

Determinants of unintended pregnancy and its impact on the health of women in some governorates of Upper Egypt

Ammal M. Metwally^a, Rehan M. Saleh^a, Amira M. Abdelhamed^a,
Somia I. Salama^a, Carine W. Mores^a, Fatma A. Shaaban^b, Osama M. Azmy^c

Departments of ^aCommunity Medicine
Research ^bChild Health ^cReproductive Health,
National Research Center, Giza, Egypt

Correspondence to Ammal M. Metwally,
MD (PhD), Department of Community
Medicine Research, National Research
Center, Giza, 12411, Egypt
Tel: +20 122 228 0640; fax: (+202)33370931;
e-mail: ammal_mok@yahoo.com

Received 21 August 2014

Accepted 03 December 2014

**Journal of the Arab Society for Medical
Research** 2015, 10:1–8

Background/aim

Worldwide, more than half of all unintended pregnancies end in abortion, indicating the preference for increasingly smaller families. The present work aimed to assess the determinants of unintended pregnancy and its impact on women's health in El Fayoum and Benisuef governorates.

Participants and methods

A community-based cross-sectional household survey was conducted among 827 married women of reproductive age. The study was conducted in two governorates, El Fayoum and Benisuef, for a period of 6 months.

Results

The current study revealed that 15.9% of women who participated in the study had an unmet need for family planning, with subsequent unintended pregnancy. Higher age of women and her age at the time of marriage, illiteracy, short interpregnancy spacing, exceeding the desired number of children, negative attitude of husbands toward the use of family planning methods, and absence of discussion between partners on the use of means to postpone pregnancy increased the number of unintended pregnancies. Also, women with unintended pregnancy were at a higher risk of experiencing health problems during her pregnancy.

Conclusion

Despite the efforts taken by family planners, the problem of unintended pregnancy continues to increase in Egypt, with its adverse effect on pregnancy and maternal outcomes. Therefore, the strategy for maternal mortality reduction in Egypt should focus on addressing the unmet needs of high-parity, uneducated, nonworking women.

Keywords:

abortion, family planning, unintended pregnancy, unmet need

J Arab Soc Med Res 10:1–8
© 2015 The Arab Society for Medical Research
1687-4293

Introduction

Family planning (FP) is critical for the health of women and their families. Because of its importance, universal access to reproductive health services, including FP, is identified as one of the targets of the United Nations Millennium Development Goals (MDGs) [1].

Unmet need for FP continues to persist, despite having declined somewhat. It is defined in two ways: unmet need for limiting childbearing, comprising the proportion of currently married women who do not want any more children but are not using an effective form of FP, and unmet need for spacing childbearing, comprising the proportion of currently married women who want to postpone their next birth for 2 years or more but are not using an effective FP method [2].

Unmet need for contraception can lead to unintended pregnancies, with their harmful consequences such as unsafe abortions and unwanted births. In less developed regions, about one-fourth of pregnancies are unintended (unwanted or mistimed) and 18 million

undergo unsafe abortions each year, contributing to high rates of maternal death [3,4]. The WHO estimates that in 2008 ~13% of maternal mortality worldwide or 47 000 deaths were due to unsafe abortions [5]. In developing countries, 11% of women report an unmet need for FP.

An analysis of the 2008 Demographic and Health Survey in Egypt, which is the main tool for measuring unmet need, shows that if Egyptian women could successfully avoid births resulting from unintended pregnancies (14%), the country's total fertility rate (lifetime births per woman) would decline from 3.0 children per woman to 2.4 [6]. Although Egypt has a strong FP program and lower rates of unmet need than other countries in the region, women in the poorest fifth of the population are twice as likely to experience unmet need as those in the richest fifth [7]. It also shows that 9% of women in reproductive age have unmet needs: 3% for spacing and 6% for limiting [7]. Some may end up having unwanted births and others may resort to unskilled healthcare providers to undergo an abortion. In such cases, because of legal restrictions

and the stigma linked to having an abortion, women may be reluctant to seek timely medical care, with subsequent postabortion complications exposing them to a significant risk for death or disability.

Social scientists believe that combating unmet need will benefit women, especially in developing countries, as they may limit the health risks [8]. Meeting the unmet need for FP is therefore an effective intervention for reducing unintended pregnancy and induced abortion. The overall objective is to decrease maternal mortality among women in the reproductive age in Egypt by reducing unintended pregnancies and their negative consequences on the health of women, especially the risk of induced abortion. This will be a step toward planning and evaluating the policies of FP programs in Egypt. The study investigated the following research questions: What are the determinants of unintended pregnancy from among sociodemographic characteristics, history of fertility, discussion with partners being perceived the most credible and the most favorite source of information, and exposure to health education messages among the surveyed women? What are the predictors of unintended pregnancy out of all the studied variables? Does awareness of maternal mortality from abortion influence the desire for intended pregnancy? Does a history of unintended pregnancy affect the future fertility behavior and FP intentions of women?

The specific objectives were to assess the determinants of unintended pregnancy out of sociodemographic characteristics, history of fertility, parental communication, and exposure to health education messages, as well as the impact of unintended pregnancy on women's fertility behavior and future FP intentions in El Fayoum and Benisuef governorates.

Participants and methods

Poverty is heavily concentrated in the upper rural region, which has the greatest incidence, depth, and severity of poverty, with 63.5% of the individuals being poor [9]. The study was conducted in two governorates of Upper Egypt that were ranked the poorest as declared in an Egyptian report in 2008. Benisuef governorate, which is ranked the second poorest after Assuit governorate, and El Fayoum governorate, which is the third, are the suggested governorates for the proposed project interventions. However, currently many donors work in Assuit governorate. The study was conducted in villages of four districts of the two governorates. The selection of districts and villages for the study was made through a participatory approach. The criteria for selection were: common practice of home delivery,

remote location from any government delivery center, and the majority of births being attended by traditional birth attendants (TBAs) (Dayas) before the start of the study. The study was conducted over a period of 6 months from August 2010 until February 2011.

The study was a community-based cross-sectional household survey conducted among married women of reproductive age (15–49 years). Two-stage random sampling was used; households were randomly selected, and then one woman of reproductive age, either currently pregnant, or in the postpartum period, or newly married, was randomly selected from each household. Household lists of currently pregnant women, newly married women, and women in the postpartum period were obtained from village health promoters (VHPs) according to the Ministry of Health classification (Raedat's zones) within the targeted villages. We have followed the division of reproductive health standards at the center for disease control and prevention for point estimates within $\pm 5\%$ of the true population prevalence, with 95% confidence and estimated response rate of 80% [10]. Out of 550 targeted women for survey from each governorate, 363 and 464 completed the survey in El Fayoum and Benisuef governorates, respectively, with response rates of 66 and 84.3%. The total number of women who completed the survey was 827. The study participants were divided into three groups: women with first pregnancy (184), multiparous pregnant women (506), and women in the postpartum period (137).

The women were interviewed by the VHPs shortly after their orientation and training to perform the assessment, after ensuring that confidentiality issues were well explained, given the sensitive nature of the topics covered in the assessment questionnaire. The VHPs were well experienced with household surveys. Such selection ensured accuracy and reliability of the obtained data. The supervision and quality control of the interviewers was ensured as they included peer reviews of completed survey tools, team meetings at the end of each day to discuss progress, spot inspection visits, and repeat interviews for a subsample of households.

A prestructured questionnaire that was tailored from the CDC (2007) was used. The measurements and categorization were also according to CDC (2007) [11]. The questionnaire included the following: socioeconomic information; age, education, and fertility history; age at first birth, interpregnancy spacing; whether achieved the desired number of children; number of living and dead children; and number of abortions (natural and deliberate). Moreover, to assess the impact of discussion between partners as being perceived as the most credible and the most preferred

source of information, to assess exposure of both wives and husbands to FP messages, and to assess the attitude and intention of the use of FP methods in the future on met and unmet needs, these parameters were added in the questionnaire, in addition to awareness about the complications from deliberate abortion and it being a major cause of maternal mortality.

Data entry and statistical analysis was carried out using SPSS (version 18; SPSS Inc., Chicago, Illinois, USA). The data collected using the above-mentioned measures were analyzed using frequencies and percentages. The χ^2 -test was performed for quantitative data, which were presented as numbers and percentages.

Women with unmet needs were those who did not desire their current pregnancy, did not want another pregnancy, or wanted to postpone pregnancy for a certain period of time and were not using any FP methods.

The percentage of unmet needs was calculated as following:

$$\text{Percentage of unmet need for FP} = \frac{\text{Unmet need}}{\text{Total need (met need + unmet need)}}.$$

The response variable has two categories: unintended pregnancy (coded 1) and intended pregnancy (coded 0). Odds ratio (OR) was calculated to compare the odds of exposure to different risk factors among those with unintended pregnancy with the odds of exposure among those without. Logistic regression was performed to significantly predict outcome risk factors to explore the predictors of unintended pregnancies. Factors found to be significantly associated ($P < 0.05$) with the main outcome of interest (unintended

pregnancy) on univariate analysis were included in a multivariate model. P value was considered statistically significant when it was less than 0.05 and was considered statistically highly significant if less than 0.01.

Ethical clearance was obtained from the ethical committee in the National Research Center before the start of the study. Written informed consent was obtained from the study participants before enrollment.

Results

Table 1 presents the fertility history, behavior, and FP indicators among the surveyed women. It shows that the percentage of women whose age at first birth was less than 20 years was significantly higher in Benisuef compared with El Fayoum governorate ($P < 0.05$). Also, the percentage of women whose age at the most recent birth was less than 20 years was higher in Benisuef than in El Fayoum governorate, but with no significant difference between the two governorates ($P > 0.05$). Out of the surveyed women, only 15 women were older than 40 years at their most recent births. Twenty-one percent of the surveyed women in both governorates had undergone more than one abortion. Around three-quarters of the surveyed women in both governorates intended to use FP methods in the near future and the difference between the two governorates was highly significant ($P < 0.001$). The total unmet need for FP was 15.9%; 74% of them were in Benisuef governorate and the difference between the two governorates was highly significant ($P < 0.001$).

Table 2 presents the OR for the determinants of unintended pregnancy out of the sociodemographic characteristics and fertility history among the surveyed

Table 1 Fertility history, behavior, and family planning indicators among the surveyed women

Key behaviors	Indicator	n (%)			P value
		El Fayoum (N = 363)	Benisuef (N = 464)	Total (N = 827)	
Giving birth at age <20 years	% of surveyed women whose age at first birth <20 years	172 (40.5)	253 (59.5)	425 (100.0)	0.04
Giving most recent birth at age <20 years	% of surveyed women whose current age at most recent birth <20 years	55 (41.0)	79 (59.0)	134 (100.0)	0.51
Giving most recent birth at age > 40 years	% of surveyed women whose current age at most recent birth >40 years	6 (40.0)	9 (60.0)	15 (100.0)	0.80
Future intention for use of family planning methods	% of surveyed women who intend to use a method in the near future	301 (50.6)	294 (49.4)	595 (100.0)	0.00
Number of pregnancies ended in abortion ≥ 1	% of surveyed women whose pregnancies ended in abortion ≥ 1	78 (45.1)	95 (54.9)	173 (100.0)	0.73
Intended pregnancy (met need)	% of surveyed women whose current pregnancy was intended	329 (47.3)	366 (52.7)	695 (100.0)	0.000
Unintended pregnancy (unmet need for spacing and limiting)	% of surveyed women whose current pregnancy was unmet	34 (25.8)	98 (74.2)	132 (100.0)	0.000

Table 2 The odds ratio for the determinants of unintended pregnancy out of the sociodemographic characteristics and history of fertility among the surveyed women

Characteristics	n (%)		OR (95% CI)	P value
	Unintended pregnancy (N = 132)	Intended pregnancy (N = 695)		
Current age of the mother				
<20	10 (7.5)	124 (92.5)	0.50 (0.27–0.92)	0.03
20–30	82 (15.8)	436 (84.2)	1.58 (1.03–2.41)	0.04
≥30	40 (22.9)	135 (77.1)		
Wife education				
Illiterate or read and write	96 (19.5)	396 (80.5)	2.32 (1.03–5.22)	0.04
Preparatory or more	7 (9.5)	67 (90.5)	1.94 (1.24–3.03)	0.003
Higher education	29 (11.1)	232 (88.9)		
Wife employment				
House wife	128 (16.5)	649 (83.5)	2.27 (0.80–6.41)	0.11
Worker	4 (8.0)	46 (92.0)		
Age of woman at first birth				
<20	75 (13.3)	489 (86.7)	0.60 (0.41–0.89)	0.010
20–30	52 (20.3)	204 (79.7)	9.81 (1.85–51.99)	0.001
≥30	5 (71.4)	2 (28.6)		
Duration between the current and previous pregnancy (years)				
<1	46 (32.8)	130 (67.2)	1.84 (1.11–3.08)	0.018
1–2	46 (20.9)	245 (79.1)	0.66 (0.40–1.08)	0.094
≥2	40 (14.8)	320 (85.2)		
Desired number of children (n = 643) ^a				
Women who exceeded their desired number of children	78 (28.1)	200 (71.9)	1.41 (0.82–2.45)	0.218
Women who achieved their desired number of children	21 (21.6)	76 (78.4)	3.09 (1.95–4.91)	0.000
Women who did not reach their desired number of children	30 (11.2)	238 (88.8)		
Current no of living children				
1–2	77 (19.4)	432 (80.6)	1.41 (0.78–2.55)	0.522
3–4	36 (20.2)	188 (79.8)	1.34 (0.70–2.58)	0.381
≥5	19 (25.4)	75 (74.6)		
Number of abortions				
0	89 (18.9)	381 (81.1)	1.34 (0.72–2.50)	0.359
1	25 (22.7)	85 (77.3)	1.06 (0.51–2.21)	0.871
≥2	15 (23.8)	48 (76.2)		
Number of dead children				
0	103 (19.5)	425 (80.5)	0.75 (0.30–1.93)	0.555
1	18 (24.3)	56 (75.7)	1 (0.45–2.23)	0.999
≥2	8 (19.5)	33 (80.5)		

CI, confidence interval; OR, odds ratio. ^aWomen with first pregnancy were excluded.

women and it shows that young age at marriage and at first birth decreases the risk for unintended pregnancy (OR = 0.4 and 0.6). Also, illiteracy increased the risk for unintended pregnancy by almost two-fold (OR = 1.9), and the difference between the two groups was highly significant ($P < 0.005$). Short interpregnancy spacing was found to increase the risk of unintended pregnancy (OR = 1.8), and the difference between the two groups was significant ($P < 0.05$). Also, women who exceeded their desired number of children were at an increased risk for unintended pregnancy by almost three-fold (OR = 3), and the difference between the two groups was highly significant ($P < 0.001$).

Tables 3 and 4 present the OR for the determinants of unintended pregnancy out of parental communication and exposure to health education messages and out of awareness of maternal mortality from abortion among the surveyed groups. It shows that negative attitude of husbands toward the use of FP methods by their wives and absence of discussion between partners on the use of means to postpone pregnancy increased the risk for unintended pregnancy (OR = 2.7 and 2.4, respectively), and the difference between the two groups was significant ($P < 0.05$). Women with unintended pregnancies had low-level knowledge regarding all items (Table 4), but the difference was statistically insignificant ($P > 0.05$).

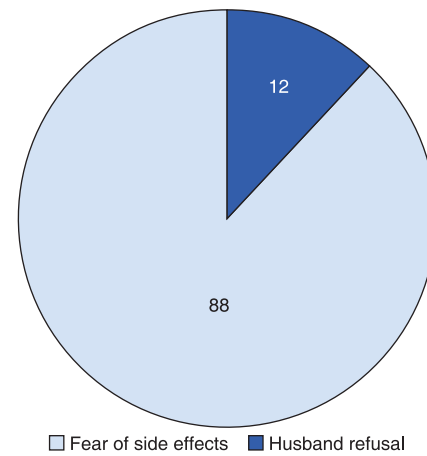
Table 3 The odds ratio for the determinants of unintended pregnancy out of parental communication and exposure to health education messages among the surveyed women

Characteristics	<i>n</i> (%)		OR (95% CI)	<i>P</i> value
	Unintended pregnancy (<i>N</i> = 132)	Intended pregnancy (<i>N</i> = 695)		
Attitude of husbands toward the use of FP methods by their wives				
Negative	11 (33.3)	22 (66.7)	2.78 (1.32–5.88)	0.005
Positive	121 (15.2)	673 (84.8)		
Exposure of wives to FP messages				
No	115 (16.3)	590 (83.7)	1.20 (0.70–2.09)	0.508
Yes	17 (13.9)	105 (86.1)		
Exposure of husbands to FP messages				
No	124 (16.2)	642 (83.8)	1.28 (0.59–2.76)	0.528
Yes	8 (13.1)	53 (86.9)		
Exposure of wives to risk of abortion messages				
No	104 (16.6)	521 (83.4)	1.24 (0.79–1.95)	0.349
Yes	28 (13.9)	174 (86.1)		
Exposure of husbands to risk of abortion messages				
No	119 (16.3)	610 (83.7)	1.28 (0.69–2.36)	0.438
Yes	13 (13.3)	85 (86.7)		
Previous discussion between partners on the use of a means to postpone pregnancy				
No	80 (22.8)	271 (77.2)	2.41 (1.65–3.52)	0.000
Yes	52 (10.9)	424 (89.1)		
Perceived talk with husband by wife as most credible information source				
No	107 (15.6)	577 (84.4)	0.88 (0.54–1.41)	0.585
Yes	25 (17.5)	118 (82.5)		
Perceived talk with husband by wife as most favorite information source				
No	109 (16.9)	537 (83.1)	1.39 (0.86–2.26)	0.18
Yes	23 (12.7)	158 (87.3)		

CI, confidence interval; FP, family planning; OR, odds ratio.

Table 5 presents the predictors for unintended pregnancy out of the variables that entered the multivariate regression models – namely, wife's education, parity, desire for more number of children, lack of previous discussion between partners on the use of a means to postpone pregnancy, health problems during pregnancy, and age of the female partner being less than 20 years at the time of marriage. It shows that the desire for more children, lack of discussion between partners on the use of means to postpone pregnancy, and low-level education and illiteracy of the wife were the most significant predictors of unintended pregnancy.

Figure 1 presents the reasons for not using FP methods according to the surveyed women with unintended pregnancy who were divided into two groups: dropouts (69%) and nonusers (31%). It shows that the most commonly cited factor obstructing their use of FP methods was the fear of side effects, followed by husband refusal.

Figure 1

Reasons for not using family planning methods according to the surveyed women with unintended pregnancy.

The impact of unintended pregnancy on the women's fertility behavior and future intentions to use FP methods is clearly shown in Table 6. There was a high percentage of women with indifferent attitude toward future pregnancies and intention to use FP methods, denoting that these women were unable to take a decision concerning their reproductive life ($P < 0.001$). Table 6 also shows that the proportion of women with health problems in their recent pregnancy was significantly higher among those with unintended pregnancy than among those with intended pregnancy ($P < 0.05$).

Discussion

Over the past two decades, the goals of the official FP policies of many countries have shifted from an emphasis on increasing contraceptive prevalence to satisfying unmet needs and reducing unintended fertility [12].

The current study revealed that 15.9% of women who participated in the study had an unmet need for FP with subsequent unintended pregnancy. This figure was lower than that seen in a Kenyan study in which 24% of the studied women reported an unintended pregnancy [13].

According to the results of the present study, illiteracy was one of the main predictors of unintended pregnancy. Illiteracy increased the risk of unintended pregnancy by almost two-fold. These findings were in agreement with a study conducted in Dehradun (India) [14]. In contrast, no significant association was observed between women's education and unintended pregnancy in a study conducted in Nepal [15]. In Egypt, early

Table 4 The odds ratio for the determinants of unintended pregnancy out of awareness of maternal mortality from deliberate abortion among the surveyed women

Characteristics	n (%)		OR (95% CI)	P value
	Unintended pregnancy (N = 132)	Intended pregnancy (N = 695)		
Awareness about abortion as a direct cause of maternal mortality				
No	129 (16.0)	677 (84.0)	1.14 (0.33–3.94)	0.832
Yes	3 (14.3)	18 (85.7)		
Awareness about heavy bleeding as a direct cause of maternal mortality				
No	97 (15.8)	515 (84.2)	0.97 (0.64–1.48)	0.882
Yes	35 (16.3)	180 (83.7)		
Awareness about foul smelling secretions as a risk sign at the beginning of pregnancy (in the first 3 months)				
No	118 (15.6)	636 (84.4)	0.78 (0.42–1.45)	0.432
Yes	14 (19.2)	59 (80.8)		
Awareness about foul smelling secretions from the vagina as an emergency symptom for referral to hospital (in the first 3 months)				
No	126 (16.3)	646 (83.7)	1.59 (0.67–3.80)	0.290
Yes	6 (10.9)	49 (89.1)		
Awareness about bleeding from the vagina even if it is minor or without pain as an emergency symptom for referral to hospital (in the first 3 months)				
No	92 (17.4)	438 (82.6)	1.35 (0.90–2.02)	0.143
Yes	40 (13.5)	257 (86.5)		

CI, confidence interval; OR, odds ratio.

Table 5 Predictors for unintended pregnancy: results from multivariate regression models

Variables	B	SE	P value	AOR (95% CI)
Desire for more children	0.23	0.06	0.00	1.25 (1.121–1.40)
Lack of discussion between partners on the use of a means to postpone pregnancy	0.23	0.04	0.00	1.25 (1.153–1.360)
Illiterate wife	0.16	0.06	0.01	1.17 (1.03–1.32)

Variables entered in equation: wife education, parity, desire for more children, lack of previous discussion between partners on the use of a means to postpone pregnancy, health problems during pregnancy, age of the female partner less than 20 years at the time of marriage; AOR, adjusted odds ratio; CI, confidence interval.

marriage and poverty are factors responsible for lower education of girls; therefore, there is an urgent need to focus on the need for higher education in health programs.

In the current study, as the women age, they come under increased risk for unintended pregnancy. Similarly, studies conducted in Nepal, Iran, and Nigeria showed that, the higher the age of women, the higher the probability of having unintended pregnancy [15–17]. The results of our study could be explained by the fact that in our country, as the woman ages, her intention to use FP methods increases but, because of factors such as illiteracy and husband nonapproval for the use of FP methods, they continue to conceive and, as a result, a higher level of unintended pregnancies was seen among them.

Table 6 The impact of unintended pregnancy on women fertility behavior and future intentions

Characteristics	n (%)		χ^2	P value
	Unintended pregnancy (N = 132)	Intended pregnancy (N = 695)		
Attitude of the surveyed women toward future pregnancy				
Positive	67 (50.8)	354 (50.9)	21.92	0.00
Negative	38 (28.8)	286 (41.1)		
Indifferent	27 (20.4)	55 (8.0)		
Intention to use family planning methods among the surveyed women				
Yes	0 (0.0)	588 (84.6)	392.79	0.00
No	44 (33.3)	24 (3.5)		
Indifferent	88 (66.7)	83 (11.9)		
Experience of any health problems during her most recent pregnancy ^a				
Yes	50 (37.9)	195 (28.1)	5.13	0.02
No	82 (62.1)	500 (71.9)		
Experience of bleeding from the vagina during her most recent pregnancy				
Yes	6 (12.0)	24 (12.3)	0.004	0.95
No	44 (88.0)	171 (87.7)		
Experience of severe abdominal pain (pain in the belly) during her most recent pregnancy				
Yes	14 (28.0)	46 (23.6)	0.41	0.51
No	36 (72.2)	149 (76.4)		
Experience of feeling very weak or tired (affecting sense of well-being) during her most recent pregnancy				
Yes	10 (20.0)	24 (12.3)	1.97	0.16
No	40 (80.0)	171 (87.7)		

^aThe table focused only on health problems that might denote abortion [vaginal bleeding, abdominal pain, feeling very weak or tired].

We could see in the current study that short interpregnancy spacing and exceeding the desired number of children significantly increased the risk for unintended pregnancy. These results agreed with the results of a study conducted in Nepal [15].

In Egypt, men are the decision-makers in almost all aspects of life, including choices related to the use of reproductive healthcare services. This study supports this fact as we found that the negative attitude of husbands toward the use of FP methods by their wives and absence of discussion between partners on the use of means to postpone pregnancy significantly increased the risk of unintended pregnancy and was one of the most significant predictors in the multivariate regression model. Several Ethiopian studies support this finding [18–20]. In contrast, in an Indian study, none of the study participants reported that their partners interfered with their birth control measures [21].

The major consequence of unintended pregnancy is abortion, whether or not induced by the woman. In developing countries like Egypt, induced abortion

is generally undocumented because of religious prohibition and stigma. We tried to overcome this obstacle by asking the women about induced abortion in an indirect manner, by asking them about experiencing any health problems during their most recent pregnancy; we found that women with an unintended pregnancy were at a higher risk of experiencing health problems during their recent pregnancy. Also, results of the present study showed that 21% of women had more than one pregnancy that ended in abortion and that women with unintended pregnancies had defective knowledge regarding the risk signs of abortion. These results agreed with the results of a study carried out in Pakistan [22].

The unmet need for FP points to the gap between women's reproductive intentions and their contraceptive behavior. This gap was noticed in the current study as around three-quarters of the surveyed women in both governorates intended to use FP methods in the near future and at the same time almost 50% of women with unintended pregnancy had a positive attitude toward future pregnancy. This gap between women's intentions and their actual practice could be explained by the presence of other factors that were considered constraints to their intention to use FP methods in the future, among which were the fear of side effects of FP methods and husband nonapproval. Similarly, the results of a study conducted in India were in accordance with those of the present study [21].

Conclusion and recommendations

Many factors contribute to the high rates of unintended pregnancy: the absence of discussion between partners on the use of means to postpone pregnancy; exceeding the desired number of children; and illiteracy. Married women aged more than 30 years deserve special consideration because unmet need is highest among them; the fertility rate among them is high and they are at high risk for maternal mortality.

FP program managers should create awareness on various FP methods and their side effects to help women make an appropriate choice and motivate nonusers and dropouts of FP to practice contraception. Messages should focus on factors associated with the occurrence of unintended pregnancy and its consequences on women and babies. Therefore, the communication strategy for maternal mortality reduction in Egypt should give high priority to addressing the needs of high-parity, noneducated, nonworking women and encourage communication between husbands and wives on FP matters. Meanwhile, Ministry of Health efforts should be further strengthened and intensified

in rural areas, where unmet need is highest to enhance accessibility to, and availability of, FP methods.

Acknowledgements

This study was conducted through a project titled 'Approaching Community Based Determinants for Maternal Health as Contribution in Maternal Mortality Reduction within the governorates of El Fayoum and Benisuef' (grant no. 358). The project was supported financially by the Science and Technology Development Fund (STDF, Egypt). The authors express their thanks and appreciation to the funding agency, to the Ministry of Health, and to the research team of the National Research Center. Special thanks to all women for their willing participation and cooperation.

Conflicts of interest

None declared.

References

- 1 The United Nations Millennium Development Goals. *Statistical annexes*. New York, USA: United Nations; 2012. Available at: <http://www.un.org/millenniumgoals>. [Accessed 8 June 2013].
- 2 Westoff C. New estimates of unmet need and the demand for family Planning. DHS comparative reports no. 14. Calverton, Maryland, USA: Macro International Inc.; 2006. Available at: <http://dhsprogram.com/pubs/pdf/CR14/CR14.pdf>. [Accessed 4 June 2013].
- 3 Haub C, Herstad B. Family planning worldwide 2002 data sheet. Washington, DC, USA: Population Reference Bureau; 2002. Available at: http://www.prb.org/pdf/fam_plan_world_wide_Eng.pdf. [Accessed 15 July 2013].
- 4 Murray C, Lopez A, editors. Health dimensions of sex and reproduction. Vol. 3, Global burden of disease. Boston: Harvard University Press; 1998. 280.
- 5 WHO. Unsafe abortion: global and regional estimates of the incidence of unsafe abortion and associated mortality in 2008. Geneva, Switzerland: WHO; 2010. Available at: http://www.who.int/reproductive_health/publications/unsafe_abortion/9789241501118/en/. [Accessed 22 June 2013].
- 6 Bradley S, Croft T, Rutstein S. The impact of contraceptive failure on unintended births and induced abortions: estimates and strategies for reduction, DHS analytical studies 22. Calverton, Maryland, USA: Macro International Inc.; 2011. Available at: <http://dhsprogram.com/publications/publication-as22-analytical-studies.cfm>. [Accessed 5 June 2013].
- 7 Fahimi F, Abdul Monem A, Ashford L, El Adawy M. Women's need for family planning in Arab countries. Egypt: Arab States Regional Office; 2012. Available at: <http://www.prb.org/Publications/Reports/2012/family-planning-arab-countries.aspx>. [Accessed 17 July 2013].
- 8 Maki S. Unmet need for family planning persists in developing countries. Washington, DC: Population Reference Bureau; 2007. Available at: <http://www.prb.org/Publications/Articles/2007/UnmetNeed.aspx>. [Accessed 18 July 2013].
- 9 Ministry of Economic Development. Millennium development goals report – Egypt, Achieving the MDGs: midpoint assessment; 2008. Available at: <http://ebookbrowse.net/egypt-mdg-mid-term-assessment-report-2008-pdf-d543877248>. [Accessed 1 August 2010].
- 10 Centers for Disease Control and Prevention (CDC). Reproductive health survey Zerbaijan, 2001: final report. Atlanta, Georgia, USA: US Department of Health and Human Services, CDC; 2004. Available at: <http://www.cdc.gov/mmwr/pdf/wk/mm5327.pdf>. [Accessed 3 August 2010].
- 11 Centers for Disease Control and Prevention (CDC). Reproductive health assessment toolkit for conflict-affected women. Atlanta, Georgia, USA: Division of Reproductive Health, National Center for Chronic Disease Prevention and Health Promotion, Coordinating Center for Health Promotion, Department of Health and Human Services, CDC; 2007. Available at: http://www.cdc.gov/reproductivehealth/Global/PDFs/Intro_TAG508.pdf. [Accessed 5 August 2010].

- 12 Casterline JB, El-Zanatay F, El-Zeini LO. Unmet need and unintended fertility: longitudinal evidence from upper Egypt. *Int Fam Plan Perspect* 2003; 29:158-166.
- 13 Ikamari L, Izugbara C, Ochako R. Prevalence and determinants of unintended pregnancy among women in Nairobi, Kenya. *BMC Pregnancy Childbirth* 2013; 13 :69.
- 14 Chandra R, Kandpal S, Negi KS. Epidemiological correlates of contraceptive prevalence in rural population of Dehradun district. *Indian J Commun Med* 2005; 30:60–62.
- 15 Adhikari R, Soonthornhdada K, Prasartkul P. Correlates of unintended pregnancy among currently pregnant married women in Nepal. *BMC Int Health Hum Rights* 2009; 9:17.
- 16 Abbasi-Shavazi MJ, Hosseini-Chavoshi M, Aghajanian A, Delavar B, Mehyar A. Unintended pregnancies in the Islamic Republic of Iran: level and correlates. *Asia-Pacific Popul J* 2004; 19:27–38.
- 17 Okonofua FE, Odimegwu C, Ajabor H, Daru PH, Johnson A. Assessing the prevalence and determinants of unwanted pregnancy and induced abortion in Nigeria. *Stud Fam Plann* 1999; 30:67–77.
- 18 Beekle AT, McCabe C. Awareness and determinants of family planning practice in Jimma, Ethiopia. *Int Nurs Rev* 2006; 53:269–276.
- 19 Fantahun M. Comparative study of the characteristics of family planning service users and non-users in northwest Ethiopia. *Afr J Reprod Health* 2006; 10:62–70.
- 20 Terefe A, Larson CP. Modern contraception use in Ethiopia: does involving husbands make a difference? *Am J Public Health* 1993; 83:1567–1571.
- 21 Prateek S, Saurabh R. Contraceptive practices adopted by women attending an urban health center. *Afr Health Sci* 2012; 12:416–421.
- 22 Rehan N. Attitudes of health care providers to induced Abortion in Pakistan. *J Pak Med Assoc* 2003; 53:293–296.