

## Knowledge and beliefs regarding breastfeeding in college students of Karachi

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### RESEARCH

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### ABSTRACT

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#### Background

Breast feeding has been shown to decrease infant mortality rates. However, the increasing number of neonatal deaths and decline in breastfeeding reflect a lack in knowledge about its importance and benefits.

#### Aims

To assess the knowledge and beliefs of college students regarding breastfeeding and to determine the factors affecting the knowledge scores regarding breastfeeding in students.

#### Methods

A cross-sectional study was carried out with a convenience sample of 1500 undergraduate college students via self-administered questionnaires. Structured questionnaires were distributed in six well known universities of Karachi. Data analysis of socio-demographics, beliefs and knowledge of students regarding breastfeeding was done using SPSS (V20) software.

#### Results

The response rate of the survey was 93.3 per cent. The

difference in overall knowledge between medical and non-medical students was significant ( $p < 0.001$ ) with 61.1 per cent of medical and only 14.4 per cent of non-medical students having adequate knowledge. Results regarding the basic knowledge about breastfeeding reflected that 49 per cent of non-medical participants had a poor knowledge compared to the 19.6 per cent of medical students. 39.4 per cent of medical and 64.5 per cent of non-medical participants considered their knowledge of breastfeeding to be inadequate. On multivariate analysis, non-medical participants were 6.85 times more likely to score in the inadequate range for knowledge compared to medical participants.

#### Conclusion

The results indicated that medical students had a better knowledge regarding the advantages of breastfeeding as compared to non-medical students. However, the overall knowledge among undergraduates from both groups was low. Therefore, in order to improve this inadequacy, it is important that public campaigns targeting the advantages and significance of breastfeeding be conducted in Pakistan.

#### Key Words

Breastfeeding, knowledge, awareness, beliefs, college students

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#### What this study adds:

##### 1. What is known about this subject?

It is already believed that medical students have greater knowledge regarding breastfeeding than non-medical students.

##### 2. What new information is offered in this study?

The study highlights the specific areas of breastfeeding like knowledge about weaning, advantages of breastfeeding, effects of breastfeeding on mothers and breastfeeding in special situations, in which the medical and/or non-medical students are lacking.

### 3. What are the implications for research, policy, or practice?

The present study highlights the areas of knowledge of breastfeeding in which college student's lag and they can be targeted for improvement.

Workshops can be conducted, making the newer generation more aware of the subject, and the specific areas of knowledge in which the students that have insufficient knowledge can be worked upon, by making them more aware of the advantages and importance of breastfeeding for the child as well as the mother.

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### Background

Exclusive breastfeeding is defined as "an infant's consumption of human milk with no supplementation of any type, except for vitamins, minerals and medications".<sup>1</sup> It has been proven to enhance the nutritional, biomedical and psychological status of both the mother and the infant, being the ultimate source of protection for the baby against infections, particularly diarrhea, since it also contains antibodies that serve as immuno-defensive agents.<sup>2</sup> According to WHO, human breast milk is the ideal food for an infant and is the best means for a newborn's normal growth and development.

In accordance with these numerous advantages of breastfeeding, the American Dietetic Association recommends that newborns should be exclusively breastfed for the first six months of their lives, followed by an intake of complementary food up till at least one year of age, hence, in this way, saving up to 1.2 million lives every year.<sup>2</sup> However, despite the several benefits of breastfeeding, global rates have not risen since 1990, with just 36 percent of infants within six months of age being breastfed in 2012.<sup>3</sup> This clearly depicts that there is a lack of knowledge of breastfeeding worldwide. Besides, there are studies pointing to the insufficient knowledge of health professionals,<sup>4</sup> college going females<sup>5</sup> and school teachers<sup>6</sup> regarding breastfeeding.

Pakistan accounts for 7 per cent of the neonatal deaths occurring worldwide,<sup>7</sup> in addition to an infant mortality of 8.6 per cent (UNICEF 2012). The major contributors of this high neonate and infant mortality are malnourishment and infectious diseases, which can be decreased, by several measures including breastfeeding.<sup>8</sup> However, a gradual decline in breastfeeding has been reported for Pakistan; notably among urban, educated, career-oriented women.<sup>9</sup> This is further supported by UNICEF's national survey, which concluded that only 16 per cent of mothers in Pakistan

exclusively breastfeed their children till six months of age and 71 per cent of mothers discard their colostrums.<sup>10</sup> These figures do not come as a surprise considering that a great majority of mothers are never properly guided about management of breastfeeding. Moreover, unsafe practices like pre-lacteal feeding (giving babies other food supplements before breast milk) and accelerating bottle feeding rates that reached up to 41 per cent in 2012 (Pakistan demographic health survey), are further indicators of the lack of awareness regarding breastfeeding.

Breastfeeding is a taboo subject in our society, and people here are reluctant to think, let alone discuss it. To the best of our knowledge, there is no study available to determine the awareness of college students regarding breastfeeding, from both medical and non-medical disciplines. The inadequacy of the local data available in relation to this, and the stigma associated with breastfeeding in our society which makes individuals unwilling to talk about it, warranted the need to conduct this study. Since a parent's mean age at first birth in Pakistan is 23.4, as established in 2012-13 according to the World Factbook by the Central Intelligence Agency, attaining the precise knowledge about breastfeeding is vital for undergraduate students, who are just about to enter that phase, in order to have improved practices in near future.

Therefore, the objectives of the present study were:

1. To assess the knowledge and beliefs of college students regarding breastfeeding.
2. To identify the factors affecting the knowledge scores regarding breastfeeding in college students.

### Method

This cross sectional and descriptive study was conducted from December 2015 to March 2016 in six well known universities of Karachi. All medical and non-medical undergraduate students enrolled in these universities were included in this study, and university students who had children, were excluded.

The study received ethical approval from Dow University of Health Sciences. A self-administered questionnaire was used for data collection. It consisted of 48 questions and was divided into three parts. The first part consisted of five questions regarding demographics, which included age, gender, marital status, field of education and the year of education of the respondents. The second part had eight questions regarding the beliefs about breastfeeding. The remaining 35 questions constituted the third part which

targeted the knowledge of the college students. This section was further divided into five categories and the target population was tested about their basic knowledge of breastfeeding (10 questions) and their knowledge about weaning (four questions), advantages of breastfeeding (10 questions), breastfeeding in special situations (five questions) and effects of breastfeeding on mothers (six questions). The questionnaire was pre-tested among 30 final year medical students of Dow University of Health Sciences, as they were expected to have sufficient knowledge about breastfeeding. These responses were excluded from the final results, and their feedback was used to make the required changes to improve the survey and produce the final questionnaire.

The structured questionnaires were distributed in six well known universities of Karachi. Three medical universities, namely, Dow Medical College, Sindh Medical College and Bahria University, and three non-medical universities, namely University of Karachi, NED University of Engineering and Technology and Institute of Business Administration, were included in this survey. The sample size was calculated using OpenEpi software version 3. By assuming the percentage of knowledge in medical students to be 60 per cent and that in non-medical students to be 50 per cent, taking power to be 80 per cent and 99.5 per cent confidence interval, the sample size was calculated to be 1356 (678 in each group). Therefore, by rounding off the value, we collected data from 1500 students (750 medical and 750 non-medical students).

Eligible participants were selected on the basis of non-probability convenience sampling. Written consent, explaining the objective and impact of the research, with emphasis on the right to not participate, was taken from each student who met the inclusion criteria, before they were asked to fill the questionnaire. As the questionnaires were translated to Urdu, the participants were allowed to fill them in whichever language they felt more comfortable with. Assurance was given regarding the confidentiality of their responses and no incentive was proposed for participation in the study. Participants took almost 15 minutes to fill in the survey forms. Partially filled and unreturned forms were excluded from the study and the response rate was calculated accordingly.

Data analysis was done using SPSS (V20) software. Socio-demographic and educational characteristics of medical and non-medical students were analyzed using descriptive statistics. Frequencies were calculated for beliefs of the students included in the survey. Knowledge of

breastfeeding, its benefits, effects on mothers, conduct in special situations and weaning (classified as poor, fair or good) were evaluated and compared between medical and non-medical students using Pearson chi-square test. Here, a score below 50 per cent was termed as poor while that above 75 per cent was termed as good, and participants with a score in between were said to have fair knowledge. A p-value of less than 0.05 was considered as significant. Univariate and multivariate logistic regression analysis was used to determine the association of socio-demographic characteristics of students with their overall knowledge regarding breastfeeding, where a knowledge score of less than 60 per cent was termed as 'low knowledge'.

## Results

The total number of respondents was 1399, and out of these, 718 completed questionnaires were received from medical and 681 from non-medical students, giving a response rate of 95.7 per cent and 90.8 per cent, respectively. The socio-demographic and educational characteristics of these students have been summarized in Table 1. It shows that a majority of them belong to the 17–21 years age group; and the sample comprised of students from first to fifth years of education. Females comprised of 75.3 per cent of the medical and 61.8 per cent of the non-medical samples. Most of the students (96 per cent of medical and 97 per cent of non-medical) were unmarried.

Table 2 shows that the beliefs of both medical and non-medical students were quite similar about formula feeding not being a better choice for working/studying mothers. In addition, 22.8 per cent of medical students and 30.5 per cent of non-medical students considered formula feeding as a symbol of wealth. More non-medical students (25.4 per cent) regarded breastfeeding as old fashioned than medical students (16.4 per cent). However, a majority in both groups (93.2 per cent medical and 83.3 per cent non-medical students) believed that breastfeeding fosters a close bond between the mother and child, and those doctors and nurses should encourage it. Only about 9 per cent of medical and 17 per cent of non-medical students were of the opinion that breastfeeding can negatively affect marital relationships. Furthermore, 283 medical (39.4 per cent) and 439 non-medical (64.5 per cent) participants considered their knowledge of breastfeeding inadequate. This difference was statistically significant ( $p < 0.001$ ).

Table 3 reveals the difference in knowledge of medical and non-medical students. According to it, medical students had a better knowledge of weaning than non-medical students. Similar results were obtained regarding the knowledge of

breastfeeding, where 49 per cent of non-medical participants had a poor level of knowledge in contrast to the 19.6 per cent of medical students. We found that 36.8 per cent students in medical universities had a good knowledge about the effects of breastfeeding on mothers as compared to the 5.6 per cent in non-medical universities. The highest number of medical students (551) scored 'good' in their knowledge about the advantages of breastfeeding but the highest number of non-medical participants (267) scored 'fair'. When asked about breastfeeding under particular situations, both medical and non-medical factions exhibited a poor knowledge in general. The difference in the overall knowledge of the two groups was significant with 61.1 per cent of medical and 14.4 per cent of non-medical students having adequate knowledge ( $p < 0.001$ ).

Factors that were associated with inadequate knowledge were entered into a logistic regression model as shown in Table 4. Respondents under 21 years of age had lesser knowledge than those above 23. Knowledge of male gender was 1.58 times more inadequate than the female gender. On multivariate analysis, a non-medical background and first, second, third and fourth year of education were found to be significantly associated with low knowledge ( $p < 0.001$ ), indicating that the extent of knowledge increased with each advancing year of education. The knowledge scores of non-medical participants were 6.85 times lower than medical participants.

## Discussion

The main objective behind including non-medical students, who do not receive much education in relation to breastfeeding conventionally, was that they also form a part of the population that will witness this natural phenomenon and it is necessary for them to have a sound knowledge about breastfeeding to promote a healthier environment. We did not exclude the male population because both man and woman generally consider the decision and particulars of breastfeeding together. However, males have not been included in most of the breastfeeding programs and studies in Pakistan. The influence of verbal persuasion on interpersonal relationships can affect the attitude of female students towards breastfeeding<sup>11</sup>, as a study reported that there was 117 per cent greater risk of terminating exclusive breastfeeding earlier than six months in women who believed that exclusive breastfeeding is not acceptable by their children's fathers.<sup>12</sup>

Beliefs found in this study have been favorable, with most of the students having a positive perception towards breastfeeding. A study from a rural area of El-Minia

governorate stated that 42 per cent of the mothers were of the view that breastfeeding prevented them from going to work,<sup>13</sup> which was comparable to our study where less than 25 per cent of the students had similar beliefs. But in Ireland, people have shown a negative response to breastfeeding in public, which has promoted formula feeding.<sup>14–17</sup> Those who are aware of the essence of breastfeeding know that it nurtures a close bond between a mother and her child. This was the belief of a great majority of our sample, and the present findings were corroborated by the results of another study which showed that 95.8 per cent of the mothers had a similar belief.<sup>13</sup> 79 per cent of the participants of an Egyptian study conducted in Assiut City gave an equivalent response.<sup>18</sup> Where 66.1 per cent of Chinese mothers in Australia believed that 'formula-feeders miss one of the great joys of motherhood',<sup>19</sup> a similar fraction (about 75 per cent) of our study participants was of the same opinion.

Although most of the students from both categories had positive beliefs with regard to breastfeeding, there was a general lack of overall knowledge regarding breastfeeding, which was congruent with the findings of a study conducted in India, where 64 per cent of the students had only average knowledge on breastfeeding.<sup>20</sup> Parallel observations were found in studies from Taiwan,<sup>21</sup> India<sup>22</sup> and Baghdad.<sup>23</sup> Even though these studies showed participants with inadequate knowledge but positive attitude towards breastfeeding, there is another study which indicated both inadequate knowledge and negative attitude of many nurses about breastfeeding.<sup>24</sup> The basic knowledge on breastfeeding included information about initiation and frequency of breastfeeding, the meaning and duration of exclusive breastfeeding and colostrum feeding. More than 85 per cent of the students could not answer more than 75 per cent of the questions related to the basic knowledge of breastfeeding correctly. A cross sectional study on mothers in Puducherry similarly concluded that their knowledge to be inadequate in the section of breast feeding (95 per cent), colostrum feeding (56 per cent), and exclusive breast feeding (38 per cent).<sup>25</sup>

In spite of having low knowledge about breastfeeding, both the medical and non-medical students were substantially aware of its benefits. These findings were corroborated by studies carried out in the past, where students<sup>20</sup> as well as mothers<sup>26,27</sup> were substantially familiar with the advantages of breastfeeding. This component tested the knowledge of students regarding colostrum feeding being nutritious and how breast milk is sterile and easier to digest and breastfeeding is convenient and helps in protection from

various diseases like infections, jaundice and diarrhea. However, it was observed that the knowledge of students regarding breastfeeding in situations like during an infection of the mother or child, in case of breast infection, soreness of the nipple or at the time of pregnancy, was very poor, with hardly 6 per cent of the students scoring above average (score  $\geq 50$  per cent). This was in accordance with a study conducted in India,<sup>20</sup> and the findings of Khoury et al. in Mississippi were found to be homogenous.<sup>28</sup>

Amongst socio-demographic and educational characteristics, female gender and medical background showed significant association with higher knowledge scores than males and non-medical background in univariate analysis, respectively. The findings were congruent with the results of a study conducted on college students in India which also demonstrated significant association of more adequate knowledge regarding breastfeeding with being female and from a medical background.<sup>20</sup> Kavanagh et al. in 2012 and Marrone et al. in 2008<sup>29</sup> further reported female participants to have greater knowledge than males. The same study concluded that participants older than 20 years had better knowledge regarding breastfeeding<sup>29</sup> which is parallel with our results showing that students above 23 years had more knowledge than those below 21, and this difference was significant on univariate analysis ( $p < 0.001$ ). Studies have proved in the past that students in higher educational years have a better knowledge score<sup>30,31</sup> and this was further proven in our study as well.

In previous studies, significant association has been found between the knowledge of practice of breastfeeding, self efficacy and intent to breastfeed with the duration and exclusiveness of breastfeeding.<sup>32-35</sup> And the determination of mothers to breastfeed can be favored by educating them regarding the benefits and importance of breastfeeding at an early learning stage, as shown by a study in which maternal knowledge of breastfeeding, with its benefits for children especially, was associated with a higher intention to breastfeed.<sup>32</sup> Furthermore, trials have been conducted on school going students by educating them about different aspects of breastfeeding, and significant improvements have been found in intent to breastfeed, breastfeeding attitudes,<sup>36,38</sup> breast feeding beliefs<sup>37</sup> and knowledge about breastfeeding benefits<sup>38</sup>. This proves how imparting breastfeeding knowledge at an earlier stage can have improved effects with regard to the knowledge and beliefs of breastfeeding.

This study also has its limitations. The research was carried

out in one city of Pakistan, in only six universities and it is a cross sectional study with convenience sampling. Therefore, the results should be generalized with caution. Notwithstanding, the study provides a good insight regarding the beliefs and knowledge of today's generation in relation to breastfeeding. Further studies would be needed to investigate and review the awareness of the youth regarding different aspects of breastfeeding.

## Conclusion

Based on the current findings, it can be said that the beliefs were quite similar in both categories as a majority of the students agreed that breastfeeding should be encouraged. However there was a gap in knowledge between the two groups as the results revealed that medical students had a better insight regarding the advantages of breastfeeding as compared to the non medical students. Nevertheless, in particular, the overall knowledge among undergraduates from both factions was low. Therefore, in order to improve this inadequacy, it is important that public campaigns targeting the significance of breastfeeding be conducted in Pakistan. Since our study also concluded that there is a general lack of awareness among male students as compared to females, it is vital for these interventions to emphasize on gender differences, so that men are able to guide their future spouses through this phase to the best of their abilities. It is necessary that commercials of formula feeding be minimized and instead educational programs focusing on the practice of breastfeeding with special reference to WHO recommendations be broadcasted. Lastly, as stated before, working on the beliefs and knowledge of students regarding breastfeeding at an earlier age can improve the intention of breastfeeding and thus it is important to improve the curriculum standards of both medical and non-medical students by stressing on recommended breastfeeding practices.

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### **PEER REVIEW**

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### **CONFLICTS OF INTEREST**

The authors declare that they have no competing interests.

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None

### **ETHICS COMMITTEE APPROVAL**

Ethical approval for the study was obtained from Dow University of Health Sciences.

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**Table 1: Socio-demographic and educational characteristics**

Characteristics	Medical n(%)	Non-medical n(%)
<b>Age(years)</b>		
17 - 21	394(54.9)	501(73.6)
22 - 23	264(36.8)	147(21.6)
> 23	60(8.4)	33(4.8)
<b>Gender</b>		
Male	177(24.7)	260(38.2)
Female	541(75.3)	421(61.8)
<b>Marital Status</b>		
Currently Unmarried	691(96.2)	661(97.1)
Married	27(3.8)	20(2.9)
<b>Year of Education</b>		
First	181(25.2)	191(28.0)
Second	155(21.6)	218(32.0)
Third	45(6.3)	180(26.4)
Fourth	143(19.9)	81(11.9)
Fifth	194(27.0)	11(1.6)

**Table 2: Beliefs of students regarding breastfeeding**

Beliefs	Medical n(%)	Non-medical n(%)	P-value
<b>Breastfeeding prevents mother from working or studying outside home, therefore formula feeding is a better choice</b>			0.88
Yes	170(23.7)	159(23.3)	
No	548(76.3)	522(76.7)	
<b>Formula feeding is a symbol of wealth</b>			0.001
Yes	164(22.8)	208(30.5)	
No	554(77.2)	473(69.5)	
<b>Breastfeeding is old-fashioned</b>			<0.001
Yes	118(16.4)	173(25.4)	
No	600(83.6)	508(74.6)	
<b>Breastfeeding fosters a close bond between mother and child</b>			<0.001
Yes	669(93.2)	567(83.3)	
No	49(6.8)	114(16.7)	
<b>Mothers who formula-feed miss one of the great joys of motherhood</b>			<0.001
Yes	588(81.9)	462(67.8)	
No	130(18.1)	219(32.2)	
<b>Doctors and nurses should encourage breastfeeding</b>			<0.001
Yes	687(95.7)	594(87.2)	
No	31(4.3)	87(12.8)	
<b>Breastfeeding has negative effect on marital relationship</b>			<0.001
Yes	64(8.9)	115(16.9)	
No	654(91.1)	566(83.1)	
<b>I don't think I know enough about breastfeeding</b>			<0.001
Yes	283(39.4)	439(64.5)	
No	435(60.6)	242(35.5)	

**Table 3: Comparison of knowledge scores between medical and non-medical students**

Knowledge	Medical n (%)	Non-medical n (%)	P-value
<b>Basic facts of breastfeeding</b>			<0.001
Poor	141(19.6)	334(49.0)	
Fair	468(65.2)	323(47.4)	
Good	109(15.2)	24(3.5)	
<b>Weaning</b>			<0.001
Poor	382(53.2)	557(81.8)	
Fair	336(46.8)	124(18.2)	
<b>Effects of breastfeeding on mothers</b>			<0.001
Poor	196(27.3)	472(69.3)	
Fair	258(35.9)	171(25.1)	
Good	264(36.8)	38(5.6)	
<b>Breastfeeding in special situations</b>			0.03
Poor	665(92.6)	652(95.7)	
Fair	53(7.4)	29(4.3)	
<b>Advantages of breastfeeding</b>			<0.001
Poor	35(4.9)	186(27.3)	
Fair	132(18.4)	267(39.2)	
Good	551(76.7)	228(33.5)	
<b>Overall Knowledge</b>			<0.001
Adequate knowledge	439(61.1)	98(14.4)	
Low knowledge	279(38.9)	583(85.6)	

**Table 4: Univariate and multivariate logistic regression analysis of factors affecting the knowledge of students regarding breastfeeding in Pakistan**

Factors	Adequate knowledge n (%)	Low knowledge n (%)	Unadjusted OR (95.0% C.I)	Adjusted OR (95.0% C.I)	p-value
<b>Age(years)</b>					
17 - 21	233 (26.0)	662 (74.0)	4.708 (3.016-7.349)*	1.689 (0.858-3.326)	0.130
22 - 23	246 (59.9)	165 (40.1)	1.111 (0.699-1.767)	0.816 (0.441-1.509)	0.517
> 23	58 (62.4)	35 (37.6)	reference	reference	
<b>Gender</b>					
Female	401 (41.7)	561 (58.3)	reference	reference	
Male	136 (31.1)	301 (68.9)	1.582 (1.245-2.010)*	1.227 (0.916-1.644)	0.171
<b>Students</b>					
Medical	439 (61.1)	279 (38.9)	reference	reference	
Non-Medical	98 (14.4)	583 (85.6)	9.361 (7.208-12.156)*	6.855 (5.098-9.217)	<0.001
<b>Year of Education</b>					
First	86 (23.1)	286 (76.9)	16.726 (10.773-25.969)*	5.221 (2.848-9.573)	<0.001
Second	105 (28.2)	268 (71.8)	12.837 (8.336-19.767)*	3.412 (1.874-6.212)	<0.001
Third	52 (23.1)	173 (76.9)	16.732 (10.342-27.073)*	3.426 (1.850-6.344)	<0.001
Fourth	123 (54.9)	101 (45.1)	4.130 (2.627-6.493)*	2.301 (1.357-3.902)	0.002
Fifth	171 (83.4)	34 (16.6)	reference	reference	
OR: Odds ratio					
C.I: Confidence Interval					
*A p-value of less than 0.05 is considered as significant					