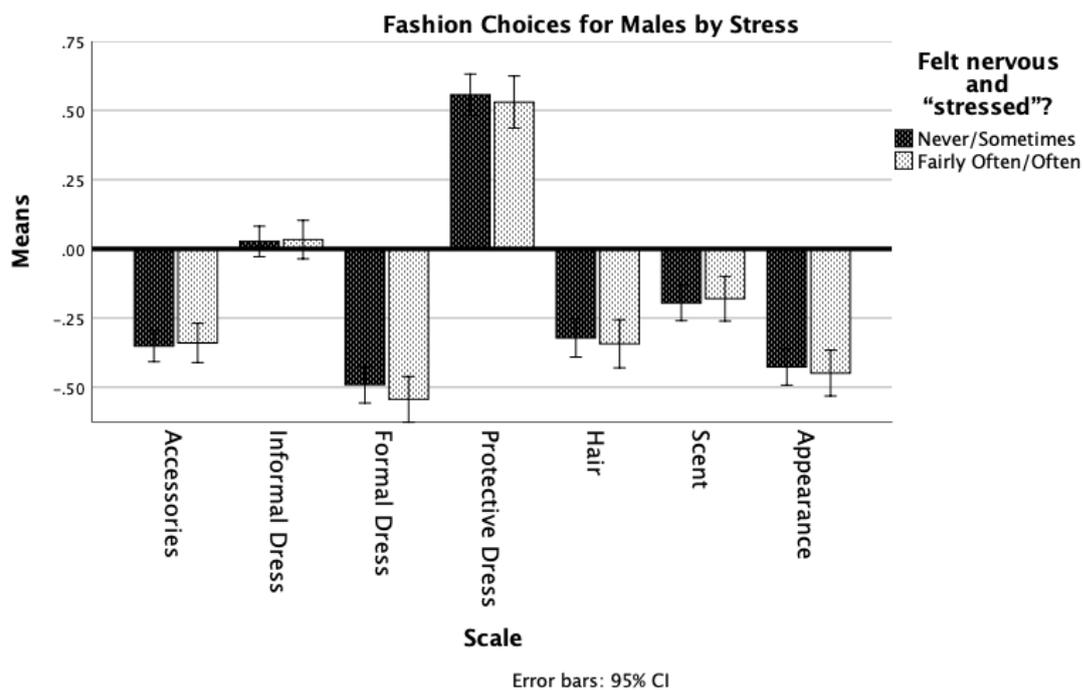


Figure 2 Fashion choices for males by stress levels

For each fashion behaviour scale, stress, demographic characteristics, the three self-care scales, and the restrictive eating behaviour scale were used as predictors in an ordinary least squares regression analysis. Except for race, which was dummy coded, categorical variables were dichotomised in order to be used as predictors. The regression coefficients are shown in Tables 3 through 10. All regression models for the fashion behaviour scales except Make-up were found to account for a statistically significant proportion of variance ($p < .05$), ranging from 7% to 17% of the predicted variance in the scales.

For the Accessories scale, there were declines in the predicted values for Asians compared to Caucasians, single compared to married individuals, or as Emotional Self-Care increased. Predicted values for Accessories rose for those living alone, working in healthcare, wearing a uniform to work, and reporting more restrictive eating behaviours (see Table 3).

Table 3 Regression Coefficients for Accessories Scale

<i>Predictors</i>	<i>Coefficients</i>				
	<i>b</i>	<i>SE</i>	β	<i>t</i>	<i>p</i>
(Constant)	-0.36	0.14		-2.57	0.010
During past month of Covid-19 pandemic: Felt nervous and “stressed”? (1 = Stressed)	0.00	0.04	0.00	0.08	0.939
Age	0.00	0.00	0.08	1.78	0.075
What is your current employment status? (1 = FT)	-0.01	0.03	-0.02	-0.38	0.707
Your race: Caucasian vs. Asian (1)	-0.17	0.04	-0.17	-3.93	< .001
Your race: Caucasian vs. African American (1)	-0.07	0.07	-0.04	-0.99	0.325
Your race: Caucasian vs. Multiracial (1)	-0.07	0.08	-0.04	-0.84	0.401
Your race: Caucasian vs. Other (1)	-0.16	0.11	-0.06	-1.49	0.137
Your ethnicity? (1 = Hispanic/Latino)	-0.01	0.05	-0.01	-0.24	0.810
BMI	0.00	0.00	0.02	0.42	0.678
Marital status (1 = Single)	-0.1	0.04	-0.12	-2.52	0.012
I live (1 = Alone)	0.15	0.05	0.15	3.11	0.002
Are you a healthcare worker? (1 = Yes)	0.13	0.05	0.11	2.37	0.018
Do you usually wear a uniform for your work? (1 = Yes)	0.09	0.05	0.10	2.00	0.046
Have you been working from home during the current, lived COVID-19 pandemic? (1 = Yes)	0.01	0.04	0.01	0.21	0.834
Were you required to participate in video conferencing for work during the current COVID-19 pandemic? (1 = Yes)	-0.04	0.04	-0.05	-1.13	0.259
What is your sex (1 = Male)	0.00	0.04	0.00	0.01	0.990
Physical Self-Care (higher score more self-care)	0.05	0.04	0.06	1.22	0.223
Psychological Self-Care (higher score more self-care)	0.02	0.04	0.03	0.55	0.583
Emotional Self-Care (higher score more self-care)	-0.12	0.04	-0.19	-3.16	0.002
Restrictive Eating Behaviours (higher score more restrictive)	0.07	0.03	0.09	2.26	0.024

$R^2 = .15$, $F(20,529) = 4.60$, $p < .001$

The Informal Dress scale showed decreased estimated values for Asians compared to Caucasians, and Hispanics compared to non-Hispanics. Increased values were predicted for those working from home or required to participate in video conferencing (see Table 4). Conversely, for the Formal Dress scale, declines in predicted values were found for those who felt stressed, were required to participate in video conferencing, or scored higher in Emotional Self-Care. Predicted scores were predicted to be higher for those who were employed, living alone, wearing a uniform, or reporting more restrictive eating (see Table 5).

Table 4 Regression Coefficients for Informal Dress Scale

<i>Predictors</i>	<i>Coefficients</i>				
	<i>b</i>	<i>SE</i>	β	<i>t</i>	<i>p</i>
(Constant)	-0.08	0.14		-0.56	0.576
During past month of Covid-19 pandemic: Felt nervous and “stressed”? (1 = Stressed)	0.02	0.04	0.02	0.49	0.622
Age	0.00	0.00	0.03	0.81	0.421
What is your current employment status? (1 = FT)	-0.01	0.03	-0.02	-0.36	0.722
Your race: Caucasian vs. Asian (1)	-0.34	0.04	-0.33	-7.90	< 0.001
Your race: Caucasian vs. African American (1)	-0.11	0.07	-0.07	-1.68	0.093
Your race: Caucasian vs. Multiracial (1)	-0.10	0.08	-0.05	-1.23	0.218

Predictors	Coefficients				
	b	SE	β	t	p
Your race: Caucasian vs. Other (1)	-0.04	0.11	-0.02	-0.38	0.701
Your ethnicity? (1 = Hispanic/Latino)	-0.11	0.05	-0.10	-2.29	0.022
BMI	0.00	0.00	0.02	0.48	0.633
Marital status (1 = Single)	-0.02	0.04	-0.03	-0.58	0.563
I live (1 = Alone)	0.08	0.05	0.07	1.57	0.117
Are you a healthcare worker? (1 = Yes)	0.00	0.06	0.00	-0.08	0.939
Do you usually wear a uniform for your work? (1 = Yes)	-0.02	0.05	-0.02	-0.36	0.720
Have you been working from home during the current, lived COVID-19 pandemic? (1 = Yes)	0.09	0.04	0.09	2.08	0.038
Were you required to participate in video conferencing for work during the current COVID-19 pandemic? (1 = Yes)	0.10	0.04	0.12	2.65	0.008
What is your sex (1 = Male)	-0.05	0.04	-0.06	-1.34	0.180
Physical Self-Care (higher score more self-care)	-0.02	0.04	-0.02	-0.47	0.636
Psychological Self-Care (higher score more self-care)	0.00	0.04	0.00	0.02	0.981
Emotional Self-Care (higher score more self-care)	0.07	0.04	0.11	1.80	0.073
Restrictive Eating Behaviours (higher score more restrictive)	0.05	0.03	0.06	1.49	0.137

$R^2 = .17$, $F(20,529) = 5.94$, $p < .001$

Table 5 Regression Coefficients for Formal Dress Scale

Predictors	Coefficients				
	b	SE	β	t	p
(Constant)	-0.65	0.16		-4.05	< 0.001
During past month of Covid-19 pandemic: Felt nervous and "stressed"? (1 = Stressed)	-0.08	0.04	-0.09	-2.02	0.044
Age	0.00	0.00	0.01	0.20	0.840
What is your current employment status? (1 = FT)	0.08	0.03	0.11	2.50	0.013
Your race: Caucasian vs. Asian (1)	0.03	0.05	0.02	0.54	0.589
Your race: Caucasian vs. African American (1)	-0.12	0.08	-0.07	-1.64	0.102
Your race: Caucasian vs. Multiracial (1)	0.06	0.09	0.03	0.63	0.532
Your race: Caucasian vs. Other (1)	-0.20	0.12	-0.07	-1.59	0.112
Your ethnicity? (1 = Hispanic/Latino)	0.04	0.05	0.04	0.84	0.400
BMI	0.00	0.00	0.01	0.34	0.732
Marital status (1 = Single)	-0.07	0.05	-0.08	-1.58	0.114
I live (1 = Alone)	0.14	0.06	0.12	2.49	0.013
Are you a healthcare worker? (1 = Yes)	0.11	0.06	0.08	1.83	0.068
Do you usually wear a uniform for your work? (1 = Yes)	0.21	0.05	0.19	3.97	< 0.001
Have you been working from home during the current, lived COVID-19 pandemic? (1 = Yes)	-0.02	0.05	-0.02	-0.46	0.648
Were you required to participate in video conferencing for work during the current COVID-19 pandemic? (1 = Yes)	-0.13	0.04	-0.14	-3.04	0.002
What is your sex (1 = Male)	0.04	0.04	0.04	0.97	0.334
Physical Self-Care (higher score more self-care)	0.04	0.05	0.04	0.82	0.414
Psychological Self-Care (higher score more self-care)	0.07	0.04	0.09	1.63	0.104
Emotional Self-Care (higher score more self-care)	-0.12	0.04	-0.17	-2.90	0.004
Restrictive Eating Behaviours (higher score more restrictive)	0.08	0.04	0.09	2.12	0.035

$R^2 = .16$, $F(20,529) = 4.98$, $p < .001$

The Protective Dress scale, which showed a large increase overall due to the pandemic, had lower predicted values for those who were employed, had lower BMI values, or were healthcare workers. Predicted values were increased for those with higher Emotional Self-Care. For the Hair scale, increased estimated values were found for those who were healthcare workers or needed to wear a uniform for work. The Scent Products scale showed declines in predicted values for those who were Asians compared to Caucasians, while there were increases for those wearing uniforms to work (see Tables 6, 7, 8).

Table 6 Regression Coefficients for Protective Dress Scale

<i>Predictors</i>	<i>Coefficients</i>				
	<i>b</i>	<i>SE</i>	β	<i>t</i>	<i>p</i>
(Constant)	0.65	0.19		3.38	0.001
During past month of Covid-19 pandemic: Felt nervous and “stressed”? (1 = Stressed)	0.02	0.05	0.02	0.34	0.731
Age	0.00	0.00	0.01	0.23	0.820
What is your current employment status? (1 = FT)	-0.08	0.04	-0.09	-2.06	0.040
Your race: Caucasian vs. Asian (1)	-0.08	0.06	-0.06	-1.32	0.187
Your race: Caucasian vs. African American (1)	0.01	0.09	0.01	0.16	0.870
Your race: Caucasian vs. Multiracial (1)	0.05	0.11	0.02	0.40	0.691
Your race: Caucasian vs. Other (1)	0.14	0.15	0.04	0.94	0.348
Your ethnicity? (1 = Hispanic/Latino)	-0.01	0.06	-0.01	-0.13	0.900
BMI	-0.01	0.00	-0.10	-2.23	0.026
Marital status (1 = Single)	-0.01	0.06	-0.01	-0.16	0.872
I live (1 = Alone)	-0.09	0.07	-0.07	-1.34	0.180
Are you a healthcare worker? (1 = Yes)	-0.16	0.08	-0.10	-2.17	0.031
Do you usually wear a uniform for your work? (1 = Yes)	0.08	0.06	0.06	1.20	0.230
Have you been working from home during the current, lived COVID-19 pandemic? (1 = Yes)	0.08	0.06	0.06	1.28	0.201
Were you required to participate in video conferencing for work during the current COVID-19 pandemic? (1 = Yes)	-0.01	0.05	-0.01	-0.28	0.783
What is your sex (1 = Male)	-0.04	0.05	-0.03	-0.76	0.446
Physical Self-Care (higher score more self-care)	0.04	0.06	0.04	0.77	0.444
Psychological Self-Care (higher score more self-care)	0.03	0.05	0.04	0.61	0.539
Emotional Self-Care (higher score more self-care)	0.11	0.05	0.14	2.24	0.026
Restrictive Eating Behaviours (higher score more restrictive)	0.00	0.04	0.00	0.02	0.987

$R^2 = .09$, $F(20,529) = 2.56$, $p < .001$

Table 7 Regression Coefficients for Hair Scale

<i>Predictors</i>	<i>Coefficients</i>				
	<i>b</i>	<i>SE</i>	β	<i>t</i>	<i>p</i>
(Constant)	-0.74	0.18		-4.04	< 0.001
During past month of Covid-19 pandemic: Felt nervous and “stressed”? (1 = Stressed)	-0.07	0.05	-0.06	-1.38	0.167
Age	0.00	0.00	0.03	0.73	0.468
What is your current employment status? (1 = FT)	0.03	0.04	0.03	0.71	0.477
Your race: Caucasian vs. Asian (1)	-0.06	0.06	-0.05	-1.10	0.270
Your race: Caucasian vs. African American (1)	-0.07	0.09	-0.04	-0.85	0.395
Your race: Caucasian vs. Multiracial (1)	0.04	0.11	0.02	0.37	0.712
Your race: Caucasian vs. Other (1)	-0.12	0.14	-0.04	-0.87	0.386
Your ethnicity? (1 = Hispanic/Latino)	0.00	0.06	0.00	-0.05	0.963
BMI	0.00	0.00	0.02	0.46	0.649
Marital status (1 = Single)	0.00	0.05	0.00	-0.05	0.959

Predictors	Coefficients				
	b	SE	β	t	p
I live (1 = Alone)	0.09	0.06	0.07	1.45	0.148
Are you a healthcare worker? (1 = Yes)	0.21	0.07	0.14	2.92	0.004
Do you usually wear a uniform for your work? (1 = Yes)	0.13	0.06	0.10	2.11	0.035
Have you been working from home during the current, lived COVID-19 pandemic? (1 = Yes)	0.01	0.06	0.01	0.19	0.850
Were you required to participate in video conferencing for work during the current COVID-19 pandemic? (1 = Yes)	-0.01	0.05	-0.01	-0.14	0.893
What is your sex (1 = Male)	0.05	0.05	0.04	1.00	0.317
Physical Self-Care (higher score more self-care)	0.10	0.05	0.10	1.94	0.053
Psychological Self-Care (higher score more self-care)	0.09	0.05	0.10	1.78	0.076
Emotional Self-Care (higher score more self-care)	-0.09	0.05	-0.11	-1.82	0.069
Restrictive Eating Behaviours (higher score more restrictive)	0.05	0.04	0.05	1.11	0.267

$R^2 = .09$, $F(20,529) = 2.52$, $p < .001$

Table 8 Regression Coefficients for Scent Products Scale

Predictors	Coefficients				
	b	SE	β	t	p
(Constant)	-0.60	0.16		-3.69	0.000
During past month of Covid-19 pandemic: Felt nervous and “stressed”? (1 = Stressed)	0.01	0.04	0.01	0.15	0.880
Age	0.00	0.00	0.03	0.72	0.475
What is your current employment status? (1 = FT)	0.04	0.03	0.06	1.24	0.217
Your race: Caucasian vs. Asian (1)	-0.11	0.05	-0.09	-2.11	0.035
Your race: Caucasian vs. African American (1)	0.05	0.08	0.03	0.59	0.557
Your race: Caucasian vs. Multiracial (1)	-0.07	0.10	-0.03	-0.69	0.489
Your race: Caucasian vs. Other (1)	-0.17	0.13	-0.06	-1.33	0.184
Your ethnicity? (1 = Hispanic/Latino)	0.04	0.05	0.03	0.69	0.489
BMI	0.00	0.00	0.04	0.85	0.398
Marital status (1 = Single)	-0.04	0.05	-0.04	-0.77	0.442
I live (1 = Alone)	0.08	0.06	0.07	1.33	0.183
Are you a healthcare worker? (1 = Yes)	0.09	0.06	0.07	1.46	0.144
Do you usually wear a uniform for your work? (1 = Yes)	0.13	0.05	0.12	2.48	0.013
Have you been working from home during the current, lived COVID-19 pandemic? (1 = Yes)	-0.01	0.05	-0.01	-0.14	0.885
Were you required to participate in video conferencing for work during the current COVID-19 pandemic? (1 = Yes)	-0.03	0.04	-0.03	-0.73	0.464
What is your sex (1 = Male)	-0.02	0.04	-0.03	-0.56	0.573
Physical Self-Care (higher score more self-care)	0.09	0.05	0.10	1.82	0.069
Psychological Self-Care (higher score more self-care)	0.02	0.04	0.03	0.51	0.608
Emotional Self-Care (higher score more self-care)	0.02	0.04	0.03	0.54	0.587
Restrictive Eating Behaviours (higher score more restrictive)	0.03	0.04	0.03	0.75	0.455

$R^2 = .07$, $F(20,529) = 2.10$, $p = .004$

The Appearance scale had decreases in predicted values for Asians compared to Caucasians, but increases for those who were healthcare workers, wearing a uniform, higher on Physical Self-Care, or more restrictive in eating (see Table 9). As demonstrated in Table 10, the overall regression model for the Make-up scale was not found to be statistically significant, but there was a predicted decline in values for those who were African Americans compared to Caucasians.

Table 9 Regression Coefficients for Appearance Scale

Predictors	Coefficients				
	b	SE	β	t	p
(Constant)	-0.62	0.17		-3.66	0.000
During past month of Covid-19 pandemic: Felt nervous and “stressed”? (1 = Stressed)	-0.02	0.04	-0.02	-0.51	0.608
Age	0.00	0.00	-0.03	-0.59	0.557
What is your current employment status? (1 = FT)	0.02	0.03	0.03	0.73	0.466
Your race: Caucasian vs. Asian (1)	-0.16	0.05	-0.14	-3.17	0.002
Your race: Caucasian vs. African American (1)	-0.02	0.08	-0.01	-0.29	0.772
Your race: Caucasian vs. Multiracial (1)	-0.16	0.10	-0.07	-1.62	0.107
Your race: Caucasian vs. Other (1)	-0.06	0.13	-0.02	-0.48	0.629
Your ethnicity? (1 = Hispanic/Latino)	-0.04	0.05	-0.03	-0.67	0.502
BMI	0.01	0.00	0.08	1.86	0.063
Marital status (1 = Single)	-0.07	0.05	-0.07	-1.34	0.179
I live (1 = Alone)	0.11	0.06	0.09	1.91	0.057
Are you a healthcare worker? (1 = Yes)	0.16	0.07	0.11	2.39	0.017
Do you usually wear a uniform for your work? (1 = Yes)	0.12	0.06	0.11	2.19	0.029
Have you been working from home during the current, lived COVID-19 pandemic? (1 = Yes)	0.05	0.05	0.04	0.97	0.330
Were you required to participate in video conferencing for work during the current COVID-19 pandemic? (1 = Yes)	0.00	0.05	0.00	-0.08	0.933
What is your sex (1 = Male)	-0.01	0.04	-0.01	-0.29	0.769
Physical Self-Care (higher score more self-care)	0.10	0.05	0.10	2.02	0.044
Psychological Self-Care (higher score more self-care)	-0.01	0.05	-0.02	-0.29	0.772
Emotional Self-Care (higher score more self-care)	-0.12	0.04	-0.17	-2.74	0.006
Restrictive Eating Behaviours (higher score more restrictive)	0.11	0.04	0.12	3.02	0.003

$R^2 = .13$, $F(20,529) = 3.96$, $p < .001$

Table 10 Regression Coefficients for Make-up Scale for Females Only

Predictors	Coefficients				
	b	SE	β	t	p
(Constant)	-0.51	0.26		-1.98	0.049
During past month of Covid-19 pandemic: Felt nervous and “stressed”? (1 = Stressed)	-0.07	0.07	-0.07	-1.07	0.284
Age	0.00	0.00	-0.01	-0.16	0.872
What is your current employment status? (1 = FT)	0.05	0.05	0.07	1.02	0.307
Your race: Caucasian vs. Asian (1)	-0.04	0.09	-0.03	-0.43	0.670
Your race: Caucasian vs. African American (1)	-0.33	0.13	-0.17	-2.53	0.012
Your race: Caucasian vs. Multiracial (1)	-0.07	0.15	-0.03	-0.45	0.656
Your race: Caucasian vs. Other (1)	0.05	0.21	0.02	0.23	0.816
Your ethnicity? (1 = Hispanic/Latino)	0.03	0.10	0.02	0.29	0.770
BMI	0.00	0.01	-0.01	-0.09	0.925
Marital status (1 = Single)	-0.09	0.07	-0.09	-1.20	0.233
I live (1 = Alone)	0.10	0.09	0.08	1.07	0.288
Are you a healthcare worker? (1 = Yes)	0.05	0.10	0.03	0.45	0.656
Do you usually wear a uniform for your work? (1 = Yes)	0.09	0.10	0.08	0.96	0.339
Have you been working from home during the current, lived COVID-19 pandemic? (1 = Yes)	-0.01	0.08	-0.01	-0.07	0.945
Were you required to participate in video conferencing for work during the current COVID-19 pandemic? (1 = Yes)	-0.01	0.07	-0.01	-0.18	0.855

Predictors	Coefficients				
	b	SE	β	t	p
Physical Self-Care (higher score more self-care)	0.08	0.08	0.09	1.12	0.265
Psychological Self-Care (higher score more self-care)	0.04	0.07	0.05	0.55	0.584
Emotional Self-Care (higher score more self-care)	-0.12	0.07	-0.16	-1.83	0.068
Restrictive Eating Behaviours (higher score more restrictive)	0.05	0.06	0.06	0.93	0.353

$R^2 = .09$, $F(19,237) = 1.20$, $p = .261$

Discussion

The purpose of this study was to examine dressing behaviour during the COVID-19 pandemic. The study provides unique data, because it was collected at a time when the lockdowns were established in the United States, April 2020. The results supported the first research question, demonstrating that dressing behaviour changed during the COVID-19 pandemic. Overall, during the pandemic participants engaged in less dressing behaviours wearing less accessories, applying less make-up, and using less hair and scent products. Participants also dressed informal clothing (e.g., jeans, t-shirts) and incorporated protective dress during the pandemic. These results support previous research that casual clothing and wearing less accessories and scent products were associated with stress (e.g., Saiki et al., 2012). In addition, these findings may indicate that the participants were engaged with comforting behaviour by wearing more casual clothing. Outcomes from this research varied from Solomon's (2020) assertions about consumer behaviour changes as a result of the COVID-19 pandemic. Instead of gravitating towards luxury, participants were more interested in wearing informal, casual clothing. In addition, participating in less dressing behaviour and perhaps having a more natural appearance might be the "rebellious" dress that tends to emerge during stressful events in history (Tortora & Marcketti, 2015). Similar to reports on other traumatic events, the pandemic could have refocused attention on the family rather than appearance related behaviour (Beyerlein & Sikkink, 2008). As with patriotic dress and the feelings after 9/11 (Beyerlein & Sikkink, 2008), wearing protective dress (masks and gloves) might have been seen as support and safety for the country and others. The decision to wear protective dress was also an individual preference. The results demonstrated that a higher score on the Emotional Self-Care Scale predicted wearing of protective dress.

The second research question was also supported because stress levels related to changes in dressing behaviour occurred during the COVID-19 pandemic. Participants indicating higher stress levels tended to wear less Formal Dress during the pandemic than prior to it. These results support the suggestion by The American Institute of Stress (2020) that neglecting one's appearance is a sign of stress.

Several findings reinforce the third research question, demonstrating demographics groups varied in dressing behaviour during the COVID-19 pandemic. More females than males experienced higher stress during the pandemic. Women changed their dressing habits more than men with regards to wearing more informal dress, less formal dress, using less hair products and services, and wearing more protective dress. The finding reconfirms Kwon and Kwon (2013) results that women participated more than men in "multifaceted appearance management" given an individual's many roles. The findings back popular commentary and research that indicates women when compared to men were more affected by the COVID-19 pandemic (e.g., Hoff, 2021; Lewis, 2021). Women generally make lower wages and are the caretakers of children, therefore they were more likely to stay at home during the pandemic. This tremendous interruption in their daily lives likely contributed to stressful feelings that was reflected in their appearances. Reilly and Rudd (2009) found having a haircut was associated with relieving anxiety. Due to the lockdown and social distancing, women were unable to visit a hair salon. Additionally, Reilly and Rudd observed that anxiety prompted participants to engage in "non-routine" behaviours. In this study, wearing formal dress may have been part of a routine that was changed with the stress of the pandemic.

There were also some differences among ethnic groups. Decline in wearing accessories was more predictive for Caucasians than non-Hispanics and Asians. For the Asian population, wearing make-up was not found to decrease as with African Americans and Caucasians.

Additionally, lifestyle variables impacted dressing behaviour during the COVID-19 pandemic. For Informal Dress, increased values were predicted for those working from home or required to participate in video conferencing. The opposite was true for formal dress. While participants who actually went to work, (e.g., wore a uniform or worked in health care) and lived alone (e.g., wearing accessories and scent products) predicted increasing wearing formal dress during the pandemic.

Implications, conclusions, and future research

This research has several scholarly and practical implications. Theoretically, this paper contributes to an understanding of communication theory. The research validates changes in dressing cues and dress rules during a significant event. It was definitely a time of “ambivalence”, as described in fashion theory (Kaiser et al., 1995). Each category of dress in the survey was affected during the pandemic, indicating that this ambivalence did prompt more appearance modification. Future studies could examine this process of fashion change during the pandemic through content analysis of product availability. Perhaps the meanings of these dress items will prompt change. For example, informal dress might be interpreted differently post-COVID pandemic.

In practice, the results can be part of determining stress (e.g., wearing informal dress), which can prompt intervention. In addition, different consumer groups could be targeted for campaigns. For example, businesses selling formal clothing could be designed to provide the comfort of informal clothing. Informal clothing can capitalise on these moments. In another example, accessories could be marketed to Asian and those living alone. Wearing masks was associated with high emotional self-care. Therefore, self-care could be incorporated in promoting mask-wearing.

Overall, the results record a unique point in time when a significant historical event occurred. It provides an understanding of how dressing habits and meanings of dress changed during the COVID-19 pandemic in the United States. Further research could include conducting a longitudinal analysis of fashion change by collecting data with the same survey after the pandemic ends. In addition, dressing behaviours can be assessed in different regions of the world, which can be compared to the results from this study.

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Teacher educators' experiences when changing to digital teaching during the COVID-19 pandemic in subject Food and Health

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Abstract

Several Norwegian universities implemented the digitization of all teaching in March 2020 during the COVID-19 pandemic. This study explores teacher educators' experiences when teaching the subject of Food and Health under the pandemic. The data consisted of eight interviews with teacher educators and was thematically analysed.

The pandemic has challenged teachers' digital competencies and pedagogical practices in different ways and forced them to work hard to maintain quality in their teaching. The findings indicate it could be possible to conduct innovative teaching in digitized learning environments. Teacher educators spent a lot of time rethinking teaching practices pedagogically and professionally in new digital settings. Digital teaching can be challenging in terms of communication and relationships between teacher educator and students, and between students. Accordingly, it would appear that the underlying challenges have presented the most obstacles to personal and institutional innovation, not the coronavirus crisis itself.

KEYWORDS: COVID-19 PANDEMIC, INTERVIEW STUDY, FOOD AND HEALTH TEACHER EDUCATORS (FHTE), DIGITAL LEARNING ENVIRONMENTS

Introduction

Student progress and the right to have a high standard of education must be maintained, even during difficult times (Education International, 2020). The first wave of COVID-19 under the global pandemic reached the Norwegian education system in March 2020. This corona crisis has challenged the ability of national and local education institutions to respond urgently with emergency plans (OECD, 2020) for addressing the health risks posed by the virus and for supporting teachers and students in developing digital learning resources and environments on a large scale (Commonwealth of Learning, 2020).

Digital learning environments involve both teachers and students using technologies for educational purposes without place restrictions, whereas face-to-face learning environments require students and teacher educators to be physically present in the same place at the same time (Allen & Seaman, 2013; Bates, 2019). Brown et al. (2005, p. 3) clarifies the concept of educational digital learning environments as “dynamic, interconnected, ever-evolving community of learners, instructors, tools, and content”.

In many countries, such as England (la Vellea et al., 2020) and Portugal (Flores & Gago, 2020), the closing of campuses forced a transformation from traditional face-to-face to more digital learning environments. Several studies have indicated that the increase in digital learning environments

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caused by the COVID-19 pandemic has changed teaching and learning worldwide in different ways (Bozkurt et al., 2020; Ferdig et al., 2020). Further, COVID-19 has provided challenges and opportunities for developing teaching practices (Carrillo & Flores, 2020; Flores & Gago, 2020) and potentially exposing shortcomings and vulnerabilities. Thus, creating an environment for generating innovative pedagogical development ideas but also raising ethical concerns requiring attention. However, students have the right to receive instruction (in terms of teaching), and the duty of teacher educators is to teach. The question as to what extent these rights have been realized during the pandemic is a subject for discussion.

The quality of higher education can be described and measured in multiple ways with complex criteria (Harvey & Green, 1993). For our study, we understand quality as meeting expectations and requirements (Norwegian Ministry of Education, 2016). Therefore, quality is achieved when teaching meets the political expectations of efficiency, professionalism, and variations in teaching methods and learning environments. Additionally, teaching must meet institution leaders, colleagues, and students' expectations in the best possible ways. In Norway, there has been an increasing number of debates on how the pandemic has influenced the quality of education and how COVID-19 will change higher education in different ways (Brökel, 2021). Moreover, the perspectives of teacher educators who teach Food and Health (FH) and other practical and aesthetic subjects have received less attention from researchers. In this study we examine Food and Health teacher educators' (FHTEs) points of view concerning the consequences of the pandemic to their teaching practices. To our knowledge, the effects of the pandemic on FH teacher education have not yet been studied.

Aim

The aim of this study was to explore the experiences and reflections of teacher educators when teaching Food and Health (FH) during the pandemic, which will be achieved by conducting qualitative interviews.

Context

The overall context of the study is the period when the global pandemic started to affect Norway in March 2020, which continues to affect teacher educators. The health authorities have introduced national infection control systems that have resulted in the closing of education institutions. However, the political expectations were to maintain student rights to receive teaching and most teaching practice transferred to the digital domain.

FH is one of several academic courses that students can choose in their five years of primary and secondary school teacher education (National Council for Teacher Education, 2016). While most students choose to study 30 ECTS (European Credit Transfer System) credits, it is possible to extend the courses up to 60 ECTS, and in case students do a master's thesis in FH they will need a total of 90 ECTS. In Norway, FH is a compulsory practical-aesthetic subject in the 4th, 6th, and 9th grades in primary and secondary school (Øvrebø, 2008). It is an interdisciplinary subject domain consisting mainly of cooking skills and knowledge of health promotion, food culture, and sustainable food.

Recently, there have been strong political and financial investments in digitising primary and secondary teacher education to strengthen the digital competencies of current and future teachers. Furthermore, as in many other countries, the Professional Digital Competence Framework for Teachers was launched to improve "the quality of teacher education and systematic continuing professional development of teachers" (Arstorp et al., 2017, p. 2). Accordingly, the digitization of teaching in Norway and many other countries were already operative when the lockdown started. However, a documented gap remains in Norway between politics and practices in terms of the digital competencies of both teacher educators and students (Instefjord & Munthe, 2017).

The conceptual framework

The Norwegian Strategy Plan for Digitizing Higher Education clarifies digitizing as the use of "technology to renew, simplify and improve [and] offer new services that are easy to use, efficient and reliable" (Norwegian Ministry of Education, 2018, p. 1). Further, digital learning environments have been justified by several arguments; they facilitate the use of technological solutions and digital tools to achieve more effective, flexible, and varied learning. In our study, the concept of digitizing

teaching was used to describe the process in which teacher educators transform traditional face-to-face teaching into digitized learning environments during the pandemic.

Translation and spreading of ideas

Czarniawska and Joerges (1996) provides concepts for understanding teacher educators' experiences and reflections with the phenomenon transforming *teaching practices during the pandemic*. The translation theory (Czarniawska & Joerges, 1996) originates from different organisation theories and is based on the notion of spreading of ideas and practices as *translation*. It focuses on the ways ideas and practices spread in different places with different groups of actors, technologies, tasks, and cultures. Spreading is understood as being a chain process where actors are involved in varying degrees. Actors such as teacher educators can adapt and influence practices and ideas while spreading and translate the practices and ideas. However, the translators can use different intentions, strategies, and modes when implementing these concepts. Such a situation, where new ideas are incorporated into the organisation and are confronted with existing practices, provides teacher educators with an opportunity to reflect on their understanding of teaching and how it could be developed. Moreover, the success of this process depends on which rules and translation modes the teacher educators choose.

Digitizing teaching practices

The concept of digitizing teaching practice is not new (Bates, 2019). Furthermore, it is one of the hallmarks of a knowledge society, progressed by global political efforts for facilitating effective education for everyone. The technology-based learning model (Bates & Poole, 2003) indicates how different degrees of digitization can influence teaching practice, placed on a scale from traditional face-to-face teaching through mixed-mode teaching to complete e-learning (Figure 1). In our case, the no e-learning method consisted of only face-to-face teaching on campus, while the fully e-learning method consisted of only online Zoom- and/or Teams-teaching. These learning practices can be mixed and are termed blended or distributed learning. A typical use of these practices is when disseminating key knowledge elements and discussions when face-to-face teaching is reduced.

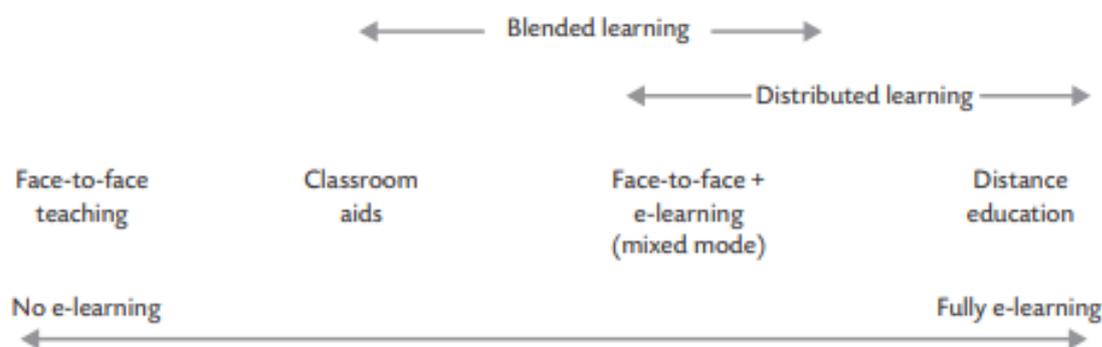


Figure 1 Model for digitized learning environments applied from Bates and Poole (2003) cited in Bates (2019)

Mixed-mode teaching, also known as blended or hybrid teaching (Allen & Seaman, 2013), combines traditional face-to-face teaching and digitalised learning. Within this mode, students can be placed into groups where one group receives traditional face-to-face teaching on campus while the other simultaneously receives distance teaching. In this study, we use some concepts from the translation theory of Czarniawska and Joerges (1996) combined with the model by Bates and Poole (2003) as frameworks for conceptualising the changed learning environments where teacher educators taught during the pandemic.

Methodology and methods

This qualitative study (Brown & Clarke, 2013) explored FH-teacher educators' experiences and reflections on their own teaching ideas and teaching practices in a pandemic-induced situation where familiar teaching environments had to be increasingly applied to digital teaching environments. Our data consist of eight interviews. We used interviews because our concern was to get "a participant

to talk about *their* experiences and perspectives, and to capture *their* language and concepts" (Brown & Clarke, 2013, p. 77). The participants were chosen using the following four criteria. First, they represent different teacher education institutions from different geographical locations in Norway. Second, they differed both in age and employment time as FH-teacher educators. Third, they have a permanent teaching position within their educational institutions. Finally, they teach FH on Campus at official primary and secondary teacher education institutions, similar to the authors. An email and telephone were used to ask the participants for their willingness to be interviewed.

The interview guide (Silverman, 2013) was based on previous research (Carrillo & Flores, 2020) and our own experiences with the pandemic. The guide consists of 10 open-ended questions. The interactive semi-structured interview data was constructed in professional conversations (Kvale, 2008) in which experiences and reflections of interviewers and interviewees (Gubrium & Holstein, 2012) developed understandings of teaching during the pandemic. Interviews were conducted in December 2020 and early January 2021. Each interview lasted 45-60 mins. Both authors conducted the interviews online and synchronously according to Brown and Clarke's (2013) guidelines through digital devices, Zoom and Skype, or telephone. This enabled time saving and involving the informants from different geographical areas and different teacher education institutions.

Our theoretical thematic analysis (Brown & Clarke, 2013) started during the interviews and was refined several times. The interviews were mainly recorded using video or audio, transcribed, and/or documented by written notes. Recordings and notes were then analysed several times and discussed by both authors to uncover topics relevant to the aim of the study. The complete dataset was initially coded selectively, according to Brown and Clarke (2013), to find descriptive items about teacher educators' experiences during the pandemic. Then, the dataset was examined again and coded completely while searching for specific items concerning the experiences, opportunities, and challenges faced by the teacher educators. The following four final themes were identified: Transformed teaching practice, solutions for surviving the pandemic, communication, and teaching quality.

Ethical considerations

According to the Norwegian National Research Ethics Committees (2016), this type of study does not require an ethical warrant. It should also be noted that there are few FHTEs in Norway; they are easily recognisable, and for this reason, their education institutions and identities were anonymized in this study. We contacted the participants by email and informed them about the study in advance. Furthermore, we asked for their voluntary participation, reminded them they could withdraw at any time, and data was stored confidentially until the publishing of this article.

In the following section, we present our main findings and discussions by using Brown and Clarke's (2013) interpretive descriptions of data material. We use both the data extracts and theoretical framework to illuminate FHTE's teaching experiences under COVID-19 restrictions. While this contributes to the transparency of our study, the findings are only generalisable in similar contexts.

Findings and discussion

Four overarching themes were identified in the thematic analysis: Transformed teaching practice, solutions for surviving the pandemic, communication, and teaching quality.

The transformed teaching practices

This theme illustrates how the FHTEs talked about the changes in their teaching practices during the COVID-19 pandemic. The digitization of teacher education was integrated in teaching practice in some degree before the pandemic. Furthermore, most FHTEs had already met their students in classrooms and teaching kitchens on the campus and knew each other a little by the time of lockdown. Accordingly, the preconditions for transforming teaching practices in FH from face-to-face to fully e-learning were quite favourable.

Some teachers referred to teaching before the pandemic as normal or ordinary teaching in a classroom and kitchen, or campus-based teaching. One FHTE said that then:

[teaching] was conducted in the old way in which I could see what is happening and where it is possible to make eye contact with students and get response from them.

None of the participants foresaw the drastic changes resulting from the pandemic. According to some of our participants, this transformation of teaching practices happened overnight. The participants were personally impacted by the pandemic in different ways. One interviewee noted that:

I experienced it [lock down] as an absurd situation, when we got new framework conditions, I felt that everything was a chaotic mess. Then we were told that these changes would apply to absolutely everyone [...] I knew that I just had to act and do what I could.

According to the participants, the transformation at educational institutions happened with unexpected power. They conveyed how their ordinary life as FHTEs was placed on hold when the government and Norwegian Institute of Public Health closed all non-essential activities on 13th March 2020. Although transforming practices can happen gradually and the spreading force can increase (or decrease) over time (Czarniawska & Joerges, 1996), while this pandemic caused a much faster transformation. FHTEs had to change their teaching practices and immediately start to transform their lectures into a format that could be taught digitally. Participants considered the transition difficult, urgent, and forced, with one stating:

[...] I had to redo everything that I had previously prepared on that Wednesday, because I was told that all teaching was to be done digitally.

The lectures were usually digitized and customized to suit the Zoom platform. Moreover, all participants stated their digital knowledge and skills had increased because reorganising the learning environments forced them to think differently. However, it was apparent that the FHTEs had different competencies in digital knowledge and skills. Preparing lectures takes more time if teacher educators are not familiar with using digital platforms. One teacher educator noted that:

[...] it was time consuming to make PowerPoint with sound. Images and sound required very long upload times in Canvas.

Some teachers recalled how they learned the most fundamental things necessary to prepare a lecture digitally; however, there were differences in how quickly they learned and became confident in using the digital teaching tools. While some of the older teacher educators told:

[...] it was scary to begin with

they still did their best. Several participants became more confident as their digital knowledge increased, while some others had to learn Zoom and other programs from scratch. FHTEs spent a lot of time rethinking teaching practices pedagogically and professionally in this new digital setting during the pandemic.

However, it was not only because of the pandemic that teacher educators reported increased time usage. One participant remarked that:

[...] it's not Corona or the fact that it's digital that has made me spend more time. Because I have spent a lot of time preparing for this autumn, and that is because I am now suddenly working with target group that is completely different, I have had before.

Accordingly, underlying challenges seem to have presented the obstacles to personal and institutional innovation, not only the coronavirus crisis itself.

While the implementation of learning resources and digital learning environments in local teaching practice gradually have become more widespread, the digital skills of teacher educators have been criticized as being inadequate (Instefjord & Munthe, 2017). However, our study does not support such findings. None of the participants were unfamiliar with digital learning environments and all participants emphasised that mastering technical skills should be considered as a prerequisite for successfully mastering digital environments.

Solutions for surviving the pandemic

According to the translation theory (Czarniawska & Joerges, 1996), the ways of new ideas and practices spread in different places with different groups of actors, technologies, tasks, and cultures. Our results show how FH-teacher educators could conduct innovative theoretical and practical teaching in digitized learning environments. For example, the analysis revealed differences in how the education institutions organised their practical lessons during the lockdown. One university did not have any practical lessons for a period, having several theory lectures instead, although several practical sessions were subsequently offered at a safer time. Further, practical lessons lost most terrain during the campus shutdown and were deemed the most difficult to transform into digital learning environments. The impressions from several participants were that students were less able to maintain focus on the practical side of FH.

Only some FHTEs had experience with all the methods of digitized teaching presented in the model by Bates and Poole (2003). Instead, they implemented teaching in various ways. One FHTE found another learning environment for her students and moved some of the practical lectures outdoors to reduce the risk of infection. Another FHTE did not have many practical lessons delivered digitally, having received special permission to conduct practical lessons on campus. Accordingly, she conducted several hybrid lessons even during the lockout. Several FHTEs prepared theoretical and practical tasks which students could complete at home. The students documented task completion by sending videos or pictures with text, and the FHTEs provided feedback on these tasks. Homework seems to assume that each student has access to sufficient kitchen equipment. This may not always be the case. This evokes a question: Is the equal right to education for all forgotten? This is the ethical concern which some of FHTEs were worried about.

Several participants used a mixture of teaching methods to digitize the practical exercises of cooking different dishes, with one explaining the teaching process as follows:

I did a live demonstration in Zoom, explaining and showing the process of cooking a fish, from removing the intestines through fileting, to plating the finished dish. Then the students were given 90 minutes to prepare a dish of their own at their homes, based on a recipe given to them before the demonstration. The students presented their prepared dish to me in a one-on-one online setting, in which we discussed the process of preparing the fish dish and how they solved their task. This one-on-one conversation was very fulfilling for the students.

This quote serves as an example of how the pandemic provided opportunities for innovative teaching practice. FHTE described one way of successfully digitizing a practical lesson in FH representing fully e-learning (Bates, 2019). She appeared to have carefully considered learning goals, methods of teaching, and the time/schedule for the lesson seem to be time-consuming. However, she told that she did not have contact with students when they worked on their tasks. Out of experience we know that in the face-to-face teaching situations in campus kitchens the interaction between students and FHTE is vivid and FHTE is constantly observing students cooking skills. The teaching method this participant describes seems to refer to student-active learning (Damşa et al., 2018) where the students are responsible for independently conduct the learning task. Furthermore, the students could clarify the criteria for the individual conversation with FHTE which took place after the finished task by bringing up their own descriptions and experiences concerning the practical cooking task. The teacher educator did not have any other data sources than the students' narratives to base the discussion on. This example shows that students' perspectives on a practical teaching event in FH can be reinforced in digitized learning environments. This was the first time this FHTE taught FH in this way and she noted that this method would never have crossed her mind without the pandemic.

Communication

Most of the FHTEs managed to continue teaching FH by digitizing their teaching despite the pandemic, partly because they had met their students in traditional face to face teaching in classrooms and in teaching kitchens on the campus before the lockdown. Nevertheless, they faced several challenges with information flow. Spreading of information of changers in existing practices can be understood as being a chain process where actors are involved in varying degrees (Czarniawska & Joerges, 1996). While university administration usually ensures that external and internal communication is flowing, the FHTEs experienced the adequate information provided to was variable. One participant described her experience with deficient communication as following:

We are frustrated because we always get information afterwards. We were told that they have shut down [the campus] via the media. This was Friday at 17 pm. We messaged our university and asked what we should do, but there was no answer, so we just decided how to teach on Monday. Once we had made that decision, we planned the coming week during the weekend [...] so [later] we were criticized because we had made those decisions ourselves [...] without involving the management.

This experience illustrates how pre-existing shortcomings in organisation could emerge (or escalate) during a crisis and how information does not always flow well. Some FHTEs took responsibility by reorganising their own teaching practices and working overtime, and two FHTEs were afterwards criticized for acting without approval from leaders. This type of critique can hamper implementing new practices (Czarniawska & Joerges, 1996) and may indicate underlying weaknesses in organisations. However, in some other organisations, FHTEs received praise for their efforts.

All participants stated that the amount of digital teaching increased due to the unexpected shut down of their campuses. Furthermore, teacher educators' working methods became different. One FH-teacher educator claimed that:

[...] communication on the digital platforms is unnatural.

Further, several participants noted that communication forms had changed because digital teaching possibly requires more written, individual communication outside the teaching events compared to face-to-face teaching.

Some participants had trouble with achieving two-way communication in Zoom because some students turned off cameras so that neither the FHTE nor co-students could see them. Instead, they saw many black computer screens. Several participants told that they did not manage to conduct active dialogue with the students in their lectures and students asked fewer questions in fully-e-learning compared to no-e-learning. One participant stated:

[...] It's something about when you are asking a question, you might get an answer, but it comes from a black screen, and that is pretty difficult to relate to [...] There is no eye contact, there is nothing [you can use] to confirm anything.

The lack of a face behind some answers makes teaching more challenging because the FHTEs struggled to determine whether their students have understood what is lectured. Teaching can be understood as interaction (Kansanen, 2006) in which both teacher and students participate and have mutual expectations for presence and feedback. However, black screens can challenge these basic premises of teaching and learning. The participant continued by stating:

While lecturing, I try to compress it more, and to be more precise. This is shorter sequences, but it is the only opportunity to capture and hold attention for a longer time span. I understand that the students find it hard to stay focused online. I can imagine that it feels more tiring than being in a classroom for example, and it becomes more monotonous.

Many of the participants recounted having similar experiences, finding communication with students easier to achieve on a face-to-face teaching. Despite this, according to FHTEs, several students experienced more freedom with digital teaching because the learning is more student-led, meaning they decide how much to listen. This freedom can be both beneficial and harmful for learning. This causes more responsibility for learning on the students. This could be one of several explanations as to why some FHTEs perceived their students were less engaged in digitized learning environments compared to no e-learning.

Another reason for the apparent reduction in student activity in fully-e-learning situations could be explained by the fact that not all teacher education institutions in Norway have integrated digitized teaching in their ordinary teaching practices (Instefjord & Munthe, 2017). A literature review of 134 empirical studies (Carrillo & Flores, 2020) indicated that teaching in digital learning environments challenges teacher collaboration and communication between several actors throughout the organisation. Accordingly, while the process of digitizing teaching practices is spreading in teaching institutions through teacher educators, they are only one link in a larger spreading chain. Other possible links could include administrative staff who ensure that timetables inform, for example, whether digitized teaching is synchronised, and technical staff who could ensure the required technical devices are working correctly. Our study indicates that FHTEs have digital assistance easily available and most of them needed support from technical staff. This need for support was uniform,

regardless of the participants' existing technical skills with digital tools. One participant remarked that:

The support I got was essential for my teaching. The critical point is that support must be available at the exact moment it is most needed. The fact that I managed to conduct the planned teaching on that Wednesday was only because of the help I got from the IT-assistance team.

However, most of FHTEs consider informing students about practical issues essential for successful teaching this practical-aesthetic subject FH. One participant noticed the missing communication too late:

[...] one problem I encountered the day of teaching practical digitized cooking was that the students had not been told to buy food [...] there were practical challenges that became quite demanding in order to make the teaching relevant to those who participated in the lecture from home.

Teaching quality

Teaching quality can be clarified by using complicated criteria (Harvey & Green, 1993) as well as by clarifying external and internal expectations and requirements. Our analysis indicates that FHTEs have been concerned about the quality of teaching during the pandemic. Furthermore, they experienced several unexpected circumstances in their teaching practice, such as problems with digital equipment and software and communication with students. One participant expressed that the pandemic was a "kick off" for the development of her digital skills.

There was a clear distinction between the digital and physical learning environments. Several teacher educators said that

It [digital learning environment] can never be the same [as physical learning environment].

The findings suggest that it was very hard to achieve engaging dialogue and discussions on Zoom/Teams, despite the FHTEs testing different methods. However, as communication stands at the very core of all teaching, this is a question of teaching quality. One participant referred to discussions about the black screens as follows:

[...] the digital teaching degrades the quality because the teacher students have special expectations for digital communication.

FHTEs teaching methods became different and communication was more limited and unnatural on the digital platform, more teacher-led teaching, less dialogue. Moreover, there can be a limit into which the students ask questions. One cannot exclude that shy students will become even more timid when there is a computer screen between them and the FHTE. One participant noted that some students found communication via a screen less satisfying and that current practice in digitized learning environments reduces teaching quality. Another perception was that other students were grateful and held that online teaching was preferable to no teaching. Another FH-teacher educator remarked that:

With in-depth learning there is usually an advantage of varied teaching methods.

Her experience was that in-depth learning was more difficult to achieve when there was no normal teaching situation.

The main concern of FHTEs was whether their teaching was good enough to support students learning. This was because some students required more attention and individual guiding as the pandemic progressed. A series of surveys have confirmed this as a relevant concern, demonstrating the pandemic has had a negative influence on expected learning outcomes (NOKUT, 2021). An interesting situation is when students are individually working with cooking tasks in their kitchens while in digital learning environments (such as Zoom), and the FHTE and other students enter there for following up the student and learning together. One participant expressed the concern this way:

If they are at home, they must open their home to the whole class and to the teacher educator and it can feel quite problematic for many.

Hence, our study shows it is possible to create a positive and permissive atmosphere that facilitates learning by using the attempt-fail method, such as in learning to use digital devices. Moreover, mutual

openness to learning challenges between the teacher and students (and between the students themselves) improves the learning atmosphere. The teacher is primarily responsible for student learning and is also a supervisor. One participant noted that:

...this [work as a teacher educator] includes being a supervisor [...] not only giving students tasks they must solve individually and in groups.

Several participants felt external expectations from leaders. One recounted her managers expecting them to control the digital classroom environment during Zoom-lectures. Some FHTEs used “icebreakers” such as correct and incorrect statements, which are designed to open conversations and improve the digital classroom environment, because they were expected to do so by their leaders.

FHTEs have taught students digitally, and this indicates their willingness to change their teaching practices. This means that FHTEs adapted to new learning environments and learned how to use digital tools effectively within a short period. Many students miss campus teaching, and the pandemic has placed campus-teaching in a more positive light. According to several participants, many students find face-to-face teaching on campus more active, present, complementary, and social compared to fully digitized teaching.

Conclusion

The aim of this study was to explore FHTEs’ experiences and reflections about their teaching during the COVID-19 pandemic. In fact, experiences and reflections were all about complex processes concerning changes in learning environments in which new ideas about teaching had to be found rapidly because existing teaching practices could not be implemented during the pandemic. Teaching had to be digitized, and it happened in different extend in different places. Our study was informed by literacy, political documents and participants’ experiences and our own experiences. Our thematic analysis was driven by translation theory (Czarniawska & Joerges, 1996) which gave us concepts to understand the ways new ideas and practices can spread in chain processes where different actors are involved in varying degrees. To understand how the different degrees of digitalised learning environments can influence teachers’ teaching the translation theory was combined with the model of the technology-based learning by Bates and Poole (2003). The theory and concepts we used allowed us to explore the goal of our research in a productive way. The results are not widely generalisable in other contexts, but still give a single picture of the implementation of FH teaching during the pandemic. Our study shows that COVID-19 has provided both challenges and opportunities for developing teaching practices. Thus, the findings and discussions can be interesting for policymakers and teachers who develop FH-teaching. However, we conclude that the underlying challenge revolves around being able to innovate personally and institutionally, not the COVID-19 pandemic itself. FHTEs are just one link in a long chain of developing processes, but they can make a difference.

This study indicates that the COVID-19 pandemic has changed FHTEs’ teaching practices. It could be possible to conduct innovative theoretical and practical FH teaching in digitized learning environments, and digital teaching can challenge communication and relationships between teacher educators and students. Our findings also indicate that several of the participants in the study will continue to develop and use digital teaching practices after the pandemic.

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Random survival or conscious development: Estonian Handicraft and Home Economics teachers' experiences during distance education

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Abstract

The sudden emergence of the COVID-19 pandemic in spring 2020 forced schools, including those in Estonia, to shift to distance learning to avoid academic loss. Estonia has been named “the most advanced digital society in the world” (e-Estonia Briefing Centre, n.d.-a, para 5), and much has been done during the last decades to increase both teachers’ and students’ digital competence. Nevertheless, teachers had challenges finding new modes of supporting students’ learning remotely. Summaries written by teachers’ regional representatives are used in this article as data to cast light on handicraft and home economics teachers’ experiences during distance learning. Such sudden changes pushed teachers into new ways of thinking, rapid learning, finding innovative solutions, and being ready to step out of their comfort zones. In addition, we point to teachers’ good practices to open the discussion on whether the COVID-19 pandemic gave rise to random survival in an educational context or supported a conscious development for better education.

KEYWORDS: COVID-19, HOME ECONOMICS, HANDICRAFT, TEACHERS’ EXPERIENCES, TEACHERS’ CHALLENGES

Introduction

The first COVID-19 signs in Estonia were announced in February 2020. The number of cases rose rapidly, and the state announced an emergency situation and a total lockdown on 12 March (Mihelson & Järv, 2020). In addition to other large-scale restrictions, schools were closed between 16 March and 18 May, and teachers needed to reorganise teaching in order to continue the school year and avoid academic loss. In this article, we give an overview of the digitalisation of Estonian education before and during the lockdown in spring 2020 and of the nature of handicraft and home economics as a school subject, and we analyse the situation from handicraft and home economics teachers’ perspectives. Although there are several slightly different concepts used when talking about learning during the COVID-19 pandemic (such as distance learning, remote learning, and distributed learning), in this article we consistently use distance learning as it was used in discussions about learning and teaching in Estonia during the pandemic period.

Estonia is a small country in northern Europe, whose reputation as a “digital country” is widely known, based on convenient e-services that are widely used in the country. According to the e-Estonia Briefing Centre (n.d.-b, para 1), 99% of state services are available online. Estonia was the first country in the world to adopt online voting in 2005. Since 2002, Wi-Fi networks have covered most of the populated areas in Estonia, and nowadays 4G is available everywhere.

Although information and communication technology (ICT) knowledge, skills, and experiences are needed everywhere, schools have a major role in providing these through education (Mis saab Eesti

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IT haridusest? Raport [What will Happen to Estonian IT Education? Report], 2015). Therefore, many activities in Estonia have been carried out to develop a suitable digital learning environment as well as to support students' and teachers' digital competence. The digitalisation of education was given a boost in Estonia in 1996, when the state started the *Tiger Leap* programme and made heavy investments to develop and expand the computer and network infrastructure in Estonian schools. One of the most important results of this project was to connect all Estonian schools to the internet. Today, 100% of Estonian schools are stated as using e-school services, mainly e-school and Studium—tools which provide teachers, students, and parents with the opportunity to collaborate and to organise all the information they need for teaching and learning (e-Estonia Briefing Centre, n.d.-c).

In addition, several national foundations for promoting digital education, such as the HITSA education information technology foundation, have been set up over the years to support teachers. The development of ICT skills for teachers has been a very common professional training area in Estonia over the last decade. The Organisation for Economic Co-operation and Development [OECD] Teaching and Learning International Survey [TALIS] shows that in Estonia, teachers' participation in the development of ICT skills has increased from 63% in TALIS 2013 to 74% in TALIS 2018 (Taimalu et al., 2019), showing teachers' growing interest and a need to further develop their skills in this area.

In order to support the development of students' ICT skills, digital competence was added as one of the eight general competencies in the national curricula for basic schools in 2014 (Vabariigi Valitsus [Government of the Republic], 2014). Stated briefly, digital competence means the ability to use digital technology: in learning and communicating, in finding and analysing information, in creating digital content, and in collaboration. Awareness of the dangers of the digital environment is also an important part of digital competence. All teachers have a major role to play in developing students' general competencies as these are cross-curricular, and their achievement must be supported in different subjects. In terms of digital competence, it is very important to advance this in all subject areas to ensure the development of ICT skills as an integral part of every level of education.

The effectiveness of these ICT projects and the development of the digitalisation of Estonian education can be seen in comparative studies of European countries. The latest studies (e.g., Di Pietro et al., 2020; Fernando et al., 2020; Telia, 2020) confirm that Estonian students have good conditions for digital learning. As an example, 95% of students in Estonia could access virtual learning environments outside of school hours or outside school premises in the 2017-2018 study year (Di Pietro et al., 2020). The Ipsos study (Telia, 2020) reveals that 97% of Estonian students had access to a computer for learning purposes in the spring of 2020.

Based on the above, one could expect that Estonia had an important advantage over some other countries as it had employed e-learning long before the emergency period and, therefore, as Di Pietro et al. (2020, p. 11) state, "were more prepared to make a quick switch to fully online learning". There is a very idealist situation described in the OECD report (Fernando et al., 2020, p. 11) about the situation in Estonia during the onset of the COVID-19 pandemic in spring 2020. It says: "In Estonia, all learning materials are already now available on paper and online in parallel. Therefore, many schools have been using digital versions in the past and do not need extra support or guidance". Or, as Silaškova and Takahashi (2020, para. 4) state, digital "classrooms, online teaching materials [...] were already in place. Even more crucially, Estonians knew how to access and use them". Despite these idealist statements, Estonian teachers experienced similar problems to their foreign colleagues. The study of Lauristin et al. (2020) points out that the primary challenge for Estonian teachers was to find and adapt to a digital environment suitable for learning and teaching in their subject. Teachers felt the need to get recommendations that were more precise from the state or schools in order not to overload students with numerous online platforms (see also Lapada et al., 2020). General agreements were needed, as pointed out by Barbour et al. (2020), as there was a lot of confusion in the organisation of digital learning as well as in the requirements given to students (Lauristin et al., 2020). In addition, teachers had to get used to working in a home office and face possible technical problems. Consequently, teachers noticed an increase in their workload with distance learning.

From the students' perspective, most Estonian students were satisfied with e-learning during the spring of 2020. Only 10% of them were displeased. Distance learning supports students' independence in relation to school and learning (Telia, 2020). However, one of the future goals for e-learning is to improve students' motivation and ability to work. According to the Ipsos study (Telia, 2020), at least a quarter of students felt bored or tired during distance learning in the spring of 2020.

There are also positive impacts of the crisis. Many quick and creative solutions were found. Schools started to lend computers and tablets to learners, and many IT companies and private individuals donated second-hand devices to students who needed them to access virtual classrooms from home (Silaškova & Takahashi, 2020). New social media groups were created where subject teachers had opportunities to share their challenges and good advice. As the United Nations (2020) states, the crisis has stimulated innovations inside the educational sector. New distance learning solutions were developed thanks to quick responses, and enormous achievements were made in a very short time. As an example, Estonia provided free digital education tools to support learning during the COVID-19 crisis (Silaškova & Takahashi, 2020). The study of Lauristin et al. (2020) shows that Estonian teachers learned remarkably quickly during this confusing and stressful two-month period. They acquired many new digital skills (environments, tools, etc.). As a result, teachers understand that the possibilities of digital learning are very diverse, and these can enrich students' learning (Lauristin et al., 2020).

Handicraft and home economics education in Estonia

The subject field of technology is one of eight subject fields in the national curricula for basic schools (Vabariigi Valitsus, 2014), and it consists of several different parts: craft in grades 1-3, technology studies (or handicraft) and home economics in grades 4-9. According to Annex 7 of the curriculum (Vabariigi Valitsus, 2011), craft study develops students' primary constituent skills by dealing with the basics of handicraft, home economics, and technology studies. This subject is delivered by the general class teachers. In the fourth grade, students are expected to choose their main field of interest under the technology field: either technology studies (mainly woodworking and metalwork) or handicraft (textile works) and home economics. Although there is freedom to choose in accordance with students' wishes (and free choice is strongly emphasised in the latest curriculum), those decisions are mainly made based on gender and traditions (Taar, 2017). Therefore, girls generally gain knowledge and skills about handicraft and home economics, while boys mainly work with wood and metal. However, study groups are exchanged once every school year for at least ten per cent of the total number of lessons (Vabariigi Valitsus, 2014) so that students in handicraft and home economics groups can learn the basics of technology studies, while students who had chosen technology studies could gain knowledge and skills in home economics (but not in handicraft).

The content of the handicraft and home economics subject area is broad, and in most schools it is provided by the same teacher. In the description of the subject (Vabariigi Valitsus, 2011), four compulsory techniques are named as the content of handicraft: sewing, knitting, crocheting, and embroidery, while design, work organisation, the basics of folk art, and the study of materials are topics that should be connected with named techniques. The home economics description is broader in the curriculum. It is a subject for gaining the skills and knowledge needed to cope with daily life tasks:

In addition to practical cooking classes, the students learn the basics of healthy eating and how to create balanced diets. The students develop their housekeeping skills, assess consumers who act in an environmentally friendly manner and know their rights and obligations, analyse consumer behaviour and try to find connections and contradictions between health awareness and actual behaviour (Vabariigi Valitsus, 2011, p. 4).

Although the subject field description sets the content and division of handicraft and home economics (at least one third should be covered with home economics), teachers have the freedom to organise the subject content according to their best understanding. In reality, home economics forms a minor part of the total lessons. A smaller number of home economics lessons (in comparison with handicraft) in the curriculum (Vabariigi Valitsus, 2011) and students' low motivation towards the theoretical aspects of the subject (see Taar, 2017) shape teachers' choices. Teaching handicraft has a long tradition in Estonia, and home economics has for a long time been narrowed down only into cooking lessons (due to influences of the long Soviet period, Taar, 2015). Therefore, cooking has been used as an alternative activity for manual handicraft tasks, meaning that home economics lessons have mainly the practical purpose of developing students' culinary skills (Paas, 2007; Taar & Vânt, 2017). In addition, it can be said that a number of Estonian handicraft and home economics teachers work either without a diploma in the subject or received their education decades ago when the content of subject and the understanding of teaching as well as the learning methods were different (Paas, 2015; Taar & Vânt, 2017).

As the studies discussed in the introduction of this article present general aspects of Estonian teachers' challenges in different subjects, it is not possible to deduce what handicraft and home economics teachers experienced during the COVID-19 crisis. Tasks in handicraft and home economics are practical, and therefore teachers might have unique challenges in instructing students from a distance. In addition, a previous study in Estonia (Veeber et al., 2017) showed that handicraft and home economics teachers use ICT tools modestly in their lessons mainly to present visual materials, and they lack ideas about how to use these tools in promoting student-centred learning. Thus, a contradiction is revealed in this context, where on one hand there seems to be sufficient resources for distance learning, but on the other hand, teachers only have a limited knowledge of the implementation of ICT tools in such cases. Therefore, we are interested in getting an overview of the good practices and challenges handicraft and home economics teachers have faced during the sudden shift from face-to-face classes to distance learning. More broadly, did the COVID-19 pandemic give rise to random survival in an educational context or support conscious development for better education?

Methodology

The study follows a qualitative research approach. Data were collected with the help of Estonian Handicraft Teachers' Association (EHTA) board members. EHTA brings together handicraft and home economics teachers from all over the country. Being a member of the association is a teacher's free choice, and approximately one in three handicraft and home economics teachers in Estonia have joined the community (Eesti Käsitööõpetajate Selts [Estonian Craft Teachers' Association] n.d.; HaridusSilm, 2020). The board is the governing body of the association, which consists of 15 leaders, one from each county in Estonia. The association organises regular seminars and learning events for its members. In October 2020, the association held its autumn virtual seminar day, where all 15 board members presented overviews of teachers' experiences of distance learning during the pandemic in spring 2020. The overview was gathered from the handicraft and home economics teachers in their area in September 2020, focusing on the following questions: Which platforms and programs were used? What were the successful experiences and failures? How did students manage? And what are the positive and negative sides of distance learning? The summaries ($n = 10$) were gathered for research purposes with the board members' permission which were based on the agreement of Estonian Universities' Good Research Convention (Hea teadustava, 2017). Collected summaries were either in PowerPoint or Word format.

It was anticipated that the gathered data would be supplemented by earlier, mostly quantitative, studies about teaching and learning in Estonia during the lockdown in spring 2020, offering subject-specific explanations to the statistical results. Therefore, board members were asked to specify their summaries for the research purposes, and additional notes ($n = 5$) were added to the gathered data. All data were systematically combined into one Word document for the analysis, consisting of over 6,400 words of text.

The data were analysed using content analysis (Schreier, 2014). Qualitative content analysis helps to get an understanding of the data systematically and flexibly. Two researchers independently read the data through several times. Together, it was agreed that the data represent two sides: teachers' good experiences (presented as positive aspects) and challenges (presented as negative aspects). Following this, both sides are explored through three themes: (1) communication, (2) learning content, and (3) learning and teaching processes. As written summaries were used for the analysis, it is not possible to present the results together with the exact quantity of answers.

Results

The key theme to sustaining learning in this period for handicraft and home economics teachers was communication, which they opened through several angles. The communication between the school and home was one of the important aspects, according to the teachers' answers, specifically in terms of how the teacher was able to communicate tasks to the students and also, in some cases, to their parents. Therefore, distance learning was considered different from the usual schoolwork as there were more actors in these plays. Parents played an important role in distance learning. It was found that students were more motivated and performed better when they had parental support for doing subject-specific tasks. The technical aspects as part of the communication were emphasised in distance learning. Two widely used everyday communication platforms, e-school and Studium, remained the main tools for transferring tasks and materials during this challenging period. However,

in addition to a well-functioning system, different solutions were found depending on the purpose and needs of the teaching and learning process (e.g., sharing information, finding out students' achievements). Figure 1 provides an overview of the programs and apps used by handicraft and home economics teachers with different aims in mind. In communication, the tools that allowed direct communication (web-based lessons, online supervising) as well as quick communication (prompt questions/answers) emerged.

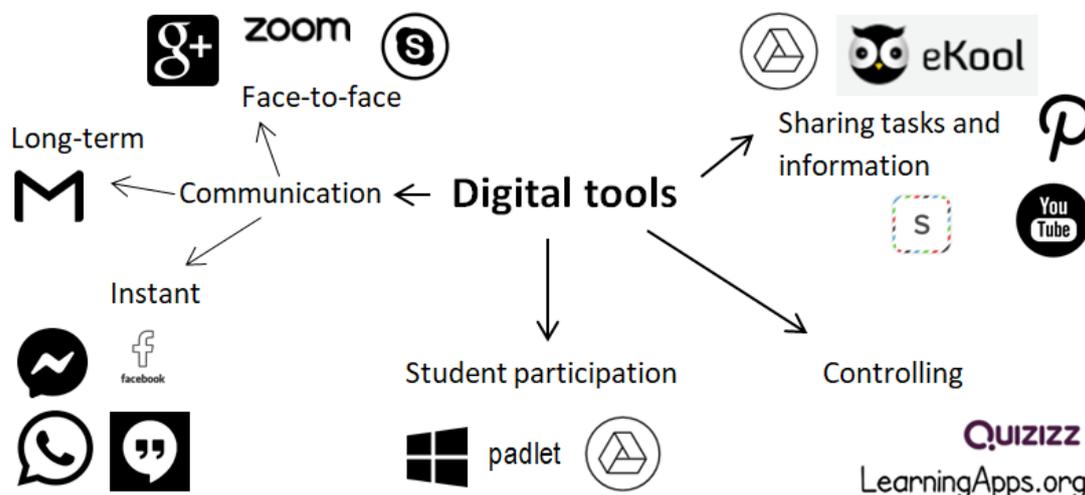


Figure 1 Main apps and programs used by teachers and students during distance learning (icons used are from the page <https://icons-for-free.com/> or from the programs' homepages).

However, to some extent, communication was also a challenge. Teachers experienced that the electronic environment set limitations to habitual communication possibilities. They saw changes both in communications between students and between teacher and students. In addition, parental impact was also named as a challenge in distance learning. As an example, the lack of parental support was mentioned several times, and even further, teachers felt tension in communication with parents.

The next theme takes together the learning content that teachers decided to handle during distance learning. Although choosing the learning content during distance learning was challenging for teachers, overall it contributed to a positive experience in the delivery of the subject-specific knowledge and skills. Teachers reflected on leaving behind their daily teaching practices, which opened the opportunity to come up with new ideas to achieve the subject outcomes. However, teachers' expressions about learning content clearly show that the challenging part of springtime was the need to rearrange the teaching structure. In particular, they stressed that certain handicraft techniques (such as sewing and knitting) were not possible to teach and therefore they limited teaching manual skills. The main influences when choosing possible learning content were tools and materials. As handicraft and home economics are practical subjects, it often happened that students did not have the needed materials at home to use. As an example, the lack of sewing machines was named as a limitation but also not having needed food ingredients for home economics cooking tasks. In addition, because of lockdown, going to stores was not an option.

Despite certain restrictions on materials and tools, teachers admitted that they chose to do more home economics during that period, as these tasks fitted more effectively with the situation of students being in their homes. The topics mostly covered food and nutrition, such as food preparation (for parents, for festive occasions) as well as menu planning and analysis. Another topic well covered was home maintenance, including cleaning different rooms and machines at home or washing clothes. The third subject area reported was consumer issues, such as package information.

Although handicraft lessons were taught to a lesser extent, teachers found solutions to use learning techniques in various ways. As an example, making *amigurumi* animals and combining different techniques into one artefact. The dynamic situation opened up opportunities for doing handicraft in other ways, such as the possibility to "walk and knit". The outcomes of student work were presented

in virtual exhibitions. These helped to present the artefacts done in the subject to classmates and a wider audience.

Some challenges also arose when choosing to teach content with regard to digital tools. Surprisingly, it was often mentioned that students did not have suitable digital tools, for example, for participating in video meetings. In addition, teachers pointed out that there are not enough digital teaching materials to use in a given subject. Teaching methods also played a role when choosing learning content. Teachers shared how handicraft techniques are difficult to teach through digital means and how it was complicated to supervise practical tasks without being able to deeply examine students' practical work.

Lastly, several aspects of the learning and teaching process during the COVID-19 period were examined. Teachers perceived experiences gained through this period as developmental for themselves, learning new practices and discovering new digital possibilities. This development was strongly supported by the wider teaching community, meaning that subject teachers were instantly formed into special Facebook groups where experiences and good practices were shared and followed. Development was also seen in subject handling, where broader subject outcomes and integration with other subjects was found by teachers. The freedom in dealing with the curriculum during this period was also highlighted as a positive aspect of teaching. Teachers also valued freedom in their use of time, being able to focus on work when they liked. However, there were also off-topic advantages of such freedom mentioned in the analysed summaries, such as saving time when not driving to work, having more time for themselves, and enjoying spring (doing gardening) for maintaining good mental health.

In the teachers' opinion, overall, students managed well during this period. They found that this kind of learning promoted different skills of students, such as time planning, independence, responsibility, and creativity. As the subject's outcomes are mostly achieved through individual work, the personal approach and real-life related tasks supported the students' learning motivation. However, teachers felt that distance learning did negatively impact students' cooperation possibilities.

However, learning quality was the most diverse theme under challenges. Teachers talked about different obstacles that hinder learning quality—namely students' learning abilities, students' participation, evaluation and feedback possibilities, teachers' own attitudes, as well as distance learning itself being time-consuming. A changing learning situation revealed that students' digital competences were not sufficient for independent learning at home. Further, students' learning abilities (including functional reading skills) hindered task management. Consequently, students had trouble understanding instructions fully or keeping up with set deadlines. Because of changed communication possibilities, teachers faced problems with involving all students in the learning process. Several times, it was mentioned how certain students "got lost" and teachers were powerless to get in touch with them. Through screens, it was hard to notice the students who were weaker (lagging behind) or motivate the ones who did not want to participate. Therefore, distance learning turned out to be an ordeal of an individual approach.

Most commentaries reflected that distance learning caused an increase in teachers' workload, and it was very tiring. Without being prepared for a changed learning situation, it took extra time to find or prepare suitable learning materials. Teachers experienced problems with giving adequate evaluation to students' practical handicraft work, as they could not see and touch them. Writing feedback to students has not been normal practice in this subject, and it was found to be very time consuming. Therefore, giving feedback was noted as one of the weak points of this period. Learning quality was also influenced by the fact that the state had recommended not awarding marks in practice-oriented subjects. The teachers' comments reflect how this change caused a decrease in students' motivation. It is seen how various challenges influenced learning quality during the sudden shift to distance learning.

Discussion

It could be assumed that with the high level of internet access in Estonia, where 100% of schools and 90% of households have a permanent internet connection (Eesti statistika andmebaas, 2020) and where there are appropriate technical tools as well as environments to support teachers' digital skills, the switching to distance learning would be a smooth process. This paints a beautiful picture about the situation in Estonia, although, unfortunately, it leaves a few aspects of the situation aside.

There is little use of the available digital tools and the skills that teachers have learned if these are not implemented into the learning process. Digital learning was not a reality in all Estonian classrooms before the crisis. In addition, online teaching materials were not a reality in all subjects or learning stages. Therefore, the rapid and extensive transition to unexpected distance learning in a virtual environment in the spring of 2020 posed various challenges for teachers, students, and parents (Lauristin et al., 2020; Telia, 2020), not least in handicraft and home economics education.

Similarly to other teachers in Estonia (Lauristin et al., 2020), the participants of this study experienced many challenges of teaching—it was hard to motivate students as well as find suitable homework assignments, supervise, and assess students in new conditions. Controversially, they also claimed a shortage of technical resources in certain regions of the country, mostly in rural areas (see also Di Pietro et al., 2020; Fernando et al., 2020; Telia, 2020).

As McGowan (2020) states, the COVID-19 pandemic accelerated and heightened many issues in education that were latent or unattended, even in such a digitally developed country as Estonia. As an example, in the context of special circumstances in the spring of 2020, general competences (digital competences in particular) became important when students needed to learn independently at home. Regardless of having the need to learn and practice ICT skills in every school subject (Vabariigi Valitsus, 2014), some students had trouble participating in subject learning.

The crisis situation caused challenges that simultaneously led to both changes and development. One of the main alterations in education due to the crisis was the re-evaluation of the subject's content and teaching methods. Based on the experience of Estonian teachers, we can state that within the subject of handicraft and home economics, the home economics side benefitted from this crisis as its volume of lessons grew remarkably. A wider list of activities was added next to practical cooking, which was the main content of home economics in most schools (Paas, 2007; Taar & Vânt, 2017). In addition, it is seen that teachers reached the essence of home economics, to teach the knowledge and skills needed in everyday life (Vabariigi Valitsus, 2014) even stronger than before. As the situation was hoped to be temporary, teachers set handicraft topics, which required certain materials or tools at home, aside to be taught next study year. However, it is hard to predict how persistent this change is. Borrowing home economics lessons from the future can cause a situation where no home economics is organised once the situation stabilises.

A lot has been discussed about the digital devices for distance learning but not much about other learning materials, for example materials needed in practice-oriented school subjects. However, in the case of distance learning, this becomes a decisive aspect when choosing the topics for lessons in handicraft, home economics, or other practical subjects.

Another shift that becomes visible from the analysed texts is that teachers concentrated more on general knowledge and skills instead of concrete subject-specific topics as they usually would. Therefore, knowledge from different subjects was integrated and handled more holistically. The need for integration has been an important issue in Estonia for some time but has only partially been implemented. It would be interesting to follow if such change is continuing as conscious development.

Teaching during the COVID-19 pandemic was strongly related to teachers' own attitudes and how they value the subject in an educational context. As the subject is valued differently, various descriptions also become visible. The teachers' written summaries allow us to imply that the teachers who see handicraft and home economics as an important part of education found digital solutions for giving lessons as effectively as possible. This increased teachers' workload and mostly accompanied learning new digital skills. Regardless of the high participation in previous courses on ICT competences (Taimalu et al., 2019), teachers felt a need to have more skills and knowledge on how to choose online platforms (Lapada et al., 2020) and organise distance learning in their subject. This means that dedicated teachers worked a lot during the day (and night) as distance learning changed the understanding of the "school day". When teachers expressed freedom in working hours, it happened that they also received students' questions and assignments outside of their regular working time. At the same time, it was possible for some teachers to only upload new assignments to the e-school system once a week, and students then worked independently or with the help of their parents. Therefore, teachers' and parents' roles in education were interwoven. The latter situation caused a lot of stress to parents as they took on the role of a supervisor, and, therefore, they expected guidance and help from the school as the institution responsible for the learning process (Požogina, n.d.).

From a personal viewpoint, teachers reflected on adjustment difficulties and fears during the crisis period. The new situation, confusion in school and state expectations (Lauristin et al., 2020), and not having the needed (digital) competences made them feel insecure. This uncertainty and a need to share experiences initiated creating different subject teacher social media groups where teachers could seek support and good advice. Handicraft and home economics teachers in Estonia often feel alone (Paas & Palojoki, 2019), as there is mostly only one such teacher in each school. They missed the opportunity to share upcoming challenges. Therefore, these groups are revolutionary, creating a sense of community and opening new possibilities for teachers.

Conclusion

In summary, it can be said that handicraft and home economics lessons continued in Estonia during the lockdown period. We have raised the question of whether the COVID-19 pandemic in spring 2020 caused random survival or supported conscious development in the educational context. Both can be seen from Estonian handicraft and home economics teachers' experiences. Teachers concurrently experienced technical, methodological, and emotional challenges. Their previous teaching methods were shaken up, and their plans needed to be redesigned several times, which influenced the quality of teaching. In addition, teachers reflected on how they were forced to learn new skills quickly. The uncertainty from schools as well as from the state did not give any security, and this created a sense of unease.

Nevertheless, these two months saw improvements in many aspects of teaching, perhaps more than the previous years of courses for teachers have achieved. Teachers' digital competences advanced remarkably (especially in comparison to the study of Veeber et al., 2017), their attitudes towards digital tools became more favourable, and long-coveted issues such as the integration of different school subjects became a reality. Such quick progress in a very short period allows us to expect that conscious developments are possible even during (or due to) a very difficult time. However, the question remains: how persistent are the changes that come through crises?

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Home Economics education training as a panacea to COVID-19 impact on food access and nutrition among rural families in Northern Nigeria

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Abstract

Conflict, environmental and climate shocks are known to be the major drivers of acute hunger and food insecurity in Northern Nigeria. Unfortunately, from 2019 to 2020, the COVID-19 pandemic had compounded this situation by slowing down the food distribution and supply chain to the vulnerable families' world over, especially women, children and the aged, due to government measures in curtailing the spread of the pandemic. This situation resulted in a serious food and nutrition crisis among families. To ameliorate the crisis, this study demonstrated a strategy that used Home Economics education skills training that focused on food production, such as kitchen garden establishment and food waste reduction skills to rural women in Sangere community in Girei Local Government Area of Adamawa State, Nigeria. The practical skills training lasted four weeks of eight sessions. A cross-sectional design approach was adopted for this study due to time constraints, using a single-system design of pre-and post-training survey. A total of 30 respondents out of the 53 women who normally attended the monthly nutritional talk at the community clinic were purposively sampled. T-test statistic of post-training data analysis revealed significant improvement in the knowledge of women on the benefits of kitchen garden establishment ($p = 0.000$, $p < 0.05$) and food waste reduction ($p = 0.001$, $p < 0.05$). Post-training experience of women supported the benefits of the kitchen garden as it served as a source of families' supplementary income, provided a diversity of fresh fruits and vegetables. It also provided direct access to food and contributed to food security. Post-training experience of women also supported benefits of food waste reduction in areas of more savings, encouraged re-use of leftovers food, bettered food portioning, ensured food preservation, promoted self-life and, thus increased the food access that met family food demand for better nutrition innovation during the period under investigation. This study, therefore, recommended that policymakers should support the establishment of kitchen gardens, and the promotion of food waste reduction awareness campaign in rural communities through the partnership between food-related professionals, Government and Non-Governmental agencies.

KEYWORDS: HOME ECONOMICS EDUCATION SKILL TRAINING, KITCHEN GARDEN AND FOOD WASTE REDUCTION, FOOD ACCESS AND NUTRITION, RURAL FAMILIES, COVID-19

Introduction

The disruption by COVID-19 on the food supply the world over is alarming. World Bank Report (2020) has estimated that over 88115 million people would be subjected to severe poverty and hunger globally. The majority of these populations are from sub-Saharan Africa where Nigeria belongs. World Food Programme (2020) also reported that about 135 million people were in acute hunger due to poor food access before the COVID-19 crisis started globally and that African people were the worst hit. Several studies have revealed a negative impact of the pandemic on food supply and access. For example, Otekunrin and Otekunrin (2020) reported that COVID-19 pandemic measures disrupted food supply globally. More so, the pandemic has generally undermined families' access to food and

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nutrition security (Amjath-Babu et al., 2020; Barrett, 2020; Bene, 2020; Torero, 2020). Poor rural people in developing countries anticipated suffering more risk of food crisis than developed countries due to their low capacity to adapt and cope (FAO, 2020)

Families in northern Nigeria are already in shortage of food because of the capacity to produce and access sufficient food due to the activities of banditry, Boko Haram insurgency and kidnapping that have disrupted the region over the past ten years. These negative developments coupled with COVID-19 have put the region at a high level of poverty, poor food access, hunger and poor nutrition (Fudjumdjum et al., 2019). It is a bad situation that had already provided a setback for Sustainable Development Goals (SDGs) whose focus is on poverty, zero hunger and good health and wellbeing of individuals and families. Exacerbating this condition is the COVID-19 pandemic's government measures in curtailing the spread of the virus which have compounded the situation by slowing food distribution and supply chain (Babatunde, 2020). These measures have negatively impacted the vulnerable people's access to food, especially the poor, women, children and the aged.

Lockdown was the COVID-19 control measure introduced in all the states in Nigeria. This significantly restricted movement of goods and services. The negative impact of such measure on a family's income, food preparation, distribution, purchase, food access and consumption was unprecedented (Leone et al., 2020). This is an indication that COVID-19 is wreaking havoc on every nation all over the globe with a potential impact on food supply disruption. The situation is leading to looming food waste with its devastating crises on food and nutrition security (Goodwin & Larsen, 2020). COVID-19 had also provided a setback to the world's progress in meeting the SDG Goal 2 agenda. This Goal seeks to "end hunger, achieve food security and improved nutrition promote sustainable agriculture." (United Nations, n.d.). In reversing this setback, Malpass (2021) suggested that countries should be prepared for a kind of post-COVID-19 economy that allows skills, innovation and capital labour to bring new ideas and support food production, new sectors and businesses. Meeting the SDG 2 agenda requires sustainable access to nutritional food that universally demands sustainable agricultural practices that support food production sustainability. This situation has clearly shown that families both in rural and urban locations are in the difficult situation of food accessibility and should therefore be prepared to engage in practices that would ensure food production for all members at this critical time and beyond.

Measures taken by governments to curb the spread of COVID-19, such as staying at home, lockdowns and movement restrictions, have provided good opportunities for Home Economists to exhibit their skills by assisting families and communities to undertake deliberate actions and responsibilities to solve food nutrition and health problems through reinforcement of appropriate nutritional training to ensure seamless food access and good nutrition. When families are exposed to this practical skills training and services that demonstrate areas of need like food, it motivates families to positive change in action and attitude and equally makes them sensitive to their nutritional needs and practices. Nutrition is important for the overall wellbeing and development of individual and families (McNulty, 2013). Providing nutrition promotion education that supports low-income families the world over will assist in providing and eating healthy food for the benefits of good health and survival (Kapur, 2019). Food and nutrition education is a component of Home Economics education (McGregor, 2019b). Home Economics, therefore, is the vehicle that drives this study. Home Economics education focuses on equipping individuals and families with skills and knowledge that can help cope with food security and nutrition problems (Olumakaiye et al., 2019). More importantly is Home Economics role in improving food security and health (McGregor, 2019b; Tach, 2019), supports for poverty reduction, family health and national development (Degala, 2018; McGregor, 2019a).

Interventions of the Home Economics professionals to act in line with the objectives of Home Economics education at the improvement of family nutrition and welfare is a good option for food security (McCloat & Caraher, 2016). Food availability could reduce hunger as zero hunger is one of the targets 2 of SDG 2030 (United Nations, 2017). The focus of Home Economics education in addressing this life and practical skills that can empower families to have good knowledge of food production, sustainable diet, food storage and preservation; as well as hygiene and health which aim to improve wellbeing and quality of life for individuals and families through the provision of food to avert nutrition security (McCloat & Caraher, 2016; McGregor, 2019b).

Today's families are being challenged globally with social and health crisis since the advent of COVID-19. This has brought more attention to the importance of women in the families since all crises that fall on families affect women the most and because women are the mothers of families, they also

bear more of the brunt presented by any crisis. Women's continued responsibility of caring, preparing and producing food for all members of the families even during crises added to reasons for their vulnerability. Any crisis that disrupts family income disrupts food access and equally affects family nutrition (Gundersen & Ziliak, 2015). This is an indication that the COVID-19 outbreak has high impact risks that have very negative effects on income, food access and nutrition of families. This calls for greater attention and intervention by all and sundry.

Nigeria government has taken steps in providing several interventions such as food palliatives and cash transfers, among others, during the lockdown to the populace. Such interventions are said not to have got to people in rural communities, especially the women (Badejo et al., 2020). This situation raises the need to look into other actions or strategies that can deal with food access issues and nutrition security during crises like this. According to Olumakaiye et al. (2019), any actions that empower women to access food will reduce hunger and improve food and nutrition security within families. This is so because any strategies that support family income are expected to provide good opportunities for sustainable food production and access and encourage quality food consumption for better family nutrition (Fresco et al., 2017). The pandemic is not just about health alone; it also poses an economic and nutritional challenge that requires multifunctional approaches to deal with (FAO, 2020). One of such approaches is the use of Home Economics skills training to educate rural people, specifically women, who account for much of the food preparation responsibilities. The skills focused on the strategies that can improve family income and food access for their nutritional security.

Home Economics skills training which this study focused on are kitchen garden and food waste reduction skills. Several studies have supported the need for food access through the engagement of families in food production during food crises. For example, the study of Otegunrin and Otegunrin (2020) encouraged practices that ensure sustainable food production amidst the COVID-19 pandemic. Galhena et al. (2013) supported organising self-help training in areas of kitchen gardens and any good actions that can help rural families raise better income that supports the promotion of food production for improving nutrition security. Food waste reduction and prevention promotion should be the responsibility of all actors and professionals in the food-related field because it creates an opportunity for food access to all (Galli et al., 2019). Training in the kitchen garden and food waste reduction at this time of the COVID-19 pandemic, when family food access is disrupted, is a good alternative for production and consumption.

Kitchen garden skill training and family's food access and nutrition

The kitchen garden is defined as a garden where food such as herbs, fruit and vegetables are grown within the family compound. The kitchen garden provides families with an opportunity to produce foods varieties that are accessible, healthier and fresher for their consumption and nutritional needs. The need for kitchen garden skill training during crises situation like COVID becomes necessary and should continue beyond the COVID-19 pandemic for better nutrition and health. Also, more food production is necessary for the ever-growing global population as the world population by 2050 is expected to reach 9 billion and above (United Nations, 2019). The implication of this statement in terms of food access and nutrition security to families is great, and if nothing is done to encourage food production, the world will be in for serious food crises. It will also bring setbacks to SDG target 2030, which is less than ten years ahead. Families in developing countries with poor access to food are expected to identify strategies that can create opportunities for food production and access to meet the demand for better nutrition. Food shocks and higher food prices due to COVID-19 control measures call for interest in providing effective action and strategic measures to local food production for families (Badejo et al., 2020). One of such actions is women's engagement in the kitchen garden (Musotsi et al., 2008). According to Suri (2020), any action that promotes nutrition gardens that can ensure improved income, food access, and dietary diversity will also provide sustainable nutrition for families and that any of such actions should be encouraged.

Previous studies of Galhena et al. (2013) and Rybak et al. (2018) found that when families participate in kitchen gardening, it leads to food access and improve nutrition. For instance, according to Galhena et al. (2013), a kitchen or home garden is seen to have played and provided strong economic values to food access that benefits family nutrition in crisis and post-crisis situations. Conducting practical skill training in kitchen gardening for rural families is expected to promote fruit and vegetable production which are the major sources of protective foods that are fresh and close to the backyard of families. The kitchen garden is not just to provide access to food but also ensures that

fresh fruits and vegetables are eaten for better nutrition (Arya et al., 2018; Suri, 2020). Consumption of fruits and vegetables helps to improve the body's immune system (Rybak et al., 2018) and people with high immunity tend to have higher resistance to the attack of COVID-19 (Aman & Masood, 2020). Kitchen garden promotion enhances food and nutrition securities (Birdi & Shah, 2018; Rybak et al., 2018). More so, the kitchen garden contributes to family food access and improves food security (Carney et al., 2014). Engaging in activities of this nature are sure ways to encourage rural women to participate in food production that can promote family immunity against COVID-19 and beyond.

Food waste reduction skill training and family's access to food nutrition

Food waste is food that is left without eating. This might be because foods that are appropriate to be consumed by humans are being discarded. The major causes of food waste are numerous and mostly occur during production, distribution, processing, retailing, and consumption. It occurs when food is kept to expire or allowed to spoil. Whatever the reason might be, the training skill that involves food waste reduction such as drying, pickling, fermenting, canning, freezing and curing aimed at making the food last longer during health crises situation like COVID. It equally brings about responsible production and consumption captured as Sustainable Development Goal 12 that is meant to ensure better use of resources and infrastructure sustainability which are expected to be achieved by 2030 (United Nations, 2017).

Food waste reduction improves food access (Sewald et al., 2018). Food waste is a major societal nutritional challenge to families globally (Halloran et al., 2014). COVID-19 has come to decrease global food access further and increase demand for food. To meet this increase in food demand, skills that can reduce food waste are better alternatives. This is because food waste reduction, prevention and promotion of awareness are critical and must be the responsibility of all actors in the food-related professions to ensure its prevention or reduction (Galli et al., 2019).

Food waste is said to be pronounced more in developing countries (Thi et al., 2015) and Nigeria, being a developing country, is not an exception to ugly this situation. This is particularly due to the poor attitude and skills of families in rural communities with their poor preservation facilities (Gebre & Gebremedhin, 2019).

Previous studies reported the benefits of food waste reduction to families. For instance, Shaw et al. (2018) stated that it ensures more savings to families; promotes self-life of foods (Devaney & Davies, 2017; Quedstedt et al., 2011); encourages re-use of leftovers food (Reynolds et al., 2019); increases food access (Thyberg & Tonjes, 2016), and ensures food preservation skills for nutrition innovation (Byker et al., 2014; Visschers et al., 2016). Food preservation is a good way to food waste reduction as it increases foods availability and promotes self-life and, thus increases food access. Preserving perishable and non-perishable foods ensures yearly food availability, adds variety to the family diet, saves energy and time along with food price stability, access, consumption, and decreased nutrition inadequacies (Gebre & Gebremedhin, 2019; Malcolm, 1944).

Statement of the problem

This study targeted rural women simply because, in most communities in Northern Nigeria, women's roles are significant in terms of food production and preparation, resource management, family care and income generation activities despite their lower income, social status, less access to education and training. Any training that enhances and empowers women to generate more income to enable them to access food for better family nutrition becomes inevitable for family development and survival (Quisumbing & Meinzen-Dick, 2001). Food access and nutrition problems in northern Nigeria have not been critically and adequately analysed and solved despite various efforts of government at various levels to address these challenges but without success (Matemilola & Elegbede, 2017).

More so, COVID-19 has added more burdens to food access and nutrition (Babatunde, 2020). For the food crisis resulting from this pandemic to be ameliorated, all governments implemented policies and programmes on COVID-19 such as cash transfer and school feeding must be backed by individual and community actions to reduce and address the negative impacts of the pandemic on food access and nutrition among rural families. These actions and strategies are expected to be provided through Home Economics skills training, specifically in areas of the kitchen garden and food waste reduction. This study therefore designed to provide a fundamental change in attitude and strategies using the approach of Home Economics skills training on all modalities that can promote family income for

better food access and also to effectively address the problems of food nutrition insecurity among rural families while obeying all the COVID-19 preventive measures. The skills training provided clear strategic actions that assure food access components (physical, economic, and sustainable access) that will in turn support and ensure improved nutrition and other conditions that bring about nutrition security during this COVID-19 pandemic and beyond.

Objectives of the study

This study was aimed at assessing Home Economics education skills training as a panacea to COVID-19 impact on food access and nutrition among rural families in Northern -Nigeria. Specifically, it aims at examining the impacts of:

1. Home Economics skills training on the benefits of the kitchen garden to rural families' food access and nutrition
2. Home Economics skills training on the benefits of food waste reduction to rural families' food access and nutrition.

Research questions

The study sought to answer the following research questions

1. What are the impacts of Home Economics Education skills training on the benefits of the kitchen garden to rural families' food access and nutrition?
2. What are the impacts of Home Economics Education skills training on the benefits of food waste reduction to rural families' food access and nutrition?

Hypotheses of the study

The study is further guided by two null hypotheses stated and tested at 0.05 alpha levels as follows:

- Ho₁. There is no significant difference in the mean response score of women on the benefits of kitchen garden pre and post-skills training.
- Ho₂. There is no significant difference in the mean response score of women on the benefits of food waste reduction pre and post-skills training.

Methodology

A cross-sectional approach was adopted for this study due to time constraints, using a single-system design of pre-and post-survey. Due to resource constraints and time, Sangere Community, in Girei Local Government Area (LGA) Adamawa State, Northern Nigeria was chosen for the study. Respondents were women who were made to attend nutritional training programmes at the Sangere community LGA Clinic. The appropriateness of this design is due to the short duration of the study. Also, the community had been under the study of the researcher on a repeated basis almost for two years; therefore, a cross-sectional design in which respondents were surveyed with a defined food access indicator was considered to be in order.

The population consisted of all the 53 women who normally attended the monthly nutritional talk at the Sangere community clinic. A total of 30 respondents that volunteered and consented to participate were selected for this study using the purposive sampling technique. The questionnaire was divided into two sections, with section one having five items that deal with the benefits of kitchen garden while section two contains five items on the benefits of food waste reduction to family food access and nutrition security. The 5-point Likert rating scale with values 5, 4, 3, 2, and 1 of *Strongly Agree (SA)*; *Agree (A)*; *Undecided (U)*; *Disagree (D)*; and *Strongly Disagree (SD)* assigned respectively was used to answer the two research questions. *Mean* points of 3 and above were said to be agreed and beneficial while the mean response point of less than 3 points was said to disagree and not beneficial. The two null hypotheses were tested using *t*-test statistics and that when the *p*-value is greater than the 0.05 level of significance, the null hypothesis is rejected, otherwise the null hypothesis is retained.

Home Economics education skills training procedure

Before the commencement of the training, pre-survey information on the respondents' knowledge on kitchen garden and food waste reduction were obtained. The training manual adapted for this study was from the Center for Sustainable Development (2020), OL 303. Areas of skill training interventions included practical skills on kitchen gardens establishment with a strong emphasis on fruit and vegetable gardening skills. The training for kitchen garden skills lasted for four sessions in two weeks while that of food waste reduction skills training with special training on food storage and preservation along with the skills on how to use leftover foods lasted for two weeks involving four sessions, all in December 2020. The training was carried out with the aid of three trained research assistants who assisted in the coordination of all training activities under strict COVID-19 measures.

Table 1 reveals the mean response of respondents on the impact of Home Economics skills training on the benefits of the kitchen garden to family food access and nutrition. The weighted mean response scores of all the items were 1.52 pre-training and 4.30 post-training with a mean response score difference of +2.78. The post-training mean response is 4.30 implying that the training had improved the knowledge of women on the benefits of the kitchen garden to families. T-test statistic shows a p -value of 0.000 which is less than the alpha level of 0.05, indicating the existence of significant differences in pre and post-skill training.

Results

Table 1 Respondents' mean response on the benefits of kitchen gardens to families

Variables	M before training	M after training	M Difference
Kitchen garden is principle source of families' supplementary money or income for poor rural Families	1.45	4.56	+3.11
Kitchen gardening direct access to food and contributes to food security during periods of food crises and stress	1.65	4.65	+3.00
Kitchen garden provides diversity of fresh fruits and vegetables that improved quantity and quality of nutrients to families	1.86	3.78	+1.92
It creates opportunities for food production and access to meet family food demand for better nutrition.	1.21	4.57	+3.36
Kitchen gardens combined with nutrition education is a viable strategy in improving the nutritional status of vulnerable populations, particularly women and young children.	1.43	3.9	+2.47
Weighted mean	1.52	4.3	+2.78

Decision: Weighted mean of 3 and above *Agreed and beneficial*, less than 3 is *Disagreed and not beneficial*, $p = 0.00$ (significant at $p < 0.05$). T-test interpretation is significant.

Table 2 results show the mean responses of respondents on the impact of Home Economics skill training on the benefits of the food waste reduction to family food access and nutrition. The weighted mean responses of all the items were 1.96 pre-training and 4.53 post-training with a mean response difference of +2.57. Post-training mean response scores of 4.53 imply that the training had improved the knowledge of women on the benefits of food waste reduction to families. T-test statistic shows a p -value of 0.001 which is less than the alpha level of 0.05, indicating the existence of significant differences in responses of pre and post-skills training.

Table 2 Respondents' mean response scores on the benefits of food waste reduction to families pre and post skills training

Variables	M before training	M after training	M difference
Food waste reduction ensures more savings as the amount of money wasted on food is reduced	2.45	4.61	+2.16
It encourages re-use of leftovers food and portioning	2.65	4.76	+2.11
Food waste reduction through food preservation is a good way to increase food availability and thus increases the food access	1.81	4.67	+2.86
Food waste reduction skills training improves food access and nutrition innovation	1.26	4.51	+3.25

Variables	M before training	M after training	M difference
It ensures food sustainability	1.65	4.1	+2.45
Weighted mean	1.96	4.53	+2.57

Decision: Weighted mean of 3 and above *Agreed and beneficial*, less than 3 is *Disagreed and not beneficial*, $p = 0.001$ (significant at < 0.05). *T*-test interpretation is significant.

Discussion of findings

The findings of this study revealed that Home Economics education skills training had significantly improved knowledge of women on the benefits of a kitchen garden for families. It is an indication that participants had agreed to have acquired skills for the kitchen garden established which is expected to benefit the families in terms of food access and nutrition security. It also means that the training beneficiaries became more equipped to continue engaging in practices that support kitchen garden establishment. Based on these findings, the null hypothesis which states there is no significant difference in the mean responses score of women on the benefits of kitchen garden pre and post-skills training are therefore rejected.

This is an indication that the post-training experience of women supports kitchen garden establishment due to its benefits such as serving as a source of families' supplementary income, providing direct access to food and contributing to food security during periods of food crises and stress. This finding suggests that the training provided a diversity of fresh fruits and vegetable for participants who are meant to improve the quantity and quality of nutrients and equally creates opportunities for food production that can meet family food demand for better nutrition. The training serves as a viable strategy in improving the nutritional status of vulnerable populations, particularly women and young children. The benefits of kitchen garden found in this study are in agreement with the findings of Arya et al. (2018); Birdi and Shah (2018); Carney et al. (2014); Mohsin et al. (2017); Musotsi et al. (2008); Rybak et al. (2018); and Sanchez and Shannon (2012) who recorded that gardens improved access to food, supported the consumption of fruits and vegetables and provided family nutritional benefits.

The findings further revealed that Home Economics education skills training significantly improved the knowledge of women on the benefit of food waste reduction for families. It is an indication that participants have agreed to use the skills acquired in ensuring that food waste is reduced at all levels of the food system for the benefits of their families' food access and nutrition security. It also implies that the training beneficiaries are becoming more equipped and able to continue engaging in practices that support food waste reduction. Based on these findings, the null hypothesis that stated that there is no significant difference in the mean response scores of women on the benefits of food waste reduction pre and post-skill training is, therefore rejected. Post-training experience of women supported the benefits of food waste reduction since it ensured more savings, encouraged re-use of leftovers food, bettered food portioning, ensured food preservation, promoted self-life and, thus increased food access and nutrition innovation for families. These findings are in concert with Devaney and Davies (2017); Quested et al. (2011); Reynolds et al. (2019); Sewald et al. (2018); Shaw et al. (2018); Thi et al. (2015); Thyberg and Tonjes (2016); and Visschers et al. (2016) who reported some benefits of food waste reduction to families. Some of these benefits included ensuring more savings, promoting self-life, encouraging re-use of leftovers food, increasing food access, and ensuring food preservation skills.

Implications

The implications of this study are the observed narrow skills gap in knowledge and practice in the kitchen garden and food waste reduction among families. Training families in complex and multi-faceted skills of this nature would provide behaviour change in food production and better dietary practices. Such practices are to bring support for better eating, nutrition and body immunity during the pandemic. Addressing the knowledge and practice gap is to ensure families have access to food. Availability of food has a direct link to food consumption during COVID-19 and also helps meeting SDG target 2030. The practical skills training approach is to sustain and promote individual, community, and family behaviour change. The practice is to ensure appropriate behaviours toward food security and provide support to all international food programmes that deal with families and societies.

Limitations

This study is not without limitations despite its contribution to family food access and nutrition security, majorly among the limited time and small sample size of respondents from non-random selection due to COVID-19 measure curtailing large gathering of people. More training and investigation using socioeconomic variables and a larger sample size with adequate time to cover the gap of this study suggested.

Conclusion and recommendations

COVID-19 exacerbated burdens of poor food access and nutrition insecurity to families. This calls for a holistic approach to tackling the menace. The solution to this menace is achievable through working together with families in providing strategic intervention to empower women to work toward food production. This will help increase access to food and improve family nutrition and avert food crises. Home Economics professionals have a role to play in sustainable food production and access through giving appropriate skills training in all areas of the food supply chain system during food crises situation like the COVID-19 pandemic and beyond. The findings of the study clearly showed that participants' interest in the skills training created awareness of the benefits of kitchen garden establishment and food waste reduction. This made the rural women demonstrated substantial improvement in the practices that benefit family food access and nutrition security. The continuation of these practices is expected to make food available during this pandemic and assist in meeting SDG 2030 target.

This study, therefore, calls on policymakers to support the establishment of gardens in the communities through a partnership between food-related professionals, government and non-governmental agencies in ensuring that resources are allocated for various interventions that support food production and poverty reduction, especially among rural families for the overall interest of food and nutrition security.

Author biography

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Children lost at home: Difficulties during COVID-19 homeschooling in Denmark

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Abstract

This article presents a survey study among Danish primary-school students (n = 5,953) and their parents (n = 5,054). The survey investigates experiences of teaching during school lockdowns caused by the COVID-19 pandemic. Data was collected during the initial lockdown period in Denmark (1 to 20 April 2020), during which time the students participated in teaching from their homes. By utilizing cross-tabulation, factor- and cluster analysis, this article identifies the ways in which students managed schoolwork at home and the consequences in terms of their wellbeing and mental health. The results indicate that different clusters of students had different experiences of teaching and learning. Young students in particular had difficulties with the situation, and teaching during school lockdowns challenged their wellbeing and mental health. Furthermore, a group of approximately 20% of all students had particular difficulties: they felt lost at home. They missed support from their parents, they didn't feel recognized by their teachers, and they had below average contact with their friends.

KEYWORDS: COVID-19, SCHOOL LOCKDOWN, WELLBEING, STUDENTS, PARENTS

Introduction

The corona pandemic hit Europe in March 2020, and as a result of school lockdowns all primary and secondary school students in Denmark practiced homeschooling, and teaching was carried out in the form of distance learning. Several questions became immediately apparent: How did the corona crisis affect the students' academic achievements and social wellbeing? What worries did it cause for students and their parents respectively? How did students and parents handle the homeschooling situation? Were there any groups of students who had particular difficulties? This article identifies the characteristics of the students who had the most difficulties managing homeschooling.

The article is based on data from a questionnaire study on students' and parents' experiences of the situation and was conducted by a research group from Aarhus University and the University of Southern Denmark during the school lockdowns in order to gain knowledge of a unique period in the history of the primary school. The questionnaire was distributed within all schools in six municipalities by posting a participation link on the schools' learning management systems to all students in 3rd to 9th grade and their parents. The total response period was April 1-20 2020. Most of the responses

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were received during the first week, when school lockdowns and homeschooling were at their peak in Denmark. At the end of April 2020 we completed a data report with all the descriptive results (response frequencies) so that it could benefit teachers, educators, school leaders, administrators and politicians (Qvortrup et al., 2020). Two Danish language articles were published during the fall of 2020. This article is based on Wistoft, Qvortrup, Christensen, and Qvortrup (2020), however with an international perspective of the insights from Denmark.

State of the art

School lockdown and homeschooling during the corona crisis is a global experience. Schools all over the world locked down, and students were placed under home quarantine. Many scientific articles have already been published on this subject (Burgess & Sievertsen, 2020; Reich et al., 2020), however only few with students and/or parents as respondents. This means they only indirectly examine what the students themselves think about the teaching and the overall situation.

Focusing on an U.S. context, Morgan (2020) reviews the guidelines published by a number of reputable organizations within technology in education. Based on this, he summarizes a number of points for schools to be aware of during the implementation of online learning in order to improve students' benefit from teaching at distance. Researchers from Norway—a country that resembles Denmark—conducted a survey of more than 4,500 teachers in the Norwegian primary school, who had carried out distance learning with the students while the schools were locked down. One of the interesting findings is that more than half of the students 1st-4th grade (54%) only had contact with the teacher 2-3 times a week or less frequently, while 71% of the students 5th-9th grade had contact with the teacher at least once a day (Roe et al., 2020). Thus, the youngest students in Norway in particular experienced problems in relation to school and teacher contact. Furthermore, the teachers have only to a very limited extent used the possibilities for dialogue and class collaboration. The online teaching seems to reinforce individual working methods. This is very much like the Danish context (Qvortrup et al., 2020). A study, also with teachers as respondents, made by the Danish Union of Teachers (DUT) show that more than half of the students (to a large extent students with academic and/or social challenges, students from marginalized homes, students with a mother tongue other than Danish and/or students with special needs), are absent from classes (DUT, 2020). Previous research confirm that inequality between different groups of students is sustained within teaching during pandemics (Bish et al., 2011; Xia & Liu, 2013).

If we look beyond the corona pandemic, previous research on home education shows that home education sometimes challenge the collaboration between teachers and students because they are assigned new roles (van Wyk & Lemmer, 2007; Yao et al., 2020). The relationship between students and their teachers is decisive with regard to the outcome of home teaching (Jung et al., 2013; Nyhan et al., 2012; Prematunge et al., 2012) as it is in general and particularly in Home Economics Education (Christensen & Wistoft, 2016). In addition, the critical science paradigm of Home Economics gives a comprehensive understanding of family vulnerability, resilience and wellbeing—pre and post-disaster. Disaster, Risk Reduction and Management literature shows the need for disaster-related home economics research for more evidence-based information that determines how and why families and communities are affected by disasters and how they can be empowered to respond to, recover and resist the adverse effects of disasters (Gabriel, 2016).

Thus, there are also many studies that point to the need for knowledge about the consequences of the corona pandemic. Aspen Institute (2020, p. 1) is worried about the students' connectedness to school and the quality of their relationships with adults and peers in school, which "are critical to learning and thriving in life". A number of studies recognize the need to focus on the social and emotional wellbeing of students. Brooks et al. (2020) have done a literature review of the psychological impact of quarantine and concludes that "Most reviewed studies reported negative psychological effects including post-traumatic stress symptoms, confusion, and anger" (p. 912) with stressors being "longer quarantine duration, infection fears, frustration, boredom, inadequate supplies, inadequate information, financial loss, and stigma" (Brooks et al., 2020, p. 912). Based on interviews with representatives of state agencies, Gill et al. (2020) conclude that "many respondents were concerned that social isolation, excessive screen time, and irregular schedules would present a major challenge for pupils in readjusting to school in the fall" (p. 19) and The Annie E. Casey Foundation (2020, p. 1) suggests that "[u]ndoubtedly, because of the COVID-19 pandemic, the world will remember 2020 as a year of fear, pain and loss for everyone". However, no studies to date have

examined the student-school relationship and the quality of students' relationships with adults and peers in school or the social and emotional wellbeing of students during the school closures.

Research design

The questionnaire was designed so that students first had to answer questions—preferably with the support of their parents—and then the parents had to take over the questionnaire and answer a small number of questions addressed to them. Students and parents had to relate to statements on a five-point scale. All the questions concerned their experiences of the situation during the school lockdowns caused by the corona pandemic. In addition, the respondents were asked questions about the background variables: gender, age, municipality, school and socioeconomic background. The total response period was April 1-20. Most of the responses were received during the first week, when school lockdowns were at their peak, and before on-site teaching was resumed.

After removing all invalid answers, the data set consisted of 5,953 answers from students and 5,054 answers from parents. With a total student base in the six participating municipalities of 55,132 this gives a response rate of 10.8%. This is generally a relatively low response rate, but compared to similar surveys where the questionnaire is not sent to individual respondents (for instance by email), but distributed in the form of a link on a web-based platform such as the school's learning management system, the response rate is as expected (Carley-Baxter et al., 2013). Contrary this approach has the possibility of reaching out to a high number of possible respondents and thereby achieve a high frequency of responses which yields more statistical power. The greatest challenge is that certain groups of the population tend not to participate, which can lead to data being skewed. We have analyzed whether this is the case and conclude there is an equal distribution in the final data set regarding students' age, gender and geographical place of residence. However we also find that parents with low socioeconomic status are underrepresented compared to national demographic distributions. For more information on response rates and distribution in relation to background variables, please refer to the project's data report (Qvortrup et al., 2020).

When students and parents answered the questionnaire, they had to reflect on a total of 49 statements within the following overall themes in relation to teaching during school lockdowns:

- Students' everyday life and wellbeing (6 items)
- Framework and structure for schoolwork (7 items)
- Contact and collaboration with teachers and classmates (5 items)
- Teaching methods and perceived teaching quality (9 items)
- Belief in one's own abilities and mastery experiences (5 items)
- 9th grade students' thoughts about final exams (4 items)
- The role and situation of the parents (7 items)
- The students' and parents' experience of the teachers' and the school's efforts (6 items)

In addition, both students and parents could use an open text field to comment on the best and worst thing about the situation during school lockdowns. This provided us with text answers from both students and parents in which they could briefly, but freely, describe their experiences in their own words.

Analytical strategy

In order to investigate age differences, we carried out cross-tabulations including the grade levels and all single items of the study. The results regarding 3rd grade were particularly interesting, which is why we will present 3rd grade student responses compared with the average responses of all students. We have done this by grouping single items according to six themes. The themes are:

1. Students' relationship with the teachers, peers and the school,
2. Students' ability to handle schoolwork independently,

3. Students' contact with the school and peers,
4. Students' experience of the quality of teaching during lockdowns,
5. The help students receive from parents or others in the home, and
6. Parents' experiences of the situation during school lockdowns.

For all these themes, we have calculated what percentage of the 3rd grade students have expressed complete or predominant agreement with a given statement, and compared this percentage with the average percentage of all students who have declared themselves completely or predominantly in agreement with the same statements.

In order to investigate which items correlate to such an extent they can be regarded as underlying latent factors, we have carried out an exploratory factor analysis. In this article, we use two variables based on this factor analysis. The first variable is *mental health*, and we have constructed this variable from 5 items ($\alpha = 0.72$). The second variable is *parental concerns*, and we have constructed this variable from 4 items ($\alpha = 0.81$). The alpha values (α) are acceptable based on general statistical quality criteria, which typically recommend values between 0.7 and 0.9, indicating that the constructed variables are reliable (Cho & Kim, 2015; Streiner, 2003; Tavakol & Dennick, 2011).

In order to investigate whether (across different age groups) particularly vulnerable groups can be identified who experienced teaching during school lockdowns as extraordinarily challenging, we have conducted two cluster analyses. There are many methodological variations of cluster analysis (Teo, 2013), but what they have in common is that a number of observations/respondents (n) are grouped into clusters (k) based on similarities. In other words, respondents grouped in one specific cluster are relatively uniform in their responses to a variety of statements that the researcher selects for the analysis. Implicitly, each cluster will differ from other clusters with regard to the same parameters (Petscher et al., 2013, p. 305). Each cluster will have special characteristics that make it possible to identify differences in a group of respondents compared with characteristics of a different group of respondents (Hancock & Mueller, 2010).

The approaches to cluster analysis differ primarily with regard to the way in which the grouping is calculated, depending on which algorithm is applied in the analysis (Karlson, 2017). In this study, we have applied the Wards Linkage approach. This is a hierarchical cluster method that uses an algorithm to initially calculate which two observations are most similar in the entire data set, and groups these in the same cluster. Then the next two observations are grouped, and so on until all the observations are grouped in clusters. From here all clusters are grouped by similarity. This process continues until all the data is reduced to one cluster which includes the entire dataset. A graphical representation in the form of a dendrogram makes it possible to "go backwards" and see the structure of clusters constructed in the hierarchy, and from there choose how many clusters to use in the further analysis (Chen et al., 2005). Then one variable is constructed with the selected number of clusters in order to produce table analyses in which differences in clusters can be observed.

Age-related differences

The cross-tabulations generally show that in terms of most parameters, the oldest students (students in 8th and 9th grade) had less negative experiences of teaching at home during school lockdowns than the youngest students. The age group that responded most negatively in terms of almost all parameters were the students in 3rd grade. This corresponds to the results from Norway, where responses from teachers indicated that the youngest students in particular had problems with regard to school and teacher contact (Roe et al., 2020). With regard to students' contact with teachers, peers and the school, Table 1 shows that 3rd grade students missed being with their teachers more than the average for all students. They do not experience to the same degree as the average students that teachers are aware whether they do their schoolwork. Presumably this is caused by the fact that 3rd graders experience having contact with at least one of the teachers every day to lesser extent than average (21% compared with an average of 34%). And compared with the average for all students, 3rd graders do not find it easy to get help from a teacher if there are tasks they do not understand.

Table 1 Students' relationship to teachers and school—3rd grade compared with the average of 3rd-9th grade

Completely or predominantly agree *Translated from Danish	3rd grade	Average of 3rd-9th grade
I miss being with my teachers*	80%	60%
The teachers at my school are aware whether I am doing my schoolwork*	66%	77%
I have contact with at least one of my teachers every day*	21%	34%
If there are tasks I do not understand, it is easy to get help from a teacher*	41%	54%

In terms of contact with their peers, students from 3rd grade experienced less contact than the average student. Table 2 shows that only 67% of the students from 3rd grade responded that they had contact with their classmates one or more times a week, compared with an average of 78%. With regard to getting help from their peers for tasks they did not understand, 3rd grade students responded significantly more negative compared with the average (15% against 47%). The number of students who experienced working in groups with questions or tasks on the computer was also significantly lower for 3rd grade students than for the average student (8% against 25%).

Table 2 Social and academic contact with the school and the peers—3rd grade compared with the average of 3rd-9th grade

Completely or predominantly agree *Translated from Danish	3rd grade	Average of 3rd-9th grade
I have contact with my classmates one or more times a week*	67%	78%
If there are tasks I do not understand, it is easy to get help from a friend*	15%	47%
We work in groups with questions or tasks on the computer*	8%	25%

The 3rd grade students also experienced the quality of the lockdown teaching remarkably different than the average student. Nearly half (45%) of 3rd grade students experienced receiving feedback on their questions and assignments via the computer, against an average of 65%. Conversely, an above-average number of students in 3rd grade answered that they received help from their parents or others in the home. Furthermore, 70% of these students responded that their parents or others in the family made a plan for each day, compared with an average of 44%.

Naturally, this all affected the parents' situation. There were far more parents of children in 3rd grade (66%) who responded it was difficult to balance work, child/children and family life than parents in general (51%). We find these age-related differences striking. Consequently, it is necessary to develop and implement age-appropriate teaching strategies, as the youngest students clearly cannot handle a situation that involves participating in teaching from their homes in the same way as the oldest students.

Particularly vulnerable students

Besides the above age-related differences, there are other noteworthy results at single item level. We will present a few of these results descriptively before moving on to the multivariate analysis. In the following, the numbers represent the respondents who completely or predominantly agreed (or completely or predominantly disagreed) with a given statement.

Social wellbeing was an area of particular concern. As shown in Table 3, more than 90% of all students predominantly or completely agreed that they missed their friends and peers. It was only 2.6% that overwhelmingly or completely disagreed with this statement. Almost as many missed their leisure activities. Slightly fewer missed the teaching and being with the teachers. Just under half of the respondents indicated they did not feel happy, and 18% completely or overwhelmingly agreed that they felt lonely. In short, they missed everyday life with their friends, leisure activities and schooling.

Even though all parties made every effort, some of the students (just under 20%) felt that they did not perform well with this type of teaching. They found it difficult to concentrate sufficiently. Just over 15% found it difficult to keep up. In addition, almost 30% thought they spent too much time on things other than school, and approximately 40% of both students and parents said they did not make

plans for schoolwork every single day. Almost 30% of all students felt they could not master the teaching, and they did not believe their own abilities were good enough to handle the teaching during school lockdowns caused by the corona pandemic.

Table 3 Students' agreement with the statement *I miss my friends and peers*

	Frequency	Percentage
Totally agree	4,654	79.94%
Mostly agree	739	12.69%
Neither agree nor disagree	251	4.31%
Predominantly disagree	86	1.48%
Totally disagree	66	1.13%
Do not know	26	0.45%
Total	5,822	100.00%

One statement was about students' self-confidence and belief in their own abilities. As shown in Table 4, just over 18% of the students completely or predominantly disagreed with the statement *I do well with this kind of teaching*. In itself, this number is thought-provoking: nearly one in five students were in doubt as to whether they could cope with the situation of attending teaching from their homes. The number of approximately 20% can be found in a wide range of answers to comparable statements. These are students who do not think they can concentrate, who do not have sufficient contact with their teachers or peers regarding assignments and schoolwork, and who probably—even though this is not something we can say with certainty based on our data—do not have sufficiently good conditions at home or support from parents to learn while attending school from home.

Table 4 Students' agreement with the statement *I do well with this kind of teaching*

	Frequency	Percentage
Totally agree	1,227	22.91%
Mostly agree	1,825	34.07%
Neither agree nor disagree	1,157	21.60%
Predominantly disagree	525	9.80%
Totally disagree	459	8.57%
Do not know	163	3.04%
Total	5,356	100.00%

Cluster analysis

In one of the cluster analyses we grouped respondents in terms of similarity in their answers to the following items: Whether the parents make a plan for each day; whether students know what teachers want them to do; whether teachers are aware of whether students are doing their schoolwork and how they are doing; whether it is easy to get help from a teacher and/or parents; whether the students have contact with the teachers; whether students experience being able to follow the teaching; and whether the students can concentrate on the daily school activities. These are all statements that characterize how students experience coping and being supported both at home and by the school. We compared these answers on single item level to the students' mental health status, which is an index constructed by the following single items: *I am happy with my current everyday life; I miss my friends; I miss being with my teachers; I miss teaching at school; I miss my leisure activities*. For further elaboration of the students' wellbeing and mental health, see Wistoft, Christensen and Qvortrup, 2020. The results of this cluster analysis are shown in Table 5.

Table 5 shows that students in clusters 1 and 2 are similar regarding a wide range of parameters. In both cases, these are students who experience they have good contact with the teachers: they mostly

know what the teachers want them to do, and they experience the teachers are aware of whether they do their schoolwork, and that teachers are aware about how they feel, and they experience that it is easy to get help from a teacher. They also find that it is easy to follow the teaching and concentrate on school activities. One difference between cluster 1 and 2 relates to their parents. Many of the students in cluster 1 say that their parents make a plan for each day; but in cluster 2 students respond more negatively to this question. The same applies to the question of whether it is easy to get help from parents for tasks that students do not understand. It can be assumed that students in cluster 2 are more independent than students in cluster 1, although of course this is only a plausible interpretation. There is also a difference between cluster 1 and 2 with regard to mental health—the students in cluster 1 indicate a higher average degree of mental health than the students in cluster 2.

Table 5 Cluster analysis 1

Index	Cluster 1	Cluster 2	Cluster 3
1. Mental health	0.28	-0.04	-0.22
Single items			
1. My mother/father/others in the family make a plan for each day	0.51	-0.84	0.06
2. I mostly know what the teachers want me to do	0.22	0.48	-0.52
3. The teachers at my school are aware of whether I am doing my schoolwork	0.36	0.41	-0.66
4. The teachers at my school are aware of how I feel	0.39	0.35	-0.66
5. If there are tasks I do not understand, it is easy to get help from a teacher	0.43	0.52	-0.79
6. If there are tasks I do not understand, it is easy to get help from my parents	0.38	0.02	-0.40
7. I have contact with at least one of my teachers every day	0.44	0.35	-0.53
8. It is easy to follow the teaching	0.19	0.53	-0.58
9. I can concentrate on the school activities I have to do during the day	0.22	0.42	-0.49
Number of respondents in cluster (n)	1,695	1,157	1,523
Percentage distribution	38.70%	26.50%	34.80%

$N = 4,375, p = 0.000$

The responses of students in cluster 3 are very different from those of students in clusters 1 and 2. The students in cluster 3 do not experience to know what the teachers want them to do, nor do they experience that the teachers are aware of whether they are doing their schoolwork or how they are doing. They also respond to have a low degree of daily contact with the teachers; and if there are tasks they do not understand, they find it difficult to get help from a teacher. Self-confidence is also low for students in this cluster: they do not find it easy to follow the teaching, and they find it difficult to concentrate on the school activities during the day. The students in cluster 3 are about average in terms of whether they experience their parents make a plan for each day. But at the same time, their answers show they find it difficult to get help from their parents if there are tasks they do not understand. Finally, it is also this group of students who expresses the lowest degree of mental health.

Cluster 3 represents a total of 34.8% of the students. According to table 5, this group has a lower coefficient than the other two groups in terms of almost all the parameters included in the analysis. In other words, they answer significantly more negatively to questions concerning their experience of teaching during school lockdowns caused by the COVID-19 pandemic. They do not have the same predominantly positive experience of teaching that took place in the home as the other two groups of students. It is important to identify and be aware of this group, both during periods of school lockdowns and when schools reopen for teaching with physical attendance.

We conclude that only about 20% of the students in our study are in this at-risk group (instead of saying that about one-third of them belong to this group). This is due to the results of the statements

presented at single-item level earlier. Almost 20% of the students did not think they did well with home schooling. Just over 15% found it difficult to keep up. The same number of approximately 20% is found in the responses to statements about whether students thought they could concentrate or had sufficient contact with their teachers and peers regarding assignments and schoolwork. In other words, for each individual parameter we examined, there are approximately one-fifth of the students who say they are having a particularly hard time. In addition, in the cluster analysis, a group of approximately one-third respond significantly more negatively to all parameters than is the case for the remaining two-thirds of students. The 20% that make up the “risk group” is a subset of cluster 3.

Mental health and parental concerns in homeschooling

In the second cluster analysis, we conducted a more detailed investigation of students’ mental health. We define mental health as a form of robustness enabling student to cope and learn under difficult living conditions (Wistoft & Qvortrup, 2017), in accordance with the previous description of which single items the index is constructed from. We divided all the respondents into three subgroups: students that express a high, medium, or low degree of mental health respectively. We compare these three groups with parental concerns, which is an index we have constructed from the statements: We are concerned about our child/children’s learning and development; we are concerned that our child/children will be infected with coronavirus; we are concerned about how the corona epidemic affects our child/children mentally; we are concerned about how the corona epidemic affects our child/children’s situation in relation to peers and leisure life. We were interested in analyzing whether there was a correlation between the high/low level of mental health of the students, and high/low parental concerns. In addition, we compared the three groups based upon the students’ degree of mental health with a number of single-item statements regarding the students’ experience of teaching, teachers, peers and family.

Table 6 shows that cluster 1 contains the group of students that report the lowest degree of mental health, and we find it noteworthy that this group also has the parents with the lowest degree of concern. It is this group that to lowest degree meets online with friends, and it is this group that is least inclined to say that teachers make a plan for each individual day. Like students in cluster 2, this group of students report a relatively low degree of doing *more cozy activities with my family than normal*. Hence this is a group of students that have low mental health who are isolated from school—and possibly also from their parents. It is worth pointing out that parents in this cluster worry relatively little about their children, even though they perhaps should. Cluster 1 accounts for 37.4% of all respondents included in the analysis ($n = 1,715$).

Table 6 Cluster analysis 2

Index	Cluster 1	Cluster 2	Cluster 3
1. Mental health	-0.37	0.11	0.36
2. Parental concerns	-0.25	0.41	-0.13
Single items			
1. I do more schoolwork than I usually do	0.07	-0.13	0.05
2. I do more cozy activities with my family than normal	-0.24	-0.24	0.5
3. I meet with my friends online (e.g. computer games or social media)	-0.36	0.12	0.38
4. My teachers from school make a plan for each day	-0.35	-0.08	0.5
5. I mostly know what the teachers want me to do	0.18	-0.64	0.45
6. The teachers at my school are aware of whether I do my schoolwork	0.04	-0.44	0.38
7. It is easy to follow the teaching	0.17	-0.7	0.47
8. I can concentrate on the school activities I have to do during the day	0.18	-0.76	0.52
Number of respondents in cluster (n)	1,715	1,320	1,549
Percentage distribution	37.40%	28.80%	33.80%

$N = 4,584$, $p = 0.000$

Cluster 2 is the group of students that report a medium level of mental health compared with the two other clusters. This is the group whose parents have the highest level of concern. Compared with

the other two clusters, these students do not experience that they are doing more schoolwork than usual. They are least aware of what the teachers want them to do, and they have the strongest sense that their teachers are unaware of whether they are doing their schoolwork. They report the most difficulty in following the teaching, and the most difficulty in concentrating on the school activities. Here it seems that a medium degree of mental health is correlated with a negative experience of the teaching. Parents in this group are rightly concerned about their children, which could call for an intervention. Cluster 2 accounts for 28.8% of all respondents included in the analysis ($n = 1,320$).

Cluster 3 is the group of students that reports the highest degree of mental health, and this group reports doing cozy activities with their family and meeting friends online more than the other groups. They also experience that teachers make a plan every day, and that the teachers are aware whether the schoolwork is being done. The students in this group know what the teacher wants them to do, they find it easy to follow the teaching, and they feel they are able to concentrate on the school activities. Their parents—for good reason—have a relatively low degree of concern. Cluster 3 accounts for 33.8% of all respondents included in the analysis ($n = 1,549$).

Conclusion

This article has dealt with three focus points: Firstly, an identification of the importance of age in relation to managing school lockdown challenges. Secondly, an identification of the particularly vulnerable group of students during school lockdowns caused by the COVID-19 pandemic. Thirdly, an analysis of the students' wellbeing and mental health, which has been compared with parents' degree of concern for their children. Three things stand out:

1. That there are clear age differences, and the youngest students had the most difficulty in terms of teaching and learning at home,
2. That one-fifth of the students were so challenged that they constitute a “risk group”, and
3. That home schooling challenged the students' mental health and wellbeing.

With regard to the age-related differences, it is quite clear that in many ways it was more challenging for the youngest students to cope with school lockdowns than it was for the oldest students. The students from 3rd grade experienced poorer relationships with the teachers, peers and the school than the average student. At the same time, they had more difficulty in carrying out schoolwork independently. Also, the students from 3rd grade experienced less social contact with the school and their peers than the average for the students as a whole. Furthermore, 3rd graders reported that the quality of teaching was poorer than the average student did. Thus, the study confirms the experiences from Norway that social and educational contacts were harder for the youngest students than the oldest students (Roe et al., 2020). However, our study shows that more of the 3rd grade students felt that they received help from their parents or others in the home than the average student did. Hence the parental relationship compensates for the challenged student-teacher role. We are thus expanding the results of van Wyk and Lemmer (2007) and Yao et al. (2020), as it appears that it is not only teachers and students who are assigned new roles, but also parents. Perhaps it was this greater dependence on the parents that led to the fact that more parents of children in 3rd grade felt it was difficult to balance work, child/children and family life than parents in general. In other words, there are reasons to focus on the youngest children in particular, not only during school lockdowns but also when they return to regular schooling.

In terms of single items, an average of one-fifth of the students felt that they were having a particularly difficult time. In addition, a group of approximately one-third responded significantly more negatively to all parameters than the remaining two-thirds of students. These students did not receive sufficient support at home. They did not have the opportunity to share their difficult situation with anyone who could help them, and they did not experience sufficient contact with the school and the teachers. For them teaching during school lockdowns was a very negative experience. Many of them were unsure of how much they were learning. In other analyses, the differences between the students have been attributed to the socioeconomic status of their families (Wistoft, Christensen & Qvortrup, 2020). So we can confirm and expand the results of previous studies that point to variations between different groups and individual characteristics (Bish et al., 2011; Xia & Liu, 2013).

The theme of wellbeing and mental health during homeschooling perhaps deserves the most attention. We can see that almost all the students missed their friends, school and leisure activities, and that almost one-fifth of them felt lonely. On the one hand, physical contact with friends was greatly reduced; but conversely, many of the children were unsure how much they were learning. At the same time, some of the parents also expressed concern about their children's learning and wellbeing—and about their mental health and wellbeing. It is important to emphasize that there is a correlation between the mental health of some of the students and the parents' level of concern: The parents of children who reported the lowest degree of mental health expressed the lowest level of concern for their children's learning and mental development. As these children also had sparse contact with their peers, teachers and the school, and did not feel they had many cozy activities with their families, they were at particular risk.

We have already mentioned some of the general expectations regarding the significance of the corona crisis for future teaching. Generalizations should of course always be treated with caution. The corona crisis constitutes an exceptional situation and has required extraordinary efforts by teachers, students and parents alike. But the lessons learned during this crisis can also be used in the future. School lockdowns, distance learning and homeschooling have a major impact on a large group of students in terms of their participation in teaching, learning processes, mental health and wellbeing. They feel lost at home.

Ethics statement

The study was conducted in accordance with European General Data Protection Regulation (GDPR). Consent was obtained from each participant. All participants have been anonymized in the dissemination of the study results.

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Professor Donna Pendergast, PhD, is Dean of the School of Education and Professional Studies at Griffith University, Brisbane, Australia. Donna researches and writes about Home Economics philosophy, education and practice.

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