

## Original Article

# The Attitudes and Behaviors Regarding Contraception of Women with Diabetes in Reproductive Period

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### Abstract

**Background:** Contraceptive use is an important issue in women with diabetes, since unplanned pregnancy adversely affects maternal and fetal health.

**Purpose:** The study aimed to determine the attitudes and behaviors regarding contraception of women with diabetes in reproductive period.

**Methods:** The cross-sectional study was conducted with 289 women with diabetes who applied to the internal medicine, endocrinology and metabolism outpatient clinics of the university hospital. The data were collected through personal identification form and Family Planning Attitude Scale.

**Results:** In the study, 83.7% of the women reported that they used contraception method, and that they mostly preferred condom (39.4%) and intrauterine contraceptive device (19.7%). Only nearly half of the women (47.8%) were informed about contraception by health professionals. Women's age, education level, number of births, obtaining information about contraception explained 21% of the total variance in attitudes towards contraception.

**Conclusion:** Although the rate using contraception was high of women with diabetes, many women did not use effective contraceptive methods. In addition, the rate of informing health professionals about contraceptive use is low. It would be beneficial for health professionals to provide information and counseling about contraception to women with diabetes.

**Keywords:** Diabetes, contraception, behavior, attitude, woman

### Introduction

Diabetes is a serious and chronic health problem that has a great impact on the lives and welfare of individuals, families, and societies all over the world. It is predicted that the incidence of diabetes, which is among the first 10 causes of mortality in adults, is 9% in women, and it is stated that this rate will continue to increase in the years to come (Saeedi et al 2019). Considering this

increasing incidence of diabetes, many women with diabetes in reproductive period may become pregnant in an unplanned way and under inadequate conditions (Leow et al 2020). This situation makes the control of diabetes more difficult and negatively affects the health of the mother and the fetus (Shawe et al 2011; Aksu and Gokdemirel 2012; Visser et al 2013; Robinson et al 2016; Britton et al 2019). Therefore, planned

pregnancy is a requirement for women with diabetes, and use of contraceptives is needed (Damm et al 2005). In this regard, women with diabetes are among the groups that should be dealt with in terms of reproduction health and contraception (Robinson et al 2016).

Nevertheless, contraception in women with diabetes is a subject that is neglected by health professionals (MacKay et al 2005; Shawe et al 2011). In fact, although contraception is a basic health right for women in reproductive period (Kalra and Kalra 2017), it is an important component of pre-pregnancy care of women with diabetes (Law et al 2019). It is necessary to attach more importance to effective contraceptive use in women with diabetes until glycemic control is achieved (Britton et al 2019; Law et al 2019; Walker et al 2020). However, when the literature is examined, it is seen that women with diabetes are frequently encountered with unplanned pregnancies as a result of using ineffective and unhealthy methods (Napali et al 2005; Schwarz et al 2006; Vahratian et al 2009), and that their contraceptive use behaviors are lower compared to women without diabetes (Law et al 2019; Walker et al 2020). Besides, it is stated that women with diabetes are hesitant about asking for advice on contraception method or do not realize the risks involved (Robinson et al, 2016).

The use of contraception in women with diabetes in reproductive period that have a high risk of pregnancy has always been a more reliable method against unwanted pregnancy (Durand and Armenta 2015). It is seen that despite free service and easy access to service in Turkey, women's status of using effective contraception methods is far from what is targeted (Oltuluoglu and Baser 2012). Especially women's attitude towards contraception can affect their contraceptive use behavior (Gavas and Inal 2019). This study was planned in order to reveal the attitudes and behaviors of women with diabetes in reproductive period regarding contraception and related factors. It is believed that the study will contribute to health professionals engaged in diabetes and the literature in terms of planning the training to be given on contraception.

## **Methods**

**Design and Participants:** The population of the descriptive study consisted of all female patients diagnosed with diabetes and in reproductive period who presented to the Internal Medicine and Endocrinology and Metabolism outpatient clinics of a university hospital between April-July 2021. Power analysis was used in determining the sample. Accordingly, 1,400 women applied to the relevant outpatient clinics of the institution where the study was conducted with diabetes diagnosis. In line with a study taken as a reference (Shawe et al 2011), sample size based on  $p=0.16$  condom use rate and 0.05 sampling error was determined as 289 individuals to represent the population at 0.05 significance level, in 1- 00.95 confidence interval, with 0.20 error margin, and with 1-  $\beta=0.80$  power. In this context, 289 women with diabetes who met the inclusion criteria were included in the study. The inclusion criteria were being diagnosed with diabetes for at least 6 months, being in the 18-49 age range and reproductive period, having an active sex life, being married, not being pregnant, not being in the menopause period, not being diagnosed with infertility, having no barriers to oral communication, and volunteering to participate in the study.

**Measures:** The data were obtained via Personal Identification Form and Family Planning Attitude Scale.

**Personal Identification Form:** was prepared by the researchers and included the sociodemographic and disease characteristics of the women and their features regarding fertility and contraception.

**Family Planning Attitude Scale (FPAS):** was developed by Orsal and Kubilay (2007) in order to measure the attitudes of women and their spouses regarding family planning. FPAS consists of 34 items, and it is a 5-point Likert type scale. The minimum score to be obtained from the scale is 34, and the maximum score is 170. Increase in the total score obtained from the scale indicates a more positive family planning attitude. The scale has three subscales, which are the attitude of the society towards family planning, the attitude towards family planning methods, and the attitude towards pregnancy.

The maximum and minimum scores to be obtained from the subscale of the Attitude of the Society Towards Family Planning are 15 and 75, from the subscale of the Attitude Towards Family Planning Methods are 11 and 55, and from the subscale of the Attitude Towards Pregnancy are 8 and 40, respectively. The Cronbach's alpha reliability coefficient of the scale was found to be 0.90 (Orsal and Kubilay, 2007). In the present study, this value was determined as 0.94.

**Data Collection:** The data were collected face-to-face in a room suitable for the interview. The data regarding the diabetic women's HbA1c value were obtained from laboratory result report. The women's height and weight were measured with the available measurement devices in the institution by the researchers. It took the researchers approximately 20-25 minutes to fill in the data form and perform the measurements.

**Statistical Analysis:** In the analysis of the data obtained in the study, SPSS 22.0 software was used. The normality of the data was evaluated via Kolmogorov-Smirnov test. The distribution of the participants regarding their sociodemographic, disease, and contraception use characteristics were evaluated in percentages and mean. In the comparison of the women's contraception use behaviors with some of their quantitative characteristics, Mann-Whitney U test was used as the data were not distributed homogeneously, and in the comparison of qualitative characteristics, Chi-square test was employed. Besides, in order to determine the explanatory effect of some variables on the attitude towards contraception, multilinear regression analysis was used. The data were analyzed at 0.05 statistical significance level.

**Ethical Consideration:** Before data collection, written permission was obtained from the Ethics Board of the university (Decision No: 2021/-03/32) and the institution where the study would be conducted. In addition, each woman included in the study were informed about the content of the study and voluntary participation, and their verbal and written consents were taken.

## Results

The mean age of 289 women participating in the study was  $38.52 \pm 7.52$  (min=21, max=47) years, and 47.4% of them had primary school education level. Of the participants, 77.5% were employed, and 29.9% were currently smoking, 3.5% drank alcohol, 31.5% were overweight, and 34.9% were obese.

The mean diabetes duration of the participants was  $5.53 \pm 4.69$  years, and 35.3% had type 1 diabetes, and 64.7% were type 2 diabetes patients. The mean HbA1c value of women with diabetes is  $6.71 \pm 1.36\%$ , and nearly half (43.3%) have a high glycemic target value. Of the women, 34.9% were receiving oral anti-diabetic (OAD) treatment, 48.1% were treated with insulin, and 17% were receiving both OAD and insulin treatment. Of the participants, 30.8% had a chronic disease other than diabetes (hypertension, asthma, coronary artery disease, migraine), and 9.3% had diabetes-related complications.

Of the women, 83.7% use contraceptive methods. However, the rate of those who use more effective contraception method is 39.3%. In Table 1, the diabetic women's characteristics related to marriage, fertility, and contraception are presented.

When the mean score of obtained from the scale by the participants in regard to their attitude towards contraception ( $126.52 \pm 22.33$ ) is considered, it is seen that they had a positive attitude. The comparison of a contraceptive use behaviors and some characteristics of women with diabetes is shown in Table 2.

According to the multiplelinear regression analysis, age, education level, number of births and having knowledge about contraception are the factors that significantly affect the contraceptive attitudes of women. These factors explain 21% of the total variance in attitudes towards contraception ( $R=0.45$ ,  $R^2=0.21$ ,  $F=8.235$ ,  $p=0.000$ ). Age, education level, number of births and having knowledge about contraception positively affect the attitude towards contraception (Table 3).

**Table 1. The characteristics of diabetic women related to marriage, fertility, and contraception**

Variables	All women		Women with type 1 diabetes		Women with type 2 diabetes	
	n	%	n	%	n	%
<b>HbA1c (%)</b>						
<7	164	56.7	65	63.7	99	52.9
≥7	125	43.3	37	36.3	88	47.1
<b>Number of births</b>						
None	23	8.0	13	12.7	10	5.3
1-2	110	38.0	52	51.0	58	31.0
3-4	120	41.5	35	34.3	85	45.5
5 ve üzeri	36	12.5	2	2.0	34	18.2
<b>Unplanned pregnancy experience</b>						
Yes	97	33.6	25	24.5	72	38.5
No	192	66.4	77	75.5	115	61.5
<b>Considering future pregnancy</b>						
Yes	74	25.6	38	37.3	36	19.3
No	215	74.4	64	62.7	151	80.7
<b>Having received information about contraception from health professionals after being diagnosed with diabetes</b>						
Yes	138	47.8	61	59.8	77	41.2
No	151	52.2	41	40.2	110	58.8
<b>Health professional from whom information was received*</b>						
Midwife in primary care health service	61	44.2	23	37.7	38	49.4
Obstetrician	43	31.2	22	36.1	21	27.3
Endocrinologist	21	15.2	11	18.0	10	13.0
Diabetes Nurse	13	9.4	5	8.2	8	10.4
<b>Currently using contraception</b>						
Yes	242	83.7	88	86.3	154	82.4
No	47	16.3	14	13.7	33	17.6
<b>Reasons for not using contraceptive methods*</b>						
Not believing that she could get pregnant	16	5.5	1	7.1	15	45.5
Planning pregnancy	11	3.8	5	35.7	6	18.2
Thinking that diabetes prevents pregnancy	9	3.1	3	21.4	6	18.2
Not believing in the protective feature of	7	2.4	3	21.4	4	12.1
Spouse requesting not to use it	4	1.4	2	14.3	2	6.1
<b>Contraceptive methods used after being diagnosed with diabetes*</b>						
Long-acting reversible contraceptive devices	57	23.6	16	15.7	41	21.9
Combined oral contraceptive	11	4.6	1	1.0	10	5.3
Injectable contraceptive	4	1.6	0	0.0	4	2.2
Female sterilization	23	9.5	5	4.9	18	9.6
Male condoms	114	47.1	60	58.8	54	28.9
Coitus interruptus	28	11.5	5	4.9	23	12.3
Calendar method	5	2.1	1	1.0	4	2.1
<b>Reason for using the preferred contraceptive method*</b>						
Ease of use	114	47.1	52	59.1	62	40.3

<b>Being more effective compared to other methods</b>	52	21.5	17	19.3	35	22.7
<b>Availability</b>	27	11.2	11	12.5	16	10.4
<b>Being cheap / free</b>	26	10.7	4	4.5	22	14.3
<b>Having no / less side effects</b>	12	5.0	3	3.4	9	5.8
<b>Upon recommendation by health professional</b>	11	4.5	1	1.1	10	6.5
<b>Person deciding on the contraceptive method used*</b>						
<b>Self</b>	165	68.2	62	70.5	103	66.9
<b>Spouse</b>	50	20.8	23	26.1	27	17.5
<b>Obstetrician</b>	22	9.0	3	3.4	19	12.3
<b>Endocrinologist</b>	5	2.1	0	0.0	5	3.2
<b>Status of being satisfied with the contraceptive method used*</b>						
<b>Yes</b>	237	98.3	87	98.9	150	97.4
<b>No</b>	5	1.7	1	1.1	4	2.6
<b>Informing the diabetes doctor and nurse about the contraceptive method used*</b>						
<b>Yes</b>	99	40.8	52	59.1	47	30.5
<b>No</b>	143	59.2	36	40.9	107	69.5

\* The number n has changed.

**Table 2. Comparison of contraception use behaviors of the women with their certain characteristics**

Variables	Using Contraception n=242	Not using contraception n=47	Test; p
	<i>M</i> ± <i>SD</i> n (%)	<i>M</i> ± <i>SD</i> n (%)	
<b>Age (year)</b>	38.15±7.67	40.45±6.43	Z=-1.756; 0.079
<b>Educational status</b>			
<b>Primary education</b>	107(78.8)	29(21.2)	$\chi^2=6.033$ ; 0.049*
<b>Secondary education</b>	89(90.8)	9(9.2)	
<b>High education</b>	45(83.3)	9(16.7)	
<b>Body mass index (kg/m<sup>2</sup>)</b>			
<b>18.5-24.9</b>	80(82.5)	17(17.5)	$\chi^2=0.178$ ; 0.915
<b>25-29.9</b>	77(94.6)	14(15.4)	
<b>≥30</b>	85(84.2)	16(15.8)	
<b>Number of births</b>			
<b>None</b>	17(73.9)	6(26.1)	$\chi^2=3.019$ ; 0.170
<b>1-2</b>	98(89.1)	12(10.9)	
<b>3-4</b>	99(82.5)	21(17.5)	
<b>5 and above</b>	28(77.8)	8(22.2)	
<b>Diabetes type</b>			
<b>Type 1</b>	88(86.3)	14(13.7)	$\chi^2=0.745$ ; 0.245
<b>Type 2</b>	154(82.4)	33(17.6)	
<b>Disease duration (year)</b>	5.54±4.23	5.48±4.37	Z=-0.942; 0.346
<b>HbA1c (%)</b>	6.69±1.34	6.77±1.49	Z=-0.526; 0.599
<b>Presence of other chronic diseases other than diabetes</b>			
<b>Yes</b>	67(75.3)	22(24.7)	

<b>No</b>	175(87.5)	25(12.5)	$\chi^2=6.753; 0.009^{**}$
<b>Status of experiencing unplanned pregnancy</b>			
<b>Yes</b>	79(81.4)	18(18.6)	$\chi^2=564; 0.278$
<b>No</b>	163(84.9)	29(15.1)	
<b>Status of having received information about contraception</b>			
<b>Yes</b>	128(92.8)	10(7.2)	$\chi^2=15.768; 0.000^{**}$
<b>No</b>	114(75.5)	37(24.5)	
<b>Family Planning Attitude Scale</b>			
<b>Total</b>	128.31±21.27	117.29±25.49	Z=-2.648; 0.008**

$\chi^2$ :Chi-square test; Z: Mann-Whitney U test; \*p<0.05; \*\*p<0.01

**Table 3. Stepwise multiple regression analysis of predictors of level of attitude towards contraception**

<b>Variables</b>	<b>B</b>	<b>SE</b>	<b>β</b>	<b>t</b>	<b>p value</b>
<b>Age</b>	0.646	0.226	0.218	2.862	0.005*
<b>Education level</b>	6.539	2.210	0.223	2.959	0.003*
<b>Diabetes type</b>	-3.840	2.658	-0.082	-1.445	0.150
<b>Disease duration</b>	0.340	0.259	0.071	1.309	0.191
<b>Having received information about diabetes</b>	0.201	2.803	0.004	0.072	0.943
<b>Number of births</b>	-5.939	2.074	-0.215	-2.863	0.005*
<b>Having received information about contraception</b>	11.014	2.808	0.233	3.922	0.000*
<b>Unplanned pregnancy</b>	-1.401	2.629	-0.031	-0.533	0.594
<b>Satisfaction with the contraception method used</b>	1.317	9.312	0.008	0.141	0.888

$R=0.45, R^2=0.21, F=8.235, p<0.01$

\*p<0.01

### **Discussion**

Use of contraception by women with diabetes until glucose level is kept under control is one of the factors in order to have a healthy pregnancy period and give birth to healthy babies in this high-risk population (Walker et al 2020). It was determined in the study that the majority of women (83.7%) used contraceptive methods. In other studies, it was found that the rate of contraception uses in women with diabetes varied between 34-89% (Napoli et al 2005; Vahratian et al 2009; Shawe et al 2011; Britton et al 2019; Celik et al 2021), and that their rate of contraception use was lower compared to healthy women (Vahratian et al 2009; Shawe et al, 2011; Britton et al 2019). In the study, it is seen that contraception use behavior of women was high, but that about one- fifth of

the sample did not use contraception. Attaching importance to guidance on contraception in addition to disease management for women with diabetes can be effective in terms of increasing this rate.

Basically, the need of women with diabetes for contraception is not different from the need of women without diabetes (Shawe and Lawrenson 2003; Damm et al 2005). However, since cardiovascular morbidity and mortality risk related to hyperglycemia is high in women, it is necessary to pay attention to the potential metabolic effects of the hormonal methods chosen (Durand and Armenta 2015). In the study, it was determined that the women mostly preferred condom (39.4%) and intrauterine device (19.7%). When the studies conducted are examined, it is seen that condom use rate in



women with diabetes varied between 24-44%, that oral contraceptive use rate changed between 12-40%, that intrauterine device use rate ranged between 5.7-12%, and that the rate of using pulling back method varied between 4.8-40.5% (Napoli et al 2005; MacKay et al 2005; Vahratian et al 2009; Evangelista et al 2014; Leow et al 2020; Celik et al 2021). In the study of Britton et al (2019), it was determined that 37.6% of the women with diabetes used more effective contraceptive methods and 33.6% used less effective contraceptive methods. Although the study findings are consistent with the literature, they reveal that effective contraceptive methods are not used to prevent pregnancy in women with diabetes.

Information about contraception in women with diabetes is necessary not only for preventing unplanned pregnancies, but also for preventing accompanying diseases and the deterioration of the disease due to potential side effects of hormonal contraceptives (Visser et al 2013). Nevertheless, use of contraception in women with diabetes is one of the subjects that is rarely dealt with by health professionals (Shawe and Lawrenson 2003; MacKay et al 2005). In the present study, it was also determined that only about half of the women (47.8%) were informed about contraception by health professionals. In other studies, it was found that the rate of receiving information about contraception from health professionals was low (MacKay et al 2005; Schwarz et al 2006; Celik et al 2021). The study findings suggest that in addition to information about the disease, women with diabetes should also be informed about contraception.

Health professionals providing service to women with diabetes need to help women about contraception preference in terms of their making educated choices (Shawe et al 2011). In the study, it was determined that women received information the most from the primary care health service, and that their rate of being informed by the diabetes doctor and nurse was low. In another study, it was found that approximately half (53%) of the women with diabetes used a contraceptive method on their own without getting health care support, that 31.8% used contraception with the support of primary health care

services, and that 8.6% used it with the support from the diabetes center (Evangelista et al 2014). The study finding may have resulted from the fact that contraception services in Turkey are mostly provided by primary health care services. It also shows that health professionals, who are responsible for the follow-up of women with diabetes, should give more importance to the subject of contraception.

Contraceptive method being easy, reliable, and accessible is important in that it enhances women's contraception behaviors (MacKay et al 2005). In the present study, 47.1% of the participants stated that they preferred the contraception method they used due to its ease of use, 21.5% because of its being more effective, and 11.2% due to its being easily available. In the study of Celik et al (2021), it was determined that 38.6% of the participants preferred the contraceptive method they used due to its being cheap and 27.3% preferred it as it was easily available. In a study conducted on women with diabetes, it was found that 37% of the women preferred the method they used because it was effective and reliable, 29% said their medical condition did not allow any other methods, 10% used it as it regulated their menstruation, and 6% used the method upon the physician's recommendation (Shawe et al 2011).

In the study, it was determined that women with diabetes had positive attitudes towards contraceptive method use. In a study conducted in Turkey with the participation of healthy women, the participants' attitudes towards contraception were determined to be at a good level (Ayaz and Efe 2009). In contrast to these studies, in studies conducted in Kenya and Ethiopia, women's perception of contraception services was found to be low (Juma et al 2015; Bekele et al 2020). The women's positive attitudes towards contraception determined in the study may have resulted from the fact that the study was conducted in health services.

Factors such as age, frequency of sexual intercourse, desired number of children, previous contraceptive use experiences, health status, presence of diabetic complications, effectiveness of the method to be chosen, long or short duration of use, side

effects, and cost can be effective in contraception use by women. In the present study, it was determined that the rate of contraception use was higher among women who had a university degree, who did not have any chronic diseases other than diabetes, and who received information about contraception (Aksu and Gokdemirel 2012; Hadisaputra and Sutrisna 2014). Besides, it was found that the attitudes of the women using contraception towards contraception were higher. The study finding is in parallel with the literature. In another study, the rate of contraception use was found to be in higher in women with high education level (Napoli et al 2005). In the study of Celik et al (2021), it was determined that the rate of contraception use was higher in women who had three and above children and who were informed about contraception, but that women who did not plan a pregnancy in future used contraception at a lower level. In another study, it was found that effective contraception use was lower in women who had relatively lower education level, who were obese, who were not insured, and who did not have access to health services; however, the rate of contraception use was higher in those who believed that contraception was beneficial (Britton et al 2020). The study finding is important in terms of emphasizing the importance of receiving training and information in contraception use.

**Conclusion:** It was determined in the study that contraception use behaviors of women with diabetes were high, but that about one-fifth of these women did not use any contraceptive methods, and that the level of attitude towards contraception and being informed were associated with contraception use behavior. In addition to the training and guidance provided by health professionals to women in reproductive period in relation to disease information and management, it is recommended to provide information to women with diabetes about contraception use in order to prevent unplanned and risky pregnancies and to ensure that they get pregnant with the targeted glycemic value. It is also recommended to make guidance services widespread in therapeutic health services as well and to evaluate contraception use behavior in every health

control. In addition, conducting studies with wider sample groups will contribute to identifying the factors associated with contraception use.

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