

Knowledge, Believes and Behaviors toward Preconception Care among Women at Childbearing period: Suggested Plan of Action

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Abstract

Background: Preconception care is a set of interventional care that aims to identify and modify medical, behavioral, psychosocial and social risks for the better maternal and childbirth outcome. **Aim:** the current study was conducted to appraise knowledge, believes and behaviors toward preconception care among women at childbearing period and design suggested plan of action. **Design:** a descriptive exploratory research design was adopted. **Sample:** A purposive sample of 300 participants was recruited in the research through a period of four months. **Setting:** Outpatient clinics at Maternity hospital, El Galaa teaching hospital. **Tools:** Four tools were used; 1) - Structured interviewing questionnaire, 2)-Preconception knowledge tool, 3)- Likert belief scale regarding preconception care and 4)- Self-reported behavior regarding preconception care. **Results:** the mean age of the study sample was 24.30 ± 4.56 years with the ranged from 18-34 years. Fifty four percent of the study sample had average knowledge score with mean total knowledge was 46.6 ± 4.7 and 79% of them had moderate preconception health beliefs. While, 64% of the study sample had not acceptable preconception health behavior. **Conclusion:** Women in childbearing period have average knowledge and beliefs towards preconception care. However, they have not acceptable preconception health behavior. **Recommendation:** Apply health education program to all reproductive women who attend outpatient clinics.

Keywords: Knowledge, attitude, Preconception Health care, Women at Childbearing period.

Introduction

Preconception care (PCC) is a set of interventions that are to be provided before pregnancy; it is aimed at taking care of women and couples before conception occurs (Fekene, Woldeyes, Erena, and Demisse, 2020). Pregnancy is common among women in reproductive age. However, many of these women are unaware that they are pregnant until they miss their menstrual cycle, which can occur approximately six to eight weeks into their pregnancy; accordingly, these women have their first antenatal visit during or after this period (Kasim, Draman, Kadir, and Muhamad, 2016). The first trimester is a crucial period for the development of important organs. Thus, many poor outcomes have already been determined prior to these women's first antenatal visit. Counseling and prevention efforts implemented after the organogenesis period therefore do not improve outcomes related to congenital malformations (Kasim, Draman, Kadir, and Muhamad, 2016) & (Moos, 2004).

Despite the target of the sustainable development goal to reduce the global maternal

mortality ratio to less than 70 per 100 000 live births by the year 2030, globally in 2015, about 303 000 mothers died from pregnancy and childbirth-related causes and 99% of the deaths occurred in low and middle-income countries, with sub-Saharan Africa alone accounting for roughly 66% (World Health Organization and UNICEF, 2020) & (The sustainable development goals report, 2016). Even though several factors could exist, lack of PC can be one of the reasons for high maternal and child morbidity and mortality (Teshome, Kebede, Abamecha, and Birhanu, 2019).

Identifying the knowledge and uptake of the preconception health belief behavior care at the local context is a very crucial and timely issue; this can accelerate the reduction in maternal and neonatal mortality for progress towards sustainable development goals (SDGs) (Ayalew, Mulat, Dile, and Simegn, 2017) & (Demisse et.al., 2019). Knowledge and uptake of PCC can be obtained from experience, health care providers, family, relatives, and media. Studies revealed that women who received PCC have more knowledge, uptake PCC service and often show risk alleviation behaviors (Elsinga, 2008).

Preconception care should involve interventions that are targeted towards both couples and individual women before they conceive a child. Nurses who are trained to provide preconception care services can contribute to the improvement in the health care outcomes for women and their babies before, during, and after a pregnancy. Focusing on women's health during the preconception period is vital to ensure the health of the mother but also the baby. By receiving proper health-related information before conceiving, women can improve the quality of health for both themselves and their child. Preconception care should cover risk factors and the cumulative protective measures, as; screening and treatment of sexually transmitted diseases, such as chlamydia and syphilis, for women and their unborn children before the child is conceived. The preconception care should improve the mental, environmental, physical, and spiritual experiences of the mother before and after a pregnancy. Thus, nurses can play a role in enhancing the perinatal experience of women by providing educational services during the preconception period (Fowler, Mahdy, & Jack, 2017).

In Egypt some studies reported poor PCC knowledge and practice among women in childbearing periods. These studies recommended that antenatal care should start before conception to alleviate bad obstetrics outcome. Maternal and child health planners, policy-makers and stakeholders should be recognizing of the values of PCC to attain the sustainable development goal (SDG) targets in relation to maternal, neonatal and child health (Kassa and Yohannes, 2018). All women of reproductive age should receive preconception counseling before becoming pregnant. So, the role of the obstetrics and community health nurse during the preconception period involves developing and delivering education programs that emphasize the individual responsibility of women during pregnancy, increase women awareness, and understand the necessity for frequent visits for pregnancy checkup and inter-conception care to prevent poor pregnancy outcomes. Nurses should be offered education and counseling to all women who attend visits for contraception, Pap smears or for follow up for chronic

diseases such as diabetes mellitus, hypertension and epilepsy (Kasim, Draman, Kadir, and Muhamad, 2016)

In Egypt, research conducted on the knowledge and believes of preconception care was limited and not much is known about the knowledge, practices and believes of preconception care, although these factors are known to contribute to good pregnancy outcomes. Thus, the aim of the current study was to assess knowledge and believes of preconception health behavior among women at childbearing period.

Significance of the study

Despite efforts to eliminate adverse birth outcomes, infant mortality rate in Egypt under 5 years estimated 51/1000 live births in both sex (WHO, 2013). Women may not recognize a pregnancy until the first or second missed menstrual cycle, a full six to eight weeks or more after conception. In that time period, the woman may have unknowingly exposed her embryo to nutritional deficiencies over the counter drugs, tobacco, alcohol, or other toxics (Kasim, Draman, Kadir, and Muhamad, 2016).

Researchers' realizing that prenatal care alone is not an effective strategy to improve prenatal health and birth outcomes and instead have emphasized the importance of preconception care. In Egypt little is known about women's preconception health behaviors, knowledge about preconception health care. In addition, previous studies tested women's knowledge of preconception health focus mainly on the knowledge of intake of folic acid supplements to reduce neural tube defects but not on other modifiable risk behaviors associated with maternal, infant health and pregnancy outcomes (Frey and Files, 2006). Addressing this gap in the body of knowledge is important, and as a result serves as the impetus for this investigation. A study done to study knowledge, attitude and practice of preconception care among Sudanese women with rheumatic heart disease in reproductive age. The result revealed that, awareness regarding preconception care was seen in only 11% of the women interviewed, nearly one third had positive attitudes towards preconception care, the majority of the women either partial know or have no knowledge about

the impact of pregnancy on their disease and almost half of the women (49%) intend to seek preconception care next time (Ahmed, Saeed and Alawad, 2015).

The findings of the current study very important implications particularly for medical professionals and health educators working with women as the preconception period continues to gain recognition as an optimal opportunity to enhance the health and wellness of reproductive aged women. Also, the findings from the current study offer an analysis of the strengths and deficits along dimensions of information, motivation, and behavioral skills in the area of preconception health. Nurses should encourage to counseling and educational services for women in preconception periods to assess the risk factors facing each woman during their pregnancy period. Increasing the awareness regarding preconception care can reduce the mortality rate of children, improve the maternal health of women during their preconception period, and lead to reduced unplanned pregnancies. In addition, the obstetrics and community health nurse can protect the childbearing women from unwanted pregnancy and sexually transmitted infections by understanding the lifestyle factors that contribute to reproductive health and wellness.

The aim of the study

The aim of current study is to appraise knowledge, believes and behavior toward preconception care and design suggested plan of action among women at childbearing period

Research questions

1. What is knowledge level toward preconception care among women at childbearing period?
2. What are beliefs level toward preconception care among women at childbearing period?
3. What are behaviors level toward preconception care among women at childbearing period?
4. Is there a relationship between knowledge, belief & behavior toward preconception care among women at childbearing period?

Subjects and methods

Research design

Descriptive exploratory research design was used to explore knowledge and believes of preconception health behavior among women at childbearing period.

Sample

A purposive sample of 300 participants from El-Gala teaching hospital who meet the following criteria: women aged from 18-35 yrs. nulliparous or multiparous women not more than two deliveries, intend to be conceive within 1-5 yrs. was included in this study. Women with history of hysterectomy, tubal ligation, uterine fibroid and infertile women, as well as women didn't plan to conceive later were excluded in this study. The recruitment plan to collect the study sample was carried out by the researcher sending a letter to the administrative personnel at El-Gala teaching hospital to obtain a list of reproductive women eligible for the study.

Sample size

The sample size of 300 women was calculated using a power analysis. A power of .95 ($\beta=1-.95 = 0.5$) at alpha 0.5 (two sided) was used as the significant level have been suggested for use in the most areas of behavioral science research.

Setting

The study was conducted at preconception care outpatient clinic at Maternity hospital, at El-Gala teaching hospital. Obstetrics and Gynecology outpatient clinics providing free healthcare to pregnant women as well as women with gynecological problems or complains as well as premarital counseling services. The clinics are held by obstetrician and gynecologist as well as diploma nurses.

Tools for data collection

Four tools were used; 1) - Structured interviewing questionnaire, 2)-Preconception knowledge tool, 3)- Likert belief scale regarding preconception care and 4)- Self-reported behavior regarding preconception care.

Tool (1) Structured Interviewing Questionnaire

This tool designed by researcher after extensive review, it consists of three parts; part I; included data related to demographic data as; age, level of education, occupational level, residence. Part II; data related to medical history as; renal disease, heart disease, systemic lupus erythematosus, diabetes mellitus, hypertension, urinary tract infection, epilepsy and genetic history. And Part III: included data related to obstetrical history as; para, gravida, complications developed in previous pregnancy as pre-eclampsia, preterm labor, and abortion.

Tool (2) Preconception care knowledge tool

This tool was designed by researcher after extensive literature review, included data related to preconception health knowledge consists of 14 question to explore preconception knowledge the following question were asked as; meaning, investigation, time, importance and time of folic acid, effect of smoking on women and fetus, type of STDs and drug abuse, time to follow up before to get pregnant, and sources of this information. There were 14 question answer by yes and no. Yes response equaled three score and no response equal one score. This knowledge measured through the scoring system include; three points were used to explore preconception care knowledge formats as follow; < 42 was poor knowledge score, 43-50 was average knowledge score, > 50 was good knowledge score.

Tool (3) Likert belief scale regarding preconception care

It was developed by researcher after extensive literature review. This tool included data related to preconception health belief was measured by using 3 point Likert scale from 1-3 in which 1 mean disagree and 3 denote strongly agree. Disagree and their degree was 17, agree and their degree was 34, and strongly agree and their degree was 51 with total score for the preconception health beliefs was 51. The total health belief scores were classified into three levels: score from 0-17 was low level of belief; score from 18-34 was moderate level of belief when more than 34 were high belief score.

Tool (4) Self-reported behavior regarding preconception care

It was developed by researcher after extensive literature review. This tool it consists of 12 questions, their response yes or no measure by 2 points for yes and 1 point for response no with total score was 24. The total health behaviors scores were classified into two levels: score from 0-12 was not acceptable level of health behaviors when score from more than 12 was acceptable level of health behaviors.

Validity and reliability

Tools were submitted to a panel of three experts in the fields of maternity and community health nursing this revision was performed to test the content validity, relevance, and clarity of the tools. Modifications were performed accordingly. The reliability of tools was tested using Cronbach's alpha test, and the result was highly respectively reliable (0.88, 0.78 & 0.86) for tools (2,3&4). Tools reviewed by five experts in the field of maternity health nursing and community health nursing (one community nursing experts and two experts in maternity health nursing). They examine the tool for relevance, comprehensiveness, and clarity.

Pilot Study

It was conducted on 10% of the study sample, were selected randomly (30 women). It aimed to evaluate the simplicity and clarity of the tools. It also helped in the estimation of the time needed to fill in the forms. According to the results of the pilot study, simple modifications were done as rephrasing questions or canceling some questions. The needed modifications were done, and the participants in the pilot study were excluded from the final study sample.

Ethical consideration

Official permission was granted from the director of El-Gala teaching hospital. The researchers introduced themselves to the women who met the inclusion criteria and informed them about the purpose of this study to obtain their acceptance to share in this study. The researchers ensured that the study posed no risk or hazards on their health and their participation in the study is voluntary. Women in childbearing period who were willing to participate in the study and met the inclusion criteria were approached by the

researchers and asked for oral consent to confirm their acceptance, and all events that occurred during data collection were considered confidential.

Procedure.

Upon receiving the formal approval through the official permission and getting acceptance from the director of El-Gala teaching hospital. The researcher introduces her to the participant and explains the purpose of the study in order to obtain their written acceptance to participate in the study as well as to gain their cooperation. The study was carried out through; interviewing, recruitment and assessment.

Interviewing and recruitment

Before collecting the data, the researcher reviewed the recent literature to construct and prepare tools for data collection. Data collection tools were revised by experts in the field of obstetric and community health nursing. The researcher does modifications depend on the jury. Official permission was obtained from the administrative authority of the Obstetrics and Gynecology Department Hospital affiliated to El-Gala teaching hospital and outpatient manager

The researcher met women who accept to participate in the study at the waiting station outside the outpatient clinic. The researcher interviewing the women and explaining the aim of the study. Moreover, the confidentiality of the information was assured. After obtaining approval and oral informed consent to conduct the study, data were collected three days/week, around five to seven women per day for three months. Data duration around three to four months (2019).

Assessment

Data collection through interviewing questionnaire with each woman by the researchers individually using the tools for data collection. All participants women who will fit the inclusion criteria was recruited for the study, each women was interviewed individually to collect personal data, medical history, past obstetric history and preconception knowledge and health behavior and attitude was also be collected.

The researcher faced the women, asked her questions in Arabic and record her answer in the tools, the interview was carried out in the waiting room at outpatient clinic. The researcher collected the data 4 days/week and time consumed to fulfill the questionnaire ranged from 30-45 minutes.

Statistical design

Collected data were coded and tabulated using a personal computer. Statistical package for social science (SPSS) version 23 was used. The researcher checked all data to avoid any discrepancies. Data were examined for coding and entry errors. Percentage, mean, standard deviation and frequency were used for analyzing the data. These tests were used to identify the significant of the relations. Level of significance was considered at p-value <0.05.

Results

The aim of the current study was to appraise knowledge and believes of preconception care among women at childbearing period. The results was presented in five sections which includes; 1) description of the study sample, 2)- women's knowledge about preconception care, 3)-women's beliefs regarding preconception care, 4)-preconception health behavior of childbearing women's and 5)- relationship between preconception knowledge, beliefs, and health behavior related to selected demographic characteristics of the study sample.

1) Description of the study sample

This section includes demographic characteristics of the study sample and obstetrical and past medical history of the study sample. The age range of the study sample ranged from 18-34 yrs. with a mean of 24.30 ±4.65. Regarding the level of education, 33.3 % of the study sample either cannot read and write or had received preparatory education, 96.7% of the selected sample were housewife compared to 3.3% was working. Seventy six point seven percent lived in urban area compared to 23.3% lived in rural area (table, 1). The results revealed that 76.6% from the study sample their gravidity ranged from 1-2 and 63% were multiparas as well as 50% from the study sample that aborted before. About

13.3% of the study sample had chronic disease as hypertension and diabetes mellitus (52.5% & 47.5%) respectively (table, 2).

2) Women's knowledge about preconception health care

Table (3) shows that more than half of the study sample 54% had average knowledge score with total mean knowledge score was 46.6 ± 4.7 . While, 22.7% of selected women had poor knowledge score about preconception time. Effect of smoking on women, types of sexual transmitted diseases and their effect and also had lack of knowledge regarding folic acid, and not attends hospital before pregnancy.

3) Women's belief regarding preconception health

Regarding women's belief toward preconception health care, a mean score was 28.46 ± 1.31 . Findings of this study revealed that out of 237 (79%) had moderate preconception health beliefs. While out of 63 (21%) there's score ranged from 0-17 had low preconception beliefs (table, 4). Regarding preconception health beliefs, women were strongly agree toward treat vaginal infection before pregnancy and visit dentist if has

problem before planning to pregnancy (6.8% & 4.7%) respectively (Table, 5).

4) Preconception health behavior of childbearing women's

Regarding preconception health behavior among study sample were as follows; (n=192, 64%) had not acceptable preconception health behavior. While, 36% of selected women had acceptable preconception health behavior (table, 6). All women not contact with pits at home and not visit dental physician before pregnancy (table, 7).

5) Relationship between preconception knowledge, beliefs, and health behavior and demographic characteristics among the selected study sample (n=300)

There is no relationship between women preconception knowledge, preconception belief level and preconception behavior level ($p=0.27$ & $p=0.29$) respectively (Table, 8).

Table (1): Percentage distribution of demographic characteristics among the selected study sample (n=300).

Demographic characteristics	Study sample (n=300)	
	No.	%
Age (in years)		
18-24	156	52
25-34	144	48
(Mean \pm SD) years	24.30 \pm 4.65	
Education level		
Cannot read & write	100	33.3
Read & write	30	10
Primary education	30	10
preparatory level	100	33.3
secondary level	40	13.3
Occupation level		
Working	10	3.3
House wives	290	96.7
Residence		
Rural	70	23.3
Urban	230	76.7

Table (2): Percentage distribution of obstetrical profile and medical history among the study sample (n=300)

Items	Study sample (n=300)	
	No.	%
Gravidity		
Gravida 1-2	230	76.67
Gravida 3-4	70	23.33
Parity		
Primipara	111	37
Multipara	189	63
Abortion		
Yes	150	50
Number of abortion		
One	110	73
Two	20	13.5
More than two	20	13.5
Chronic disease		
-Yes	40	13.34
-No	260	86.66
If yes....		
-Hypertension	21	52.5
-Diabetes mellitus	19	47.5

Table (3): Percentage distribution of women knowledge regarding preconception health among the selected study sample (n=300)

Knowledge score	Study sample (n=300)	
	No.	%
Poor (< 42)	68	22.7
Average (43-50)	162	54
Good (>50)	70	23.3
Mean total score knowledge M ± SD	46.6 ± 4.7	

Table (4): Women's attitude regarding preconception health care among the selected study sample (n=300).

Belief score	Study sample (n=300)	
	No.	%
Low (0-17)	61	21
Moderate (18-34)	237	79
High belief score (34.5-51)	0	0
Mean total belief score M ± SD	28.46 ± 1.31	

Table (5): Preconception health attitudes as perceived by the selected study sample (n=300).

Items	Disagree No. %	Agree No. %	Strongly agree No. %
Reduce the exposure to smoking before planning to pregnancy	13(4.3)	287(95.7)	0(0)
Maintain ideal body weight before pregnancy.	60(20)	240(80)	0(0)
Improve nutritional status before pregnancy.	0(0)	300(100)	0(0)
Treat vaginal infection before pregnancy.	70(23.2)	210(70)	20(6.8)
Check-up medical and genetics counseling before pregnancy.	60(20)	240(80)	0(0)
Take medication without prescription.	20(6.7)	280(93.3)	0(0)
Do exercise during pregnancy may affect the health of her future baby.	60(20)	240(80)	0(0)
Contacts with home pits have adverse effects on future baby.	300(100)	0(0)	0(0)
Make check-up before pregnancy regarding chronic health problems.	40(13.3)	260(86.7)	0(0)
Maintain psychological status before pregnancy.	131(43.7)	169(56.3)	0(0)
Visit dentist if has problem before planning to pregnancy.	178(59.3)	108(36)	14(4.7)
Provide preconception care for mother only.	300(100)	0(0)	0(0)
Define pregnancy as a natural process that requires preparation even if a woman has no known medical illness.	0(0)	300(100)	0(0)
Expose to chemicals such as household cleaners or paint.	0(0)	300(100)	0(0)

Table (6): Preconception health behavior among the selected study sample (n=300)

Pre-conception health behavior	Study sample (n=300)	
	No.	%
Acceptable (12.5 -24)	108	36
Not acceptable (0-12)	192	64

Table (7): Preconception health behavior among the selected study sample (n=300)

Variables	Yes	No
Don't expose to active or passive smoking.	300(100)	0(0)
Maintain ideal body weight.	300(100)	0(0)
Check-up blood sugar level	300(100)	0(0)
Don't take medication without prescription.	148 (49.3)	152(50.7)
Taking well balancing diet.	137(45.7)	163(54.3)
Not taking excessive caffeine, tea.	300(100)	0(0)
Contact with home pits especially cat.	0(0)	300(100)
Well prepared bio-psychosocial.	6(2)	294(98)
Provide diet free fat.	183(61)	117(39)
Use folic acid.	119(39.7)	181(60.3)
Expose to toxic chemicals.	3(1)	297(99)
Check dental problems.	0(0)	300(100)

Table (8): Relation between preconception health behavior, knowledge and attitudes among the selected study sample (n=300)

Items	Perception behavior		χ^2	P
	Acceptable	Not acceptable		
Preconception knowledge				
• Poor	19	29	2.95	0.27
• Average	61	101		
• Good	28	42		
Preconception Attitude			0.46	0.29
▪ Low	83	154		
▪ Moderate	25	38		
▪ High	0	0		

Discussion

The preconception period is a critical window in which maternal health can profoundly affect both individual and intergenerational health. Before pregnancy, all women of reproductive age should undergo preconception counseling. All women who come in for contraception, Pap screenings, or follow-up for chronic conditions as; diabetes, hypertension, should receive this type of counseling. There isn't a lot of information about it in Egypt. Thus, the aim of the current study was to appraise knowledge, beliefs and behavior of preconception care among women at childbearing period Kasim et al., (2016), The discussion was presented the demographic and past obstetrics characteristics of the study sample, women's knowledge, belief and behavior about preconception health, and the relationship between preconception knowledge, attitude, and health behavior related to selected demographic characteristics of the study sample.

1) Demographic characteristics: Findings of the current study revealed that nearly half of the study sample age was 25-34 years old, and nearly the entire study sample was housewives. This finding was matched with the data in a cross-sectional study carried out by Kasim et al., (2016), to determine the level of knowledge, belief, and behavior regarding preconception care among women attending antenatal care appointment. They reported that, the mean age of the study sample was 28.8 years, and above two thirds of the sample were unemployed. Also this finding was supported with study carried out by Fekene et al., (2018) founded that the mean age of the respondents was 25.59 with the standard deviation of ± 2.89 years and more than half of the study sample age was 23-37 years old. From the researchers' opinions, the congruency between the current study and other studies may be related to that the age of fertility and childbearing period is average from 18-35 years.

The current study revealed that, the majority of the study samples were living in urban areas, and one third of the study sample cannot read and write and one third had

preparatory education. This finding was supported by Teshome et al., (2020). In their community-based cross-sectional study who reported that, more than half of the respondents had no formal education whereas only a few cases attended college or university-level education. And most of the study participants were housewives. Regarding the finding of the residence, this finding was contradicted with the same study, which reported that a majority of the respondents was living in rural areas. From the researchers' point of view, the finding of the current study may be related to the selected setting of the current study was done in Cairo Governorate as a bigger urban Governorate in Egypt.

2) Concerning the past obstetrics characteristics: The results revealed that more than three quarter of the study sample their gravidity ranged from 1-2 times, this finding was in agreement with study done by Fekene et al., (2020), whom reported that nearly three quarter of the participants had at least one pregnancy before.

3) Women's knowledge about preconception health: More than half of the study sample had average knowledge score while nearly one quarter had either good knowledge or poor knowledge score with total mean knowledge score was 46.6 ± 4.7 . This findings was matched with the data in a study carried out by Giri & Gautam (2018), entitled "knowledge on preconception care among reproductive aged women in kaski district, Nepal", who reported that, about twenty percent of respondents possessed poor knowledge followed by sixty percent point five of the respondents possessed average level of knowledge and fifteen point five percent of respondents possessed good level of knowledge. The mean score for the level of knowledge was 50.6 ± 10.6 .

In addition, this finding was supported by study done by Teshome et al., (2020), to assess knowledge of preconception care and associated factors among pregnant women in Mana district, Jimma zone, Oromia Region, Southwest Ethiopia, in 2019. The study highlighted that twenty one point five percent of the women had

good knowledge of preconception care. Also, the previous findings were in agreement with study carried out by Fekene et al., (2020), entitled “knowledge, uptake of preconception care and associated factors among reproductive age group women in West Shewa zone, Ethiopia, 2018” the study founded that, among the respondents, only twenty eight percent had a good knowledge of PCC. From the researchers' point of view, the finding of current study may be related to informatic revolution that make information available among women at childbearing period through different technological devices.

4) Women’s belief and behavior regarding preconception health care:

More than three quarters of the study sample had moderate belief score, while less than one quarter had low belief score regarding preconception health care. Regarding preconception health behavior less than two third of the study sample had unacceptable preconception health behavior, while, more than one third had acceptable preconception health behavior. This finding was matched with the data in a study carried out by Kasim et al., (2016), who reported that, ninety eight percent of the respondents had good attitudes towards preconception care, and more than one third of the study sample had good preconception care practices.

In addition to study done by Khan et al., (2019), who assess preconception health attitudes and behaviors of women: a qualitative investigation, this study concluded that, few women acknowledged the importance of formal preconception health checks and screening with health professionals. The researchers referred the finding of the current study regarding beliefs to the huge variations of different cultures in Egypt. Cairo Governorate (setting of the current study) is considering a biggest governorate that collect people from different governorates with different culture due to internal migration. Culture refers to the beliefs, values, and behavior so varied beliefs that guide to different behavior that may to accepted or not.

5) Relationship between preconception knowledge, belief; and health behavior related to selected demographic characteristics:

The result revealed significant relationship between age, and level of education and preconception health knowledge, while no significant relation between occupation, and residence and preconception health knowledge. This finding in agreement with study carried out by Giri and Gautam (2018), whom reported that, there was statistically significant association between levels of knowledge on preconception care with education, number of children, heard about preconception care, source of information. From the researchers' point of view, this agreement is so logic because the level of knowledge of any issue depends on many essential factors as age and level of education but occupation, and residence as factors may be not crucial for recipients.

There is no statistical significance relation between preconception health behavior and women knowledge and beliefs. This findings in contrast with study done by Fekene et al., (2020), who concluded that, women who having good knowledge of PCC has shown a positive association with the uptake of PCC. A woman who was a good knowledge of PCC four times more likely to utilize PCC than women who have poor knowledge of PCC. From the researchers' opinions, this contrasting between studies is logic findings and congruent with all literatures and theories that support the positive and logic relation between knowledge, beliefs and behaviors.

Conclusion

Women in childbearing period have average knowledge and attitude towards preconception care. However, they have not acceptable preconception health behavior.

Recommendations

- 1) Applying health education program regarding pre-pregnancy care and increase awareness of female in outpatient clinics and secondary schools.

- 2) Implementation of suggested plan regarding preconception care in secondary schools and youth centers.
- 3) Obstetrics and family health nurses should increase awareness toward preconception care for couples parallel to pre-marital examination program.
- 4) Nurses should receive additional training to deliver this care with more confidence, and to improve their knowledge, skills and awareness, because they have competences, knowledge and skills to counsel.
- 5) Preconception care information should also be provided to all reproductive women who attend outpatient clinics for reasons other than pregnancy.

Suggested strategic plan of action.

The aim of the suggested strategic plan of action to improve a woman's health before conception, and improve outcome. Based on literature review (7,17,18, &19) the following suggested strategic plan of actions as; 1) individual responsibility across the lifespan, 2) Increase public awareness to improve the knowledge and attitudes and behaviors of men and women related to preconception health. 3) Preventive visits and identified risks that will enable them to enter pregnancy in optimal health. 5) inter-conception care to provide additional intensive interventions to women who have had a previous pregnancy that ended in an adverse outcome.6) pre-pregnancy checkup, 7) health insurance coverage for women with low incomes, 8) Integrate components of preconception health into existing local public health and related programs, including emphasis on inter-conception interventions for women with previous adverse outcomes.

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