

# Knowledge and Attitude Assessment of Medical and Nursing Female Students at Al-Azhar University in Cairo; For their Anticipated Breastfeeding Support

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## ABSTRACT

**Background:** Breastfeeding is a critical first step on a child's path to a healthy future. Despite its benefits, breastfeeding is no longer a norm in many communities. Inadequate support and lack of information by healthcare professionals were risk factors affecting breastfeeding failure. Although many studies identified knowledge and attitudes towards breastfeeding among mothers, little is known about knowledge and attitudes towards breastfeeding among medical and nursing students in Egypt.

**Aim:** This study is aiming to assess knowledge, attitude and anticipated practices of medical and nursing female students at Al-Azhar University to provide breastfeeding support.

**Participants and methods:** A cross sectional study, conducted at Al-Azhar University in Cairo during the academic year (2018-2019) on a sample of 440 female students from faculty of medicine and faculty of nursing.

**Results:** Regarding knowledge, the finding of the study revealed very good level of knowledge (mean percent score of knowledge was  $75.23\% \pm 7.37$ ) and most of studied groups had neutral attitude (78.4%). Mean score of anticipated practices among them was  $63.97 \pm 6.64$  indicating average level.

**Conclusion and recommendation:** This study reflects very good level of knowledge, neutral attitude and average anticipated practices level among undergraduate female students in medical and nursing faculties at Al-Azhar University. So, it is crucial to focus on students' education and training as a fundamental aspect in improving future health care providers' knowledge, skills and experience needed in clinical practice. This will affect students' attitudes towards breastfeeding and will reflect on their anticipated practices.

**Keywords:** breastfeeding, medical students, nursing students, knowledge, attitude and practices.

## INTRODUCTION

Breastfeeding is a critical first step on a child's path to a healthy future. It should begin within the first hour of a baby's life, should be exclusive for the first six months and continue until the child complete two years <sup>(1,2)</sup>.

Numerous benefits of breastfeeding are documented and new benefits continue to be identified. Extensive research indicates stronger associations between longer duration of exclusive breastfeeding and enhanced maternal and infant health<sup>(3)</sup>. Despite its established benefits, breastfeeding is no longer a norm in many communities <sup>(4)</sup>. Globally, rates of breastfeeding are far lower than what is needed to optimally protect the health of women and their children. Only 42% of newborns begin breastfeeding in the first hour and 41% of infants less than six months of age are exclusively breastfed which is still far short of the 2030 global target of 70% exclusively breastfeeding <sup>(5)</sup>. In addition, over 66% of those who exclusively breastfed continue breastfeeding for at least one year while by two years of age, breastfeeding rates drop to 45 % <sup>(6)</sup>.

In the Middle East/North Africa initiation of breastfeeding in the first hour was 65% and continuation of breastfeeding up to two years was 20%

<sup>(5)</sup>. Despite widespread efforts to encourage breastfeeding, the rates in Egypt have remained low <sup>(7)</sup>.

There is declining trend of exclusive breastfeeding from 68% in 1995 to 28.6% in 2018 <sup>(8,9)</sup>.

Physicians and nurses are considered important health care members as they are one of the largest health care providers who are involved in different levels of health care and represent the frontline for health care services <sup>(10)</sup>. Medical and nursing students are considered future role models or advocates of breastfeeding through evidence-based breastfeeding education and clinical training <sup>(11)</sup>. Inadequate support and lack of accurate information by healthcare professionals were reported among risk factors affecting breastfeeding failure <sup>(12)</sup>. World Health Organization recommended preparing medical and allied health profession students to promote infant and young child feeding<sup>(13)</sup>. Although many studies in Egypt identified the knowledge and attitude about breastfeeding among mothers, little is done among medical and nursing students <sup>(14,15)</sup>.

## AIM OF THE STUDY

To assess knowledge and attitude of medical and nursing female students and to investigate their anticipated practices to provide breastfeeding support.

## PARTICIPANTS AND METHODS

**Study setting and design:** Analytical cross sectional study was carried out over a period of 12 months from October 2018 to September 2019 during the academic year 2018–2019, on baccalaureate medical and nursing students.

### Sample size and sampling technique:

Sample size was calculated using Epi info programme Version 7.0 with 5% margin of error, 95% confidence level, 80% power of study and according to a knowledge level of 52% of Egyptian baccalaureate nursing students of *Ahmed and El-Guindy* <sup>(16)</sup>. Calculated total sample size was 310 students and was increased to be 440 female students from both faculties. Baccalaureates medical students from grade fourth to grade six were selected by randomized stratified sampling method and drawn by the sum of proportional allocation from every stratum. While all baccalaureates nursing students (130 students) were intended to be involved in the research but only 100 nursing students agreed to participate in the study. Students who agreed to participate in the study were included while, non-Egyptian and married students were excluded from the study.

### Study tools and data collection:

An interviewer-administered questionnaire was used.

The questionnaire included four sections:

- The first section for sociodemographic data: (age, origin, residence, type of college, educational grade and social class which was determined according to the modified socioeconomic scale of *Fahmy et al.* <sup>(19)</sup>.
- Two sections for breastfeeding knowledge and anticipated practices questionnaires :  
Australian Breastfeeding Questionnaire (ABQ) designed by *Brodrigg et al.* <sup>(20)</sup> was used. The original questionnaire is composed of 36 knowledge items. 16 items for knowledge regarding breastfeeding (benefits of breastfeeding, basic lactation concepts and adequacy of breastfeeding) and the remaining 20 items for knowledge about anticipated practices to support breastfeeding (specific maternal situations seriously affect breastfeeding, milk supply problems, common breast problems and common nipple problems). The questionnaire developed at this stage was tested on 20 students to assess clarity, appropriateness of wording, understandability and culture relevance of the version.

16 items for knowledge regarding breastfeeding and 20 items about anticipated practices to support breastfeeding were separated from the original questionnaire and rescored.

To assess reliability and validity of the two separated questionnaires:

- Testing- retesting with time interval of two weeks was applied on a sample of 20 students (Correlation coefficient ( $r=0.83$ ) for both.
- Internal consistency was measured using Cronbach's alpha. It was 0.7 for knowledge questionnaire and 0.8 for anticipated practice questionnaire, these results indicated good internal consistency.

The knowledge total score was summed 80 (100%) and the total score for anticipated practices was summed 100 (100%), the percent score was calculated for each student according to *Brodrigg et al.* <sup>(16)</sup> and was categorized as : Excellent (>85%), Very good (75% to 84%), Good (65% to 74%), Average (60% to 64%) and Poor (<60%) .

- Fourth section for breastfeeding attitude questionnaire: Iowa Infant Feeding Attitude Scale (IIFAS) designed by *Mora et al.* <sup>(21)</sup> was used.

It is a valid scale consists of 17 items that assess students' attitude towards and perceived effectiveness of breastfeeding in comparison to formula fed babies. Internal consistency of the original questionnaire (Cronbach's alpha) was 0.85 and reliability ( $r$ ) was 0.80. For the appropriateness to the Egyptian culture, *Ahmed and El-Guindy* <sup>(16)</sup> reassess internal consistency for IIFAS; it was 0.77. The total score of IIFAS was summed 85 according to *Mora et al.* <sup>(21)</sup> and was categorized as: Positive (70 to 85), Neutral (49 to 69) Negative ( 17 to 48). All opinions (knowledge, attitude and anticipated practices questionnaires) were rated using a five-point Likert scale, which ranges from "strongly disagree" to "strongly agree". All opinion levels were initially analyzed and those who responded as strongly agree or agree, strongly disagree or disagree were merged into a single category for statistical purpose.

Concerning the reverse scored at 24 items (4 for knowledge, 9 for attitude and 11 for anticipated practices items) with disagreement answer were indicated a positive response.

### Statistical methods

(SPSS) Statistical Package for Social Sciences version 20 was used for data entry and analysis. Qualitative data were presented as frequencies and percentages. While mean, standard deviations and ranges were used to present quantitative variables.

Pearson Chi square-test ( $X^2$ ) was used for qualitative data and when cells had expected count less than 5, Fisher's exact test was used instead. The Student's independent t-test was used to measure the difference between means of two continuous variables. Pearson's correlation coefficient (r) was employed to generate the correlation matrix between knowledge, attitudes and anticipated practice variables.

**Ethical considerations:** Before collecting data and conducting the study, approval was obtained from the Ethical Committees of the Community and Occupational Medicine Department and the Faculty of Medicine (For Girls), Al-Azhar University-Cairo and approval was also taken from the authorized personnel's of the Faculty of Medicine and Nursing. Also, an informed consent was obtained from each participants.

**RESULTS**

**Table (1): Characteristics of the study participants**

| <i>Studied group</i><br><i>Items</i> | <i>Medical students</i><br><i>N=340</i> |             | <i>Nursing studen</i><br><i>N =100</i> |             | <i>Total</i><br><i>N=440</i> |             | <i>P value</i>  |
|--------------------------------------|---|-------------|--|-------------|------------------------------|-------------|-----------------|
|                                      | No                                      | %           | No                                     | %           | No                           | %           |                 |
| - Range<br>(Minimum –maximum)        | 22.19±1.01<br>4 (20-24)                 |             | 21.35±0.69<br>4 (20-24)                |             | 22±1.01<br>4 (20-24)         |             | <0.001*         |
| <b>Origin:</b>                       |   |             |  |             |                              |             |                 |
| - Rural                              | 219                                     | <b>64.4</b> | 66                                     | <b>66.0</b> | 285                          | <b>64.8</b> | >0.05           |
| - Urban                              | 121                                     | <b>36.6</b> | 34                                     | <b>34.0</b> | 175                          | <b>35.2</b> |                 |
| <b>**Social class:</b>               |   |             |  |             |                              |             | <b>p= 0.01*</b> |
| - High                               | 133                                     | <b>39.1</b> | 29                                     | <b>29.0</b> | 162                          | <b>36.8</b> |                 |
| - Middle                             | 205                                     | <b>60.3</b> | 67                                     | <b>67.0</b> | 272                          | <b>61.8</b> |                 |
| - Low                                | 2                                       | <b>0.6</b>  | 4                                      | <b>4.0</b>  | 6                            | <b>1.4</b>  |                 |
| <b>Type of family:</b>               |   |             |  |             |                              |             | >0.05           |
| - Extended                           | 151                                     | <b>44.4</b> | 36                                     | <b>36.0</b> | 187                          | <b>42.5</b> |                 |
| - Nuclear                            | 189                                     | <b>55.6</b> | 64                                     | <b>64.0</b> | 253                          | <b>57.5</b> |                 |

\*Significant difference (p value≤0.05). \*\*Socioeconomic status was calculated according to (Fahmy et al., 2015).  
(19)

**Table (1)** demonstrates characteristics of the study participants. About two thirds of them were from rural area. Middle class was significantly most prevalent one of the total sample.

**Table (2): Students' knowledge towards breastfeeding**

\*Significant difference (p value≤0.05). \*\*Reverse score answer. \*\*\*The correct response is shown in parentheses

| <i>Studied groups</i><br><br><i>Response to knowledge items</i>                                | <i>Medical students</i><br><i>N=340</i> |             | <i>Nursing students</i><br><i>N =100</i> |             | <i>Total</i><br><i>N=440</i> |             | <i>P value</i> |
|--|---|-------------|--|-------------|------------------------------|-------------|----------------|
|  | No                                      | %           | No                                       | %           | No                           | %           |                |
| <b>Exclusive breastfeeding is beneficial in the first six month:(agree)***</b>                 | 326                                     | <b>95.9</b> | 97                                       | <b>97.0</b> | 423                          | <b>96.1</b> | >0.05          |
| <b>Breastfed infants are less likely to become obese:(agree)***</b>                            | 280                                     | <b>82.3</b> | 76                                       | <b>76.0</b> | 356                          | <b>80.9</b> | >0.05          |
| <b>Premature breastfed infant less likely to develop necrotizing enterocolitis: (agree)***</b> | 237                                     | <b>69.7</b> | 63                                       | <b>63.0</b> | 300                          | <b>68.1</b> | >0.05          |
| <b>Breastfeeding reduces the incidence of gastroenteritis:(agree)***</b>                       | 296                                     | <b>87.1</b> | 88                                       | <b>88.0</b> | 304                          | <b>87.3</b> | >0.05          |
| <b>Breastfed women have lower incidence of breast cancer:(agree)***</b>                        | 304                                     | <b>89.4</b> | 90                                       | <b>90.0</b> | 394                          | <b>89.6</b> | >0.05          |
| <b>Formulated infants have more ear infections:(agree)***</b>                                  | 255                                     | <b>75.0</b> | 65                                       | <b>65.0</b> | 320                          | <b>72.7</b> | < 0.05*        |
| <b>**Formulas feeding improve neurodevelopment :(disagree)***</b>                              | 145                                     | <b>42.7</b> | 41                                       | <b>41.0</b> | 186                          | <b>42.3</b> | >0.05          |
| <b>** change to infant formula will improve colic:(disagree)***</b>                            | 115                                     | <b>33.9</b> | 32                                       | <b>32.0</b> | 147                          | <b>33.4</b> | >0.05          |
| <b>Position of breastfed baby differs from formula fed baby:(agree)***</b>                     | 230                                     | <b>67.7</b> | 48                                       | <b>48.0</b> | 278                          | <b>63.2</b> | <0.001*        |
| <b>Nutritional content of breast milk changes through breastfeed: (agree)***</b>               | 271                                     | <b>79.7</b> | 67                                       | <b>67</b>   | 338                          | <b>76.8</b> | <0.01*         |
| <b>Removal of breast milk maintains milk production:(agree)***</b>                             | 275                                     | <b>80.8</b> | 86                                       | <b>86.0</b> | 361                          | <b>82.0</b> | >0.05          |
| <b>Exclusive breastfed infants require extra water in hot weather:(disagree)***</b>            | 143                                     | <b>42.1</b> | 33                                       | <b>33.0</b> | 176                          | <b>40.0</b> | >0.05          |
| <b>Breastfed infants may regain their birth weight by two weeks of age:(agree)***</b>          | 197                                     | <b>58.0</b> | 69                                       | <b>69.0</b> | 266                          | <b>60.5</b> | >0.05          |
| <b>Normal breastfed infant will usually feed 8-12 times in 24 hours:(agree)***</b>             | 246                                     | <b>72.4</b> | 78                                       | <b>78.0</b> | 324                          | <b>73.6</b> | >0.05          |
| <b>** Normally, breastfeed infant defecates once every 3 days:(disagree)***</b>                | 91                                      | <b>26.8</b> | 34                                       | <b>34.0</b> | 125                          | <b>28.4</b> | >0.05          |
| <b>Growth of breastfed infants differ from formula fed infants:(agree)***</b>                  | 267                                     | <b>78.5</b> | 82                                       | <b>82.0</b> | 349                          | <b>79.3</b> | >0.05          |

Table (3): Students' attitude towards breastfeeding

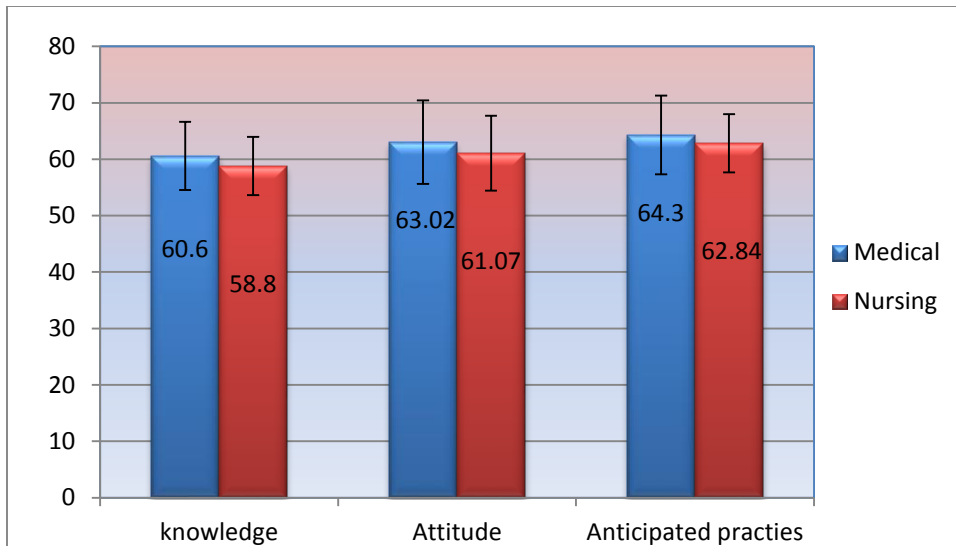
| <i>Studied groups</i><br><br><i>Items</i>   | <i>Medical students</i><br><i>N=340</i> |             | <i>Nursing students</i><br><i>N =100</i> |             | <i>Total</i><br><i>N=440</i> |             | <i>P value</i>    |
|---|---|-------------|--|-------------|------------------------------|-------------|-------------------|
|   | <i>No</i>                               | <i>%</i>    | <i>No</i>                                | <i>%</i>    | <i>No</i>                    | <i>%</i>    |                   |
| <b>** Formula feeding is more convenient than breastfeeding:</b><br>(Disagree)                            | 269                                     | <b>79.2</b> | 87                                       | <b>87.0</b> | 356                          | 80.9        | <b>&gt;0.05</b>   |
| <b>Breastfeeding increases mother-infant bonding:</b><br>(Agree) ***                                      | 301                                     | <b>88.5</b> | 90                                       | <b>90.0</b> | 391                          | 88.9        | <b>&gt;0.05</b>   |
| <b>Formula fed babies are more likely to be overfed than breastfed babies :</b> (Agree)***                | 188                                     | <b>55.3</b> | 45                                       | <b>45.0</b> | 233                          | 52.9        | <b>&gt;0.05</b>   |
| <b>**Iron content of breast milk is not sufficient for baby in the first six months:</b><br>(Disagree)*** | 158                                     | <b>46.5</b> | 54                                       | <b>54.0</b> | 212                          | 404         | <b>&gt;0.05</b>   |
| <b>**Formula feeding is the better choice if a mother goes back to work:</b> (Disagree)***                | 234                                     | <b>68.8</b> | 20                                       | <b>20.0</b> | 263                          | 59.8        | <b>&lt;0.001*</b> |
| <b>Mothers who formula feed miss one of the great joys of motherhood:</b> (Agree)***                      | 247                                     | <b>72.6</b> | 72                                       | <b>72.0</b> | 319                          | 72.6        | <b>&gt;0.05</b>   |
| <b>**Women should not breastfeed in public places:</b><br>(Disagree)***                                   | 95                                      | <b>27.9</b> | 26                                       | 26.0        | 121                          | 35.2        | <b>&gt;0.05</b>   |
| <b>Breast milk is the ideal food for babies:</b><br>(Agree) ***   | 319                                     | <b>93.8</b> | 93                                       | 93.0        | 412                          | 93.7        | <b>&gt;0.05</b>   |
| <b>**A mother who occasionally smokes should not breast feed:</b><br>(Disagree)***                        | 132                                     | <b>38.8</b> | 34                                       | 34.0        | 156                          | 36.1        | <b>&gt;0.05</b>   |
| <b>Babies fed breast milk are healthier than babies formula feed:</b> (Agree) ***                         | 298                                     | <b>87.6</b> | 83                                       | <b>83.0</b> | 381                          | <b>86.6</b> | <b>&gt;0.05</b>   |
| <b>**Fathers feel left out if a mother breastfeeds her baby:</b> (Disagree)***                            | 142                                     | <b>41.7</b> | 50                                       | <b>50.0</b> | 192                          | <b>43.7</b> | <b>&gt;0.05</b>   |
| <b>**Nutritional benefits of breast milk last only until baby weaned:</b><br>(Disagree)***                | 194                                     | <b>57.1</b> | 54                                       | <b>54.0</b> | 248                          | <b>56.4</b> | <b>&gt;0.05</b>   |
| <b>Breast milk is less expensive than formula:</b><br>(Agree) ***   | 300                                     | <b>88.2</b> | 90                                       | <b>90.0</b> | 390                          | <b>88.6</b> | <b>&gt;0.05</b>   |
| <b>Breastfeeding is more convenient than formula:</b><br>(Agree) ***                                      | 265                                     | <b>77.9</b> | 89                                       | <b>89.0</b> | 354                          | <b>80.4</b> | <b>&lt;0.02*</b>  |
| <b>**Formula is as healthy for an infant as breast milk:</b> (Disagree)***                                | 245                                     | <b>72.0</b> | 6  | <b>6.0</b>  | 316                          | <b>71.8</b> | <b>&lt;0.001*</b> |
| <b>Breast milk is more easily digested than formula feeding:</b> (Agree)***                               | 300                                     | <b>88.2</b> | 92                                       | <b>92.0</b> | 392                          | <b>89.1</b> | <b>&gt;0.05</b>   |
| <b>Babies fed breast milk are healthier than babies formula feed:</b> (Agree) ***                         | 298                                     | <b>87.6</b> | 83                                       | <b>83.0</b> | 381                          | <b>86.6</b> | <b>&gt;0.05</b>   |

\*Significant difference ( $p$  value $\leq$ 0.05). \*\*Reverse score answer. \*\*\*The correct response is shown in parentheses.

**Table (4): Students' anticipated practices regarding to breastfeeding**

| <i>Studied groups</i>  | <i>Medical students<br/>N=340</i> |             | <i>Nursing students<br/>N =100</i> |             | <i>Total<br/>N=440</i> |             | <i>P value</i>     |
|--|-----------------------------------|-------------|------------------------------------|-------------|------------------------|-------------|--------------------|
|  | <i>No</i>                         | <i>%</i>    | <i>No</i>                          | <i>%</i>    | <i>No</i>              | <i>%</i>    |                    |
| <b>**Mother diagnosed with low milk supply may not produce enough milk for other babies: (disagree)***</b> | 129                               | <b>34.4</b> | 42                                 | <b>42.0</b> | 171                    | <b>38.8</b> | <b>&gt;0.05</b>    |
| <b>woman with low milk supply is advised to increase the frequency of breastfeeds:(agree)***</b>           | 253                               | <b>74.4</b> | 84                                 | <b>84.0</b> | 337                    | <b>76.6</b> | <b>&gt;0.05</b>    |
| <b>Increasing her fluid intake may increase a mother's milk supply:(agree)***</b>                          | 231                               | <b>67.9</b> | 78                                 | <b>78.0</b> | 309                    | <b>70.2</b> | <b>&gt;0.05</b>    |
| <b>Introducing complementary feeds interfere with exclusive breastfeeding: (agree)***</b>                  | 223                               | <b>65.6</b> | 61                                 | <b>61.0</b> | 284                    | <b>64.5</b> | <b>&gt;0.05</b>    |
| <b>Feeding from one breast is a management for oversupply of breast milk:(agree)***</b>                    | 93                                | <b>27.4</b> | 12                                 | <b>12.0</b> | 105                    | <b>23.9</b> | <b>&lt;0.002*</b>  |
| <b>**A 'top-up' bottle is the best way to manage an infant not gaining weight:(disagree)***</b>            | 93                                | <b>27.3</b> | 28                                 | <b>28.0</b> | 121                    | <b>27.5</b> | <b>&gt;0.05</b>    |
| <b>Dummy use associated with a reduction in breastfeeding duration:(agree) ***</b>                         | 96                                | <b>28.2</b> | 48                                 | <b>48.0</b> | 144                    | <b>33.7</b> | <b>&lt;0.001*</b>  |
| <b>**A breastfeeding woman should be advised to wean if she becomes pregnant:(disagree)***</b>             | 80                                | <b>23.5</b> | 7                                  | <b>7.0</b>  | 87                     | <b>19.7</b> | <b>&lt; 0.001*</b> |
| <b>**Breastfeeding is contraindicated for women with Hepatitis C, and TB:(disagree)***</b>                 | 130                               | <b>38.2</b> | 13                                 | <b>13.0</b> | 143                    | <b>32.5</b> | <b>&lt;0.001*</b>  |
| <b>Baby should be weaned temporary if mother is taking medications:(agree)***</b>                          | 173                               | <b>50.9</b> | 60                                 | <b>60.0</b> | 233                    | <b>53.0</b> | <b>&gt;0.05</b>    |
| <b>A woman with postpartum depression can continue to breastfeed:(agree)***</b>                            | 183                               | <b>53.8</b> | 49                                 | <b>49.0</b> | 232                    | <b>52.7</b> | <b>&gt;0.05</b>    |
| <b>**A woman had a previous benign breast biopsy is unable to breastfeed:(disagree)***</b>                 | 124                               | <b>36.5</b> | 31                                 | <b>31.0</b> | 155                    | <b>35.2</b> | <b>&gt;0.05</b>    |
| <b>**A woman with mastitis expresses her milk until treatment is complete:(disagree)***</b>                | 35                                | <b>10.3</b> | 13                                 | <b>13.0</b> | 48                     | <b>10.9</b> | <b>&gt;0.05</b>    |
| <b>A woman with breast abscess can continue to breastfeed from both breasts :(agree)***</b>                | 74                                | <b>21.8</b> | 16                                 | <b>16.0</b> | 90                     | <b>20.5</b> | <b>&gt;0.05</b>    |
| <b>**Amoxicillin used in treatment of mastitis:(disagree)***</b>   | 119                               | <b>35.0</b> | 24                                 | <b>24.0</b> | 143                    | <b>22.5</b> | <b>&lt;0.04*</b>   |
| <b>**Woman with cracked nipples should express her milk :(disagree)***</b>                                 | 205                               | <b>60.3</b> | 51                                 | <b>51.0</b> | 256                    | <b>58.2</b> | <b>&gt;0.05</b>    |
| <b>**Antenatal nipple preparations prevent nipple soreness (disagree)***</b>                               | 208                               | <b>61.2</b> | 83                                 | <b>83.0</b> | 291                    | <b>66.1</b> | <b>&lt;0.001*</b>  |
| <b>**A nipple shield used in problems of infant attachment:(disagree)***</b>                               | 46                                | <b>13.5</b> | 8                                  | <b>8.0</b>  | 54                     | <b>12.3</b> | <b>&gt;0.05</b>    |
| <b>A woman with nipple pain may have thrush infection of the nipple: (agree)***</b>                        | 195                               | <b>57.4</b> | 61                                 | <b>61.0</b> | 256                    | <b>58.1</b> | <b>&gt;0.05</b>    |
| <b>Common cause of cracked nipples is poor positioning and attachment:(agree)***</b>                       | 259                               | <b>76.2</b> | 68                                 | <b>68.0</b> | 327                    | <b>74.3</b> | <b>&gt;0.05</b>    |

\*Significant difference (p value≤0.05). \*\*Reverse score answer. \*\*\*The correct response is shown in parentheses.



**Figure (1): Mean knowledge, attitude, and anticipated practices score**

**Figure (1)** demonstrates the distribution of students regarding their **mean knowledge, attitude, and anticipated practices score**. The score of knowledge among the studied groups was  $60.19 \pm 5.90$ . It is significantly higher among medical students compared to nursing students ( $60.6 \pm 6.05$  and  $58.8 \pm 5.18$  respectively). Additionally, the mean of their attitude score was  $62.58 \pm 7.29$ . It is significantly higher among medical students versus nursing students ( $63.02 \pm 7.42$  and  $61.07 \pm 6.65$  respectively). Moreover, the mean score of anticipated practices among the studied group was  $63.97 \pm 6.64$ . It was significantly higher among medical students compared to nursing students ( $64.30 \pm 6.99$  and  $62.64 \pm 5.15$  respectively).

**Table (5): Correlation between scores of knowledge, attitude and anticipated practices regarding breastfeeding**

| Scores                 | Knowledge score             |         | Attitude score              |         | Anticipated practice score  |         |
|------------------------|-----------------------------|---------|-----------------------------|---------|-----------------------------|---------|
|                        | Correlation coefficient (r) | P-value | Correlation coefficient (r) | P-value | Correlation coefficient (r) | P-value |
| <b>Knowledge score</b> |                             |         | 0.42                        | 0.001*  | 0.39                        | 0.001*  |
| <b>Attitude score</b>  | 0.42                        | 0.001*  |                             |         | 0.23                        | 0.001*  |
| <b>Practice score</b>  | 0.39                        | 0.001*  | 0.23                        | 0.001*  |                             |         |

\*Significant difference ( $p \text{ value} \leq 0.05$ ).

**DISCUSSION**

In assessing the knowledge of the students regarding breastfeeding, the current results revealed the mean of the total score was  $60.19 \pm 5.90$  with mean percent score 75.23% indicating very good level of knowledge. The current result is higher than that of *Ahmed and El-Guindy* <sup>(16)</sup> in Egypt who recorded poor level of knowledge (mean percent score of knowledge 52%) among their participants. Our results are still higher than that of *Amin et al.* <sup>(20)</sup> in Saudi Arabia and *Anjum et al.* <sup>(21)</sup> in India who recorded poor level of knowledge among medical students.

Furthermore in attempt to know the frequency of knowledge level among students. The study showed that less than half of all studied groups (44.5%) had very good level of knowledge which are better than the result of *Payghan and Kadam* <sup>(22)</sup> in Basaveshwara, India who found the most prevalent level of knowledge (64%) to be

the average level among his studied group of medical, nursing, dental and pharmacy students.

This discrepancies may be due to up grading of our students in their educational level (clinical stage of medical students and baccalaureate nursing students) as clinical year’s students were exposed to plenty of information on breastfeeding as they went along their academic education and clinical training. In addition, discrepancies may be due to differences in curriculum contents among different countries.

In the current study the majority of studied students (96.1%) knew that exclusive breastfeeding is recommended in the first six months. This is in similarly with the majority of medical students in a study conducted in Malaysia and Canada as well as most of medical students of Rangaraya Medical College in Kakinada and Al Tibri Medical College in Pakistan who got the correct answers <sup>(23,24, 25, 26)</sup>. Noteworthy, the most alarming results

were that of *Ahmed and El-Guindy* <sup>(16)</sup> on their study in Cairo University, Egypt as only 15% knew that exclusive breastfeeding is recommended for the first six months. Also, only half of medical students of El Mansoura University, Egypt had correct response regarding this point <sup>(27)</sup>. Also, unsatisfied low level was observed by *Hatamleh and Abu Sabeeb* <sup>(28)</sup> among university nursing students in Prince Sultan Military Medical City, Saudia Arabia. Concerning other benefits of breastfeeding for infants, this finding revealed that most of students agreed that breastfeeding reduces the incidence of gastroenteritis and ear infections increase among formula fed infant (87.3% and 72.7% respectively) with significant more figure among medical than nursing students regarding the last point. Similarly high correct response (76.0%) was observed for both baccalaureate nursing students in Cairo university and medical students in El Mansoura University, Egypt regarding breastfeeding benefits in reduction the incidence of gastroenteritis <sup>(16, 27)</sup>. Furthermore, majority of Indian nursing students (94%) knew that breast milk has vital role in building up immunity and provides protection against diarrhea and ear infections <sup>(12)</sup>. However, the results of a study conducted at Basaveshwara in India, among medical and nursing students reported that only half of students accepted that breastfed babies less suffer from diarrhea <sup>(28)</sup>.

Concerning benefits of breastfeeding for mother, significant high frequencies of the studied groups (89.6%) agreed that breastfed women have lower incidence of breast cancer. Likewise, high frequencies of nursing students (87.6%) in Prince Sultan Military medical City, Saudia Arabia, had this correct knowledge <sup>(28)</sup>. Meanwhile in India, lower frequencies were observed by *Bharani et al.* and *Payghan and Kadam* (62.5% and 64.9% respectively) <sup>(12, 22)</sup>.

Concerning requiring extra water in hot weather for exclusive breastfed infants, less than half of medical students (42.1%) disagreed that exclusive breastfed infants require extra water in hot weather while only about one third (33.0%) of nursing students gave the same response. Our results supported that of *Bharani et al.* <sup>(12)</sup> in India and *Hatamleh and Abu Sabeeb* <sup>(28)</sup> in Saudia Arabia who recorded less frequent disagreement regarding this point. However, in another study in India and in a study in Nigeria more frequencies were observed (90.8% and 73% respectively) <sup>(11, 22)</sup>.

Regarding attitude, positive attitude among studied groups was only 19.3% with significant high figure among medical than nursing student (23.2% and 6.0% respectively) while three quarters of medical students and the majority of nursing students (90.0%) had neutral attitude towards breastfeeding. The overall attitude with mean score was  $62.58 \pm 7.29$  with significant difference between both groups. This result is unexpected, because the Egyptian culture supports

breastfeeding as more than 90% of the Egyptian population follows Islam as a religion and Qur'an supports breastfeeding for two years <sup>(16)</sup>. These results are consistent with others carried out in the Middle East among undergraduate students in Egypt by *Ahmed and El-Gindy* and in Jordan by *Al-Ali et al.*; they found neutral attitudes were the most prevalent among their participants <sup>(16, 29)</sup>. However, results of another study suggested that in general the majority of nursing students in Sudia Arabia had positive attitudes regarding breastfeeding <sup>(28)</sup>. Also, a study reported that undergraduate nursing students in a public university in Saudi Arabia had negative attitudes towards breastfeeding practice <sup>(30)</sup>. This discrepancies may be due to inadequate education on breastfeeding practices which affect the students' attitude towards breastfeeding.

Concerning if formula feeding is the preferable for a mother when she goes back to work, the current findings showed that 68.8% of medical students in comparison with 20.0% of nursing students disagreed that formula feeding is the better choice if a mother goes back to work with statistical significant difference between them. Likewise, 53% of medical students disagreed that formula feeding is the better choice if a mother plans to work outside the home <sup>(20)</sup>.

Otherwise, three fourths of clinical medical students of Bingham University, in Nigeria, advised giving of expressed breast milk at work <sup>(11)</sup>.

Only more than one third of medical and nursing students (35.2%) showed agreement that women could breastfeed in public places. Also, only 23.7% of clinical medical students in Nigeria, declared that it is acceptable to breastfeed in public <sup>(11)</sup>. Although, a study conducted by *Vandewark* <sup>(31)</sup> found that most of nursing students (80.90%) showed acceptance regarding breastfeeding in public places. Also, *Pendergast et al.* found that most of medical students of Memorial University in Canada showed agreement regarding breastfeeding in public places <sup>(24)</sup>. Furthermore, only one fourth of nursing students in Sudia Arabia agreed or strongly agreed that mothers should not breastfeed in public places such a restaurants <sup>(20)</sup>.

In addition, the current results revealed that 42.7% and 65.0% of medical and nursing students respectively agreed that mother who occasionally smokes should breastfeed. However, only 2.8% of nursing students in India agreed with that <sup>(22)</sup>. The current finding was lower to what *Pendergast et al.* <sup>(24)</sup> obtained in Canada with 86.5% of Medical Students at memorial University who had correct response.

The present study demonstrated the distribution of students regarding their score of anticipated practices. The mean score of anticipated practices among the studied group was  $63.97 \pm 6.64$ . It was significantly higher among medical students comparing to nursing students ( $64.30 \pm 6.99$  and  $62.64 \pm 5.15$  respectively). Less than half



of them (41.4%) had good level of anticipated practices. Similarly, the intending practices of breastfeeding of the Malaysian medical students was above average. <sup>(11)</sup> Also, **Elsaid et al.** <sup>(32)</sup> found that (31.5%, 22.0%, 19.0%, 15.5% and 12.0%) of Egyptian GPs had poor, average, good, very good and excellent score of anticipated practices respectively.

In the current study, more than two thirds (64.5%) of students believed that introducing complementary feeds interfere with exclusive breastfeeding. Similar to the current results, most of Malaysian medical students (84.6%) believed that complementary feeding should not be given to infants who receive exclusive breastfeeding during the first six months of life <sup>(23)</sup>. Comparable to **Satyavani et al.** <sup>(25)</sup> in their study among medical and nursing students in Kakinada who believed that introducing complementary feeds interfere with exclusive breastfeeding (67.0% and 37.9% respectively). Meanwhile, about 20% of the Egyptian nursing students of Cairo University were anticipated to advice that supplemental feeding is detrimental to breastfeeding initiation and duration. Indeed, supplemental substances have been a major barrier to exclusive breastfeeding in Egypt and other Middle Eastern and Arab countries <sup>(16)</sup>.

The current study demonstrated students' anticipated practices regarding special maternal conditions that may affect breastfeeding and how to deal with these conditions. One of these conditions is breastfeeding during pregnancy, only 23.6% and 7.0% of medical and nursing students respectively anticipated to advice pregnant woman to continue breastfeeding, the results show statistical significant difference between both groups. In consistent with this results, 12% of medical students of El Mansoura University had intending practices to advice that pregnant mother to continue breastfeeding <sup>(27)</sup>.

As regard anticipated to advice of avoidance of breastfeeding for woman with hepatitis C or TB, the current research found that about one third (32.5%) of students disagreed that breastfeeding is contraindicated for women with hepatitis C or TB. Also these results show statistical significant difference between medical and nursing students (38.2% and 13.0% respectively). Similarly, in a study conducted among medical and nursing students of Basaveshwara University in India, it was found that 26.10% agreed with mothers with tuberculosis infection can breastfeed their babies <sup>(22)</sup>. Also, another study revealed that only 23.3% of students of medical colleague of El Mansoura University anticipated to advice mother with tuberculosis to continue breastfeeding and about 31.5% of them intended to advice mother with hepatitis C to continue breastfeeding <sup>(27)</sup>. Likewise, 21.9% Australian GPs disagree that breastfeeding is contraindicated for women with hepatitis C <sup>(33)</sup>. In addition, **Bharani et al.** <sup>(12)</sup> found that 23.7% of

nursing students answered correctly that mothers with TB on treatment could feed the baby.

Concerning the common cause of cracked nipples, the current study showed that around three quarters of students gave the correct response that poor positioning is the common cause of cracked nipples. Similar to this study, **Brodribb et al.** <sup>(18)</sup> found that most of GPs in Australia (87%) gave the correct response that the common cause of cracked nipples is poor positioning. Also around two thirds of nursing students (61.5%) in a public university in Saudi Arabia and 70% of medical students of Bingham University, Nigeria gave the same response <sup>(11,30)</sup>.

The current finding showed a correlation between scores of knowledge, attitude and anticipated practice regarding breastfeeding support. There was a significant positive weak correlation between student's score of knowledge and practices percent score. Moreover, there was a significant positive moderate correlation between student's score of knowledge and attitude. Additionally, there was significant positive weak correlation between students' score of practice and attitude.

Data supported the hypothesis that knowledge level and attitudes about breastfeeding are related, which is consistent with findings of **Ahmed and El Guindy** <sup>(16)</sup>. Additionally, **Brodribb et al.** <sup>(18)</sup>, in Australia, found that there was a strong positive correlation between knowledge and attitudes.

## RECOMMENDATION

The results of this study highlight the need to improve breastfeeding education among baccalaureate medical and nursing students. This can be done through extensive improvement in breastfeeding education. Also, the need for in-depth and focused breastfeeding content in clinical sessions and more structured clinical experience to help students relate theoretical knowledge to practice. Moreover, all these topics need to be taught using a variety of methods such as case studies, role playing using model dolls and simulators, problem solving and evidence-based projects. Furthermore, providing students with opportunities to practice breastfeeding management skills before actually caring for clients in a clinical setting may increase confidence.

## CONCLUSION

This study reflects very good level of knowledge, neutral attitude and average anticipated practices level among undergraduate female students in medical and nursing faculties at Al-Azhar University. Medical students showed higher knowledge, attitude and anticipated practices scores.

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