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# Knowledge Toward Utilization of Family Planning Services In Mansoura District, Dakahlia Governorate: A Quasi-Experimental Study

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## A B S T R A C T

**Background:** Family planning (FP) is an important component of reproductive health (RH). Through FP, couples can plan the number and spacing of their children. **Objective**: to assess the knowledge of women about the use of FP services. **Method:** A quasi-experimental study was conducted at FP clinics in health care centres and units in Mansoura District. Data were collected from 415 married women selected by systematic random sampling technique from the selected FP clinics according to the proportionate client flow. The data collection tool included a self-structured questionnaire assessing the knowledge of women. Analysis was done using descriptive and inferential statistics. **Results:** The mean age of women was 36.93± 7.4 years. Most women were rural residents (76.9%), married (88.4%), participants are educated up to secondary school (87%), and working (88.4%). Most women had fair (98.2%) and 10.4% had poor knowledge about the use of FP services at the pre-test. A statistically significant improvement in knowledge score was observed at the post-test (good knowledge increased from 1.4% to 100.0%, p<0.001). In multivariate analysis, age, monthly income, and social score were significant predictors of knowledge improvement (p < 0.05). **Conclusions:** Knowledge score was markedly improved after appropriate health education. Women with older age, lower monthly income, and higher social score have better knowledge improvement. Therefore, future studies to improve the knowledge of women toward contraceptives use is recommended.

## INTRODUCTION

Family planning (FP) is defined as a way of thinking and living being voluntarily adopted by an individual or couple based upon knowledge and responsible decisions to promote the health and welfare of the family groups and thus contribute effectively to the social development of a country.[1] In developing regions, 214 million women of reproductive age have an unmet need for modern contraceptives. The use of modern contraceptives prevented an estimated 308 million unintended pregnancies and meeting all women's need for these methods would avoid an additional 67 million annually. About 15 million adolescents use a modern contraceptive method, while 23 million have an unmet need for modern contraception and are thus at elevated risk of unintended pregnancy.[2]

FP is one of the most cost-effective investments a country can make in its future. It offers a range of potential benefits that encompass economic development, maternal and child health, education, and women's empowerment. In almost all regions of the world, contraceptives are used by most women of

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reproductive age (15-49 years). Worldwide in 2017, 63 percent of these women were using some form of contraception. Contraceptive use was above 70 percent in Europe, Latin America and the Caribbean, and Northern America, while being below 25 percent in Middle and Western Africa.[3]

In Egypt the National Population Program started in the mid–60s, Egypt has made significant strides in lowering fertility levels, from a total fertility rate (TFR) of 5.3 in 1980 to 3.0 in 2008. However, the TFR has risen to 3.5 in 2014. This recent increase, along with a persistently high contraceptive discontinuation rate of around 30 percent, has raised the alarm that; if the current annual population growth rate of 2.5 percent continues, Egypt's population will hit 120 million in 2030.[4]

The reasons for not using any FP methods are lack of knowledge and education, religious belief, and fear of side effects.[5] A lack of knowledge of contraceptive methods or a source of supply, cost, and poor accessibility are the barriers to FP that exist in developing countries. Side effects perceived or real are major factors for the leaving off modern methods. Mass media also plays an important role in the promotion and acceptability of contraception.[6]

It has been observed that the awareness of the availability of FP services has a great influence on the utilization of FP services.[7] Also, some women are aware of the availability of FP services, but they are not properly informed about the various forms of FP methods and how they work. Some of the women who went for FP services were not adequately counseled on the side effects of some of the FP methods.[8] Although people are aware of the benefits of FP services, some of them complained that it was difficult to access FP services as such services were provided by health facilities that were far from their homes**.**[9] In addition, religious inclination has been noted to be a major constraint to the uptake of FP services in Africa**.** It is therefore essential to organize educational campaigns on the awareness of FP services by emphasizing the benefits of the services as it will help reduce misconceptions and increase access and utilization of FP services**.**[7]

To the best of the authors' knowledge, no previous studies in Dakahlia governorate had been conducted about knowledge of family planning services. So, this study was carried out to assess the knowledge of women toward utilization of family planning services in Mansoura district, Egypt.

**METHOD**

This quasi-experimental (pre-post) study was conducted over three years from 2017- 2020 at FP clinics in health care centers and units in Mansoura District, Dakahlia governorate, Egypt. Mansoura Health District consists of 10 family medicine centers, 31 family medicine units, 1 outpatient clinic, 4 health offices, 6 (wehda ahyaeya) units, and 2 maternity and childhood care centers, providing health services to 1,096,009 residents of Mansoura District. There is a FP clinic in each one of them providing reproductive health (RH) and FP services to 182,668 married females in the childbearing period (15-49), residents of the centers, and the city of Mansoura.

Females' clients attending FP clinics of Mansoura Health District in the childbearing period (15-49 years) were the target population. They should be well-conscious, cooperative, and well-oriented with time, place, and person, to avoid bias from respondent's answers and accept to share in the study (after explanation of the study purpose).

Refusal to share in the study or inability to respond were excluded.

Sample size was calculated according to the one proportion sample size equation.[10] Assuming that the expected utilization prevalence 63.3% and a precision (margin of error) of 5%, a total 361 participants are required. To overcome attrition, 15% has been added to the sample size; thus, the total number was 415 participants.

The researcher visited the FP clinics (55 clinics) of Mansoura Health District periodically along three months five days a week. A random sample from (27) FP clinics was taken after defining the median, depending on the monthly flow rate which was 148 clients per month. Participants were selected from each of the 27 clinics by proportionate random method; we calculate the total clients in the 27 clinics, and then calculate the proportion of clients that would be enrolled from. The participants from each clinic were selected using a simple random sample until fulfilling the sample size.

**Table (1): Sociodemographic characters of the participants (n= 415)**

| Character | Number (%) |
|---|---|
| **Age** | |
| Mean ± SD | 36.93 ±7.4 |
| **Residence** | |
| • Urban | 96 (23.1) |
| • Rural | 319 (76.9) |
| **Marital status** | |
| • Married | 367 (88.4) |
| • *Other | 48 (11.6) |
| **Work status** | |
| • Clerical | 367 (88.4) |
| • Skilled | 7 (1.7) |
| • Unskilled | 5 (1.2) |
| • Not working | 36 (8.7) |
| **Education level** | |
| • Read, write or illiterate | 21 (5.1) |
| • Elementary (primary, preparatory) | 28 (6.7) |
| • Secondary | 361 (87) |
| • University or higher | 5 (1.2) |
| **Family size** | |
| • Less than3 | 25 (6.0) |
| • 3-5 | 370 (89.2) |
| • 6 or more | 20 (4.8) |
| **Crowding index** | |
| • Less than 2/room | 4 (1.0) |
| • 2/room | 24 (5.8) |
| • 3/room | 246 (59.3) |
| • 4/room | 141 (33.9) |
| **Presence of audiovisual sets** | |
| • T.V& its devices | 161 (38.8) |
| • Computer | 92 (22.2) |
| • Computer with internet | 17 (4.1) |
| • All | 145 (34.9) |
| **Monthly income** | |
| • Enough & satisfactory | 102 (24.6) |
| • Just enough | 169 (40.7) |
| • Not enough with transient debt | 102 (24.6) |
| • Not enough with permanent debt | 42 (10.1) |
| **Social class** | |
| • Low | 9 (2.2) |
| • Middle | 318 (76.6) |
| • High | 88 (21.2) |

*Social score:    Low class=<19 = Middle class = 19-< 29 High class = 29-40.*

**Data collection:** The data was collected using a questionnaire that was previously validated and modified by Abedin,[11] and tested through a pilot study. It was translated into Arabic and reviewed by the supervisors and a specialist in obstetrics and gynecology. Data from the questionnaire were completed by the participants after clarifying the main points. Nurses helped participants who cannot read or write.

The self-administered structured questionnaire included the following: (1) Socio-demographic characteristics: age, residence, marital status, occupation, education, family size, crowding index, audiovisual sets, and income for classification of socioeconomic status according to modified Fahmy and El-sherbini [12] to; low social class (less than19), middle social class (from19-less than 29), high social class (from 29-40). (2) Knowledge assessment (pre/posttest): The participants were asked about their knowledge concerning reproductive health (RH) and contraception use. Knowledge was classified into modifiable and non-modifiable items. The non-modifiable items were 4 items regarding knowledge about RH and contraception, receiving any RH and contraceptive-related education at school, hearing or seeing any advertisement about FP in the last 6 months, and participating in an educational session about FP during the last 6 months. While modifiable ones were 10 items regarding methods of contraceptives known, hearing about any emergency contraceptive method, hearing about sexually transmitted diseases (STDs), the ideal time to have the first child, being better not to have other children after the age of 35 years, thinking that FP is good behavior in a woman's life, knowing about the complication of FP methods and wrong beliefs and rumors about FP, using FP only for older women who do not want children, difficulties to become pregnant after using contraception and optimal period to start hormonal or intrauterine device (IUD) method. A knowledge score was made for each participant. A score of two was given to the right answer; a score of one was given to the wrong answer. Questions with more than one answer, a score of two were given if she chooses more than one answer, and a score of one was given if she chooses only one answer. The total score of knowledge is between 17 – 34. A score of (17 - 22) will be given for poor knowledge, a score of 23 - 28) will be for fair

**Table (2): Knowledge of the participants modifiable items (n=415)**

|  | Number (%) |
|---|---|
| **Main source of knowledge** |  |
| • Family member | 55 (13.3) |
| • Medical source | 300 (72.3) |
| • Education at school | 8 (1.9) |
| • Mass media | 35 (8.4) |
| • Other sources ** | 17 (4.1) |
| • One source | 23 (5.5) |
| • More than one source | 392 (94.5) |
| **Getting any reproductive health and contraceptive education** | 103 (24.8) |
| **Receiving any advertisement about family planning** | 294 (70.8) |
| **Participating in educational sessions about family planning** | 114 (27.5) |

*\*\*Other sources of knowledge: a friend, work College, neighbor knowledge, and a score of (29 - 34) will be for good knowledge.*

After the pre-intervention questionnaire, the researcher applies an educational program with health education messages covering; FP concepts and methods (types of methods, how to use, advantages and disadvantages, contraindications, birth spacing effects on mother and child health,), and hazards of early marriage. Health education message was carried out in small groups (8-10 female /session) in the form of lectures, using PowerPoint presentations, videos, and brochures. Pre/post-intervention questionnaire was aiming at assessing the effect of the health education intervention on knowledge before and after the implementation of the educational program. The time used to complete the pre-test questionnaire by the participants was about 20 minutes, the health education intervention lasted for about 60 minutes, then the post-test questionnaire lasted for 10 minutes. **Statistical analysis:** Data were collected, coded, and analyzed using IBM SPSS version 22 (Armonk, NY: IBM Corp.). Qualitative data were described using numbers and percentages. Quantitative data were described using median (minimum and maximum) for nonparametric data and mean, and standard deviation for parametric data after testing normality using Kolmogorov-Smirnov test. The significance of the obtained results was judged at the (0.05) level. MC Nemar test was used to compare before and after changes in binominal variables. Stewart –Maxwell test was used to compare follow-up periods for variables with more than 2 categories. Chi-Square test for comparison of 2 or more groups. Monte Carlo test was used as correction for Chi-Square test when more than 25% of cells have a count less than 5 in nxn tables. One Way ANOVA test was used to compare more than 2 independent groups with Post Hoc Tukey test to detect pair-wise comparison. Paired t-test to compare between 2 studied periods.

**RESULTS**

The mean age of participants is 36.93 ±7.4 years. The highest percentages of the participants (117, 28.2%) are in the age group (35-39) years. More than three fourth of the participants (319, 76.9%) are rural residents; the majority are married (367, 88.4%) and working (367, 88.4%). Most of the participants are educated up to secondary school (361, 87%) and are having all audio-visual devices (145, 34.9%). Less than half (169, 40.7%) of the participants have income which was just enough. Most participants (318, 76.6%) are belonging to the middle social class (Table 1).

The majority (300, 72.3%) of participants obtain their knowledge about reproductive health and family planning from medical sources mainly. The majority (392, 94.5%) of participants have their knowledge from more than one source. Only (103, 24.8%) of the participants got some education about reproductive health and contraception. The majority (294, 70.8%) of participants heard and/or saw some advertisements about family planning in the last 6 months, and only (114, 27.5%) participated in an educational session about FP during the last 6 months (Table 2).

Regarding the pre-test, a great majority of participants (389, 93.9%) know more than one method, only (105, 25.3%) of participants know about an emergency contraceptive. Most participants of participants know about (STDs), the ideal time to have the first child which was in the age of 18-21 year and that they should not have children after the age of 35 years (367, 88.4%), (392, 94.5%) and (362, 87.2%), respectively. The majority (414, 99.8%) of participants agree that family planning is a good behavior in a woman's life. These percentages rise in the post-test to become (413, 99.5%) and (415, 100%)

**Table 3: Assessment of pre /post knowledge of the participants' non-modifiable items (n=415)**

| Knowledge about | Pre-test | Post-test | P value |
|---|---|---|---|
| **Contraceptive methods** *(pills, IUD, injection, local')* | | | |
| • Only one method | 26 (6.1) | 2 (0.5) | 0.001* |
| • More than one method | 389 (93.9) | 413 (99.5) | |
| **Emergency contraceptives** | 105 (25.3) | 415 (100.0) | 0.001* |
| **Sexually transmitted diseases** | 367 (88.4) | 415 (100.0) | 0.001* |
| **Optimum time to have first child** | 392 (94.5) | 415 (100.0) | 0.001* |
| **Not having children after 35 years** | 362 (87.2) | 415 (100.0) | 0.001* |
| **Benefits of family planning** | 414 (99.8) | 415 (100.0) | 0.001* |
| **Wrong rumors about contraceptives** | | | |
| *1-Loop can penetrate the heart* | | | |
| • Believe | 53 (12.8) | 0 (0.0) | 0.001* |
| • Not believe | 362 (87.2) | 415 (100.0) | |
| *2-Injection can cause infertility* | | | |
| • Believe | 131 (31.6) | 0 (0.0) | 0.001* |
| • Not believe | 284 (68.4) | 415 (100.0) | |
| *3-Pills can cause cancer* | | | |
| • Believe | 115 (27.7) | 0 (0.0) | 0.001* |
| • Not believe | 300 (72.3) | 415 (100.0) | |
| *4- Contraceptive methods can harm health* | | | |
| • Believe | 171 (41.2) | 0 (0.0) | 0.001* |
| • Not believe | 244 (58.8) | 415 (100.0) | |
| *5-Contraceptives used only for older women* | | | |
| • Yes | 114 (27.5) | 0 (0.0) | 0.001* |
| • No | 301 (72.5) | 415 (100.0) | |
| *6-Difficulties of pregnancy after using contraception* | | | |
| • Yes | 137 (33.0) | 0 (0.0) | 0.001* |
| • No | 278 (67.0) | 415 (100.0) | |
| *7-Optimum timing to start the contraceptive method* | | | |
| • Yes | 220 (53.0) | 415 (100.0) | 0.001* |
| • No | 195 (47.0) | 0 (0.0) | |
| **Knowledge score** | | | |
| • **Poor Knowledge (17-22)** | 39 (9.4) | 0 (0.0) | |
| • **Fair Knowledge (23-28)** | 370 (89.2) | 0 (0.0) | <0.001* |
| • **Good Knowledge (29-34)** | 6 (1.4) | 415 (100.0) | |

*\* = significant*

respectively which were statistically significant (P ≤ 0.05). The total score of knowledge is between (17 – 34). The majority (370, 89.2%) of participants have fair knowledge in the pretest changed to good knowledge (415, 100%,) in the post-test which was statistically significant (P ≤ 0.05). Some wrong beliefs and rumours about contraceptives like; the loop can penetrate the heart, the injection can cause infertility, pills can cause cancer, and methods of family planning can harm the woman's health, small percentage agree with that wrong beliefs and rumours in the pre-test (53, 12.8%), (131, 31.6%), (115, 27.7%), and (171, 41.2%), respectively, decrease to 0% in the post-test and were statistically significant (P ≤ 0.05). The small percentage of the participants (114, 27.5%) and (137, 33%) respectively who had wrong information (that believe FP should be used only for older women, and difficulties becoming pregnant after using

**Table (4): knowledge level according to socio-demographic characters**

| | Poor knowledge N=39 N. (%) | Fair knowledge N=370 N. (%) | Good knowledge N=6 N. (%) | P value |
|---|---|---|---|---|
| **Age/years** | | | | |
| Mean ±SD | 33.92±10.59 [A] | 37.54±4.28[A] | 34.50±4.28 | 0.02* |
| **Residence** | | | | |
| • Rural | 28 (8.8) | 285 (89.3) | 6 (1.9) | 0.31 |
| • Urban | 11 (11.5) | 85 (88.5) | 0 (0.0) | |
| **Marital status** | | | | |
| • Married | 34 (9.3) | 329 (89.6) | 4 (1.1) | 0.92 |
| • Other | 5 (10.4) | 41 (85.4) | 2 (4.2) | |
| **Work status** | | | | |
| • Not working | 7 (19.4) | 29 (80.6) | 0 (0.0) | |
| • Unskilled | 2 (40.0) | 3 (60.0) | 0 (0.0) | 0.07 |
| • Skilled | 0 (0.0) | 7 (100.0) | 0 (0.0) | |
| • Clerical | 30 (8.2) | 331 (90.2) | 6 (1.6) | |
| **Education level** | | | | |
| • Read, write or illiterate | 15 (71.4) | 6 (28.6) | 0 (0.0) | |
| • Elementary (primary, preparatory) | 4 (14.3) | 24 (85.7) | 0 (0.0) | <0.001* |
| • Secondary | 20 (5.5) | 335 (92.8) | 6 (1.7) | |
| • University or higher | 0 (0.0) | 5 (100.0) | 0 (0.0) | |
| **Family size** | | | | |
| • Less than3 | 0 (0.0) | 22 (88.0) | 3 (12.0) | <0.001* |
| • 3-5 | 36 (9.7) | 331 (89.5) | 3 (0.8) | |
| • 6 or more | 3 (15.0) | 17 (85.0) | 0 (0.0) | |
| **Crowding index** | | | | |
| • Less than 2/room | 0 (0.0) | 4 (100.0) | 0 (0.0) | |
| • 2/room | 0 (0.0) | 23 (95.8) | 1 (4.2) | 0.53 |
| • 3/room | 26 (10.6) | 216 (87.8) | 4 (1.6) | |
| • 4/room | 13 (9.2) | 127 (90.1) | 1 (0.7) | |
| **Presence of audiovisual sets** | | | | |
| • T.V& its devices | 10 (6.2) | 147 (91.3) | 4 (2.5) | |
| • Computer | 12 (13.0) | 78 (84.8) | 2 (2.2) | 0.13 |
| • Computer with internet | 0 (0.0) | 17 (100.0) | 0 (0.0) | |
| • All | 17 (11.7) | 128 (88.3) | 0 (0.0) | |
| **Monthly income** | | | | |
| • Enough & satisfactory | 11 (10.8) | 91 (89.2) | 0 (0.0) | |
| • Just enough | 9 (5.3) | 156 (92.3) | 4 (2.4) | <0.001* |
| • Not enough with transient debt | 2 (2.0) | 98 (96.0) | 2 (2.0) | |
| • Not enough with permanent debt | 17 (40.5) | 25 (59.5) | 0 (0.0) | |
| **Social score** | | | | |
| • Low | 4 (44.4) | 5 (55.6) | 0 (0.0) | |
| • Middle | 28 (8.8) | 284 (89.3) | 6 (1.9) | 0.004* |
| • High | 7 (8.0) | 81 (92.0) | 0 (0.0) | |

*\* significant. Similar superscripted letters denote significant difference within groups by Post-hoc Tukey*

contraception), decreased to 0%, in the post-test which was statistically significant (P ≤ 0.05). About (220, 53%) of participants who know the optimal period to start hormonal or IUD method, increases to

**Table (5): Univariate and multivariate analysis of factors affecting knowledge**

| Variable | Univariate analysis | | Multivariate analysis | |
|---|---|---|---|---|
| | p value | COR (95% CI) | p value | AOR (95% CI) |
| **Age/years** | 0.006* | 1.39 (1.10-1.76) | 0.002* | 1.20 (1.08-3.45) |
| **Monthly income** | | | | |
| • Enough & satisfactory (R) | | | | |
| • Just enough | <0.001* | 34 (7.37-156.9) | 0.001* | 32 (7.11-134.5) |
| • Not enough with transient debt | <0.001* | 12.09 (4.86-30.07) | 0.003* | 13.1 (3.56-44.10) |
| • Not enough with permanent debt | <0.001* | 5.63 (2.34-13.54) | 0.005* | 6.77 (1.25-15.63) |
| **Social score** | | | | |
| • Low (R) | | | | |
| • Middle | 0.002* | 8.28 (2.1-32.63) | 0.01* | 7.98 (2.4-40.7) |
| • High | 0.004* | 9.26 (2.02-42.53) | 0.03* | 8.63 (2.0-41.8) |

*Overall % predicted =90.6%, * = significant, R = reference group, COR= crude odds ratio, AOR = adjusted odds ratio, and CI = confidence interval*

100% in the post-test which was statistically significant (P ≤ 0.05). (Table 3). It is noticed that there are statistically significant differences (P ≤ 0.05) in knowledge where; the mean age group 34.5±4.2 has good knowledge. Only (5, 100%) of university-educated participants and (331, 89.5%) of participants belonging to family size 3-5 have fair knowledge; also (98, 96%) of participants with not enough monthly income have fair knowledge. The majority (81, 92%) of participants belonging to the high social score are having fair knowledge (Table 4).

The current study showed that older age was a significant predictor of high knowledge (AOR, 95% CI (1.20, (1.08- 3.45), P= 0.002). Also, participants with (just enough monthly income, not enough with transient debt, and not enough with permanent debt) have more knowledge than participants with enough monthly income by (32, 13.1, and 6.77) respectively and participants with middle and high social score age have more knowledge than participants with a low social score by (7.98 and 8.63) respectively (Table 5)

**DISCUSSION**

Overpopulation is a worldwide problem. FP plays an important role in overpopulation control, poverty reduction, and human development. FP has two main objectives; to have only the desired number of children and spacing of pregnancies.[13] This study assessed the knowledge of women toward utilization of family planning services.

The current study showed that the mean age of the participants was 36.93. This agrees with a study in Egypt in which the mean age was 31.4±5.2 years, [14] a study conducted in Malaysia in which the mean age was 34±3.5 years[15], and a study in Sudan in which the mean age was 30.7±7.2 years.[16] Other studies in Nigeria and Iran the mean age was 40-50 and 40.4 ± 17.6 years respectively.[17,18] This may be explained by an increase in the utilization rate of FP methods at this age, as most women had completed their families.

This study showed that the good knowledge was among the 34.5±4.28 years which agreed with a study in Nepal in which the best knowledge level was among the 34 years.[19] This could be explained by; this age group being more exposed to health education and RH messages through various methods of communication.

This study revealed that the higher the educational level the fairer level of knowledge, which agreed with studies conducted in Iraq, Jordan, India, and Bangladesh as education is the main and the most influencing factor in the decisions regarding family planning and contraceptive knowledge.[20,21,22,23]

The main source of knowledge about FP and RH in the current study was from medical sources which were in agreement with a study in India that 74.2% of participants gained their knowledge from medical sources, a study in Nigeria where, health providers were the major sources of information, and a study in Iarq in which the main source of knowledge (54%) among participants was from health personnel.[24,25]

This could be explained by the role of healthcare personnel in giving health information.

In other studies, a study conducted in Nepal declared that the main source of knowledge about FP and RH was mass media as reported by 55.5% of participants, a study in India stated that print and electronic media were the common source of knowledge (57.7%). [19,26] In a study in Ethiopia most respondents reported that mass media was the most frequent source of information which accounted for 62.5%. In Sudan, a study revealed that 35% of women got their knowledge from the media and 25.5% from health care providers.[27,16] The differences in the main sources of knowledge between different countries may be due to differences in sociodemographic character mainly residence, educational levels, and cultures.

In the current study, it was found that 93.9% of the participants knew about more than one method of contraception which was in accordance with a study conducted in Norway, Egypt, and Sudan; that 73%, 89%, and 70% of the participants knew about more than one method of contraception respectively.[11,14,16] This may be explained by the abundance and diversity of FP methods and increase knowledge of females attending FP clinics.

This study showed that 25.3% of participants knew about emergency contraceptives, which was following a study conducted in Alexandria, Egypt to assess knowledge among participants about emergency contraceptives that was 25% and another study in port-said stating that 67.5% of participants knew about emergency methods.[28,14] In contrast, a study in Kuwait and a study in Pakistan found that 6% and 12% of the participants knew about emergency contraceptives respectively.[29,30] These differences in knowledge about emergency contraceptives may be due to their limited use and differences in education and source of knowledge.

The current study found that 88.4% of participants knew about STDs which was acceptable compared to a study in Nigeria and a study in Germany found that 92% and 99% of the participants knew about STDs respectively.[31,32] This acceptable level of knowledge because STDs is considered an important part in any FP and RH program.

This study found that 94.5% of participants knew about the ideal time to have the first child, 87.2% knew that it is better not to have other children after the age of 35 years and 99.8% thought that FP is good behavior in a woman's life which was in line with a study conducted in Egypt.[33] This could indicate increase awareness among females attending FP clinics and the role of mass media

This study showed that 27.7% of participants thought that oral contraceptive pills may cause cancer like cervical and breast cancer as reported in a study in the UK and a systematic review.[34,35] However other studies stated that there is no relation.[36,37] 12.8% of participants in this study thought that loop can reach the heart which was in line with an old study in Peru that reported beliefs of some females like IUD can perforate some body organs.[38] 31.6% of participants in this study thought that injection can cause infertility which was in line with a study conducted in Afghanistan.[39] This variation in knowledge about the complication of FP methods and wrong beliefs and rumors could be attributed to differences in sociodemographic characteristics mainly residence, educational levels, and cultural concepts.

The current study revealed that 89.2%, 9.4%, and 1.4% of participants had fair, poor, and good knowledge respectively. Other studies in Ethiopia found that 96% of participants had good knowledge[40]. A study in Norway found that 11%, 30%, and 59% had good, fair, and poor knowledge respectively.[11] Urban and rural women were nearly equal in having fair knowledge, rural women were having good knowledge, but urban women were having poorer knowledge than rural. USAID study of contraceptive trends in 35 developing countries found that in most countries outside Sub-Saharan Africa, no variation in knowledge by age, number of living children, urban-rural residence, and regular exposure to mass media or social class status.[41] The variation in the knowledge level could be explained by educational level, residence, religious beliefs, and culture, also increase in the level of knowledge among rural females is attributed to improvement in RH and FP services and the important role played by raeda refya.

These differences may be due to differences in sociodemographic characteristics such as age,

residence, level of education, number and gender of living children, social class, knowledge level, and the level of FP and RH services.

Multivariate analysis of the current study showed that older women have more knowledge than younger by 1.20 in this study which was flowing a study in Bangladesh in which the older participants were more knowledgeable than younger.[42] This may be because older women had completed their families and were more likely to seek knowledge concerning FP and RH.

## CONCLUSIONS AND RECOMMENDATIONS

The main source of knowledge was a medical source. Knowledge scores improved significantly after the health education message. Age, monthly income, and social score were significant predictors of knowledge. Therefore, we recommend future studies to improve the knowledge of women toward the use of FP services through comprehensive health education programs. We also suggest different measures to improve health education.

### Ethics Approval

The proposal was approved by the Institutional Research Board (IRB), Faculty of Medicine, Mansoura University (number MD/17.03.131). Informed verbal consent was obtained from each participant sharing in the study after assuring confidentiality and explaining the purpose of the study.

### Strengths and Limitations

the strength of the current study lies in that the response rate was excellent, and it also assessed knowledge for the first time in Mansoura Center, Dakahlia Governorate. Nevertheless, it has some limitations where a small percentage of participants were having low educational levels, so we had to clarify every point in the questionnaire to them and wrote the answers by ourselves.

### Conflict of Interest

The authors declare that they have no competing interests.

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