

counseling program for Diabetic Women in Reproductive age to detract the complication of gestational pregnancy in preconception care

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Abstract

Background: Diabetic women's, pregnancies have raised chances of congenital fetal malformations and maternal morbidities Preconception care may reduce the risks of severe malformations and perinatal mortality for all of these mothers. **the aim:** of this study was to evaluate the effect of counseling program on knowledge of diabetic women to detract the complication of gestational pregnancy in preconception care. **Methods:** In Diabetes outpatient clinics affiliated to the Ministry of Health (MOH) hospitals in Assiut & sohag city, this quiz experimental study was conducted on 140 diabetic women of reproductive age who were interviewed for assessment of their awareness of preconception treatment and for the counseling program of their item's. **Results:** The majority of women in the current study suffered from type 1 diabetes(86.4%), resided in metropolitan areas(61.4%), and received intermediate degrees in education Nineteen percent had a history of spontaneous abortion beforehand The counseling program used resulted in a substantial increase ($p < 0.05$) in the awareness of preconception care for diabetic women that was substantially correlated with their higher level of education ($p < 0.001$). **Conclusions:** The provided counseling program contributed to a greater increase in preconception care awareness improvement, which was improved by the high educational level of women.

Key words: Diabetic women, Reproductive age, detract the complication of gestational pregnancy, counseling program and preconception care.

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I. Introduction

Globally, the prevalence of type 2 diabetes mellitus continues to increase. [Bringer et al 2009, and Wild et al, 2004]. The number of deaths due to diabetes in the Arab region is about 170,000 adult individuals, representing more than 10 percent of all deaths in the region. [Boutayeb et al, 2012]. Circulatory, gastrointestinal, musculoskeletal, and genitourinary structures are malformations associated with maternal diabetes. [Frias et al, 2007 and Lisowski et al, 2010]. It is well known that diabetic women's births, whether type 1 or type2, are two to four times more likely than non-diabetic women to have congenital malformations. [Allen et al, 2007 and Bahhidy et al, 2010]. Diabetes in pregnancy is also associated with risks of maternal morbidity such as miscarriage, pre-eclampsia, and preterm labor [Ray et al, 2004]. as well as macrosomia and increased risk of prenatal mortality [The Diabetes and Trial Research Group, 1996]. The prevalence of significant congenital malformations in infants of women with type 1 and type 2 diabetes ranged from 2.9% to 7.5% and from 2.1% and 12.3%, respectively, in many population-based studies. [Bell et al, 2008 and Gonzalez et al, 2008]. Reported studies stated that preconception care for diabetic women is found to reduce the risk of major malformations [Bahhidy et al, 2010], lower perinatal mortality [Pearson et al, 2007 and Tripathi et al 2010] and may decrease the risk of fetal macrosomia [Kitzmilller et al, 2010].

According to Canadian Diabetes Association clinical practice guidelines [Meltzer et al, 1998], The level of glycemic control and the status of any diabetic complications should be assessed by any woman with diabetes Physical examination and laboratory investigations should consist of preconception assessment. You should test hemoglobin (HbA1C) Epidemiological studies suggest that rates of congenital malformations and spontaneous abortions that are not higher than rates of non-diabetic pregnancies are correlated with A1C test values up to 1 percent above average. [American Diabetes Association, 2003]. Creatinine clearance and 24-hour excretion tests for microalbumin are required prior to conception and during pregnancy at regular intervals

Relation should be made to an ophthalmologist to determine any pre-existing retinopathy. [Meltzer et al, 1998 update Delaney MP and Lamb EJ 2018]. Counseling program before pregnancy should involve discussion of the risk of transmitting diabetes, the risk of congenital anomalies, fetal and maternal complications of pregnancy, and the need for pregnancy planning [Klinke and Toth, 2003 and Hayley Willacy, 2020].

the aim: of this study was to evaluate the effect of counseling program on knowledge of diabetic women to detract the complication of gestational pregnancy in preconception care.

II. Methods:

2.1. Study design: The current research is a quiz experimental study.

2.2. Setting: This research was carried out in outpatient diabetes clinics associated with MOH hospitals in the city of Assiut & Sohage, where diabetic patients are treated and supervised During the study period from September 2017 to August 2018.

2.3. Inclusion criteria: The current research involved diabetic (reproductive-age) married patients who witnessed pregnancy and delivery.

2.4. Exclusion criteria: Comorbidities other than diabetes such as ischaemic heart disease, hypertension, renal dysfunction, or hepatic disease existed in women who were in menopause (postmenopausal women), in pregnancy (pregnant women).

2.5. Sample: The prevalence of diabetes is 10.4 percent among the Egyptian population [Soliman, 2013] The sample size was determined according to the following formula, based on our research design (quiz experimental study): $N = Z^2 \times P(1-P) / d^2$ [Danial, 1999] The estimated minimum sample size was 138 women with a prevalence of 10.4 percent, a confidence level of 95 percent and 5 percent accuracy A larger sample size of 140 diabetic women of reproductive age was obtained by the authors In order to gather socio-demographic and demographic data, these women were interviewed to collect socio-demographic and obstetric history data as well as preconception care knowledge.

2.6. Data collection tools: In this study four tools prepared by the researcher were used to collect information It was founded upon a study of literature.

Tool I: - socio-demographic data: Age, education, occupation and residence were involved in the socio-demographic data collected Numbers of pregnancies, deliveries and abortions as well as various methods of delivery were included in the obstetric history data collected.

Tool II:- pretest assessment: Until reviewing the prepared booklet (counseling program) with them this method was developed by the researchers to test the awareness of diabetic women who were asked about the core cardinal things about pre-conception care.

Tool III:- counseling program: The basic knowledge of preconception care for diabetic married women in childbearing age (18-45 years) was defined in this tool. The top 5 preconception care points discussed were; Pregnancy preparation (**3 points**): To delay pregnancy in order to avoid fetal and maternal complications before glucose change Malformations and macrosomia were included in fetal complications Maternal complications, polyhydramnios, included abortion. Blood pressure physical assessment and study (**3 points**), laboratory tests (such as hemoglobin A1C and creatinine clearance) and ophthalmological & neurological examination (**3 points**). Bl. blood glucose level Modifying (**3 points**) with control, insulin dose modification and experience of hyperglycemic symptoms (thirst, polyuria, fatigue, headache) and hypoglycemia Diet control (profuse sweating, headache, drowsiness, blurring of vision, coma), (**3 points**) with Low Sugar, Low Salt and Low Fat, Dietician cooperation, and Folic Acid supplements. Exercise (**3 points**) with glucose monitoring for pre-exercise, glucose monitoring for post-exercise and weight management.

Tool IV:- Post-test evaluation: This tools was a comparison of pre-test and post-test data on their knowledge of cardinal pre-conception care items for diabetic women. A Likert style scale was used in post-test sitting to measure the level of awareness of each cardinal point, where "0": none; "1": poor; "2": medium; and "3": good. Using the Kruskal-Wallis test, a potential relationship between the educational level of women and their level of knowledge in post-test seating was examined.

2.7. Procedure: This study was conducted by three researchers, all with doctoral degree of obstetric and gynecological nursing. The women in this research were interviewed by the prepared booklet "pregnancy and diabetes" to determine knowledge about pre-conception treatment (pre-test evaluation) and to discuss counseling program. Diabetic women were interviewed for 30 minutes Post-test assessment was then carried out to reassess the awareness of women about preconception care components in detail.

2.8. Ethical considerations: The current research was accepted by the Faculty of Nursing's local ethical committee, Sohag University, Egypt, oral consent was obtained from all women in the sample.

2.9. Statistical analysis: Socio-demographic data were tabulated, as well as data on obstetric history and knowledge of preconceptions, where mean, median and percentages were used Using Fisher's exact test, the

pretest/posttest data comparison was performed Using the Kruskal-Wallis test, a potential relationship was examined between the educational level of women studying and their level of knowledge.

III. Results:

Table 1: Socio-demographic data on the reproductive age of diabetic women in this research, showed that the median age was 32 years Lived in urban areas(61.4%) and attained intermediate education degrees(51.4%; in preparatory(4.3) and secondary schools(47.1)), while 24.3% attained a higher level of education.

variable	NO	%
Age		
Median	23 years	
Age range	20 - 40 years	
Educational level		
Illiterates	16	11.4
Read and writes, primary school	18	12.9
Prep school	6	4.3
Secondary school	66	47.1
Institutes for 2 year after secondary school	10	7.2
University degrees	24	17.1
Residence		
Urban	86	61.1
Rural	54	38.6
Total	140	100

Table 2: Characteristics of women by type of diabetes compared to women of reproductive age showed that Women's characteristics in the current study revealed that most of the women had type 1 diabetes (86.4%)

variable	NO	%
Type of diabetes		
Type1	121	86.4
Type2	19	13.6
Total	140	100

Table 3: Obstetric history of diabetic women according to pregnancy, parity and abortion during reproductive age showed the reproductive profile of women revealed that only 19.4% of women (n=27) had a positive obstetric history of spontaneous abortion, while the remaining women (n=113;80.6%) did not have a history of previous abortion.

Obstetric history	NO	%
Pregnancy, parity and abortion:		
Gravida 1, Para 1 & Abortion 0	16	11.4
Gravida 2, Para 2 & Abortion 0	38	27.1
Gravida >2, Para >2 & Abortion 0	59	42.1
Gravida 2-8, Para 1-7 & Abortion 1	18	12.9
Gravida 3-5, Para 1-3 & Abortion 2	6	4.3
Gravida 7-8, Para 4 & Abortion 3-4	3	2.1
Total	140	100

Table 4: Obstetric history of reproductive-age for diabetic women according to type of labor showed the majority of women (n=84; 60 percent) underwent cesarean section for previous pregnancy delivery.

Obstetric history	NO	%
Type of labor:		
Vaginal	56	40
CS	69	49.3
Vaginal, CS	15	10.7
Total	140	100

Table 5 : Evaluation of awareness of pre-conception care items that could be influenced by the counseling program It showed that the awareness of women about preconception care items was greatly enhanced by the counselling program the comparison between pre-test and post-test assessment showed that pregnancy improve awareness (p=0.0166), blood glucose management (p=0.0001), physical examination (p=0.0002), diet (p<0.0001), and exercise (p<0.0001) were enhanced by the provided counseling program.

P value	Pre-test		Post-test		P value
	NO	%	NO	%	
Pregnancy planning *Mentioned					0.0166
*Not mentioned	57	40.7	78	55.7	
	83	59.3	62	44.3	

Control of blood glucose					0.0001
*Mentioned	54	38.6	87	62.1	
*Not mentioned	86	61.4	53	37.9	
Physical exam.					0.0002
*Mentioned	42	30	74	52.9	
*Not mentioned	98	70	66	47.1	
Diet					<0.0001
*Mentioned	33	23.6	76	54.3	
*Not mentioned	107	76.4	64	45.7	
Exercise					<0.0001
*Mentioned	35	25	78	55.7	
*Not mentioned	105	75	62	44.3	

Figure (1) Demonstrates the impact of the counseling program on awareness(knowledge) of pre-conception care

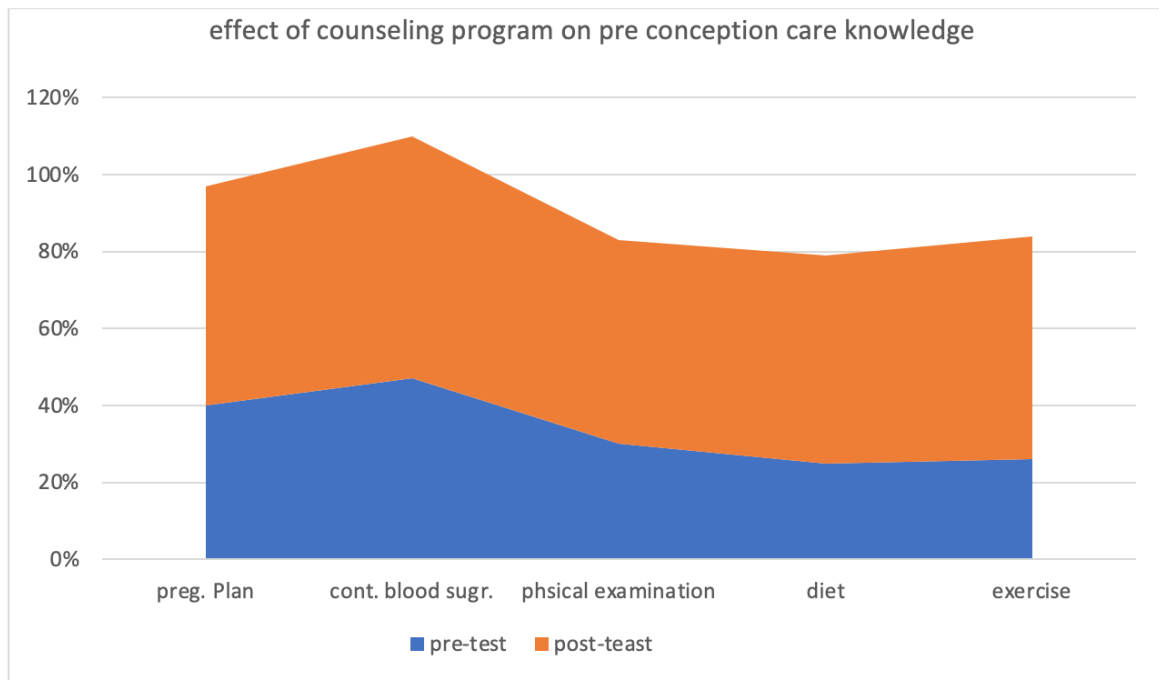


Table 6: The relation between educational and preconception care knowledge levels among diabetic women in child bearing age showed the relationship between the levels of awareness of education and pre-conception care among diabetic women in childbearing age.

Educational level	No.	Knowledge level, Mean ± SD	Knowledge level, Median	95% C.I.
1	16	0.25 ± 0.447	0.00	0.01 - 0.49
2	18	0.22 ± 0.428	0.00	0.01 - 0.43
3	6	1.00 ± 0.894	1.00	0.06 - 1.94
4	66	1.20 ± 0.845	1.00	0.99 - 1.40
5	10	1.20 ± 0.789	1.00	0.64 - 1.76
6	24	2.21 ± 0.932	2.00	1.81 - 2.60

The difference in the Kruskal-Wallis test was found to be significant ($p < 0.001$).

IV. Discussion:

Unlike developed countries where the majority of people with diabetes are over retirement age, the majority of people with diabetes in the Arab region are under 60 years of age and in their peak productive years. [Boutayeb et al, 2012], Women are considered in the child bearing age There is also a growing proportion of pregnancy for diabetic women's in developed countries. [McElduff et al, 2005 and Bell et al, 2008] In Egypt, the risk of fetal and maternal morbidity and mortality is higher. [Mahmud and Mazza, 2010]. Considering the fact, that congenital malformation is caused early during pregnancy and is linked with hyperglycemia, diabetes

care and supplementation with folic acid should be managed prior to pregnancy. [Kitzmilller et al, 2010]. Preconception care is also important and crucial for diabetic women of childbearing age.

The present study is an ongoing quiz experimental study discussing the awareness of pre-conception care in diabetic women. Calculation of sample size for a research estimating by Daniel, has estimated population prevalence. [Danial, 1999], and based on " statistic(Z) of 1.96" for 95% confidence level, 10.4% expected prevalence of diabetes among Egyptian population aged (10 – 79) years [Soliman,2013], also 95% confidence interval. Consequently, the measured sample size was 138 cases. However, our sample included 140 child-bearing diabetic women with a median age of 32 years. Most all of women have earned preparatory and secondary education as well as higher levels of education, This is equivalent to Nikuei et al , 2013. Who documented most of the education in secondary school and higher academic level. the majority of their females have type 2 diabetes and live in urban areas. Type (2) diabetes is the most prevalent form of diabetes, with type (1) diabetes accounting for approximately 10% of the reported literature. [Klinke and Toth , 2003] The change from rural to urban domination leads to sedentary lives and less physical activity, he said. [Boutayeb, 2012].

One fifth of women in the current study had an adverse reproductive profile with an obstetric history of spontaneous abortion. Moreover for previous deliveries, most women underwent a cesarean section. That is supported by Tenderich, 2012, They confirmed that the majority of diabetic women's pregnancies lead to cesarean births. In addition, our findings are clarified in the published literature that diabetic women have a high risk of urinary tract infections and premature rupture of membrane , as well as a 4-fold increase in macrosomia prevalence, which justifies delivery by cesarean section [Moura et al 2012].

In an attempt to mitigate maternal and fetal risks of pregnant diabetic women, the current literature reported that preconception evaluation should consist of a fully history and physical examination in conjugation with laboratory investigations, blood glucose self monitoring, family planning, and achieving a healthy weight [Meltzer et al, 1998 ; Klinke and Toth, 2003; Mahmud and Mazza, 2010 and Farahi ,and Zolotor ,2013] by addressing nutrition, and physical activity [Paden and Avery, 2012]. Therefore in the present research, the preconception care included particular elements such as pregnancy planning, physical examination, etc. (neurological, ophthalmological and blood pressure) , and Hemoglobin A1C, renal function tests, Blood glucose level correction, diet management and exercise activity. The results of the women's pre-test assessment revealed that most of them lack the basic knowledge of pre-conception care and demonstrated the need for a therapy program to address the components of the core components of the care needed, Evaluation post-test (after counseling program), Compared to pre-test findings, substantial progress in women's awareness was seen with higher percentages of correct pre-conception care items listed. However, lower educational levels were observed in post-test sitting. The Kruskal-Wallis test show a significant positive association between the degree of women's knowledge and their level of education. For illiterates, reads and writes, and those who achieved primary school education, the median level of awareness(knowledge) was '0' whereas for women with intermediate education, the median level was '1' and increased to '2' for those with university education, denoting the value of women's education in recognizing and following instructions for preconception care. It is in accordance with Stonecypher, [Stonecypher,2009] and DeCleene et al , 2013. Who confirmed that a major component of daily health care practice is client education.

V. Conclusions:

Around one fifth of their diabetic women had a reproductive profile with a history of spontaneous abortion that was unfavorable. In the current research, the used counseling program resulted in a substantial increase in pre-conception care awareness among women, This awareness development was significantly correlated with a higher level of education among diabetic women.

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