

## ORIGINAL ARTICLE

# Factors Associated with Knowledge and Attitude of Breastfeeding among Staff of Faculty of Medicine and Health Sciences, Universiti Putra Malaysia

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## ABSTRACT

**Introduction:** Many studies have investigated the knowledge and attitude towards breastfeeding among fathers and mothers, however studies looking at working adults' knowledge and attitude towards breastfeeding is limited. Working adults with good knowledge and favourable attitude toward the practice of breastfeeding may increase the breastfeeding initiative among working mothers. Therefore, the objective of this study was to investigate the knowledge and attitude toward breastfeeding among staff from the Faculty of Medicine and Health Sciences of a public university and its associated factors. **Methods:** A cross sectional study was conducted among faculty staff members. The respondents were selected by simple random sampling and a self-administered questionnaire was used to investigate the knowledge and attitude towards breastfeeding among them. Multiple linear regression was used to determine the factors associated with knowledge and attitude respectively. **Results:** A total of 117 respondents were recruited to take part in this study. Of these, 83(70.9%) had good knowledge while 61(52.6%) respondents had favourable attitude toward breastfeeding. There was significant positive fair correlation between knowledge and attitude score ( $r=0.396, p<0.001$ ). Gender (coefficient:1.04, CI:0.25-1.84), education level (coefficient:1.56, CI:0.60-2.53) and number of children (coefficient:0.21, CI:0.01-0.40) were the factors affecting knowledge score whereas education level (coefficient:5.73, CI:1.40-10.07) and number of children (coefficient:1.3, CI:0.41-2.11) were the factors affecting attitude. **Conclusion:** Overall, majority of respondents were found to have good knowledge but half of them had favourable attitude toward breastfeeding. A awareness program is suggested particularly for male, low education level and those with less number of children in order to increase knowledge and attitude toward breastfeeding.

**Keywords:** Breastfeeding, Knowledge, Attitude, Factors

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## INTRODUCTION

Breastfeeding is the best way for mothers to provide newborns with the nutrients they need. World Health Organization (WHO) recognizes mothers' breast milk as the best food for infants as it contains all the essential nutrients needed to support the newborn's growth and development. WHO has outlined the ideal duration for breastfeeding; stating that babies should be exclusively breastfed until they reach the age of 6 months. Continuing from that until the infant reaches the age of 2 years, a mother should still continue to breastfeed as she introduces other types of food for her child (1).

In 2017, the global rate of breastfeeding initiation still falls at below half of what is expected for most major stages of

infant age, with only 29.0% of infants were exclusively breastfed for 0-5 months in Malaysia compared to 41% worldwide (2). According to the National Health and Morbidity Survey 2015, only 47.1% of infants were exclusively breastfed for 6 months while only 39.4% of children continued to be breastfed by their mothers until the age of 2 years (3).

There are various risk factors associated with breastfeeding intention reported; including father's and mother's age, mother's occupation, previous exclusive breastfeeding experience, decision of parents, education level, support from family, ethnicity, occupation of mothers, as well as the level of knowledge and attitude toward breastfeeding among mothers and fathers (4-9). Previous studies have investigated the level of knowledge and attitude of mothers and fathers and its associated factors in Malaysia. For instance, a study that was conducted among 162 mothers showed that knowledge of breastfeeding among mothers were fairly good (8) and they have favourable attitude toward

breastfeeding (10,11). Regarding fathers' knowledge and attitude, the average knowledge and attitude scores were about 75% and 80% respectively (12). Socio-demographic characteristics that have been found to be associated with knowledge and attitude on breastfeeding among mothers and fathers in Malaysia were maternal employment, family income, education level, counselling on breastfeeding and ethnic groups (6,9,13). In general, recent studies reported significant positive association between knowledge and attitude, but the strength was fair (9).

Up to now, there is limited studies that investigate the knowledge and attitude of working adults toward breastfeeding in Malaysia. The level of knowledge and attitude of breastfeeding and its associated factors among working adults remain unknown. Authors hypothesized that working adults having good knowledge and favourable attitude will directly or indirectly influence the breastfeeding decision of working mothers. By understanding the knowledge and attitude among working adults, appropriate policies and strategies can be devised in order to increase support toward working mothers, eventually leading to an increase in the breastfeeding rate among them. Thus, the objective of this research is to assess the level of knowledge and attitude towards breastfeeding among working adults (staff from the Faculty of Medicine and Health Sciences in a public university) and its associated factors.

## MATERIALS AND METHODS

### Study design

This cross sectional study was carried out at the Faculty of Medicine and Health Sciences of a public university. The faculty consists of 16 academic departments and a human resource department. A total of 387 respondents was required for this study, based on the two population mean formula with the details of mean (1.15), standard deviation (4.46), effect size (1.338) of age group (6) and 90% response rate. Data collection was conducted among academic staff and non-academic staff from all of the departments in July 2018 using random sampling method to select the respondents. Staff who were absent or unavailable during the data collection week were excluded. The units in the population were numbered from 1 to N from a list of names of all registered academic and non-academic staff 2018 in Faculty of Medicine and Health Sciences obtained. The name list was put together in a series. Random numbers between 1 to N were drawn by means of a table of random numbers from the name list that had been put together. Thus, each individual had an equal probability of being selected. This study was approved by Ethics Committee for Research Involving Human Subjects (JKEUPM-2018-164). This sampling population was selected as the authors believe that they play an important role in teaching and cultivating knowledge among the medicine and health sciences students. If staffs in this faculty have deep understanding

of breastfeeding, this will indirectly influence students to have better knowledge of breastfeeding and to have positive attitude toward breastfeeding, consequently they will be able to educate the community with the knowledge they gained. Therefore, authors were interested to understand their knowledge and attitude toward breastfeeding.

A set of self-administered questionnaires with dual languages (English and Bahasa Malaysia) was used as the study instrument. The questionnaire had undergone content validity evaluation by public health physicians to assess the content validity of the questionnaire. Face validity was conducted among 10 respondents and their feedback was obtained and appropriate amendments made. The questionnaire consists of 3 sections; Section A: socio-demographic, Section B: knowledge regarding breastfeeding adapted from (8) and Section C: attitude toward breastfeeding adapted from (14). The questionnaire was distributed to participants after obtaining their written consent. Reliability value for knowledge and attitude in the questionnaire were 0.78 and 0.79 respectively.

There were 10 and 16 questions for knowledge and attitude respectively in the questionnaire. For the knowledge questions, participants had three options to choose from consisting of correct answer, incorrect answer and not sure, whereas for the attitude questions, 5 point likert scale (strongly disagree, disagree, neutral, agree and strongly agree) was used. For attitude questions, questions 3, 5, 7, 9, 11, 12, 14 and 15 are questions that indicate favourable attitude toward breastfeeding whereas questions 1, 2, 4, 6, 8, 10, 13 and 16 were questions indicating unfavourable attitude toward breastfeeding. Total knowledge score and attitude score were used as the dependent variables in this study. A total knowledge and attitude score of more than 80% are considered good knowledge score and favourable attitude toward breastfeeding.

### Data analysis

Statistical analysis was carried out using IBM SPSS Statistics version 25. The data was screened for errors, missing values, outlier and normality. Histogram with normal curve was used to check the normality of the continuous data. Descriptive analysis was performed using frequency and percentage for categorical data, mean and standard deviation for normally distributed data and median and interquartile range for not normally distributed data.

Simple linear regression was used to analyse the relationship of socio-demographic characteristics with the dependent variables (knowledge and attitude toward breastfeeding respectively). Those variables with  $p < 0.25$  in simple linear regression were retained and further analysed using multiple linear regression. A stepwise regression method was used to obtain a

final multiple linear regression model. Variables with  $p < 0.05$  were considered significant in the final model. Homoscedasticity and normality of residuals, interaction term and multicollinearity were checked. The model was created using MLwiN version 3.02.

## RESULTS

There were 117 (30.2%) participants in the study. The socio-demographic aspects of the respondents were made up of the following: 78.6% females, 87.2% Islam and Malay, academic staff made up 52.1%, 87.1% obtained tertiary education, 85.5% are married, median (interquartile) of age, number of children and age for youngest child were 37.0(9.0), 2.5(2.0) and 4.0(6.8) respectively (Table I).

**Table 1: Distribution of socio-demographic variables among respondents (n=117)**

Variables	Frequency	Percentage
	(n =117)	(%)
Gender		
Male	25	21.4
Female	92	78.6
Religion		
Islam	102	87.2
Non-Islam	15	12.8
Ethnicity		
Malay	102	87.2
Non-Malay	15	12.8
Occupation		
Academic staff	61	52.1
Non-academic staff	56	47.9
Education level (n= 116)		
Primary or Secondary education	15	12.9
Tertiary education and others	101	87.1
Marital status		
Single and widowed	17	14.5
Married	100	85.5
Age group	37.0 (9.0)*	
Number of children (n= 103)	2.5(2.0)*	
Youngest child age	4.0( 6.8)*	

\* Median(Interquartile range)

Median and interquartile range (IQR) of knowledge was 9 out of 10 (IQR:2) and 65 out of 80 (IQR:12) respectively. A total of 83 (70.9%) respondents had more than 80% correct knowledge toward breastfeeding. Table II shows the distribution of percentage of correct and incorrect answers for each knowledge on breastfeeding questions. Question 4,5,7,8 and 9 had more than 80% respondents answering correctly with question 4 having the highest number of correct answers with 116 respondents

**Table II: Distribution of percentage of correct and incorrect answers for each knowledge of breastfeeding questions**

Knowledge questions	Correct answer	Incorrect answer
	Frequency (Percentage)	Frequency (Percentage)
Question 1: A woman who is fully breastfeeding her child is less likely to become pregnant three months after delivery than a woman who is formula feeding her child.	87 (74.4)	30 (25.6)
Question 2: A breastfed baby is protected against gastrointestinal infection.	109 (93.2)	8 (6.8)
Question 3: A breastfed baby is not protected against allergy.	75 (64.1)	42 (35.9)
Question 4: Breastfeeding should be initiated immediately after birth.	116 (99.1)	1 (0.9)
Question 5: Frequent breastfeeding in the early newborn period can help reduce jaundice.	101 (86.3)	16 (13.7)
Question 6: Mothers intending to breastfeed should expect sore nipples as a normal part of breastfeeding.	70 (59.8)	47 (40.2)
Question 7: Exclusive breastfeeding should be practiced for the first 6 months.	102 (87.2)	15 (12.8)
Question 8: Breast milk and formula milk provides same health benefits for infants.	97 (82.9)	20 (17.1)
Question 9: Colostrum is good for baby.	100 (85.5)	17 (14.5)
Question 10: Breastfeeding should be stopped if either/ both of baby and mother is / are sick.	73 (62.4)	44 (37.6)

(99.1%). For questions 1, 3,6 and 10, the percentage of correct answers was between about 60% to 74%, with question 6 having the lowest number of respondents who answered correctly with 70 (59.8%).

Median and interquartile range (IQR) of attitude score was 65 out of 80 (IQR:12) and 61 (52.6%) of respondents had favourable attitude toward breastfeeding. Table III(a) and 3(b) show the frequency and percentage of Likert scale answers for favourable and unfavourable attitude on breastfeeding questions among respondents. Based on Table III for attitude questions, the highest number of respondents agreed with the statement in the 3rd question, with 95 (81.2%) whereas the highest number of respondents disagreed with question 16 at 67 respondents (57.3%).

### Correlation between knowledge and attitude

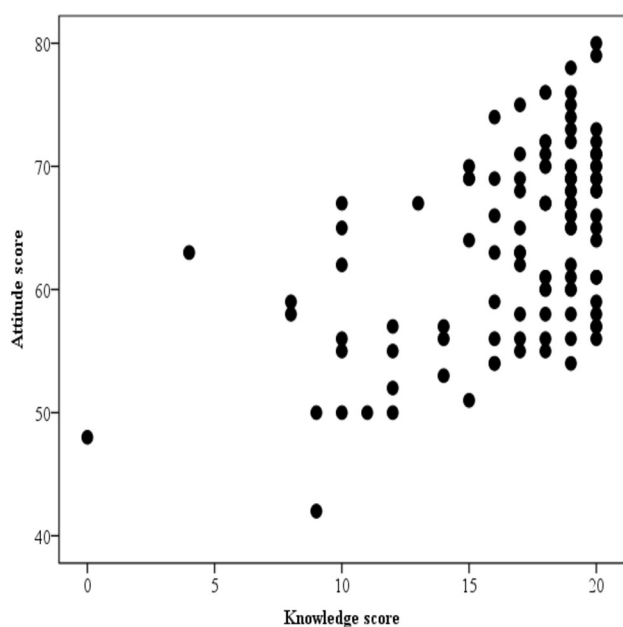
Spearman correlation test showed that there was statistically significant, positive and fair correlation between knowledge and attitude score ( $r=0.396$ ,  $p < 0.001$ ) (Figure 1), where respondents with higher knowledge has higher attitude score.

**Table III (a): Frequency and percentage of Likert scale answers for favourable attitude on breastfeeding questions among respondents**

Favourable attitude questions	Strongly disagree n(%)	Disagree n(%)	Neutral n(%)	Agree n(%)	Strongly agree n(%)
Question 3: Breastfeeding increases mother infant bonding.	4(3.4)	0(0.0)	2(1.7)	16(13.7)	95(81.2)
Question 5: Formula fed babies are more likely to be overfed than breastfed babies.	3(2.6)	18(15.4)	30(25.6)	55(47.0)	11(9.4)
Question 7: Mothers who formula feed miss one of the great joys of motherhood.	6(5.1)	17(14.5)	18(15.4)	38(32.5)	38(32.5)
Question 9: Breastfeed babies are healthier than formula fed babies.	0(0.0)	11(9.4)	22(18.8)	42(35.9)	42(35.9)
Question 11: Breast milk is the ideal food for babies.	3(2.6)	1(0.9)	7(6.0)	33(28.2)	73(62.4)
Question 12: Breast milk is more easily digested than formula.	1(0.9)	1(0.9)	7(6.0)	30(25.6)	78(66.7)
Question 14: Breastfeeding is more convenient than feeding by formula milk.	0(0.0)	7(6.0)	14(12.0)	43(36.8)	53(45.3)
Question 15: Breast milk is cheaper than formula milk. <i>Missing data: 1 (0.9)</i>	2(1.7)	1(0.9)	9(7.7)	33(28.2)	71(60.7)

**Table III (b): Frequency and percentage of Likert scale answers for unfavourable attitude of breastfeeding questions among respondents**

Unfavourable attitude questions	Strongly disagree n(%)	Disagree n(%)	Neutral n(%)	Agree n(%)	Strongly agree n(%)
Question 1: The benefits of breast milk last only as long as the baby is breastfed.	4 (3.4)	23 (19.7)	9(7.7)	49(41.9)	32(27.4)
Question 2: Formula feeding is more convenient than breastfeeding.	2(1.7)	14(12.0)	24(20.5)	47(40.2)	30(26.6)
Question 4: Breast milk is lacking in iron.	5(4.3)	8(6.8)	10(8.5)	47(40.2)	47(40.2)
Question 6: Formula feeding is the better choice if the mother plans to go back to work.	1(0.9)	9(7.7)	22(18.8)	52(44.4)	33(28.2)
Question 8: Women should not breastfeed in public places such as restaurants.	5(4.3)	14(12.0)	16(13.7)	45(38.5)	37(31.6)
Question 10: Fathers feel left out if a mother breast feeds.	1(0.9)	5(4.3)	8(6.8)	53(45.3)	49(41.9)
Question 13: Formula milk is as healthy for an infant as breast milk.	2(1.7)	6(5.1)	17(14.5)	59(50.4)	33(28.2)
Question 16: A mother who occasionally drinks alcohol should not breastfed her baby.	29(24.8)	38(32.5)	20(17.1)	23(19.7)	7(6.0)



**Figure 1: Scatter plot of correlation between knowledge score and attitude score among respondents (n=116; r=0.396, p<0.001).**

**Factors associated with knowledge and attitude**

Histogram with normal curve showed that knowledge and attitude were not normally distributed. Original data and transformed data (log) were tested in the linear

regression analysis. Due to the similar results computed from both data, the regression model with original data is presented.

For simple linear regression model of knowledge and attitude, there was five variables with p<0.25, which are occupation, gender, education level, age of respondents and number of children. Of these, only three and two factors remained in the multiple linear regression for knowledge and attitude respectively (Table IV and Table V). Females had 1.04 higher score for knowledge compared to males (coefficient:1.04, confidence interval (CI): 0.25-1.84, p= 0.01) and respondents with tertiary education had 1.56 times higher knowledge score compared to respondents with primary and secondary education (coefficient:1.56, CI: 0.60-2.53, p=0.01). Number of children was significantly positively associated with knowledge score (coefficient:0.21, CI: 0.01-0.40, p =0.04). There was 20.1% of the variation in the knowledge score was explained by the factors.

Factors of attitude, education and number of children were retained in the final model (Table 5). Respondents with tertiary education had 5.73 higher attitude score compared to those with primary and secondary education (coefficient:5.73, CI: 1.40-10.07, p = 0.01). Number of children was significantly positively associated with attitude score (coefficient:1.3, CI: 0.41-2.11, p=0.004).

**Table IV: Simple and multiple linear regression model for knowledge score**

Variables	Simple linear regression					Multiple linear regression				
	$\beta$	SE	95% CI		p	Adj( $\beta$ )	SE	95% CI		p
Intercept						6.39	0.48			
Occupation										
Academic staff	Ref									
Non-academic staff	-1.066	0.35	-1.75	-0.38	<0.001*					
Gender										
Male	Ref					Ref				
Female	1.36	0.43	0.52	2.19	<0.001*	1.04	0.41	0.25	1.84	0.01*
Religion										
Islam	Ref									
Non-Islam	0.37	0.54	-0.70	1.43	0.50					
Ethnicity										
Malay	Ref									
Non-Malay	0.37	0.54	-0.70	1.43	0.50					
Education level										
Primary or Secondary education	Ref					Ref				
Tertiary education	2.23	0.51	1.24	3.22	<0.001*	1.56	0.49	0.60	2.53	0.01*
Marital status										
Single and widowed	Ref									
Married	-0.56	0.51	-1.57	0.45	0.28					
Age of respondents	0.05	0.03	0.00	0.10	0.06					
Number of children	0.27	0.11	0.06	0.48	0.01*	0.21	0.10	0.01	0.40	0.04*
Youngest child age	-0.02	0.03	-0.08	0.05	0.65					

\*  $\beta$ : Coefficient; SE: Standard error; CI: Confidence interval; Adj( $\beta$ ): Adjusted coefficient; Ref: Reference; \*: p value less than 0.05.\*  
 \* r square 0.201; random effect: 2.708(0.379);-2 loglikelihood: 391.086

**Table V: Simple and multiple linear regression model for attitude score**

Variables	Simple linear regression					Multiple linear regression				
	$\beta$	SE	95% CI		p	Adj( $\beta$ )	SE	95% CI		p
Intercept						55.48	2.30			
Occupation										
Academic staff	Ref									
Non-academic staff	-3.62	1.39	-6.33	-0.90	0.01*					
Gender										
Male	Ref									
Female	3.53	1.70	0.20	6.86	0.04*					
Religion										
Islam	Ref									
Non-Islam	-0.70	2.12	-4.86	3.45	0.74					
Ethnicity										
Malay	Ref									
Non-Malay	-0.70	2.12	-4.86	3.45	0.74					
Education level										
Primary or Secondary education	Ref					Ref				
Tertiary education	5.69	2.13	1.52	9.85	0.01*	5.73	2.21	1.40	10.07	0.01*
Marital status										
Single and widowed	Ref									
Married	-2.17	2.00	-6.09	1.76	0.28					
Age of respondents	0.18	0.11	-0.02	0.39	0.08					
Number of children	1.37	0.44	0.50	2.24	0.002*	1.26	0.43	0.41	2.11	0.004*
Youngest child age	-0.07	0.15	-0.36	0.21	0.61					

\*  $\beta$ : Coefficient; SE: Standard error; CI: Confidence interval; Adj( $\beta$ ): Adjusted coefficient; Ref: Reference; \*: p value less than 0.05.\*  
 \* r square 0.143; random effect: 51.376(7.23);-2 loglikelihood: 684.482.

There was 14.3% of the variation in the attitude score was explained by the factors.

## DISCUSSION

Based on the results, a majority of the respondents (70.9%) had good knowledge (more than 80% of questions answered correctly) on breastfeeding, as evident by seven questions from the knowledge section were answered correctly with the range above 70.0%. However, only 52.6% of respondents had favourable attitude (more than 80% of favourable score on attitude questions). Previous studies conducted in Malaysia showed that knowledge and attitude of mothers are fairly good (>70%) with favourable attitude (>80%) toward breastfeeding (8,10,15) whereas fathers' knowledge and attitude were about 75% and 80% respectively (12). A recent study conducted among undergraduate university students showed that about 77% of the population had poor knowledge and unfavourable attitude toward breastfeeding (9). Due to different questionnaires being used, varied categorization used and different populations involved, the results are hardly comparable. Overall, the knowledge and attitude of mothers and fathers are reported as good compared to the general population, including working adults and students. This study result further shows that respondents with high knowledge score has favourable attitude, but the relationship is fair. This indicates that with good knowledge there is fair chance to have favourable attitude toward breastfeeding (9). One of the possible reasons is that formula feeding is often perceived as a better and more convenient choice compared to breastfeeding among these working adults. They may have a strong understanding on the advantages of breastfeeding, unfortunately due to working situations such as a busy work life, lack of breastfeeding facilities and small amount of support from colleagues and employers lead them to believing that formula feed is a better choice, more convenient and also as healthy as breastmilk. Longer maternity leaves, improved policy on employers to provide breastfeeding facilities for breastfeeding mothers at the workplace and also the promotion of awareness on the advantages of breastfeeding among employees could increase their favourable attitude toward breastfeeding, eventually increasing the breastfeeding rate.

Gender was found to be associated with knowledge score, with females having higher knowledge score compared to males. This could be due to breastfeeding knowledge is mainly given to mothers or females. It is important that males are also provided with in depth knowledge regarding breastfeeding as initiation of breastfeeding among mothers is heavily dependent on joint agreement and support by their spouse and family members. The role of husbands in encouraging a successful practice of breastfeeding among mothers has been highlighted by previous studies (11,14,16). It is also outlined in the guideline released by the Ministry

of Health (2013) stating specifically that 'Breastfeeding mothers should receive full support by her husband and family members'. Knowledge regarding breastfeeding should not only be well understood by woman and mothers but also by men and husbands.

Higher education level and number of children were associated positively with knowledge score and attitude on breastfeeding. These factors were also identified by prior studies in Malaysia (4,15,16). Educated people are more aware of the advantages of breastfeeding as they more likely to retrieve the related information from the internet to increase their understanding and this eventually increases their interest to breastfeed babies (4,6). Besides, people having their first child are assumed to have less skill, knowledge and limited experience on breastfeeding compared to people with more than one child, therefore they are less likely to breastfeed, as demonstrated by the findings of other similar studies (15,16). This might be due to the fact that people with more than one child have prior experience and this will increase their knowledge and improve the attitude toward breastfeeding (9).

Results of this study cannot be generalized to the public because the respondents were the staff from a Faculty of Medicine and Health Sciences and they are expected to have better knowledge, attitude and practice on breastfeeding and also because of the low response rate. Therefore, future studies are suggested to recruit respondents consisting of academic and non-academic staff from different faculties of various universities to represent adults in the workplace. One of the limitations of this study was response rate is low, however post-hoc power analysis showed that the power of this study was 84.6%, indicating the result of this study has enough power to detect the statistical differences. Aside from that, the low response rate (30.23%), especially from male respondents (18.9%) affects the generalization of this study results on the public's knowledge, attitude and practice on breastfeeding. Male respondents might be less willing to participate in this study possibly because of the traditional belief that the topic of breastfeeding is only to be discussed among mothers. A future study is suggested to investigate the knowledge and attitude of breastfeeding among male respondents in order to better understand the perspective of breastfeeding as viewed by men. Furthermore, adding higher non-response rate in the sample size calculation is suggested if the study is to investigate the phenomenon among male respondents. Another reason leading to the low response rate is the mode of questionnaire delivery, where researchers delivered the questionnaires to respondents' pigeon holes and e-questionnaire via google form to respondents' email address instead of face-face invitation for this study. These delivery modes are useful, time, cost and labor saving but the response rate is low compared to face-face invitation (17). Therefore, for future study it is recommended to

use face-face invitation or to increase sample size in order to get a higher number of respondents.

Support from the workplace and government also plays a role in a mother's decision to breastfeed, a future study that focuses on investigating the effects of the environment at the workplace and employers' support on breastfeeding toward the practice of breastfeeding among mothers is also suggested. Further studies should evaluate the condition of working environment, colleagues support as well as employee-employer support as to whether they project positive support toward the practice of breastfeeding among working mothers.

## CONCLUSION

Overall, the majority of respondents (70.9%) had good knowledge score and (52.6%) had favourable attitude toward breastfeeding. Gender, education level and number of children were found to be the associated factors for knowledge while education level and number of children were found to influence attitude toward breastfeeding. A better awareness program is suggested to devise for particularly for those male, low education level and those with less number of children in order to increase knowledge and attitude toward breastfeeding, eventually to increase their positive support toward the practice of breastfeeding among working mothers.

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