



Breastfeeding Experiences During the COVID-19 Lockdown in the United Kingdom: An Exploratory Study Into Maternal Opinions and Emotional States

Cristina Costantini, BSc, MSc, ClinPsyD, PhD¹ , Anna Joyce, BSc, MSc, PhD¹, and Yolanda Britez, BSc, MSc¹

Abstract

Background: The COVID-19 pandemic has hugely impacted upon people's psychological and physical wellbeing; however, the effects of the COVID-19 lockdown on mothers of young children, with particular regard to breastfeeding, are unknown.

Research Aims: To explore: (1) Sources of advice and support available to breastfeeding mothers during and prior to the COVID-19 lockdown; (2) Mothers' opinions on statements and recommendations made by the World Health Organization on the importance of breastfeeding and breastfeeding during the COVID-19 pandemic; (3) Maternal emotional states (i.e., anxiety and depression symptoms) experienced by breastfeeding mothers during the COVID-19 lockdown; and (4) influence of breastfeeding duration and number of children on breastfeeding opinions and emotional states.

Methods: Mothers of children aged 0–36 months ($N = 4018$) took part in an online survey. The survey included demographic questions, as well as the Generalised Anxiety Disorder Questionnaire and the Patient Health Questionnaire. Mothers were further probed on opinions regarding breastfeeding practices during the COVID-19 pandemic.

Results: Participants strongly agreed with the importance of breastfeeding, even if a mother showed symptoms of COVID-19. Differences in opinions on breastfeeding practices (e.g., the use of donor human milk and relactation), were found between participants in relation to breastfeeding duration and number of children. Participants with more than one child showed higher negative emotional states, namely anxiety symptoms. Except for Internet usage, participants indicated a decline in all sources of advice and support for breastfeeding during the COVID-19 lockdown.

Conclusions: Health bodies and professionals should consider maternal viewpoints and opinions regarding breastfeeding during the COVID-19 pandemic. Interventions are urgently needed in order to support breastfeeding mothers and prevent the development of mental health issues.

Keywords

breastfeeding, breastfeeding experience, breastfeeding support, maternal psychology, mental health, COVID-19, COVID-19 lockdown, COVID-19 pandemic

Background

The World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) recommend mothers to initiate breastfeeding within the first hour after child-birth and exclusively breastfeed an infant for the first 6 months of life, with supplemental breastfeeding continuing for 2 years and beyond (WHO, 2020a; WHO & UNICEF, 2003). In 2003, the Department of Health in the United Kingdom (UK) adopted the WHO recommendations (Scientific Advisory Committee on Nutrition [SACN], 2003), advising mothers to breastfeed their infant

for at least 6 months postpartum (National Health Service [NHS], 2020a). A large body of scientific evidence

¹School of Psychotherapy and Psychology, Regent's University London, UK

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Corresponding Author:

Cristina Costantini, BSc, MSc, ClinPsyD, PhD, School of Psychotherapy & Psychology, Regent's University London, Inner Circle Regent's Park, NW1 4NS, UK.

Email: CostantC@regents.ac.uk

supports the relevance of breastfeeding for the health, development, and growth of an infant (WHO, 2021a). Human milk is the best source of nutrition that an infant may receive (Oddy, 2017) as it contains antibodies (Andreas et al., 2015), enzymes (Di Lauro et al., 2016), and hormones (Hull, 2018).

The results of breastfeeding, however, go beyond infancy; indeed, human milk continues to be rich in proteins, vitamins, and minerals even after 12 months postpartum (Czosnykowska-Łukacka et al., 2018; Perrin et al., 2017). The importance of breastfeeding for both mother and infant are widely known. It has been found that breastfeeding positively influences the child's health (Pattison et al., 2019); for instance, breastfed infants have had lower incidence of respiratory and urinary infections (Frank et al., 2019), asthma (Klopp et al., 2018), and leukemia (Gao et al., 2019) relative to infants who were not breastfed. Breastfeeding also is beneficial to the mother (National Health Service [NHS], 2020b); for instance, it is associated with lower risk of breast cancer (Unar-Munguía et al., 2017), osteoporosis (Duan et al., 2017), endometrial cancer (Jordan et al., 2017), and cardiovascular disease (Peters et al., 2017).

In addition, breastfeeding assists the development of a positive dyadic relationship, supporting mother–infant bonding (Liu et al., 2014) and may help attachment development via the provision of regular intimate mother–infant interactions (Gibbs et al., 2018). Breastfeeding enhances the psychological wellbeing of both mother and child (Abul-Fadl et al., 2005; Krol & Grossmann, 2018), contributing to the quality of mother–child relationship (Papp, 2014), maternal sensitivity (Weaver et al., 2018), and child secure attachment (Linde et al., 2020). Recently, researchers have further shown that breastfeeding is protective of the quality of maternal caregiving in mothers with depressive symptoms as it influences mother–infant affectionate touch patterns (Hardin et al., 2021). However, researchers have also shown that mothers with depressive symptoms are less likely to initiate and continue breastfeeding than women with no psychopathological symptoms (Mathews et al., 2014). Maternal anxiety has been associated with reduced exclusivity and continuation of breastfeeding (Adedinsewo et al., 2014).

Different factors may influence mothers' decisions regarding breastfeeding initiation; for instance, care and help provided by health professionals, specifically breastfeeding counsellors in hospital (Meedya et al., 2010), personal and professional support, namely midwives, health visitors, and trained volunteer mothers (peer supporters; Brown et al., 2011; Radzimirski & Callister, 2016), and maternal breastfeeding knowledge (i.e., best nutrition for an infant; Radzimirski & Callister, 2016). Fathers also play an important role; their practical and emotional support has been found to influence mothers' decisions to initiate and continue breastfeeding (Datta et al., 2012; Rempel

Key Messages

- Little is known regarding the impact that the COVID-19 lockdown has had on mothers in the United Kingdom, with regard to breastfeeding support and maternal opinions.
- In the scenario of coronavirus symptoms, differences of opinions in relation to breastfeeding duration and number of children were found.
- The Internet was the main source of support and advice on breastfeeding that participants used *prior to* and *during* the COVID-19 lockdown in the United Kingdom.
- Maternal viewpoints and preferences need to be considered by health professionals in order to support breastfeeding mothers during the COVID-19 pandemic.

et al., 2017). First-time mothers are most likely to initiate breastfeeding if they receive support from their partner (Hinich, 2016) and are able to take part in breastfeeding groups and intervention programs (Liu et al., 2017; Maleki-Saghooni et al., 2020).

In the 1990s, the WHO in collaboration with UNICEF established the Baby-Friendly Hospital Initiative (BFHI) to promote breastfeeding and support mothers initiating early and exclusive continued breastfeeding via prompt interventions (i.e., individual counseling or group education; Philipp & Merewood, 2004; WHO, 2021b). In the UK, BFHI has been extensively adopted (Radford, 2001; UNICEF, 2019a); however, despite the importance of breastfeeding for both infant and mother as well as BFHI in UK hospitals, the breastfeeding rate in the UK is rather low in comparison to other European countries (Bagci Bosi et al., 2016).

In recent times, due to the COVID-19 pandemic, the health service in the UK has changed from one-to-one appointments with health professionals to digital health services (Hutchings, 2020); consequently, breastfeeding groups have not been able to support mothers with face-to-face interaction. However, electronic leaflets have been made accessible via the Internet and support via telephone helplines has been available (see UNICEF, 2020). Although Baby Friendly resources on infant feeding have been made available online, several queries regarding breastfeeding practices during the COVID-19 pandemic have been raised (UNICEF, 2020). At present, UNICEF (2020) recommends that:

to facilitate breastfeeding, mothers and babies should be enabled to stay together as much as possible, to have skin-to-skin contact, to feed their baby responsively and to have access to ongoing support when this is needed. When

mothers are partially breastfeeding, they can be encouraged to maximise the amount of breastmilk they are able to give or, if they choose, to be supported to return to full breastfeeding. If mothers are considering stopping breastfeeding, it is worth having a sensitive conversation about the value of continuing during the COVID-19 outbreak (p.1)

The impact that the lockdown, and its undeniable challenges, has had on mothers and infants in the UK, with particular regard to breastfeeding practices, is unknown.

Thus, the main aim of this study was to explore maternal emotional states and personal opinions as well as support received during the lockdown in the UK. Due to the impact of breastfeeding experiences on mothers' infant feeding decisions (DiGirolamo et al., 2005; Huang et al., 2019), the effects of breastfeeding duration and number of children were investigated. More specifically, the current study aimed to explore:

1. Sources of advice and support available to breastfeeding mothers during and prior to the COVID-19 lockdown.
2. Mothers' opinions on statements and recommendations made by the WHO on the importance of breastfeeding and breastfeeding during the COVID-19 pandemic.
3. Maternal emotional states (i.e., anxiety and depression symptoms) experienced by breastfeeding mothers during the COVID-19 lockdown.
4. The influence of breastfeeding duration and number of children on breastfeeding opinions and emotional states.

It was predicted that sources of support used by mothers would change as a result of the pandemic, and that breastfeeding opinions and emotional states would vary depending on the current duration of breastfeeding and number of children in the family.

Methods

Research Design

This study was a cross-sectional, prospective online (self-report) survey. Due to the COVID-19 pandemic and social distancing rules, an online self-report survey was used.

This study followed the International Ethics Declaration of Helsinki (World Medical Association [WMA], 2001) and obtained ethical approval from the Psychology Research Ethics Committee, Regent's University London, UK.

Setting and Relevant Context

Although a high percentage of UK mothers initially breastfeed their infant (NHS, 2015), the UK has one of the lowest

breastfeeding rates in Europe (Bagci Bosi et al., 2016). It appears that breastfeeding continuation remains critical (Public Health England, 2016). Increasing breastfeeding practices in the UK would save up to £50 million in NHS expenditure (UNICEF, 2019b).

In March 2020, 3,912 deaths involving the coronavirus occurred in England and Wales (UK Office for National Statistics, 2020). The COVID-19 pandemic has negatively influenced the physical and psychological wellbeing of the British population, with lockdown leading to lifestyle changes and an increase in negative emotions. Lifestyle restrictions, stressful situations, and unhealthy behaviors have been related to negative moods in the British population (Ingram et al., 2020).

Sample

Women who were at least 18 years old, UK residents, breastfeeding at the time of the study, with a child aged 0–36 months, were invited to participate in the survey. Participants were recruited through social media (e.g., breastfeeding Facebook pages). Overall, 4,627 women initiated the survey, however 609 participants did not complete it and their responses were not included in the analysis. Thus, the final sample consisted of 4,018 participants.

Measurement

Aims 1-4: The Survey. Participants were asked questions about their age, ethnicity, education level, and household income. Participants were further asked about their child's age, birth order, and sex as well as breastfeeding duration, exclusivity, and the sources of support utilized before and during the lockdown. In addition, participants were asked their personal opinions about breastfeeding a child during the COVID-19 pandemic, as well as their emotional states, using the Generalised Anxiety Disorder Questionnaire (GAD-7; Spitzer et al., 2006), which assesses generalized anxiety, and the Patient Health Questionnaire (PHQ-9; Kroenke & Spitzer, 2002), which assesses depression symptoms. The National Institute for Health and Care Excellence (NICE) in the UK recommends the use of the GAD-7 and PHQ-9 to identify and assess mental health issues and disorders; thus, both questionnaires have been considered reliable and valid for detecting negative emotional states (NICE, 2020).

Aim 2: Maternal Opinions on the Importance of Breastfeeding and Breastfeeding Practices During the COVID-19 Pandemic. Participants were asked to rate the degree to which they agreed or disagreed with statements and recommendations made by the WHO on the importance of breastfeeding and breastfeeding during the COVID-19 pandemic. Responses ranged from 1 (strongly disagree) to

Table 1. Statements about the Importance of Breastfeeding and Breastfeeding Practices During the COVID-19 Pandemic.

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- S1. Breastfeeding protects new-borns from getting sick and helps them throughout their infancy and childhood.
- S2. Breastfeeding is particularly effective against infectious diseases as it strengthens the immune system by transferring antibodies from the mother to the child via breast milk.
- S3. Due to the benefits of breastfeeding a mother should continue breastfeeding even if she shows symptoms of COVID-19.
- S4. If a mother is ill with coronavirus, practising respiratory hygiene during breastfeeding should be recommended.
- S5. Due to COVID-19, weaning a breastfed child should be advised.
- S6. If a mother is ill with coronavirus expressing milk should be encouraged.
- S7. If a mother is ill with coronavirus relactation should be advised.
- S8. If a mother is ill with coronavirus wet nursing should be recommended.
- S9. If a mother is ill with coronavirus donor human milk should be considered.
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Note. The questions were created by the authors based on the WHO (2020c) recommendations.

5 (strongly agree). The statements were chosen based on—and adapted from—the WHO's (2020c) recommendations on breastfeeding practices during the COVID-19 pandemic. Example statements include “Due to the benefits of breastfeeding a mother should continue breastfeeding even if she shows symptoms of COVID-19” and “Breastfeeding protects new-borns from getting sick and helps them throughout their infancy and childhood.” Table 1 shows the nine statements rated by the participants.

Aim 3: Maternal Emotional States. The Generalised Anxiety Disorder Questionnaire (GAD-7) is a 7-item self-report instrument used to assess adult generalized anxiety during the past 2 weeks (Spitzer et al., 2006). Questions concern, for instance, feeling nervous and worrying too much. Items are scored on a 4-point Likert scale, ranging from 0 (not at all) to 3 (nearly every day). If participants had one or two missing items, their average item score was used for the missing items; participants with three or more missing items were excluded. A total score ranging between 0 and 5 indicates mild anxiety, between 6 and 10 indicates moderate anxiety, between 11 and 15 indicates moderately severe anxiety, and between 16 and 21 indicates severe anxiety. The GAD-7 has shown high internal consistency in previously reported research (Cronbach's $\alpha > .80$; see Maroufizadeh et al., 2019; Spitzer et al., 2006) and in the current study (Cronbach's $\alpha = .91$). The GAD-7

has further shown high construct and factorial validity (see Spitzer et al., 2006).

The Patient Health Questionnaire (PHQ-9) is a 9-item self-report instrument used to measure depression symptoms in adults over the last 2-week period (Kroenke & Spitzer, 2002). Questions concern, for instance, feeling tired, feeling depressed, and sleeping too much. Previously, researchers have reported high internal consistency (Cronbach's $\alpha > .80$; see Kroenke & Spitzer, 2002); similarly, in the current study, Cronbach's α was .87. Equally to the GAD-7, items are scored on a 4-point Likert scale, ranging from 0 (not at all) to 3 (nearly every day). Scores were summed to give a total score. If participants had one or two missing items, their average item score was used for the missing items; participants with three or more missing items were excluded. A total score between 0 and 5 represents mild depression, between 6 and 10 indicates moderate depression, between 11 and 15 indicates moderately severe depression, and 16 and above represents severe depression. The PHQ-9 has further been reported to have high construct and factorial validity (see Maroufizadeh et al., 2019).

Data Collection

This study was conducted through an online survey, which was developed using Qualtrics (USA, 2002), between April 23–25, 2020. This time frame was chosen to assess participants' responses after the WHO's declaration of a global pandemic on March 11, 2020 (WHO, 2020b) and the UK Government's declaration of lockdown on March 23, 2020 (UK Government, 2020).

Informed consent was obtained by asking participants to click on a consent radial button, to confirm that they agreed to participate in the study. In the information sheet, participants were informed that they could withdraw at any time and that the data would not be used for research purposes. The survey was anonymous and data confidentiality was assured in accordance with the Data Protection Act (UK Government, 2018a) and the General Data Protection Regulation (UK Government, 2018b). At the end of the survey, participants were provided with further information on the purpose of the study, NHS guidelines regarding breastfeeding, as well as information on coronavirus.

Data Analysis

The data were analyzed using SPSS Version 26. Prior to analysis, the data were inspected for normality and outliers using the Shapiro Wilk test of normality and Cook's distance > 1 respectively. No outliers were removed (maximum Cook's distance = .06). Since the data tended to be skewed and deviated significantly from normality on all variables, nonparametric tests were used for all analyses.

Table 2. Participants' Characteristics ($N = 4,018$).

Characteristics	Total n (%)	BF < 6 Months ($n = 1234, 31\%$) n (%)	BF > 6 Months ($n = 2784, 69\%$) n (%)	One Child ($n = 1723, 43\%$) n (%)	> One Child ($n = 2291, 57\%$) n (%)
Mother's education					
No formal qualifications	40 (1)	12 (1)	28 (1)	0 (0)	23 (1)
GCSEs/A-levels	1366 (34)	420 (34)	919 (33)	482 (28)	871 (38)
Bachelor's Degree	1728 (43)	543 (44)	1197 (43)	810 (47)	939 (41)
Master's Degree	723 (18)	210 (17)	529 (19)	345 (20)	389 (17)
Doctoral Degree	161 (4)	49 (4)	111 (4)	86 (5)	69 (3)
Mother's ethnicity					
White	3857 (96)	1185 (96)	2673 (96)	1654 (96)	2222 (97)
Other	161 (4)	49 (4)	111 (4)	69 (4)	69 (3)
Household income					
< £20,000	482 (12)	136 (11)	362 (13)	172 (10)	298 (13)
£20,001-£40,000	1286 (32)	370 (30)	891 (32)	517 (30)	756 (33)
> £40,001	2250 (56)	728 (59)	1531 (55)	1034 (60)	1237 (54)
Child sex					
Female	2089 (52)	642 (52)	1448 (52)	896 (52)	1191 (52)
Male	1929 (48)	592 (48)	1336 (48)	827 (48)	1100 (48)
Childbirth order					
First	1728 (43)	506 (41)	1225 (44)	1723 (100)	0 (0)
Subsequent	2290 (57)	728 (59)	1559 (56)	0 (0)	2291 (100)

Note. BF = breastfeeding; GCSE = General Certificate of Secondary Education. Data missing for four participants with incomplete data for number of children in the family.

In order to address the first aim of this study, percentages were calculated to explore sources of advice and support used by breastfeeding participants prior to and during the COVID-19 lockdown in the UK. The chi-square test on proportions was used to assess whether use of different sources of advice changed before and during the lockdown.

To address the second aim, frequencies of opinions on breastfeeding statements were examined. To address the third aim, mean scores on the GAD-7 and PHQ-9 were examined; frequencies of participants scoring with mild, moderate, and severe anxiety (GAD-7) and depression symptoms (PHQ-9) were further examined.

To address the fourth aim, Mann-Whitney U tests were conducted to examine differences between breastfeeding duration (participants who breastfed for more than 6 months vs. participants who breastfed for less than 6 months) and total number of children in the family (1 child vs. 2 or more children) in relation to opinions on breastfeeding practices

during the COVID-19 pandemic as well total scores for anxiety and depression symptoms. The cut-off point for breastfeeding duration was chosen in accordance with WHO (2020a) current recommendations on exclusive breastfeeding for 6 months.

Results

Tables 2 and 3 display the participants' characteristics.

Aim 1: Breastfeeding Support Before and During the COVID-19 Lockdown

Eighty-eight per cent of the participants reported exclusively breastfeeding their child, whereas 12% used a mixed feeding approach (i.e., human and formula milk). Overall, 98% of

Table 3. Participants' mean (SD) ages ($N = 4018$).

Ages	Total sample M (SD)	BF < 6 months ($n = 1234; 31\%$) M (SD)	BF > 6 months ($n = 2784; 69\%$) M (SD)	One child family ($n = 1723; 43\%$) M (SD)	> One Child ($n = 2291; 57\%$) M (SD)
Mother's age (years)	32 (4.87)	31 (4.62)	33 (4.93)	31 (4.74)	33 (4.78)
Child age (months)	12 (8.75)	3 (1.77)	15 (7.80)	12 (8.63)	12 (8.84)

Note. BF = breastfeeding. Data missing for four mothers with incomplete data for number of children in the family.

Table 4. Comparisons of Participants' Sources for Advice Before and During the UK COVID-19 Lockdown (N = 4,018).

Source of advice	Before n (%)	During n (%)	χ^2	p
National Health Service classes	506 (13)	26 (1)	463.79	<.001
National Childbirth Trust classes	360 (9)	43 (1)	262.52	<.001
Friends and family	2064 (51)	1269 (32)	324.01	<.001
Leaflets	725 (18)	121 (3)	481.96	<.001
Books	359 (9)	144 (4)	98.04	<.001
Internet	2481 (62)	2421 (60)	1.88	.170
Other	1526 (38)	907 (23)	225.87	<.001

Note. Other = midwives, health visitors, telephone helplines, peer support groups.

the participants stated they received support from their partner during their breastfeeding journey.

Sources of advice used by participants changed considerably from before lockdown to during lockdown. Use of NHS and National Childbirth Trust (NCT) classes, friends and family, leaflets, books, and other sources (e.g., midwives and telephone helplines), were all significantly reduced. The only source of advice with no significant change was the use of online sources, in particular websites, forums, and online support groups (see Table 4).

Aims 2 and 4: Opinions on the Importance of Breastfeeding During the COVID-19 Pandemic

The range of responses to the nine statements on breastfeeding are illustrated in Figure 1. The highest levels of agreement were for Statements 1, 2, and 3 on the efficacy of

breastfeeding for protection of the infant against getting sick, infectious diseases, and the recommendation for a mother to continue breastfeeding if she became ill with COVID-19. Participants most strongly disagreed with Statement 5, regarding weaning a breastfed child due to COVID-19. When asked about whether “breastfeeding protects newborns from getting sick and helps them throughout their infancy and childhood”, participants who had one child were more positive about this statement than participants who had two or more children. In addition, participants with one child were more in favor of practicing respiratory hygiene than participants who had subsequent children. Participants who breastfed their child for less than 6 months and participants who had one child agreed with advice to wean a breastfed child during the COVID-19 pandemic. Similarly, participants who breastfed for a shorter period (< 6 months) and participants with one child highly agreed with expressing

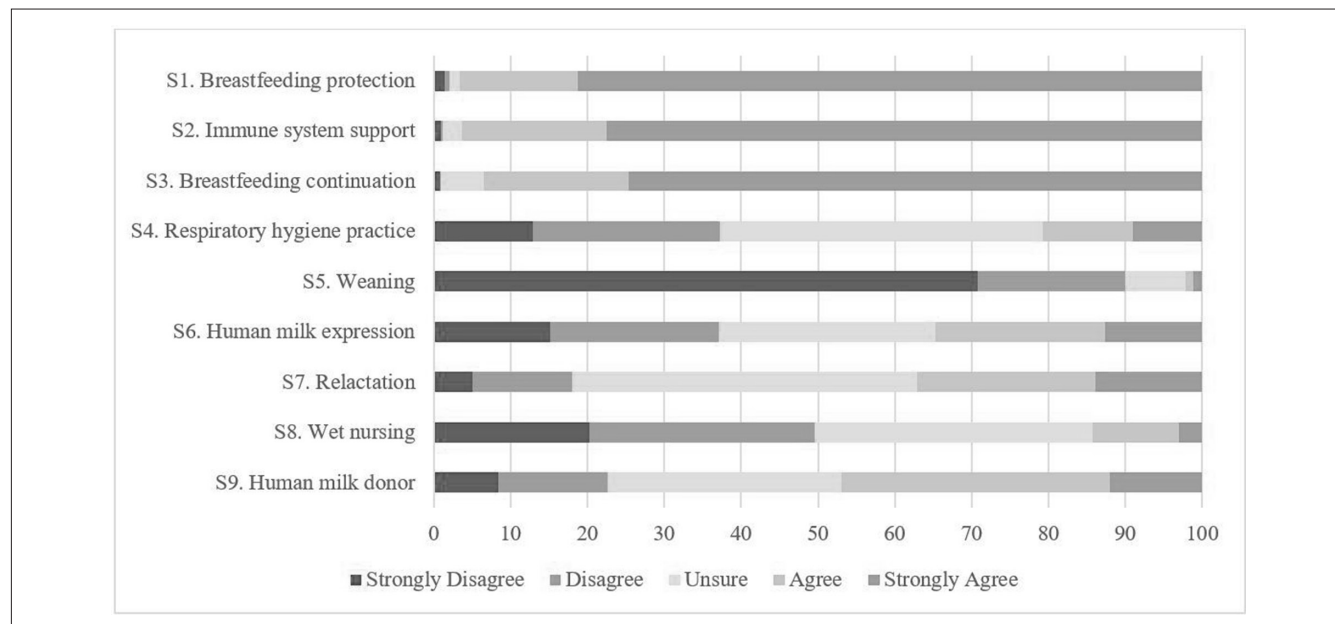


Figure 1. Showing range of responses from mothers to each statement.

human milk if a mother presented with symptoms of the coronavirus. Additionally, participants who breastfed for less than 6 months were more in favor of considering relactation in case of COVID-19 symptoms. In contrast, participants who breastfed for more than 6 months and participants who had more than one child were more positive about considering human milk donation as well as wet nursing if a mother became ill due to the coronavirus. Table 5 shows statistical comparisons and mean ranks for the statements.

Aims 3 and 4: Maternal Emotional States During the COVID-19 Lockdown

Participants with two or more children showed a significantly higher level of anxiety than mothers with one child; however, no differences were found with regard to breastfeeding duration on the GAD-7 total scores. There was no significant influence of breastfeeding duration or number of children on the PHQ-9 total scores. Descriptive statistics for emotional states along with the percentage of participants falling into categories for mild to severe anxiety and depression levels are reported in Tables 6 and 7.

Discussion

To the authors' knowledge, the present study was the first to explore maternal experiences, opinions, and emotional states in relation to breastfeeding during the COVID-19 lockdown in the UK. Our results suggested that participants who breastfed for longer than 6 months and participants who had two or more children had different opinions about breastfeeding practices than participants who breastfed for less than 6 months and those who had one child. More specifically, participants who breastfed for a longer period and those with more than one child were more in favor of the use of human milk donation and wet nursing in case of COVID-19 symptoms.

Donor human milk is considered the best option in case a mother's own milk is not available and infants are vulnerable (Renfrew et al., 2020). According to NICE (2010a) there are 17 human milk banks available in the UK; the donor human milk is mainly provided to preterm infants and those with growth limitations. However, the COVID-19 pandemic has also had an impact on human milk banks; for instance, human milk donors may have difficulty accessing phlebotomy services (Shenker et al., 2021) for serological screening tests, which are essential for human milk donations (NICE, 2010b).

In the UK, human milk donor banks have employed policies to ensure the safety of donated human milk during the COVID-19 pandemic (Shenker, 2020); however, little is known regarding the availability of human milk, about mothers affected by coronavirus. As our findings may indicate, mothers with longer breastfeeding experience may be more aware of breastfeeding

resources (i.e., human milk donor banks), information about availability of human milk should be made accessible to mothers who have shorter or no breastfeeding experience. According to the WHO (2020c) if a mother has COVID-19 and is not able to breastfeed her child, expressed human milk, as well as donor human milk and wet nursing, should be advised by health professionals.

We further showed that participants who breastfed for less than 6 months and who had one child were more prone to agreeing with expressing human milk and weaning the child in case of coronavirus symptoms; moreover, those who breastfed for a shorter period were pro-relactation. Additionally, participants with one child were favorable to the practice of respiratory hygiene and they had stronger opinions about the benefits that breastfeeding has on children's health. According to the WHO (2020c), if a mother is suspected or confirmed to have COVID-19, she should wear a mask while breastfeeding (WHO, 2020c), as well as strictly following the instructions on infection control, for instance hand hygiene (Davanzo et al., 2020).

Our findings suggest that mothers of a single child may be more motivated to establish exclusive breastfeeding and develop breastfeeding self-efficacy (Henshaw et al., 2015); they may also be more informed about the value of breastfeeding (e.g., lifelong health and development advantages to new-borns and infants (WHO, 2020c). Additional factors (e.g., family support and education) may play an important role in the initiation and duration of exclusive breastfeeding, especially in first-time mothers (Semenic et al., 2008).

In a study by Salvatori et al. (2020), expressed human milk from mothers who were affected by the coronavirus was analysed; the results indicated no detection of SARS-CoV-2 in the milk. Similarly, Marín Gabriel et al. (2020) found no evidence of SARS-CoV-2 in colostrum samples from women who tested positive for COVID-19. Previously researchers have further supported these findings (Chen et al., 2020); in fact, the WHO (2020c) has recently declared that the transmission of COVID-19 through human milk and breastfeeding has not been detected. On the contrary, the transmission from mother to child may occur through respiratory droplets (Salvatori et al., 2020).

We suggest that in case of coronavirus symptoms, health professionals should take into account mothers' viewpoints about breastfeeding practices; indeed, mothers' involvement in decision-making may influence breastfeeding continuation and initiation. The WHO (2020c) has advised health professionals to assist mothers who have recovered from COVID-19 with relactation, as well as supporting mothers of infants aged more than 6 months to continue breastfeeding along with complementary foods. According to Salvatori et al. (2020) "medical staff and nurses should not only focus on care of COVID-19 mothers and infants, but also protect, promote, and support breastfeeding" (p. 347).

Given the interrelations between breastfeeding opinions, perceptions, and decisions, and their influence on

Table 5. Comparison of Frequency Distributions of Participants who Responded Agree or Strongly Agree on Pandemic Survey (N = 4,018).

Statement	Total n (%)	Breastfeeding Duration				Number of Children				Statistical comparisons
		< 6 months (n = 1234; 31%)		> 6 months (n = 2784; 69%)		One child (n = 1723; 43%)		> One child (n = 2291; 57%)		
		M rank	n (%)	M rank	n (%)	M rank	n (%)	M rank	n (%)	
S1. BF protection	3878 (97)	1975	1193 (97)	2024	2685 (96)	2045	1679 (97)	1978	2195 (96)	U = 1,907,162.00 z = -2.67, p = .008
S2. Immune system support	3842 (96)	1981	1183 (97)	2002	2659 (96)	2015	1653 (97)	1977	2186 (96)	U = 1,909,834.00 z = -1.42, p = .157
S3. BF continuation	3747 (93)	1965	1132 (92)	2023	2615 (94)	1997	1607 (93)	2007	2137 (94)	U = 1,955,068.00 z = -0.37, p = .715
S4. Respiratory hygiene practice	832 (21)	2040	272 (22)	1984	560 (20)	2064	394 (23)	1951	438 (19)	U = 1,847,512.50 z = -3.23, p = .001
S5. Weaning	88 (2)	2213	35 (3)	1909	53 (2)	2089	39 (2)	1933	49 (2)	U = 1,807,946.50 z = -5.29, p < .001
S6. Human milk expression	1389 (35)	2211	507 (41)	1909	882 (32)	2067	622 (36)	1949	766 (34)	U = 1,843,605.50 z = -3.27, p = .001
S7. Relactation	1485 (37)	2089	488 (40)	1966	997 (36)	2004	638 (37)	2000	846 (37)	U = 1,958,110.00 z = -0.13, p = .897
S8. Wet nursing	569 (14)	1889	125 (10)	2052	444 (16)	1955	214 (12)	2033	355 (16)	U = 1,882,052.00 z = -2.23, p = .026
S9. Human milk donor	1885 (47)	1923	530 (43)	2043	1355 (49)	1962	775 (45)	2036	1109 (49)	U = 1,894,570.00 z = -2.08, p = .04

Note. BF = breastfeeding. See Table 1 for the list of complete statements. Data missing for four mothers with incomplete data for number of children in the family.

Table 6. Comparisons of Participants' Mean (SD) Scores on the GAD-7 and PHQ-9.

Instrument	Total N; M (SD)	Breastfeeding Duration		Comparisons	Number of children		Comparisons
		< 6 mos. (n = 1232); M (SD)	> 6 mos. (n = 2781); M (SD)		One Child (n = 1723) M (SD)	> One Child (n = 2287) M (SD)	
GAD-7	6.76 (5.17)	6.86 (5.19)	6.72 (5.16)	$U = 1,692,808.50; z = -.64, p = .521$	6.01 (5.16)	6.23 (5.35)	$U = 1,862,345.50; z = -2.98, p = .003$
PHQ-9	6.14 (5.27)	6.07 (5.21)	6.17 (5.30)	$U = 1,699,678.00; z = -.42, p = .678$	6.02 (5.15)	6.19 (5.32)	$U = 1,936,182.50; z = -.94, p = .346$

Note. Data missing for four mothers with incomplete questionnaire data, and four mothers with incomplete data for number of children in the family. GAD-7 = Generalised Anxiety Disorder Questionnaire; PHQ-9 = Patient Health Questionnaire.

psychological wellbeing and breastfeeding outcomes (see Henshaw et al., 2015), health bodies and professional organizations must consider mothers' experiences and viewpoints in order to create a supportive environment (Brown, 2017). At present, implementing aid and strategies for breastfeeding initiation and continuation during the COVID-19 pandemic is urgent. More specifically, first-time mothers and mothers with little or no previous breastfeeding experience may benefit from receiving information about breastfeeding a child during the COVID-19 pandemic; they may further benefit from enhanced support by health professionals, as they may be vulnerable to ceasing breastfeeding.

Additionally, we found that the number of children influenced maternal anxiety; mothers who had more than one child scored higher on the GAD-7 than mothers of a single child. Recently, researchers reporting about maternal mental health during the COVID-19 lockdown in the UK have demonstrated that low mood and solitude were typical of mothers during this time; apprehension about COVID-19 infection was associated with maternal emotional issues (Dib et al., 2020).

The number of children in the family may increase their level of anxiety. This could be due to worries regarding the coronavirus contagion; moreover, looking after two or more children at home and with little support may be exhausting. Although anxiety symptoms presented in the participants in this study may not be entirely related to breastfeeding (e.g., fatigue), previously researchers have found a positive association between breastfeeding groups

and healthier maternal mental health (Dib et al., 2020). This demonstrates that sharing experience and getting support may facilitate mothers to feel less lonely and stressed. Additionally, according to Black et al. (2020), mothers who were members of social media groups had greater breastfeeding success and longer breastfeeding duration. In contrast, we found no influence of number of children on depression symptoms, nor was there an influence of breastfeeding duration on the GAD-7 or PHQ-9 total scores.

One important aspect to consider is that the questionnaires used in this study assess psychological symptoms during the last 2-week period; the data collection of the current study took place 1 month after the beginning of the lockdown. It is possible that more severe psychological symptoms (i.e., depression) developed in due course. Alternatively, a study by Ozamiz-Etxebarria et al. (2020) showed that psychological symptoms arose after 3 weeks of quarantine in comparison to the beginning of the lockdown; thus, it also is possible that levels of anxiety and depression in our study were already inflated from pre-lockdown levels.

It is important to highlight that almost all participants in this study stated they had received breastfeeding support from their partner; this indicates that when participants were assisted, they could rely on emotional and practical support about breastfeeding their child. Researchers have reported that mothers who breastfed for at least 6 months benefited from partner support (Guyer et al., 2012); clearly, encouragement is an essential aspect of breastfeeding continuation.

Half of our study participants relied on friends and family for advice and support about breastfeeding prior to the lockdown; it is not surprising that due to the impossibility of seeing family members and friends the percentage decreased. In a previous study, Costantini et al. (2019) reported that British mothers (pre-pandemic) used to receive and seek advice from family and friends, as well as books and leaflets. We showed that sources of advice significantly changed from before the lockdown to during the lockdown as participants were restricted to using advice, which was available to them (e.g., the Internet, midwives,

Table 7. Frequency Distribution of Participants' Scores for Anxiety (GAD-7) and Depression (PHQ-9).

Scores	Anxiety; n = 4014; n (%)	Depression; n = 4014; n (%)
Mild	1962 (49)	2260 (56)
Moderate	1230 (31)	1035 (26)
Moderately severe	479 (12)	439 (11)
Severe	343 (8)	280 (7)

Note. GAD-7 = Generalized Anxiety Disorder Questionnaire (Spitzer et al., 2006); PHQ-9 = Patient Health Questionnaire (Kroenke & Spitzer, 2002). Data missing for four mothers with incomplete questionnaire data.

telephone helplines, friends and family). However, participants indicated no variation in the use of the Internet as the main source for seeking advice. This suggested that the Internet (e.g., websites, forums) may be the preferred source that breastfeeding mothers use to gather information and advice. However, Watson et al. (2020) has highlighted the use of the Internet mainly for white and scholarly participants.

Although we demonstrated the importance of mothers' opinions on breastfeeding practices in the scenario of coronavirus symptoms, further investigation is needed in order to understand breastfeeding practices during the COVID-19 pandemic in lower socio-economic groups, as well as social and environmental supports for ethnic minority groups and those who suffer from mental health issues. In the future, researchers should investigate factors that may influence maternal decisions about breastfeeding initiation and continuation, namely lactation stage and maternal physical and psychological wellbeing.

Limitations

Although online surveys are considered a robust and flexible method for data collection (Couper, 2017), as well as an effective approach to collect nationwide data during the COVID-19 pandemic (Ali et al., 2020), there are some limitations that need to be discussed. For instance, online surveys are subject to coverage error, which concerns the access to the Internet for the whole population (Dillman & Bowker, 2001); the Internet may not be available to everyone. Mothers who did not have access to the network at the time of data collection could not take part in this study.

Researchers have indicated that mainly white, wealthy, and scholarly individuals participate in research studies (Schulz et al., 2018), particularly online surveys (e.g., Watson et al., 2020). Although this study aimed to recruit mothers from all backgrounds and ethnicities, the sample was skewed, consisting of predominantly highly educated and white participants. Nevertheless, it is important to highlight that, due to the overwhelming response, the survey was closed after 48 hr; this may have contributed to the exclusion of participants with different backgrounds and minorities.

The high number of responses from mothers may indicate that women who were breastfeeding their child during the first lockdown in the UK, felt the need to share their experiences and viewpoints, and to have a voice in this matter; future research should explore maternal breastfeeding experiences in order to identify mothers' needs and wants.

Conclusion

In conclusion, our study has highlighted the importance of examining the influence of COVID-19 on breastfeeding

dyads concerning breastfeeding continuation, as well as maternal viewpoints and psychological wellbeing. Interventions are urgently needed in order to aid breastfeeding mothers and prevent the development of mental health issues. Professionals, organizations, and health bodies need to consider mothers' knowledge, experience, and care responsibilities with the purpose of providing support during the COVID-19 pandemic.

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*Editor's Note

JHL has a policy of not publishing references from predatory publishers. The references in the Reference List with * were published in journals whose publishers have been criticized by some academics for low standards of peer review as well as some allegations of academic misconduct. Others have felt these publishers have done their due diligence. Due to the importance of the topic covered in this review, we left the inclusion of these articles to the authors' discretion. The authors have reviewed all references and take responsibility for their quality.

**Editor's Note

Reprints are preliminary reports that have not undergone peer review. They should not be considered conclusive, used to inform clinical practice, or referenced by the media as validated information. The reference in the reference list below indicated by ** is a preprint.


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ORCID iD

Cristina Costantini, BSc, MSc, ClinPsyD, PhD  <https://orcid.org/0000-0002-6897-5870>

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