

UNINTENDED PREGNANCY AND FAMILY PLANNING COUNSELING GUIDELINE ON MATERNITY NURSES' PERFORMANCE: CLINICAL BASED STUDY

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ABSTRACT

Background: An unintended pregnancy is a substantial matter closely attached to public soundness, because of its adverse correlation with health outcome for both mothers and their own babies. Maternity nurses are responsible and play a key role in educating women on family planning to decline unintended pregnancy rate. The **aim** of the study was to design and implement a guideline for nurses regarding unintended pregnancy and family planning counseling. **Subject and methods:** Two research designs were used in the current study: A cross sectional design used to collect data about unintended pregnancy from women and a quasi-experimental design employed to assess the efficiency of the guideline regarding unintended pregnancy and family planning counseling among all on job nurses in family planning clinics in all MCH centers in Port Said. The data was collected using a structured interview schedule sheet for women and an observational checklist for nurses. **Results:** More than 30% of the studied women were exposed to unintended pregnancy and almost half of them did not use contraception. A statistically significant improvement was found in knowledge and practice of nurses in all tested elements about the unintended pregnancy and family planning counseling in the post-intervention ($P < 0.001$). **Conclusion:** The underlying reasons of unintended pregnancy were the use of no contraceptives and/or the failure of the method used for contraception. In addition, the implementation of a guideline on unintended pregnancy and family planning counseling has a positive effect on nurses' related knowledge and practices. **Recommendations:** It is recommended that the current guideline should be replicated in similar settings. Further research is recommended using different designs to evaluate the consequences of unintended pregnancy on pregnancy outcome.

Keywords: *Unintended Pregnancy Nurses, Family Planning Counseling, Guideline*

INTRODUCTION

It is worth mentioning that unintended pregnancy (UP) is a paramount public health matter in high, low- and middle-income countries because of its unfavorable correlation with the social and health outcomes for not only mothers but also children (WHO, 2015).

A study was carried out in Egypt to determine the prevalence of unintended pregnancy among married

women. This study revealed that about one fifth of women reported unintended pregnancy. The Egyptian rate of unplanned pregnancy is closer to that noticed in Iran, where the rate was 35% (Shaheen *et al.*, 2007).

A study in Japan uncovered that 46.2% of the pregnancies were unexpected and more than two fifths of them have repeated experience of UP, the rate of which is still significantly considerable. Wrong or inconsistent use of contraceptives was frequently noted

among participant in the greater proportion of UP especially in developed countries. None the less, in developing countries, the lack of access to contraceptive is the tacit reason (WHO, 2015).

Numerous studies have shown that unsatisfied needs of family planning (FP) can have significant ramifications for the health and well-being of women and children (Seyfried, 2011). Unmet need for contraception can lead to unintended pregnancies, with their harmful consequences such as unsafe abortions and unwanted births (Population Action International Healthy, 2011). Consequently, providing family planning services necessitates unparalleled skills, knowledge and sensibility to client needs (Bednash *et al.*, 2009).

Ortayli & Malarcher (2010), Creanga *et al.*, (2011), Malarcher *et al.*, (2011), Bongaarts *et al.*, (2012) notified that miscellaneous social determinants can impact the demand for and use of FP, either personally or in several combinations such as literacy status, spousal communication, religion, women's autonomy, age, total children ever born, and age at first marriage. FP workers' visit and knowledge about FP are important to explain unintended pregnancy. In the multivariate analysis, these variables were found out to have statistically significant impact on unplanned pregnancy.

In addition, Hong *et al.*, (2011) stated that the quality of family planning and venereal health services favorably impacts contraceptive use and behavior of the clients; and that clients should receive safe and high-quality services with reverence.

Clinical guidelines are intended is a guidance for both practitioners and patients to take decisions concerning the appropriate health care for given conditions. Therefore, the aim of this study is to design a guideline for nurses regarding unintended pregnancy and family planning counseling in Port Said.

RESEARCH METHODOLOGY

Research Design

Two research designs were utilized in this study

- a- Cross sectional descriptive design was utilized for women to collect data about unintended pregnancy, contraceptives and factors influencing them.
- b- Quasi-experimental research design (i.e. one

group pre- and post-test) was employed for nurses to assess the effectiveness of the guideline regarding unintended pregnancy and family planning counseling.

Study Setting

To ensure generalization of the study results in Port Said City, the study was conducted in all hospitals and primary health care centers (i.e. antenatal and family planning clinics) representing the six districts of Port Said. Namely, primary health care centers (Bank El-Escan, El-Manakh (1), El manakh (2), El Kuwait, El arab (1), El Arab (2), Fatma El-Zahraa, Omar Ebn Elkhatab, El-Abouty, Osman Ebn Afan, Mostafa Kamel, Port Fouad (1), Port Fouad (2) and El-Gwhara) in addition to some hospitals (e.g. EL-Ameri Hospital (outpatient), El-Nasr Hospital (outpatient), Port Fouad Hospital (outpatient), and El-Tadamon Hospital (outpatient)).

Study Population and Sample

Two different samples were used. The first sample comprises women fulfilling the inclusion criteria. The second sample includes all nurses working in the above-mentioned hospitals.

Inclusion criteria for women

Women with at least one child and no medical or obstetric disorders and no previous contraindications for using FP methods were included in the current study.

Sample size and type

For women, a convenient sample of 600 women, attending the study setting and fulfilling the inclusion criteria, were registered in this study during study period (8 months). For nurses, a total coverage of 31 maternity nurses, working in the previously stated settings and willing to take part in the program, were enrolled for this study.

Tools for data collection

Two tools for data collection were used. The first tool was a structured interviewed schedule sheet for women. This tool was designed mainly to collect socio-demographic data, obstetrical history, history of current pregnancy, causes of unintended pregnancy, history of contraception; evaluation of women's needs to health education about contraceptive methods and their

perception about nurse's role in family planning counseling. The second tool included a structured self-administered schedule sheet and an observational checklist for nurses, which were used to evaluate nurses' knowledge and performance about unintended pregnancy and family planning counseling, (pre- and post-test). The ACQUIRE Project (2008) was used to collect data about counseling (RESPECT model) and counseling for contraceptive methods specifically to COCs and IUD. This training guide includes service provider's non-verbal communication, service provider's verbal communication, and RESPECT model process.

Scoring system

Concerning the knowledge items, a right response was scored 1 and the wrong one was scored zero. For each knowledge area, the scores of the items were summed up and the total of the scores was divided by the number of the items, providing the mean score for each part. These scores were converted into percentages, and the means and standard deviations were computed. Knowledge was regarded satisfying if the percentage was 60% or more and unsatisfactory if it is less than 60%. The performance was regarded appropriate if the percent score was 60% or more and inadequate if it was less than 60%.

Operational design

The study field was conducted through the following stages. The first phase is called preparation stage. It aimed at the preparation of the tools used in data collection based on a systematic review which concentrated on only one question seeking to identify, estimate, pick out and synthesize all high-quality research clues pertinent to that question. The tools were reviewed by a ten-expert jury majoring in obstetrics and gynecology to ascertain their content validity. Then, a guideline regarding unintended pregnancy and family planning counseling was prepared by the researcher based on past and recent related literature by using national and international references, and related journals, conferences and books. The program guideline was divided into theoretical and practical parts.

A pilot study was conducted over a period of two months. It was carried out on 10% of total sample size involving women and nurses to evaluate the content validity, time required to fill each tool and feasibility of

tools of the study. Necessary modifications were carried out as revealed from the pilot study. The study tools were revised, redesigned and rewritten according to obtained results and acceptance of final forms. The fieldwork lasted for 8 months from the beginning of January 2015 to the end of August 2015.

In the assessment phase, the researcher interviewed women to find out if they were exposed to intended pregnancy or not and their contraceptive history. Women's need to health education regarding contraceptives and their perception about nurse's role in this regard was also included. A Structured interviewed schedule sheet was used.

For nurses, a self-administered schedule and an observation checklist were used to assess nurse's knowledge and performance (pre- and post-test).

Planning phase: Guideline development

A guideline was developed and submitted to the study group. It includes the following information: unintended pregnancy and how to reduce it, concept of family planning, benefits of family planning, and types of family planning methods and how to use it, family planning counseling, and protocols needed for practice in family planning clinics. The first phase deals with the process of developing a guideline in determining the clinical question that the guideline is expected to deal with. This is pursued by assigning the eligibility standards for the research studies comprised in the guideline recommendations. A systematic search of the previous analyses is then carried out. In developing recommendations, likely benefits, hazards, inconveniences and costs must be considered in addition to addressing patients' tacit values and predilections. The quality of the data enhancing the recommendations was examined and is reflected in a grading system describing the intensity of the recommendation and the quality of the backing clues.

Implementation phase

After the development of the guideline, the researcher started to give it for the intervention group of nurses. The guideline covered the theoretical and practical part of unintended pregnancy and family planning counseling and included definition of unintended pregnancy, reasons for unintended

pregnancy, consequences of unintended pregnancy, measures for its prevention, the concept of family planning and its importance, different types of contraceptive methods, a guide to provide advice on the use of emergency, contraceptive method in case of unprotected intercourse and RESPECT model of counseling about contraceptive methods.

Evaluation phase

After the completion of implementation phase, the post-test was done after one week using the pre/post-test questionnaire to assess the nurse’s knowledge and practice to find out the retention of the information given.

Ethical considerations

The study protocol was ratified by the pertinent committees at Port-Said University and written permissions to carry out the recent study were obtained from official authorities in the study setting. The researcher explained the aim of the study to each nurse and woman and their oral consent was taken, which was given after a brief explanation of the study to assure them that the data collected were clandestine and employed only for the sake of the study.

Statistical analysis

Statistical analysis was carried out utilizing SPSS version 16.0. Descriptive statistics were employed. In other words, frequencies and percentages were used for qualitative variables, whereas means and standard deviations were utilized for quantitative variables. As for quantitative continuous data, they were compared utilizing Student *t*-test in case of drawing comparisons between two groups. When the data were not normally distributed, the non-parametric Mann-Whitney test was employed instead. Further, the qualitative categorical variables were compared via chi-square test. When the expected values in one or more of the cells in a 2x2 tables was less than 5, Fisher exact test was employed instead. Moreover, in bigger than 2x2 cross-tables, no test was administered whenever the expected value was 10% or more of the cells were less than 5. Statistical significance was checked at *p*-value < 0.05.

RESULTS

According to socio-demographic peculiarities of

the studied pregnant women, the ages of women ranged from 23-40 years, with a mean of 31.0±3.6. Meanwhile, two thirds of them (66.7%) were more than 30 years and 99.7% were married and 89.8% had urban residence, while 23.5% reported that they were employed at the time of the study. More than two thirds of the studied women (67.2%) had secondary level of education and 20.2% could just read and write or had primary education. Meanwhile, more than one-half (63.2%) reported that their monthly family income was not enough, and their mean crowding index was 2.3±0.3.

Regarding prevalence and reasons of unintended pregnancy, figure 1 shows that about one third of the studied women (31.3%) were exposed to unintended pregnancy and figure 2 shows the reasons given by women for the unintended pregnancy. It indicates that 44.0% didn’t use contraceptives and partially similar proportion (42.0%) experienced failure in the method used for contraception. The rest of them (14.0%) reported that they discontinued using contraceptives before recent pregnancy.

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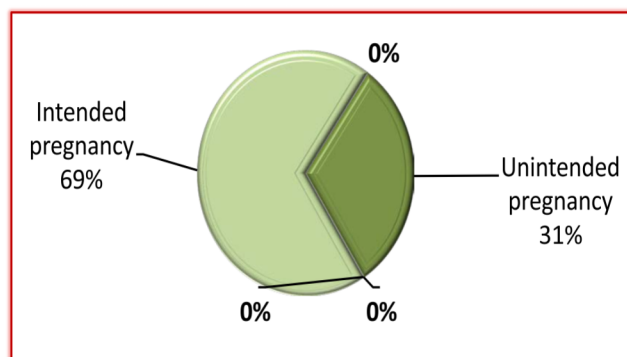


Figure 1: Distribution of the studied women according to their intention of pregnancy (n= 600)

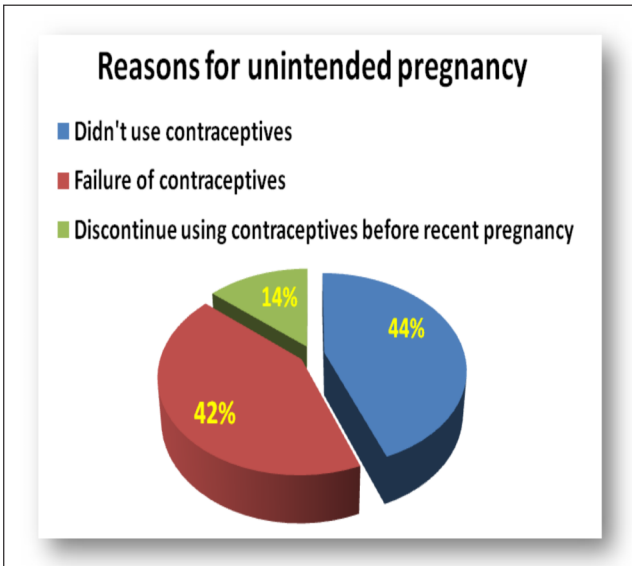


Figure 2: Reasons for unintended pregnancy (n= 188)

It is obvious from table 1 that 13.8% of women exposed to unintended pregnancy were depressed and 30.9% were embarrassed and anxious about it. However, more than half of them (55.3%) ignored this issue and did not think about. Only 13.8% of women had an attempt to abort the pregnancy using herbals (61.3%), physical methods as jumping from high place (22.6%) or taking drugs as misoprostol pills (16.1%). But all of them failed to abort pregnancy.

Table 1: Response of Studied women toward unintended pregnancy (n=188)

Items	Women (n=188)	
	No.	%
# Women response to the unintended pregnancy		
Being sad and feeling sorrow	26	13.8
Unhappy, embarrassed and anxious	58	30.9
Ignore this issue and does not think about it	104	55.3
Attempt to abort the pregnancy	26	13.8
# Methods used to abort pregnancy [n=26]		
Use herbals remedies	19	61.3
Jumping from high place	7	22.6
Using misoprostol pills	5	16.1

Categories are not mutually exclusive

As displayed in table 2, women with unplanned pregnancy were more likely to be older (30-≤40) and married at an age more than 20 compared to those who had intended pregnancy (77.7% vs. 61.7% and 88.8%

vs. 74.8% respectively), differences observed are statistically significant (^{FE}P=0.03*). Meanwhile, they significantly apt to be housewives, had low level of education, and insufficient income (88.8% vs. 70.9%, 38.9% vs. 11.6% and 83.5% vs. 53.9% respectively).

Table 2: Relation between the intention of the current pregnancy and socio-demographic characteristics of the studied pregnant women (n=600)

Socio-demographic characteristics	Groups				Significance
	Unintended (n=188)		Intended (n=412)		
	No.	%	No.	%	
Age (years)					
20-	42	22.3	158	38.3	$\chi^2=14.888$ $P<0.00001^*$
30.-=40	146	77.7	254	61.7	
Age at marriage					
Less than 20	21	11.2	104	25.2	$\chi^2=15.50$ $P<0.0001^*$
More than 20	167	88.8	308	74.8	
Period of marriage					
Less than 10	94	50.0	217	52.7	$\chi^2=0.369$ $P=0.544$
More than 10	94	50.0	195	47.3	
Residence					
Urban	164	87.2	375	91.0	$\chi^2=2.025$ $P=0.155$
Rural	24	12.8	37	9.0	
Marital status					
Married	186	98.9	412	100.0	^{FE} P=0.03*
Divorced	2	1.1	0	0.0	
Occupation					
Housewife	167	88.8	292	70.9	$\chi^2=23.152$ $P<0.0001^*$
Working	21	11.2	120	29.1	
Level of education					
can read and write	8	4.3	1	0.2	$\chi^2=77.671$ ^{MC} P=0.0001*
primary education	65	34.6	47	11.4	
Secondary education	111	59.0	292	70.9	
University education	4	2.1	72	17.5	
Crowding index					
Min-Max	1.7-3.0		1.3-3.0		Z=5.340 $P<0.0001^*$
Mean±SD	2.4±0.3		2.2±0.3		
Monthly family income					
Enough	31	16.5	190	46.1	$\chi^2=48.703$ $P<0.0001^*$
Not enough	157	83.5	222	53.9	

χ^2 : Chi-Square test ^{MC}P: Monte Carlo corrected P-value ^{FE}P: Fisher's Exact test

Z: Mann Whitney test *significant at $P\leq 0.05$

As shown in table 3, unintended pregnant women were more likely to use contraceptive pills, for short period (less than one year), with improper counseling compared to those with intended pregnancy (41.9% vs. 20.9%, 52.4% vs. 14.0% and 49.5% vs. 4.9% respectively). Meanwhile, they faced more side effects than the other group (54.3% vs.12.9%). Differences observed are statistically significant $P<0.0001^*$.

Table 3: Relation between intention of the current pregnancy and use of contraceptives before recent pregnancy (n=600)

Family planning methods used	Groups				Significance
	Unintended (n=105)		Intended (n=364)		
	No.	%	No.	%	
Type of family planning used					
Condoms	8	7.6	16	4.4	Z=2.036 P=0.042*
Pills (combined or progesterone only)	44	41.9	76	20.9	
Hormonal injection	2	1.9	74	20.3	
IUD	35	33.3	184	50.5	
Period safety	2	1.9	5	1.4	
Lactational amenorrhea	14	13.3	9	2.5	
Use based on counseling					
Yes	53	50.5	346	95.1	
Not	52	49.5	18	4.9	
Duration of use					t=2.167 P=0.037*
One month	2	1.9	1	0.3	
Less than a year	55	52.4	51	14.0	
More than a year	48	45.7	312	85.7	
Decision to use					Z=6.856 P<0.0001*
Husband only	2	1.9	14	3.8	
Wife only	76	72.4	111	30.5	
A joint decision between the spouse	27	25.7	239	65.7	
Occurrence of side effects after use the method					MCP=0.001*
Yes	57	54.3	47	12.9	
No	48	45.7	317	87.1	
Side effects	(n=57)		(n=47)		F _E P=0.024*
Bleeding between period	34	50.0	24	51.1	
Increase in weight	10	14.7	16	34.0	
Nausea	4	5.9	0	0.0	
Chest pain	7	10.3	4	8.5	
Headache	3	4.4	3	6.4	
Mood swings	5	7.4	0	0.0	
Severe pelvic pain	5	7.4	3	6.4	

Z: Mann Whitney test X²: Chi-Square test ^{MC}P: Monte Carlo test
^{FE}P: Fisher's Exact test t: t-test *significant at P≤0.05
 # Categories are not mutually exclusive

The age of nurses ranged from 20 to 59 years, with a mean 38.4±8.1 years. The great majority of nurses (96.8%) were married, had nursing diploma and all of them attended training courses in family planning (table 4).

Table 4: Socio-demographic and academic characteristics of the studied nurses (n=31)

Socio-demographic characteristics	Studied nurses	
	No.	%
Age (years)		
20-	4	12.9
30-	15	48.4
40-	9	29.0
50-<60	3	9.7
Min-Max	25.0-59.0	
Mean±SD	38.4±8.1	
Marital status		
Married	30	96.8
Widowed	1	3.2
Educational level		
Nursing diploma	30	96.8
Nursing institute	1	3.2
Duration of nursing experience in Family planning (years)		
1-	14	45.2
10-	13	41.9
20-<30	4	12.9
Min-Max	1.0-25.0	
Mean±SD	9.5±5.7	
Received training on family planning		
No	0	00.0
Yes	31	100

Table 5 demonstrates statistically significant improvement in nurses' knowledge about the unintended pregnancy post-intervention in all tested elements. In total, 64.5.0% of nurses had satisfying knowledge at the pre- intervention stage, and this augmented to 90.3% at the post-test (p<0.001). The same table indicates that nurses in the post-test had statistically significant increase (p<0.001) in their total knowledge of COCs. It was particularly evident regarding the side effects of COCs and the follow up visits (100.0% vs. 71.0%, and 100.0 vs. 90.3% respectively) followed by the indications and contraindications of COCs and (96.8% vs. 61.3% and 93.5% vs. 32.5% respectively).

Table 5: Distribution of nurses according to satisfactory knowledge throughout the study phases (n= 31)

Areas of knowledge	Satisfactory knowledge of nurses				Paired <i>t</i> -test (<i>P</i> value)
	Pre intervention		Post intervention		<i>P</i> value
	No.	%	No.	%	
Knowledge about unintended pregnancy (UP)					
Definition of UP	31	100.0	31	100.0	-NA-
Causes of UP	20	64.5	26	83.9	<0.001*
Adverse effects of UP	11	35.5	25	80.6	<0.0001*
Followed Guidelines to reduce UP rate	17	54.8	29	93.5	<0.0001*
Total score	20	64.5	28	90.3	<0.001*
Knowledge about Compound Contraceptive methods (COCs)					
Effectiveness of COCs	17	54.8	24	77.4	<0.0001*
Rumors and misconception about	10	32.3	29	93.5	<0.0001*
Criteria of selecting women	19	61.3	30	96.8	<0.002*
Known medical conditions that contradicting use	22	71.0	28	90.3	<0.001*
Side effects of COCs	22	71.0	31	100.0	<0.0001*
Warning signs & possible complications	10	32.3	24	77.4	<0.0001*
Appropriate follow-up schedule after using COCs	28	90.3	31	100.0	0.25
Timing and reasons for stoppage of COCs	18	58.1	23	74.2	<0.0003*
Total score	18	58.1	28	90.3	<0.0001*
Knowledge about Intra Uterine Devise (IUD)					
Effectiveness of IUD	18	58.1	28	90.3	<0.0001*
Rumors and misconception about method & how to clear it up	11	35.5	18	58.1	<0.004*
Criteria of selecting women	10	32.2	27	87.1	<0.0001*
Known medical conditions that contradicting use	22	71.0	27	87.1	<0.001*
Side effects of IUD	15	48.4	26	83.9	<0.0001*
Warning signs of possible complications	16	51.6	26	83.9	<0.0001*
Appropriate follow-up schedule after insertion IUD	16	51.6	25	80.6	<0.0001*
Timing and reasons for stoppage of IUD	23	74.2	27	87.1	0.125
Total score	16	51.6	26	83.9	<0.0001*

*significant at $P \leq 0.05$

Regarding knowledge of nurses about IUD, almost half (51.6%) of nurses acquired satisfying knowledge before the intervention of the program; and this augmented to 83.9% at the intervention ($p < 0.001$). As for nurses' knowledge about IUD, statistically significant improvement was observed in all tested variables ($p < 0.001$). In total, improvement was more marked in the effectiveness of the IUD, its indications,

contraindications and danger signs. However, slight change was noticed regarding rumors and misconception concerning IUD and the methods of clearing them up (58.1% vs. 35.5%).

Table 6 describes the Six-Step Counseling Model (i.e. RESPECT). These forces were included in this model and they weigh heavily in accepting or rejecting

family planning methods, in addition to continuous compliance that are mentioned by Pathfinder and WHO (2008) and used by the researchers to train nurses about. It revealed that after implementing of the program, most nurses were significantly more likely to use verbal or non-verbal communication and RESPECT parameters when counseling. The difference observed is statistically significant ($P < 0.0001$).

Table 6: Observational checklist about counseling skills (RESPECT model) practiced by the studied nurses throughout the study phases

Tasks	Studied nurses (n=31)				Paired <i>t</i> - test (<i>P</i> value)
	Pre-intervention		Post intervention		<i>p</i> -value
	No.	%	No.	%	
Using non-verbal communication	11	35.5	27	87.1	<0.0001*
Using verbal communication	10	32.2	27	87.1	<0.0001*
Practicing RESPECT model process					
Rapport	20	64.5	26	83.9	<0.002*
Empathy	13	41.9	24	77.4	<0.0001*
Support	17	54.8	28	90.3	<0.0001*
Partnership	19	61.3	24	77.4	<0.006*
Explanations	15	48.4	25	80.6	<0.0001*
Cultural Sensitivity	25	80.6	25	80.6	-NA-
Trust	12	38.7	28	90.3	<0.0001*
Total score	17	55.7	26	82.9	<0.0001*

*significant at $p \leq 0.05$

DISCUSSION

Unmet need for contraceptive methods can lead to unintended pregnancies, with their adverse consequences for mothers and their babies such as unsafe abortions and unwanted births.

According to the findings of the current study, about one third of the studied women were exposed to unintended pregnancy. This is in coherence with El

zanaty *et al.*, (2001) in Egypt, Kiersten, Zoubi & Wulfe, (2004) in Jordan, Shaheen *et al.*, (2007) in Islamic Republic of Iran, and Hamadela & Tizta, (2012) in Ethiopia, where the rate was 35.0%. But a lower extent i.e. one fifth of all the births were detailed by Jaeni *et al.*, (2009) in Indonesia, Faye *et al.*, (2013) in Senegal (14.3%) and Sedgh *et al.*, (2014) in Nigeria (28.0%). Besides, a higher number of women experiencing unintended pregnancy were reported by nearly half of women Adhikari *et al.*, (2009) in Nepal and 54.1 % in Tanzania (Exavery *et al.*, 2014). The disparities among the various studies addressing the above-mentioned prevalence and the present one has been attributed to diverse tradition, cultural and religious denominations between different nation.

On exploring women's response to the unintended pregnancy, less than one fifth was sad and felt sorrow. Nevertheless, more than half of them ignored this issue and does not think about it. This may be attributed to Muslims' religious belief which considers pregnancy as God's blessing or treasure of the family. Meanwhile, many studies have attached unplanned pregnancy and childbearing to disquiet, guilt, blame and other psychosocial circumstances (Gipson *et al.*, 2008; Weitz Kimport, 2012). Recently, Jalay *et al.* (2015), Gerdtts *et al.*, (2016) showed that unplanned pregnancies are more probably to result in unfavorable well being conduct.

Oral contraceptives are the most popular form of reversible contraception and one million accidental pregnancies occur each year related to their use, misapplication, or discontinuation. In addition, new users of oral contraceptives are more likely to stop using them within the first year, mostly because of its side effects. The results of the recent study uncovered that most of the studied women become pregnant because of either contraceptive failure or stopped using contraceptive methods, slightly less than half using oral contraceptive on their own and not based on counseling, the wife only decided to use family planning and slightly more than half of them experienced side effect after using contraception such as bleeding between period, increase in weight and chest pain. This finding is in accordance with Bradley *et al.* (2011).

Speidel, Harper & Shields, (2008) stated that unintended pregnancies are the most obvious reason for induced abortions, resulting in about 42 million induced abortions all over the world. But Urassa *et al.*, (2008)'s study in Tanzania reported that 88.0 % of

unwanted pregnancies ended up into abortion, of those 26.0% were induced rather than being spontaneous. In this regard, Guttmacher Institute (2010) asserted that unplanned birth rate was 22 per 1,000 for women aged 15–44 and the abortion rate was 17 per 1,000 women. On exploring women's reaction in the current study, approximately less than one fifth of unintended pregnant women had an endeavor to end pregnancy (abort pregnancy), but they all fizzled to abort. This may be due to that in Egypt, induced abortion is generally undocumented because of religious and legislative denial and disgrace.

From the present finding it is evident that the factors impacting the occurrence of unintended pregnancy, included socio-demographic and access to family planning health information/services. The analysis showed that the factors such as education status and women's autonomy along with the procedures of family planning are imperative to clarify accidental pregnancy. In the multivariate analysis, these variables were found out to have statistically significant impact on unplanned pregnancy. These findings are partially in congruence with Ortayli & Malarcher (2010), Creanga *et al.*, (2011), Malarcher *et al.*, (2011) and Bongaarts *et al.*, (2012). They reported that several social determinants can affect the demand for and use of family planning, either individually or in various combinations.

There are numerous studies that uphold the significance of understanding the most effective factors that locate the demand and use in a particular place, and, in turn, for defining those populations which are underserved and have the most noticeable neglected requirements (Cleland *et al.*, 2006; DFID, 2010). The extent to which public determinants interact and affect demand for, access to, and use of family planning services, and thus augmenting inequities, is excessively contextual and population-based. Situation-given analyses should consequently be assumed to generate clues for guiding rights-based program development in all countries (Ortayli & Malarcher, 2010).

A number of studies have shown that there is relationship between age of the woman and increased risk of accidental pregnancy. The results of this study show that women with unplanned pregnancy were more likely to be older (30–40). This is partially in agreement with Adhikari *et al.*, (2009) from Nepal, Jaeni *et al.*, (2009) from Indonesia, Najafian *et al.*, (2010) from Iran, and Geda & Lako (2012) from Nigeria. These findings

are in accordance with studies conducted in Ecuador, Vietnam, China, and Bangladesh among pregnant women in reproductive age group. These studies reported that as women's age advances, the likelihood of unplanned pregnancy boosts (Calverton, 2014).

The present study shows that women with unintended pregnancy were married at an age more than 20 compared to those who had intended pregnancy. This may be due to the delayed age of marriage in Egypt. Unlikely, Nasab *et al.*, (2010) in Iran found that women married before the age of 18 were 4.6 times more probably to undergo unplanned pregnancy compared to those who were married at age of 18 and above. Also, Nasab *et al.*, (2010) found that the rate of unplanned pregnancy significantly augmented in the age group less than 18 when being compared to those married between 19–24 years.

Regarding education status, the finding of the present study shows that nearly half of the unintended pregnant women had low level of education. This is supported by Finer & Zolna (2014) in United States who reported that women with no high school degrees attained the highest unplanned pregnancy rate among all educational levels (73 women per 1,000 women aged between 15 and 44), and rates were lower for those with more years of education. In contrast, Stephenson *et al.*, (2008) noticed that women who attained primary, secondary and higher education were more probably to report accidental pregnancy when being compared to ladies with no education. Such dissimilarities among the results of the above-mentioned studies and the present one could be related to the differences in the sample size and its criteria of selection.

More than three quarters of the unintended pregnant women in this study were housewives and had an insufficient income. This is partially in accordance with Finer & Zolna (2014). Conversely, Exavery *et al.*, (2014) in Tanzania, found out that women occupation was not significantly related to unintended pregnancy. This dissimilarity between the various studies may be related to the difference in the setting or in the measurement of the socio-economic variable. Several studies measure this variable after construing the proxy variables of socio-economic status. It is worth mentioning that very few studies measure this variable by posing questions concerning the income of the household categories of this variable (e.g. poor, middle

and rich) arbitrary. Consequently, the results need to be interpreted carefully (Exavery *et al.*, 2014; Mukaba *et al.*, 2015).

Nurses' ages ranged from 20 to 59 years with a mean age of 38.4±8.1 with the highest percentage were between 30-40 years and most of the nurses had nursing diploma and were married. Nearly half of nurses had an experience that ranged between 1-10 years of experience with a mean of 9.5±5.7 years. In this regard, Clawson & Haskins (2006) commented that there is evidence stating that the more experienced nurse is capable of understanding the complexities of clinical situation rapidly and can differentiate between pertinent and insignificant data.

The finding of the current study has shown that despite the fact that all nurses were aware of the unintended pregnancy and family planning counseling, their baseline knowledge about it was not satisfied. Thus, at the pre-planning phase of the guideline, none of the them had a satisfactory knowledge about unintended pregnancy and family planning counseling which include rumors and misconception about method and how to clear it up, criteria of selecting women, warning signs of possible complications, the reasons for seeking medical advice, and appropriate family planning follow-up schedule.

Previous studies have examined the influence of official training programs on nurses' ability to liaise with patients. The results that such training programs can improve the quality of family planning counseling significantly and other types of nurse-patient liaison such as active listening, friendship, body gestures and compliment also help regarding this matter (Shattell, 2004; Kim *et al.*, 2008).

The findings of the present study revealed a significant improvement in the post-test of nurse's knowledge and practice regarding unintended pregnancy and family planning counseling. This result was in harmony with Lamiani & Furey (2008), whose findings showed that a 2-day workshop on patient education, based on a patient-centered method, ameliorate nurses' communication skills and knowledge, and their sense of readiness. Furthermore, they reported that patient handling skills can be easily taught and learned the same as other nursing skills. Nurses must be provided with more educational chances based on a patient-centered

technique to brush up their patient related education skills.

The foregoing findings confirm the positive effect of the evidence-based guideline in improving the counseling knowledge and practice of nurses regarding family planning and unintended pregnancy. This may be ascribed to the reality that the researchers utilized straightforward applications and role playing in order to simplify the information and help nurses to apply their knowledge to practice.

CONCLUSION AND RECOMMENDATION

The findings of the study concluded that unplanned pregnancies can result in insecure abortion, which may have adverse consequences for the mother. Most accidental pregnancies can be prevented via minimizing unsatisfied needs for efficient, convenient, contraceptive ways. This can be carried out via concentrating on the information given by nurses to the recently wed couples and gravid ladies during prenatal check-ups. Based on these results, training programs are recommended for nurses to enhance their knowledge and skills regarding unintended pregnancy and different kinds of contraceptives so that they can educate and counsel women. Antenatal and postnatal counseling programs for women using simple illustrative booklets and pamphlets in Arabic language can be used to reduce the unmet need within the country. Finally, replication of the present study at different setting and among various subjects is recommended. Meanwhile, further research is recommended about other pre-determinants of unintended pregnancy and its consequences on both mother and baby.

Limitation of the study

As for the limitation of the study, it was not easy to round up all the nurses together at the same time due to their working circumstances. This was considered and arranged during the implementation of the study. Moreover, the researcher faced difficulties to select the purposive sample of women keeping in mind the inclusion criteria and short period allocated for the study. Thus, the program was limited to the two mentioned methods (IUD, COCs).

Conflict of Interest

The authors declare no conflict of interest

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