



Predictors of Breastfed Mother's knowledge, Attitude and Practice during COVID-19 Pandemic

Fawzia El Sayed Abusaad¹, Abdel-Hady El-Gilany²

¹ Professor of Pediatric Nursing, Faculty of Nursing, Mansoura University, Egypt

² Professor of Public Health & Preventive Medicine, Faculty of Medicine, Mansoura University, Egypt

ABSTRACT

Background: The COVID-19 pandemic has posed several challenges to breastfeeding (BF) mothers. **Aim:** to assess Knowledge, attitude and practice of breast-fed mothers during pandemic of COVID 19. **Method:** A cross-sectional study was conducted on 208 mothers-infant dyads attended to primary health office for vaccination and outpatient department of different children's hospitals in Mansoura, Egypt. A structured questionnaire was used to collect data about COVID-19 in general as well as knowledge, attitude and practice of BF during COVID-19 pandemic. **Results:** The linear regression revealed that mother's education is an independent predictor of COVID-19 general knowledge and attitude scores. Mothers' work and general knowledge are independent predictors of knowledge BF during COVID-19. Mothers' education is an independent predictor of attitude score. Knowledge BF during COVID-19 and attitude are independent predictors of practice score. **Conclusion:** Mother's education and work are independent predictors of knowledge BF during COVID-19, their attitude and practice. **Recommendation:** Ongoing educational program for mothers about COVID-19 and breast feeding.

Keyword: Breastfed Mother, Knowledge, Attitude, Practice, COVID-19, Predictors

Introduction

Breast milk is the best source of nutrition for infants, including infants whose mothers have confirmed or suspected coronavirus infection. If an infected mother takes appropriate precautions, she can breastfeed her baby (Latorre, et al., 2021). Extraordinary actions have been implemented to control the rapid spread of the ongoing COVID-19 epidemic in Egypt. Mother's adherence to control measures is influenced by their knowledge, attitudes and practices towards the disease (Hanza, Badary & Elmazar, 2020).

To date, the virus that causes COVID-19 has not been detected in breast milk. However, as the disease is

new, this evidence is based on limited studies. The experience obtained shows that the disease course of COVID-19 generally is not severe in infants and young children. The main risk of transmission appears to come from the respiratory tract of an infected mother (Green, Petty, Bromley, Walker & Jones, 2020).

There is a disagreement in the literature about breastfeeding management in confirmed COVID-19 mothers. They have affirmed the possibility of vertical transmission of the new coronavirus and through breast milk; for this reason, they recommend separating the mother and child and interrupting breastfeeding, even in suspected cases. In their publications, they advise that breastfeeding and/or extraction of breast milk are

allowed only in the case of a negative PCR test for COVID-19 in the mother and breast milk (Wang, et al., 2020). Wang, et al (2020) did not recommend breastfeeding in suspected cases, uncured cases and while taking lopinavir/ritonavir treatment.

In addition, neonatal isolation was recommended in newborns that had been suspected or confirmed SARS-COV 2 infection (Chen, et al., 2020). On the other hand, the Union of European Neonatal and Perinatal Societies advise direct breastfeeding under strict measures of infection control in asymptomatic COVID-19 mothers, but when the mothers are too sick, the neonates will be managed separately with fresh expressed breast milk (Davanzo, et al., 2020).

Breastfeeding decisions for women with COVID-19 must counterbalance the risk for infection to the infant with the known health benefits of close contact and breastfeeding to the infant and mother; yet, different organizations, countries, and experts vary in how they calculate this balance, which is challenging, given gaps in knowledge concerning SARS-COV-2 transmission (Sachdeva, Jain, Mukherjee & Singh, 2020).

At present, many health authorities and international societies, such as WHO and UNICEF, promote breastfeeding and mother-baby contact if adequate measures to control COVID-19 infection are followed. In cases where maternal general health conditions impede direct breastfeeding or in cases of separation between mother and baby, health organizations encourage and support expressing milk and safely providing it to the infants (World Health Organization, 2021).

Knowledge, attitude and practice of breastfed mothers about COVID-19 in general and BF during COVID-19 can contribute to its prevention and control.

This study is the first of its kind in Egypt exploring breast feed mothers' knowledge, attitudes and practice during the pandemic of COVID-19. The study provides baseline information for implementing initiatives to identify the educational needs and modify routine practices in the fight against this pandemic.

Aim of the study:

Assess predictors of breast-fed mothers Knowledge, attitude and practice during pandemic of COVID-19.

Subjects and Methods

Design & Setting: A descriptive cross-sectional study was conducted on mothers-infants dyads at both urban and rural primary health care centers during the vaccination sessions in Mansoura District, Egypt during the period from May to July, 2021.

Study Subjects

Sample size was calculated using Medcalc 15.8 (<https://www.medcalc.org/>). The primary outcome of interest is the total practice score of breastfeeding during COVID19. A pilot study on 41 mothers found that the mean practice score is 17.1 and SD= 4.7. With alpha error of 5%, study power of 90% and 3% precision, then the sample size is 194 breastfeed mothers at least. However, a total of 208 mothers were included and mothers were recruited consecutively from the chosen health facilities.

Study Tools

A **structured questionnaire** was developed by the researcher after reviewing previously conducted research. The questions were developed in Arabic and tailored to meet the needs of the participants. Five professors of pediatric and community health nursing reviewed and verified the questionnaire for content and relevance. The parts of the questionnaire that were covered were as follows:

Part I: Demographic characteristics of mothers and their infants: that include data about infants age, sex, birth order and type of feeding. As well as mothers age, residence, education, occupation and source of information about COVID-19.

Part II: The knowledge section: consisted of 22 knowledge questions. Seven questions asking general information about COVID-19 as causes, mode of transmission, high risk group, and immunization. The other (15) questions about mother's knowledge about breast feeding during COVID-19. Each question was answered by correct answer took (2) score, partially correct answer (1) and (0) score for wrong\or don't know. The total score of general COVID-19 knowledge was 14 and breastfeeding Knowledge during COVID-19 was 30

Part III: The attitude of breast feed mothers about corona virus outbreak; included eight questions assessing mothers' attitudes of COVID-19 as a preventable and controllable disease. Each question was answered either by yes took (1) score, and score (0) for no and not sure. The total score was 8.

Part IV: Breast feed mothers reported practice about protective measures used during COVID-19: (13) questions. The response either always (2) score, sometimes (1) score, and zero for no. The total score was 26. Higher scores mean better KAP as there are no validated cut off points.

Validity and Reliability:

Content validity was assessed by five experts in pediatric and community health nursing who revised the tools for clarity, relevance, applicability and comprehensive. Cronbach's alpha ranged from 0.81 to 0.92 for the study tool parts.

Data Collection Procedure

The researcher proposal was approved by the

Research Ethics Committee, Faculty of Nursing-Mansoura University and informed oral consent from every mother for her contribution after explaining the study's goal, benefits and process. They were informed that contribution in the study is nonobligatory and they are free to pull out at any time without any accountability. The interview with the mothers was individually using the study tool during the period from March to June 2021, to assess mothers' knowledge, attitude and practice of breast feeding during COVID -19 pandemic, the time needed for each mother interview was around 15 minutes.

Data Analysis:

The data were collected and analyzed using Statistical Package for Social Sciences (SPSS for Windows program version 22; Armonk, NY: IBM Corp., USA). Cronbach's alpha was used to test the internal consistency of the study tools. Categorical data were presented as number and percent. Scores of the different tools were presented as mean and SD. Unpaired t-test and ANOVA test with Bonferroni post hoc comparisons were used for comparison between groups, as appropriate. Correlation coefficients were calculated using rank correlation coefficient. Significant correlations were entered into a linear regression model to measure the contribution of factors found to be significant in bivariate analysis in predicting different scores. Categorical variables were included in the correlation and linear regression as dummy variables. $P \leq 0.05$ was considered statistically significant.

Results

Table 1 shows that the mean general COVID-19 knowledge, knowledge about breastfeeding during COVID-19, attitude and practice scores are 9.4, 6.3, 5.3 and 15.0 corresponding to 67.1%, 21.0%, 66.3% and 57.8% of the total score respectively. Both the means

of general COVID-19 knowledge and knowledge about breastfeeding during COVID-19 scores are significantly higher in highly educated and working mothers residing in urban areas with enough and able to save income. The mean score of the attitude is significantly higher in highly educated women with enough and able to save income. The mean practice score is significantly higher in working mothers.

Table 2 shows that there are significant positive correlations between general COVID-19 knowledge and mothers' education, work, residence and income. There are significant positive correlations between knowledge about Bf during COVID-19 and mothers' education, work, residence, child age and general COVID-19 knowledge. There is a significant positive correlation between attitude and mothers' education. There are significant positive correlations between practice and mothers' education, work, residence, income, general knowledge, knowledge of BF during COVID-19 and attitude.

The linear regression model reveals that mother's education is an independent predictor of general knowledge and attitude scores. Mothers' work and general knowledge are independent predictors of knowledge BF during COVID-19. Mothers' education is an independent predictor of attitude score. Knowledge BF during COVID-19 and attitude are independent predictors of practice score (**table 3**).

According to mothers' source of knowledge about breastfeeding during COVID-19 pandemic, the results shows that mass media and social media were the commonest sources of information about BF during COVID-19 (**table 4**).

Table 1: Total knowledge, attitude & practices scores of breastfeeding during the COVID-19 pandemic and their variation with maternal sociodemographic features

	Total	Mean ± SD			
		COVID-19 knowledge	Knowledge BF during COVID-19	Mother's BF Attitude during COVID-19	f B F during COVID-19
Overall % of mean/total score	208	9.4±2.9 67.1%(9.4/14)	6.3±2.8 21.0%(6.3/30)	5.3±1.5 66.3%(5.3/8)	15.0±4.7 57.75(15.0/26)
Mothers' age (years):					
≤25	96	9.1±2.8	6.1±2.8	5.2±1.4	14.7±3.9
>25	112	9.6±3.0	6.5±2.7	5.4±1.6	15.3±5.3
t,P		1.2,0.2	1.1,0.3	0.2,0.4	1.0,0.3
Mothers' education:					
≤ secondary	107	8.6±3.0	5.9±2.7	5.0±1.6	14.6±4.0
> secondary	101	10.3±2.5	6.8±2.8	5.6±1.5	15.5±5.4
t,P		4.5, <0.001	2.3,0.02	2.8,0.005	1.4,0.2
Mothers' work:					
No	115	8.5±3.0	5.6±2.8	5.1±1.6	14.3±3.9
Yes	93	10.5±2.5	7.1±2.4	5.5±1.4	15.9±5.5
t,P		<0.001	4.1, <0.001	1.7,0.1	2.4,0.02
Residence:					
Rural	139	8.9±3.0	6.0±2.7	5.2±1.6	14.5±4.2
Urban	69	10.3±2.5	6.9±2.8	5.6±1.5	16.0±5.4
t,P		3.2,0.001	2.1,0.03	1.7,0.1	2.3,0.3
Income:					
Not enough	33	7.6±2.7 ^{A,B}	5.2±2.4 ^A	4.7±1.7	13.4±4.5 ^A
Enough	122	9.4±2.8 ^{A,C}	6.2±2.8 ^B	5.4±1.5	14.7±4.4 ^B
Enough & save	53	10.5±2.7 ^{B,C}	7.3±2.6 ^{A,B}	5.5±1.6	16.6±5.1 ^{A,B}
F,P		11.5, <0.001	6.9, <0.001	3.1,0.05	
Child age:					
up to 6 months	66	8.7±3.2	5.8±3.0	5.2±1.7	14.6±5.3
6-12 months	63	9.6±2.6	6.2±2.9	5.2±1.5	15.5±4.1
12 months	79	9.8±2.8	6.8±2.4	5.4±1.5	14.9±4.7
F,P		2.8,0.07	2.4,0.09	0.6,0.6	0.7,0.5
Child sex:					
Male	107	9.4±2.8	6.6±2.5	5.5±1.5	15.1±4.7
Female	101	9.4±3.1	5.9±2.9	5.1±1.5	14.9±4.7
t,P		0.2,0.9	1.8,0.07	1.0,0.1	0.9,0.8
Birth order:					
1 st	64	9.2±2.8	6.4±2.7	5.2±1.6	14.7±3.9
2 nd	79	9.6±3.0	6.0±2.7	5.2±1.6	14.6±4.8
3 rd & more	65	9.4±2.9	6.5±2.9	5.6±1.4	15.9±5.3
F,P		0.3,0.7	0.7,0.5	2.0,0.1	1.6,0.2

A,B,C significant difference between the corresponding groups by Bonferroni post hoc multiple comparisons

Table 2: Correlation matrix of KAP score with different parameters

	Score of			
	General COVID-19 knowledge r(P)	Knowledge BF during COVID-19 r(P)	Mother's BF Attitude during COVID-19 r(P)	Practice of B F during COVID-19 r(P)
Mothers' age (years)	0.13(0.06)	0.02(0.75)	-0.11(0.13)	0.03(0.71)
Mothers' education:	0.36(≤0.001)	0.16(0.02)	0.27(≤0.001)	0.19(0.005)
Mothers' work	0.34(≤0.001)	0.28(≤0.001)	0.12(0.08)	0.17(0.02)
Residence	0.22(0.001)	0.15(0.03)	0.12(0.1)	0.16(0.03)
Income	0.26(≤0.001)	-0.05(0.45)	0.13(0.06)	0.31(≤0.001)
Child age (months)	0.14 (0.05)	0.16(0.02)	0.11(0.11)	0.03(0.71)
Child sex	-0.01(0.87)	-0.13(0.07)	-0.11(0.11)	0.02(0.79)
Birth order	0.04(0.62)	-0.02(0.77)	0.12(0.08)	0.05(0.44)
General	-	0.58(≤0.001)	0.05(0.46)	0.3(≤0.001)

	Score of			
	General COVID-19 knowledge r(P)	Knowledge BF during COVID-19 r(P)	Mother's BF Attitude during COVID-19 r (P)	Practice of B F during COVID-19 r(P)
COVID-19 knowledge				
Knowledge BF during COVID-19	-	-	-0.12(0.1)	-0.24(≤0.001)
Mother's B F Attitude	-	-	-	0.25(≤0.001)

r=correlation coefficient

Coding of variables included in the model: Categorical variables were included in the model as dummy variables and coded as:

- 0 was given for non-working, not enough income
- 1 was given for male, rural residence, illiterate, working, enough income
- 2 was given to female, urban residence, less than secondary education, enough income and able to save.
- 3 was given to secondary education & 4 was given for high education

Table 3: Multiple linear regression analysis of significant independent predictors of KAP scores

	Score of							
	General COVID-19 knowledge		Knowledge BF during COVID-19		Mother's BF Attitude during COVID-19		Practice of B F during COVID-19	
	β	P	β	P	β	P	β	P
Mothers' education:	1.2	≤0.001			0.6	≤0.001		
Mothers' work	1.6	≤0.001	1.0	0.008				
General COVID-19 knowledge				≤0.001				
Knowledge BF during COVID-19							0.5	≤0.001
Attitude							0.7	≤0.001
Constant	4.44		3.3		3.2		8.0	
R ²	0.19		0.13		0.07		0.14	
F,P	25.3, ≤0.001		16.7, ≤0.001		15.6, ≤0.001		18.0, ≤0.001	

Coding of variables included in the model:

Categorical variables were included in the model as dummy variables and coded as:

- 0 was given for non-working, not enough income
- 1 was given for male, rural residence, illiterate, working, enough income
- 2 was given to female, urban residence, less than secondary education, enough income and able to save.
- 3 was given to secondary education & 4 was given for high education

Table 4: Sources of knowledge about breastfeeding during the COVID-19 pandemic

Items	N (%)*
Mass.media (TV, radio, newspapers)	120 (57.7)
Social media	96(46.2)
Health care workers	35(16.8)
Others#	32(15.4)

*Categories are not mutually exclusive
#relatives, friends, internet

Discussion:

According to the WHO, mothers with COVID-19 infection, whether suspected or confirmed should be encouraged to start or continue breastfeeding, because the benefits of breastfeeding much outweigh the risks of transmission (Willams, et al., 2020).

The current results revealed that the overall COVID-19 knowledge mean score among study participants was acceptable and satisfactory, the only deficit items was related to symptoms, mode of transmission and risk factors. This agrees with Kamal, Thakur, Swain, Vikneshram, (2020) & Hamadneh, et al., (2021) who clarified that; the majority of the respondents were aware of COVID-19 and demonstrated a high level of awareness.

Contrarily the subject's knowledge about breastfeeding during COVID-19 scores was unsatisfactory particularly items related to role of breast milk in the COVID-19 transmission, breast milk storage, availability of vaccine against COVID-19 and ways of infant feeding for suspected or confirmed COVID-19 mothers. This deficit may because the scientific nature of this information for non-specialized working and illtreat mothers.

Also, the results indicated that there are significant positive correlations between general COVID-19 knowledge and mothers' education, work, residence and income. There are significant positive correlations between knowledge about Bf during COVID-19 and mothers' education, work, residence, child age. Similar results were founded in Kamal, Thakur, Swain & Vikneshram, (2020) & Zhong, et al., (2020). It is possible that educated mothers or those living in urban areas had more opportunities to stay informed with the updated information about COVID-19 prevention and control via various medium channels and workplace.

As regard breast feed mothers' attitudes during COVID-19, the overall score was slightly higher. While the mean score of the attitude was significantly higher in highly educated women with enough and able to save income. This could be because social media have been continuously exaggerating about the severity and mortality of COVID-19 disease happened in many developed countries that consequently imposed on mother's' perceptions in the prospect of pandemic control. This opinion comes in accordance with Brown & Shenker, (2021) who clarified that breastmilk is the best source of nutrition for babies. It strengthens the immune system by providing maternal antibodies and other immune factors through milk. Disruption of breastfeeding may leave negative impact on infant's short-term and long-term health.

The current results clarified that the overall practices score of breastfeed mothers during COVID pandemic was more than half. The mean practice score was significantly higher in working mothers with a significant positive correlation between practice and mothers' education, work, residence and income. The only deficit items of practice were related to availability of protective supplies as mask, alcohol, disinfecting breast pump after using and asking for support during attack for feeding their infants. The previous study by Kamal, Thakur, Swain & Vikneshram, (2020) stated a high level of practice was noticed; over 93.7 % of the respondents had not visited any crowded areas. Nearly all the participants (99.4%) used safety precautions such social distance and hand sanitization.

Also, Pereira, et al., (2020) & Brown & Shenker, (2021) stated that the findings revealed two very different experiences: 41.8 % of women believed that lockdown safeguarded nursing, whereas 27.0 % struggled to acquire help and faced several difficulties

as a result of lockdown, some mothers stopping breastfeeding before they were ready. Less educated mothers, more difficult living conditions, and a Black or minority ethnic heritage were more likely to find the impact of lockdown difficult and quit nursing. The findings are critical in determining how we can best serve women who are grieving the loss of breastfeeding and are influenced by their negative experiences, as well as how we can learn from those who have had a positive experience.

The linear regression analysis of the current study reveals that mother's education is an independent predictor of general knowledge and attitude scores. Mothers' work and general knowledge are independent predictors of knowledge BF during COVID-19. Mothers' education is an independent predictor of attitude score. Knowledge BF during COVID-19 and attitude are independent predictors of practice score. This finding agree with Kasemy et al., (2020) who found that unsatisfactory knowledge was correlated with poor education (OR = 2.69, 95 % CI: 1.96–3.67) and rural residency (OR = 2.69, 95 % CI: 1.96–3.67). Not working (OR = 1.94, 95 % CI: 1.61–2.35) and not having enough money were connected to a negative attitude. Poor practice is correlated to being young (OR = 2.41, 95 % CI: 1.94–2.98), having a low education (OR = 1.19, 95 % CI: 1.03–1.37), and being unemployed.

Mailk, Joshi ,Gupta & Sharma, (2021) stated that low education was a predictor for unsatisfactory knowledge and bad practice as well as insufficient income was a predictor for more negative attitude . Also, Omar & Amer (2021) stated that the observed disparity in knowledge, practice, and perceptions could be attributed to differences in socio-demographic background, available sources of information, outbreak situation in the studied locality, health awareness,

routine health practices, and level of worry about the pandemic. All this led to the variation in the application of correct actions and behaviors to prevent COVID-19.

Another study showed participants' education was a major predictor of good COVID-19 knowledge. The relationship between participants' educational level and their COVID-19 knowledge score is unsurprising; the more educated a person was, the more information they sought about major disasters or diseases, and the more understanding they had of the proposed preventive measures (Al-Hanawi, et al., 2020).

Media plays a vital protective role in increasing the public awareness about protective measures and exposing misconception (Kasemy, et al., 2020). In this study, the source of information regarding COVID-19 for breastfeed mothers were from mass media as T.V, Radio, Newspaper and social media, such as Facebook and WhatsApp which has great impact on disseminating health information, especially at the time of pandemics to enhance knowledge, and to dispel myths and misinformation. The Egyptian Ministry of Health and Population provided clusters with COVID-19 information via their websites and are encourage everyone to be aware of updates relating to knowledge about COVID-19 (Ministry of Health-Egypt, 2020). This comes in agreement with the results of a study in Syria by Hamadneh, et al., (2020) where TV (66.4 %) was the most popular source of information, followed by government officials (38.7%), Facebook (34.8 %), health staff (31.4%), websites (23.8 %), and family and friends (43.3 %).

While the current results inconsistent with Abdelhafiz, et al., (2020) who reported that social media, particularly Facebook, was the most popular source of information among the Egyptians they investigated. Furthermore, an Ethiopian study by

Hager, et al., (2020) reported that the participants' primary sources of information were the internet (social media platforms- 84%) and television (44%)

Study limitations:

This is a single district study and its results cannot be generalized to the national level. Also, the cross-section design does not for studying the cause effect relationship.

Conclusion:

Breastfeeding mothers appear to be knowledgeable about COVID-19 and have a positive attitude about it. However, they lacked knowledge regarding features of breastfeeding that should be considered for the transition of COVID-19, as well as preventive measures and practical intervention that should be considered when COVID-19 is suspected or confirmed. Mothers' education and work are independent predictors of BF knowledge, attitude, and practice during COVID-19. In addition, the study subject's primary sources of information were the mass media and social media.

Recommendation:

1. Ongoing educational program for mothers about COVID-19 and breast feeding.
2. The predictors associated with KAP could be the cornerstone in directing policymakers to target the health education campaigns to breastfeed mothers for better infant's health.

References:

- Latorre, G., Martinelli, D., Guida, P. & et al. (2021). Impact of COVID-19 pandemic lockdown on exclusive breastfeeding in non-infected mothers. *Int Breastfeed J* 16, 36. <https://doi.org/10.1186/s13006-021-00382-4>
- Hanza,S M.,Badary,A O.,& Elmazar,MM.,(2020). Cross-Sectional Study on Awareness and

- Knowledge of COVID-19 Among Senior pharmacy Students. *Journal of Community Health* <https://doi.org/10.1007/s10900-020-00859-z>.
- Green, J., Petty, J., Bromley, P., Walker, K. & Jones, L. (2020). COVID-19 in babies: knowledge for neonatal care. *J Neonatal Nurs*, 26(5), 239-46. <https://doi.org/10.1016/j.jnn.2020.06.005>
- World Health Organization ,WHO. (2021). Coronavirus disease (COVID-19) outbreak. Coronavirus disease (COVID-19) outbreak. www.who.int/emergencies/diseases/novel-coronavirus-2019/events-as-they-happen Accessed March 6.
- Wang L, Shi Y, Xiao T, Fu J, Feng X, Mu D, et al.(2020). Chinese expert consensus on the perinatal and neonatal management for the prevention and control of the 2019 novel coronavirus infection (First edition). *Ann Transl Med*,8(3):47-55.
- Wang, S.S., Zhou, X., Lin, X.G., Liu, Y.Y., Wu, J.L., Sharifu, L.M. & et al. (2020). Experience of clinical management for pregnant women and newborns with novel coronavirus pneumonia in Tongji hospital. *China Curr Med Sci*,40(2),285–9.
- Chen, H., Guo, J., Wang, C., Wang, C., Luo, F., Yu, X. & et al. (2020). Clinical characteristics and intrauterine vertical transmission potential of COVID-19 infection in nine pregnant women: a retrospective review of medical records. *Lancet*,395 (10226),809–15.
- Davanzo, R., Moro, G., Sandri, F., Agosti, M., Moretti, C. & Mosca, F. (2020). Breastfeeding and coronavirus disease-2019. Ad interim indications of the Italian Society of Neonatology endorsed by the Union of European Neonatal & Perinatal Societies. *Matern Child Nutr*,16 (3),13010.
- Sachdeva, R.C., Jain, S., Mukherjee, S. & Singh, J. (2020). Ensuring exclusive human milk diet for all babies in COVID-19 times. *Indian Pediatr*,57(8),730–3. <https://doi.org/10.1007/s13312-020-1917-4>.
- Q&A: Breastfeeding & COVID-19. [2020 11 May 11, 2020]; Available from: www.who.int/news-room/q-a-detail/q-a-on-covid-19-and-breastfeeding.
- Willams, J.,Baranova , L. N., Weber, M., Vural, M., Mestrovic, J., Carrasco-Sanz, A., Bedra, J., Berdzuli, N., & Pettoello-Mantovani, M. (2020). The Importance of Continuing Breastfeeding during Coronavirus Disease-: In Support of the World Health Organization Statement on Breastfeeding during the Pandemic. EUROPEAN PAEDIATRIC ASSOCIATION. 0022-3476/\$ - see front matter. 2020 Elsevier Inc. All rights reserved. <https://doi.org/10.1016/j.jpeds.2020.05.009>
- Kamal , D., Thakur, V.D., Swain, S.K & Vikneshram, C. R. (2020). Knowledge, attitude, and practice toward COVID-19 among pregnant women in a tertiary care hospital during the COVID-19 outbreak. *J Mar Med Soc* .22.Suppl S1:66-71.
- Hamadneh, S., Hamadneh, J., Amarin, Z., Kassab, M., Obeidat, R & Rawashdeh, H. (2021). Knowledge and attitudes regarding Covid-19 among syrian refugee women in Jordan. *Int J Clin Pract*.75.e14021. <https://doi.org/10.1111/ijcp.14021>.
- Zhong, B.L., Luo, W., Li, H.M., Zhang, Q.Q., Liu, X.G., Li , W.T& et al. Knowledge, attitudes, and practices towards COVID-19 among Chinese residents during the rapid rise period of the COVID-19 outbreak: A quick online cross-sectional survey. *Int J Biol Sci* .16.1745-52.
- Kasemy, Z. A., Bahbah, W. A.,Zewain, A. K., Haggag, M. G., Alkalash, S. H., Zahran, E ., & Desouky,

- D. E. (2020). Knowledge, Attitude and Practice toward COVID-19 among Egyptians. *Journal of Epidemiology and Global Health*. Volume 10, Issue 4, December, Pages 378 – 385.
- Pereira, A., Cruz-Melguizo, S., Adrien, M. & et al. (2020). Breastfeeding mothers with COVID-19 infection: a case series. *Int Breastfeed J* 15, 69. <https://doi.org/10.1186/s13006-020-00314-8>.
- Brown, A & Shenker, N. (2021). Experiences of breastfeeding during COVID19: Lessons for future practical and emotional support. *Matern Child Nutr.* .17.e13088. <https://doi.org/10.1111/mcn.13088> BROWN AND SHENKER 15 of 15bs_bs_banner.
- Ali, R .A., Ghaleb, A .A., & Abokersha, S .A. (2021). COVID-19 related knowledge and practice and barriers that hinder adherence to preventive measures among the Egyptian community. An epidemiological study in Upper Egypt. *Journal of Public Health Research*. 10.1943.
- Al-Hanawi , M.K., Angawi, K., Alshareef, N., & et al. (2019). Knowledge, attitude and practice toward COVID-19 among the public in the Kingdom of Saudi Arabia: A cross-sectional study. *Front Public Health* .8. 217.
- Mailk, S., Joshi ,P., Gupta, P. K., & Sharma, S. (2019). Assessment of knowledge and opinion regarding breastfeeding practices during COVID-19 pandemic among paediatricians and obstetricians in India: an online survey. *Sudan J Paediatr.* 21(1).30–35.
- Omar, D .I & Amer, S. A. (2021). Egyptian Public's Knowledge, Attitudes, Perceptions, and Practices toward COVID-19 Infection and Their Determinants. A Cross-Sectional Study, 2020. Scientific Foundation SPIROSKI, Skopje, Republic of Macedonia. Open Access Macedonian Journal of Medical Sciences. Apr 02. 9(E).250-259. <https://doi.org/10.3889/oamjms.2021.5797>.
- Ministry of Health-Egypt (2021). COVID-19 overview. 2020. Retrieve 16 May from <https://www.care.gov.eg /Egypt Care/Index.aspx> .
- Abdelhafiz, A. S., Mohammed, Z., Ibrahim, M. E., & et al. (2020). Knowledge, perceptions, and attitude of Egyptians towards the novel coronavirus disease (COVID-19). *Journal of Community Health*. <https://doi.org/10.1007/s10900-020-00827-7>.
- Hager, E., Odetokun, I.A., Bolarinwa, O., Zainab, A., Okechukwu, O & Al-Mustapha, A.I. (2020).** Knowledge, attitude, and perceptions towards the 2019 coronavirus pandemic: A bi-national survey in Africa. *PLoS One*.15(7). e0236918. <https://doi.org/10.1371/ journal.pone.0236918> PMID:32726340.