

Knowledge, Attitude, Prior Exposure and Intention to Breastfeed among Undergraduate University Students

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ABSTRACT

Introduction: The Theory of Planned Behaviour by Ajzen (1985) states that breastfeeding intention which is made prior to pregnancy predicted future breastfeeding outcomes and also influenced by factors including attitude, knowledge and exposure. The goal of this study was to investigate the level of breastfeeding knowledge, attitude, prior exposure and intention to breastfeed and the relationship between these factors among non-pregnant, single undergraduates. There are limited studies in Malaysia involving young adults who will be future parents. **Methods:** This cross-sectional study involved 377 students in UiTM Puncak Alam, Selangor. Self-administered questionnaires adapted from Infant Feeding Knowledge Test and Iowa Infant Feeding Attitude Score (IIFAS) were included as research instruments. **Results:** Overall study population had a low level of knowledge (10.61 ± 2.10) and attitude (60.64 ± 5.02) towards breastfeeding, high exposure (2.7 ± 0.52) and intention (4.74 ± 0.64) to breastfeed especially in females. Breastfeeding knowledge is significantly associated with breastfeeding attitude and prior breastfeeding exposure. Breastfeeding intention also established an association with breastfeeding attitude and prior breastfeeding exposure. Subsequent predictive analysis found that breastfeeding attitude impacts breastfeeding intention. **Conclusion:** Breastfeeding intervention should target undergraduate university students in preparing these future parents with adequate and accurate knowledge and positive attitudes towards breastfeeding thus, resulting in higher breastfeeding intention and greater efforts of initiation and sustenance of breastfeeding.

KEYWORDS: Breastfeeding knowledge, breastfeeding attitude, breastfeeding exposure, breastfeeding intention, university undergraduates

INTRODUCTION

To fully understand the practice of breastfeeding, various studies from all over the world have applied the Theory of Planned Behaviour (TPB) by Ajzen [1], which is capable of demonstrating the interrelation between intention to perform a behaviour, and the behaviour itself as well as several constructs that influence the behavioural intention [2-6]. These constructs include attitude, perceived norm and perceived behavioural control. In accordance to the theory, behavioural intention directly determines the outcome of a behaviour.

Decisions on infant feeding or prenatal intention are often made before pregnancy [7-10]. Prenatal intentions are also found to directly influence breastfeeding outcomes which include the duration and initiation of breastfeeding [11, 12]. Despite the continuous efforts employed to improve breastfeeding practices in Malaysia since 1990s targeting pregnant mothers, several studies conducted in various regions

in Malaysia concluded similar findings over the years, that the rate of exclusive breastfeeding among mothers remains low [13-15]. However, since infant feeding decision is made long before pregnancy, the intervention is said to be less effective. Therefore it is best to explore the determinants of breastfeeding behaviour by applying the Theory of Planned Behaviour [1] among non-pregnant single women, involving among young women and female adolescents.

Even though the decision to breastfeed is predominantly made by women, support from the husband plays a significant role in the initiation and cessation of breastfeeding [16-21]. Social support was also recognized as one of the factors influencing breastfeeding intention across literature. A study by Draman et. al. [22] stressed the need to address and acknowledge the important role of father in initiating and sustaining exclusive breastfeeding among health practitioners. The study revealed that parents' mutual



decision was an important factor influencing exclusive breastfeeding practices among mothers.

Thus, it is also important to explore the determinants of breastfeeding behaviour among both young female and male adults. On top of that, there are limited publications in the current literature concerning breastfeeding practices in Malaysia and among several published studies conducted in Malaysia, none has been found involving the non-pregnant adolescent and adults.

Therefore, this study is conducted to evaluate the level and the relationships between breastfeeding knowledge, attitude, exposure and intention to breastfeed among university students in UiTM Selangor Puncak Alam Campus.

METHODS

Study design and sampling

This cross-sectional study was commenced on May 2017 until September 2017. The sample size was determined using Krejcie and Morgan table for determining sample size from any given population [23]. According to Krejcie and Morgan, given the nearest population size of 20,000, the determined sample size was 377 samples. Thus, for the purpose of this study, 377 undergraduate students were recruited. Convenience sampling was used in this study, involving all full-time undergraduate students from both genders aged between 18 to 25 years old. The inclusion criteria for this study involved were non-pregnant, unmarried Malaysian undergraduates enrolled in UiTM Puncak Alam campus. Undergraduates were from Faculty of Health Sciences, Faculty of Education, Faculty of Accountancy, Faculty of Pharmacy, Faculty of Hotel & Tourism Management and Faculty of Business Management. However, the exclusion criteria were students of Bachelor in Nursing (Hons) and Bachelor in Dietetics (Hons) from Faculty of Health Sciences to avoid bias because they had exposure to breastfeeding as taught in their courses. Written informed consent was obtained from the participants to ensure privacy. The questionnaires were self-administered and data collected anonymously. The study was approved by UiTM Research Ethics Committee (REC/151/17).

Data collection

The self-administered questionnaires consisted of five subsets addressing breastfeeding knowledge (Infant Feeding Knowledge Test), attitude (Iowa Infant Feeding Attitude Scale), exposure [5] and intention [5]. Additionally, basic sociodemographic information was collected, including age, gender, faculty, study major (health-related versus non-health-related) and year of study.

Below is a detailed description of each questionnaire used in this study:

Infant Feeding Knowledge Test Form

Respondents' breastfeeding knowledge is assessed using the Infant Feeding Knowledge Test -Form A adopted from Grossman, Harter, & Hasbrouck [24]. It is comprised of ten true or false questions and ten multiple choice questions. One point will be given for each correct answer with the possible score ranges from 0 - 20. Higher score indicates higher knowledge of breastfeeding. A score of more than 13 out of the possible 20 is considered as high level of knowledge and lower than 13 is considered as low level of breastfeeding. This test is adequately reliable in previous studies with the internal consistency measured by Cronbach's α coefficient of 0.64 [24].

Iowa Infant Feeding Attitude Scale (IIFAS)

Breastfeeding attitude is measured using the Iowa Infant Feeding Attitude Scale (IIFAS) adopted from De La Mora [25]. Its 17 statements measures individual's attitude towards infant feeding practices. Among the aspects measured are the cost, nutrition, sexuality and infant bonding. The responds are based on a five-point Likert scale (strongly disagree, disagree, neutral, agree and strongly agree) with the score ranges from 17 - 85. Of the 17 items, items that are asterisked have reversed scoring such that 1=5, 2=4, 4=2, 5=1. Higher score indicates more positive attitude towards breastfeeding. A score of more than 65 indicates high breastfeeding attitude and a score less than 65 indicates a low level of breastfeeding attitude. The IIFAS questionnaire by La Mora et al. [25] is validated and very reliable with Cronbach's alpha ranging from 0.85 to 0.86.

Breastfeeding exposure

Breastfeeding exposure and intention questions are adapted from Kavanagh et al. [5]. Information on breastfeeding exposure includes three questions assessing whether the respondents have been breastfed as infants, whether they knew someone who breastfeeds and whether they have witnessed breastfeeding. From the possible score of 3, scores of 0 – 1 indicates low exposure and a score of 2-3 indicates high exposure.

Breastfeeding intention

Information on breastfeeding intention was derived by asking the respondents to rate the probability of them to breastfeed or support their partner to breastfeed in future based on a 5-point Likert Scale. The intention to breastfeed is categorized into two groups; a scale between 1 - 3 represents low breastfeeding intention and a scale between 4 - 5 represents high breastfeeding intention [26].

Data analysis

Data was analysed using Statistical Program for the Social Sciences (SPSS) version 22.0. Descriptive statistics was used to analyse the demographic data,

and the statements in breastfeeding measures (breastfeeding knowledge, attitude, prior exposure and intention to breastfeed among respondents). An independent sample t test was used to compare the mean of all breastfeeding measures according to gender. The Pearson correlation analysis was conducted to determine the association between breastfeeding knowledge and breastfeeding attitude, prior exposure and future intention to breastfeed. The multiple linear regression was then exploited to predict factors that indicate future intentions to breastfeed.

RESULTS

Demographic characteristics

The sample characteristics of the study population are presented in Table 1. The respondents' range between 19 years old and 28 years old with an average of 22.34 ± 1.45 years old. The age group with the highest number of respondents was between 21 and 24 years old (86.2%). More than half of the respondents were students from the Faculty Health Sciences (n= 219). In terms of the year of study, majority of the respondents were Year Three students (n=188), representing 49.9% of the total respondents. 97.3% of the respondents were Malays (n=368).

Table 1 Descriptive statistics of demographic characteristics (N=377)

Variables	Frequency (n)	Percentage (%)	Mean (±SD)
Age group			22.34 ± 1.45 years old
	19-20 years old	41	10.9
	21-24 years old	325	86.2
	25-30 years old	11	2.9
Gender	Female	302	80.1
	Male	75	19.9
Faculty	Health Sciences	219	58.1
	Pharmacy	40	10.6
	Accountancy	16	4.2
	Hotel and Tourism Management	11	2.9
	Business and Management	29	7.7
	Education	62	16.4
Year	1	51	13.5
	2	130	34.5
	3	188	49.9
	4	8	2.1
Ethnicity	Malay	367	97.3
	Others	10	2.7

Table 2 Mean knowledge, attitude, exposure and intention and exposure scores among undergraduate students between gender

Score	Female (N=302)		Male (N=75)		p value
	n	%	n	%	
Breastfeeding knowledge					p < 0.001**
Mean±SD	10.84 ±1.99		9.71±2.26		
Low (Score <13)	226	74.8	67	89.3	
High (Score>13)	76	25.2	8	10.7	
Breastfeeding attitude					p < 0.001**
Mean±SD	61.29 ± 4.85		58.05± 4.88		
Low (Score < 65)	224	74.2	68	90.7	
High (Score>65)	78	25.8	7	9.3	
Breastfeeding exposure					p = 0.040*
Mean±SD	2.74±0.47		2.55±0.68		
Low (Score <2)	2	0.7	8	10.7	
High (Score ≥2)	300	99.3	67	89.3	
Breastfeeding intention					p = 0.037*
Mean±SD	4.77±0.63		4.6± 0.64		
High (scale of 4-5)	293	97	74	98.7	
Low (scale of 0-3)	9	3	1	1.3	

Note: †p values were obtained from independent t-test analysis for continuous variables

*p < 0.05, statistically significant

**p < 0.001, statistically highly significant

Breastfeeding knowledge, attitude, exposure and intention scores in the study population

Table 2 displays levels of breastfeeding knowledge, attitude, exposure and intention. The knowledge scores of the study population range from 5 – 15 out of the possible 20, with a mean score of 10.61±2.10, indicating an overall low level of knowledge (lower than 13). More than half of the respondents (77.7%) had a low level of breastfeeding knowledge and only 22.3% had a high level of knowledge. The independent t test revealed that female respondents (10.84±1.99) were found to have higher breastfeeding knowledge compared to males (9.71 ±2.26) in this present study, p < 0.001. Most of the low-scoring items on the knowledge scale concerned the benefits of breastfeeding to mothers, sufficiency of milk supply and maternal constraints or contraindications to breastfeeding. Two major misconceptions were identified which more than half of the respondents being unaware that breastfeeding helps to cut down the

mother's bleeding after delivery (54.1 %) and 88.3% of them thought breast milk alone is enough until babies become one year old (data not shown).

Meanwhile, the mean score of breastfeeding attitude in this study population was 60.64± 5.02. Thus, the sample population has an overall low attitude towards breastfeeding (score less than 65). An independent sample t test comparing the mean score by genders revealed that female respondents (61.29 ± 4.85) have higher breastfeeding attitude compared to the male respondents (58.05± 4.88), p<0.05 as shown in Table 2. 94.7 % of the mothers had a positive understanding of breastfeeding increasing mother-infant bonding and 92.6 % of them also agreed that breastfeeding is relatively cheaper than formula feeding. Furthermore, several misunderstandings were noted particularly concerning with maternal dietary restrictions such as occasional alcohol intake. This was observed as restrains to continued breastfeeding by 84.7 %. On top of that, 45.9 % of the respondents also negatively perceived towards the long-term benefits of

breastfeeding where they believe these benefits ‘last only as long as the baby breastfed’. In addition, almost half of the participants (43.7 %) believed that ‘mothers should not breastfeed in public’. Furthermore, more than one third of the participants (38.7 %) indicated that, formula feeding is ‘a better choice if the mother plans to resume work’ and 39.7 % of them also stated that ‘formula feeding is more convenient’ compared to breastfeeding (data not shown)

From the possible score of 3, the mean score of breastfeeding exposure among the sample population was 2.7 ± 0.52 , generally indicating an overall high exposure towards breastfeeding among the sample population. 97.3% of the sample population

have high level of exposure towards breastfeeding. As shown in Table 2, female respondents (2.74 ± 0.47) have higher breastfeeding exposure compared to male respondents (2.55 ± 0.68), $p < 0.05$. They have high exposure towards breastfeeding due to the fact they have been breastfed as infant, knowing someone who breastfed their child and have witnessed breastfeeding.

Moreover, 97.3% of the respondents reported a high level of breastfeeding intention. This can be concluded from the results of the independent sample t test as depicted in Table 2, more females (4.77 ± 0.63) than males (4.6 ± 0.64) expressed higher intention to breastfeed their future children compared to males ($p < 0.05$) who wish their spouses to do so.

Table 3 Association of breastfeeding knowledge, breastfeeding attitude, prior exposure and future intention to breastfeed (N=377)

Variable	Knowledge		Attitude		Exposure		Intention	
	r	p	r	p	r	p	r	p
Knowledge	1							
Attitude	0.305	0.001**	1					
Exposure	0.110	0.033*	0.068	0.190	1			
Intention	0.119	0.021*	0.239	0.001**	0.114	0.027*	1	

†analysed using Pearson correlation test

* $p < 0.05$, statistically significant

** $p < 0.01$, statistically highly significant

Table 4 Predictors of breastfeeding intention (N=377)

Variable	Unstandardized Coefficients		Standardized Coefficients	t	p-value
	B	Std. Error	Beta		
Knowledge	0.013	0.016	0.041	0.782	0.435
Attitude	0.028	0.007	0.220	4.189	0.001*
Exposure	0.115	0.061	0.095	1.881	0.061

Dependent variable: Intention to breastfeed (continuous)

†analysed using multiple linear regression

** $p < 0.01$, statistically significant

Association between breastfeeding knowledge, breastfeeding attitude, prior exposure and intention to breastfeed

Table 3 demonstrated there was a significant correlation between breastfeeding knowledge with breastfeeding attitude ($r = 0.305$, $p < 0.05$) and between breastfeeding knowledge with prior exposure to breastfeeding ($r = 0.110$, $p < 0.05$). A statistically significant correlation was also found between breastfeeding knowledge and the intention to

breastfeed in future ($r = 0.119$, $p < 0.05$). Breastfeeding intention was positively correlated with breastfeeding exposure ($r = 0.01$, $p < 0.05$). Breastfeeding exposure was also found to be associated with breastfeeding intention among the sample population.

Predictors of breastfeeding intention

The extent of breastfeeding knowledge, attitude, and prior exposure to breastfeeding predicts breastfeeding attitude was examined and presented in Table 4. Nonetheless, only breastfeeding attitude were

statistically significant to predict breastfeeding intention ($p < 0.05$). The overall model was significant, $R^2 = 0.068$, $SE = 0.618$, $F(1, 375) = 22.707$, $p < 0.001$. Breastfeeding attitude was the only significant predictor to breastfeeding intention ($\beta = 0.028$, $p < 0.001$). Thus, breastfeeding attitude was the single predictor of breastfeeding intention in such a way that higher breastfeeding attitude the higher the intention to breastfeed.

DISCUSSION

The findings from this present study indicate that the overall level of breastfeeding knowledge in the sample population was low with a mean score of 10.61 ± 2.10 , out of the possible 20 points. Low level of breastfeeding knowledge was also found among university undergraduates of both genders in Korea [27] and Egypt [28]. In contrast, similar studies involving undergraduates students and adolescents in United States reported good breastfeeding knowledge among its study population [5, 29].

Female respondents scored significantly higher than male respondents ($p < 0.05$) in this study. This is similar to the previous studies conducted among college and university students [6, 26-27, 30]. This could be due to the fact that breastfeeding is often stigmatized and placed solely under women's responsibility, this may also have an influence on the discrepancies of the scores of breastfeeding knowledge and support between genders [31].

The majority of the sample population in the present study had good knowledge on exclusive breastfeeding to infants (93.1%). Interestingly, a study among university students in Kuwait specifically addressing the knowledge, misconception and intention to breastfeed among the students also reported similar findings in which 74% of the students believed mothers should exclusively breastfeed their infants up to two years of age. These misconceptions among the present study population might be explained by the fact that these students acquire knowledge on breastfeeding indirectly from their surrounding environment but have never been educated formally on this topic in classes [32].

Meanwhile, the sample population generally has a low breastfeeding attitude, according to the cut-

off point established by Cox, Giglia and Binns [33] with the overall mean score 60.64 ± 5.02 . Based on the original developer of the IIFAS, De La Mora et al. [34], a score of 50 - 69 denotes a neutral attitude towards breastfeeding. Similarly, a study involving 248 undergraduate students in United States found an overall neutral attitude towards breastfeeding among the students [5]. It was also consistent with other studies [26,28].

Higher attitude towards breastfeeding was observed among female respondents as compared to male respondents ($p < 0.001$). The present study was consistent with other studies involving undergraduate students (4,26,35). However, a study among high school students in Canada found no significant differences in breastfeeding attitude score between the genders. An overall positive attitude towards breastfeeding was observed in both genders (9). On top of that, having a higher attitude in breastfeeding increase the likelihood to early initiation and extended duration of breastfeeding (36).

In addition, this study population has an overwhelmingly high level of exposure to breastfeeding (97.3%). Both male and female respondents have high exposure to breastfeeding. However, a comparison between genders revealed that female respondents have higher exposure to breastfeeding compared to male respondents ($p = 0.004$). Most of the studies assessing breastfeeding among university students also reported high exposure to breastfeeding [6, 37-38].

According to Lou et al. [6], being in a supportive breastfeeding society and environment increases the likelihood of breastfeeding exposure. Similarly, the high levels of breastfeeding exposure among the present study sample population might be due to the increased initiation of breastfeeding campaigns among Malaysian from 63.7% in 2006 to 86.4% in 2015 [39].

Furthermore, a majority of the respondents in the present study reported high levels of breastfeeding intention representing 97.3% from the total population. Female respondents had an overall higher intention score than male respondents ($p < 0.001$). A majority of the undergraduates in one local university in the United States also reported the intention to breastfeed

their child in the future with more females (83%) compared to males (78.1%) expressing this intention [5]. These findings were also consistent with another study among university students by Jefferson [37].

Association between breastfeeding knowledge, breastfeeding attitude, prior exposure and intention to breastfeed

The present study found several significant correlations between breastfeeding measures among the undergraduates. A significant weak positive correlation was found between breastfeeding knowledge and breastfeeding attitude ($r=0.305$, $p<0.05$). Similarly, a study by Ahmed & El Guindy involving university students in Cairo, Egypt also found a significant relationship between breastfeeding knowledge and attitude ($r=0.236$, $p<0.001$) [28]. These findings were also consistent in other studies in the United States [5], Nigeria [40] and China [41]. Thus, having knowledge on breastfeeding will more likely develop a more positive attitude towards breastfeeding.

Knowledge was also found to be significantly associated with breastfeeding intention in the present study. This was also consistent in another study piloted among Scottish adolescents which suggested that having high knowledge and social influences are the predictors of positive beliefs in breastfeeding and increase the intention to breastfeed [42].

The present study also found a weak positive correlation between breastfeeding attitude and the intention to breastfeed ($r=0.239$, $p<0.05$). A similar finding was also reported among university undergraduates in Lebanon [38] and China [26]. In line with the Theory of Planned Behaviour, this present study found that having a positive breastfeeding attitude increases one's intention to breastfeed in future.

On top of that, being breastfed as a child or have seen a mother breastfeeding also were significantly correlated with intention to breastfeed and further promoted positive breastfeeding attitudes [32]. Marrone et al. also found a significant relationship between breastfeeding knowledge and the exposure to breastfeeding, which was consistent with the present study ($r=0.110$, $p<0.05$) [26]. Goulet et al. further reiterated that higher breastfeeding exposure

results in extensive breastfeeding knowledge [9]. Exposure to those who breastfeed was associated with higher knowledge score among undergraduate students in China [6]. One possible explanation for this may be due to informal information transfer that may have occurred by being around those who breastfeed [9].

The present study also found significant association between breastfeeding exposure and intention ($p<0.05$). The present study was inconsistent with a study by Čatipović et al. in which breastfeeding intention was found to be not statistically significantly between gender and the exposure to breastfeeding [43]. Similarly, other findings in the European countries also reported that breastfeeding attitude among undergraduates also appeared to be influenced by their previous exposure to breastfeeding but these did not reach a statistical significance [26,44].

Increased duration of breastfeeding is to be predicted by having higher knowledge in breastfeeding, had intention to breastfeed prenatally, had previous breastfeeding experience and higher self-efficacy with respect to breastfeeding [45].

Regression analysis to predict breastfeeding intention

A multiple linear regression was conducted to determine the predictors of breastfeeding intention. Three variables were entered into the model; breastfeeding knowledge, attitude, and breastfeeding exposure. The present study found that breastfeeding attitude was the sole predictor to breastfeeding intention $R^2=0.068$, $SE=0.618$, $F(1,375)=22.707$, $p=0.01$. Higher breastfeeding attitude was associated with higher breastfeeding intention among the study population ($\beta=0.028$, $p=0.001$).

The significant association between breastfeeding attitude and breastfeeding intention were also frequently reported among studies involving both the non-pregnant and pregnant population [46-48]. In line with the Theory of Planned Behaviour, these studies found that those with higher breastfeeding attitude reported higher intention to breastfeed. Thus, it can be concluded that the results of the present study are consistent with the theory proposed by TPB in which attitude towards breastfeeding influences the intention to breastfeed.

CONCLUSION

Since the breastfeeding decisions are made prenatally and are largely influenced by knowledge and attitude which are acquired and shaped prenatally, this study, therefore warrants the need for breastfeeding interventions targeting the non-pregnant population. Thus, breastfeeding education and promotion endeavours should include both male and female adolescents and young adults in which they are capable of preparing these future parents with adequate and accurate information on breastfeeding knowledge, apart from correcting misconceptions on breastfeeding and directing positive attitude towards breastfeeding which eventually will result in higher breastfeeding intention and greater efforts of initiation and sustenance of breastfeeding

Conflict of Interest

Authors declare none.

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