The knowledge of women with diabetes mellitus regarding preconception care and maternal-fetal risks*

CONHECIMENTO DE MULHERES COM DIABETES MELLITUS SOBRE CUIDADOS PRÉ-CONCEPCIONAIS E RISCOS MATERNO-FETAIS

CONOCIMIENTO DE MUJERES CON DIABETES MELLITUS SOBRE CUIDADOS PRECONCEPCIONALES Y RIESGOS MATERNO-FETALES

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ABSTRACT

The objective of this study was to describe the reproductive profile of women with diabetes mellitus (DM) and to identify their knowledge regarding maternal and fetal risks and preconception care. This exploratory study was performed at the Integrated Center for Hypertension and Diabetes, from March to July 2009, on a sample consisting of 106 women. The variables were: *number of pregnancies, births and abortions*, and *planning the pregnancy*. The data were collected through interviews that followed a preconceived form. The reproductive profile of women with DM proved to be permeated with risks and showed negative repercussions to maternal and fetal health. Of the 106 (100%) women studied, 44 (41.5%) demonstrated adequate knowledge regarding preconception care, while 58 (54.7%) had limited knowledge regarding maternal and fetal risks. It is necessary to provide information to women with diabetes to promote knowledge of maternal and fetal risks and preconceptional care.

DESCRIPTORS

Diabetes mellitus
Women
Knowledge
Pregnancy
Maternal and child health

RESUMO

Objetivou-se descrever o perfil reprodutivo de mulheres com diabetes mellitus (DM) e verificar o nível de conhecimento destas quanto aos riscos maternos e fetais e os cuidados pré-concepcionais. Estudo exploratório, que contou com a participação de 106 mulheres, realizado no Centro Integrado de Hipertensão e Diabetes, de março a julho de 2009. As variáveis reprodutivas foram: *número de gestações*, *partos e abortos* e *planejamento da gravidez*. Os dados foram coletados por meio de entrevista que seguiu um formulário pré-estabelecido. O perfil reprodutivo de mulheres com DM mostrou-se permeado de riscos e repercussões reprodutivas negativas à saúde materna e fetal. Das 106 (100%) mulheres estudadas, 44 (41,5%) apresentaram conhecimento moderado sobre os cuidados pré-concepcionais e 58 (54,7%) conhecimento limitado sobre os riscos maternos e fetais. Faz-se necessário oferecer informações às mulheres a fim de promover o conhecimento sobre os riscos maternos e fetais e os cuidados pré-concepcionais.

DESCRITORES

Diabetes mellitus
Mulheres
Conhecimento
Gravidez
Saúde materno-infantil

RESUMEN

Se objetivó describir el perfil reproductivo de mujeres con diabetes mellitus (DM) y verificar su nivel de conocimiento en cuanto a riesgos maternales y fetales, y cuidados preconcepcionales. Estudio exploratorio realizado con 106 mujeres, en el Centro Integrado de Hipertensión y Diabetes, de marzo a julio de 2009. Las variables reproductivas fueron: *número de gestaciones*, *partos y abortos* y *planificación del embarazo*. Los datos se recogieron mediante entrevista según formulario preestablecido. El perfil reproductivo de mujeres con DM se mostró expuesto a riesgos y repercusiones reproductivas negativas a la salud materna y fetal. De 106 (100%) mujeres estudiadas, 44 (41,5%) presentaron conocimiento limitado sobre riesgos maternales y fetales, y 58 (54,7%), con conocimiento limitado sobre riesgos maternos y fetales. Se hace necesario ofrecer información a las mujeres con el objeto de promover el conocimiento sobre riesgos maternales y fetales y sobre cuidados preconcepcionales.

DESCRIPTORES

Diabetes mellitus
Mujeres
Conocimiento
Embarazo
Salud materno-infantil

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INTRODUCTION

According to law No. 9,263, from January 12th 1996, providing for family planning, every Brazilian citizen has the right to access services, means of contraception and information concerning conception. The Brazilian Ministry of Health (MH) establishes the competencies of health professionals according to this instrument in law: nurses provide clinical care in this field and develop educational activities aiming to provide sound information to users so they can make informed decisions concerning their reproductive goals[1]. Gaps were detected in the field in Brazil when a national survey conducted with 15,575 women aged from 15 to 49 years old revealed that 53.8% of women using contraceptive methods do it without professional guidance, with little or no knowledge concerning their correct usage, and at least 50% of pregnancies were not planned[2].

When pregnancies occur without proper planning, we assume that preconception care (clinical and educational) was not provided, which increases the likelihood of maternal and fetal morbidities. When women already affected by a chronic disease such as Diabetes Mellitus (DM) become pregnant, the risks are even greater. Hence, this population should receive information and be encouraged to practice self-care in the preconception period[3]. It is known that educational programs focused on diabetes do not address or only barely address contraceptive methods indicated for women with DM or the complications that advise against a pregnancy when experiencing a decompensated DM[4].

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DM pre-pregnancy monitoring is aimed to prevent birth defects associated with preconceptional hyperglycemia and other maternal and fetal complications associated with pregnancy, such as vascular disorders, retinopathy, nephropathy, fetal macrosomia, fetal respiratory distress, polyhydramnios and ketoacidosis[5]. Hence, a pregnancy in DM women should be provided careful care from the preconception period, because metabolic control in the first weeks of pregnancy is essential to organogenesis[4].

Investigation of the relationship between normoglycemia and the fetal and neonatal evolution in diabetic pregnant women verified that when satisfactory metabolic control is attained, perinatal morbidity is comparable to that of women without DM, regardless of age, parity, or severity of disease[6]. Other authors state that rigorous maternal control based on the adjustment of insulin therapy according to the glycemic profile of the patient enables a pregnancy to continue safely until term[7].

Based on the preceding discussion, preconception care and knowledge concerning maternal and fetal risks in women with DM were adopted as this study's object because even though these epistemological themes are well clarified from the physiological and pathological point of view, there is little research from the perspective of health services practice and the knowledge acquired by women affected by the disease. This statement is based on a search conducted in the Virtual Health Library (VHL). A total of 21 studies were found through the use of the key word *preconception care* in association with the descriptor *diabetes mellitus*. The titles showed that 12 papers were related to preconception care in women with DM, though the abstracts revealed that none addressed the knowledge of these women concerning care or their reproductive profile. Another 18 papers were found with the use of the descriptor *diabetes mellitus* associated with the key word *pregnancy, high-risk*. Five were discarded because, according to the titles, they addressed pregestational DM and none, according to the abstracts, addressed the reproductive profile of women with DM and their knowledge concerning maternal and fetal risks.

This study's guiding questions were: what is the reproductive profile of women with DM? What is the level of knowledge of these women concerning the potential maternal and fetal risks associated with decompensated DM and the care to be adopted during pre-conception? Answering these questions can contribute to advancing knowledge concerning this subject and provide support to the redirecting of pre-conception care for women with DM in order to recognize negative conditions in their reproductive profiles that can be alleviated; a second contribution is identifying aspects of knowledge these women hold that require greater emphasis so they present satisfactory knowledge concerning issues involving their health and that of their children.

This study identifies the reproductive profile of women with DM and verifies their level of knowledge concerning preconception care and maternal and fetal risks.

METHOD

This exploratory study was conducted in the Integrated Hypertension and Diabetes Center in the City Health System of Fortaleza, CE, Brazil from March to July 2009.

The population corresponded to 4,865 women with DM registered in the Primary Care Information System (SIAB) in the city. The confidence coefficient was fixed at 95%, the sampling error at 5%. A sample of 106 women was obtained based on the prevalence of the phenomenon (P) of 7.6%, which in turn was based on the prevalence of the phenomenon in the general Brazilian population[8]. Women with type 1 and type 2 diabetes mellitus of reproductive age (18 to 49 years old) with an active sexual

life were included in the study. The inclusion of women older than 18 years old occurred because it refers to age of majority and the maximum age of 49 years old because it represents the extreme pole for female reproductive age. Women were classified as sexually active when they reported at least one monthly sexual relation, a condition for getting pregnant. Sterilized, hysterectomized, oophorectomized women and those whose husbands had vasectomies were excluded from the study since, theoretically, these amount to marital sterility, constituting a group that does not require pre-conception care.

The variables selected to investigate the reproductive profile of women with DM were: number of pregnancies, deliveries and abortions, types of deliveries, reasons for C-sections and how the last pregnancy was planned.

A Likert scale developed by the study's authors was used to evaluate the level of knowledge of women, for which the following parameters were adopted to evaluate the dimension 'knowledge': 1 – None; 2 – Limited; 3 – Moderate; 4 – Substantial; and 5 – Extensive, according to the Nursing Classification Outcomes (NOC)[9]. The authors established the content and defined a scoring system for each level of knowledge based on the previously mentioned parameters and on theory relevant to the theme[3-5,8,10]. A pilot test was conducted using the proposed scale, which was considered efficient.

The following was defined concerning knowledge of pre-conception care: women would score one point for each of the mentioned pre-concept care, that is, the respondent would score 1 point on the scale in case she did not mention any care action; would score 2 if she mentioned one care action; score 3 if two care actions were mentioned; score 4 for three care actions and score 5 if she mentioned all the pre-conception care actions. Care elected by the authors included: maintaining control of capillary glucose level (up to 110mg/dl for fasting glucose test and up to 140mg/dl for random tests), healthy diet (low salt, low fat and low sugar), healthy weight (Body Mass Index (BMI) between 18.5 and 24.9), and maintaining control of blood pressure (up to 140x90mmHg). It should be noted that women would have to mention only the care action; the values of normal parameters were not required. These parameters are presented only to the readers. In order to enact the utilitarian role of the study, at the end of data collection, the participants had their blood level, blood pressure and BMI measured by the researcher and received pertinent instructions.

Concerning knowledge of maternal and fetal risks: for each risk mentioned, women also scored 1 point because the score system is the same as the previously described. Maternal and fetal risks elected by the authors included: gaining weight above normal levels, fetal malformation, spontaneous abortion, stillbirth, macrosomia, and polyhydramnios.

The participants were initially identified through consultation of medical records that were set aside daily for consultations according to the arrival of patients scheduled for that shift and date and were invited to participate in the study. This aspect conferred randomness to the selection of the study's participants.

Interviews took 30 minutes on average and were held in two shifts; six women on average were interviewed per day. A private room was selected for the interviews so that women would feel comfortable expressing private information.

Findings were processed in the Epi Info version 6.0 and Statistical Package for the Social Sciences (SPSS) version 18.0. A descriptive statistical analysis was performed for: absolute frequency, relative frequency, average (χ) and standard deviation (SD). The Confidence Interval was fixed at 95% for the categorized data.

The Ethics Research Committee at the Federal University of Ceará approved the project (Process No. 27/09). Guidelines concerning research involving human beings provided by the National Council of Health, Ministry of Health were complied with[11]. After women received pertinent information concerning the study and freely consented to it, they signed free and informed consent forms.

RESULTS

Reproductive profile of women with DM

The average age of the women was 25.7 years old (SD= 7.3), while the predominant age was between 18 and 24 years old with 56 (52.8%) of the women. Among the 106 (100%) women with DM, 90 (84.9%) were type 1 DM and 16 (15.1%) were type 2 DM, 88 (83%) used insulin, 11 (10.4%) used oral diabetics and seven (6.6%) used both; 99 (93.3%) had received their diagnosis within the last 20 years and seven (6.6%) were diagnosed more than 20 years ago; the average time of diagnosis was 11.3 years (SD= 6.6 years).

Forty (37.7%) women with DM received a fasting glucose test and 66 (62.3%) took the test at random. Blood glucose was altered (>100mg/dl) in 22 (55%) women who had the fasting glucose test and in 38 (57.5%) women who performed it at random (>140mg/dl); 16 (15.1%) reported a compromised target organ, which characterizes an important criterion of clinical eligibility in the choice of a contraceptive method for women with DM.

The reproductive profile of women with DM is presented in Table 1.

Table 1 – Reproductive profile of women with DM – Integrated Hypertension and Diabetes Center – Fortaleza, CE, Brazil – 2009

Reproductive Profile	N	%
History of pregnancy (n= 106)	56	52.8
Nº of pregnancies (n= 56)		
1 to 2	46	82.1
3 to 5	10	17.8
History of abortion (n= 56)	14	25.0
Nº of abortions (n= 14)		
1	10	71.4
2	4	28.6
History of parity (n= 56)	52	92.8
Nº of births (n= 52)		
1 to 2	46	88.4
3 to 4	6	11.5
Type of delivery (n= 52)		
Normal	24	46.1
C-section	21	40.4
Normal and C-section	7	13.5
Reason for C-sections (n= 28)		
Indirect or directly related to DM	25	89.2
Not related to DM	7	25.0
Plan of a second pregnancy (n= 56)	20	35.7
Responsible for the planning		
Couple	19	95.0
Couple and professional	1	5.0

Of the total number of women with DM, 56 (52.8%) reported at least one pregnancy. Of these, 46 (82.1%) became pregnant once or twice, and ten (17.8%) thee or more times. None had more than five pregnancies. Concerning parity, among the 56 (100%) women with history of pregnancy, four (7.1%) were nulliparous, that is, they became pregnant but had an abortion, and the other 52 (92.8%) experienced one to four deliveries, with an average of 0.79 deliveries (SD=1.021).

Among the 56 women with DM who had already become pregnant, 14 (25.0%) reported at least one abortion: 10 (71.4%) of these reported one abortion and four (28.6%) reported two abortions. This study did not verify what type of abortion, whether it was spontaneous or induced, something recognized as a limitation in this study.

The reasons reported by 28 (100%) women for having a C-section were organized into groups as directly or indirectly related to DM and unrelated causes. The following was identified in the first group: hypertension, DM, fetal macrosomia, post term pregnancy and premature rupture of membranes, cumulatively mentioned by 25 (89.2%) women. The group of causes not related to DM included previous C-sections, breech presentation and transverse position, mentioned by seven (25%) women.

Among the 56 (100%) women with a history of pregnancy, only 20 (35.0%) reported that the pregnancy was planned. Of these, 19 (95.0%) reported that the couple planned the pregnancy and only one (5.0%) reported that a professional helped with the planning.

Knowledge of women with DM concerning preconception care

A total of 72 (67.9%) women reported they received some information concerning preconception care. Of these, 62 (86.1%) mentioned the DM monitoring service at the Integrated Hypertension and Diabetes Center as the source of information, ten (13.9%) reported some means of communication and five (6.9%) mentioned prenatal and maternity care.

Of the 34 (100%) women who reported no information was received, 27 (79.5%) did not mention any care action and seven (20.5%) mentioned care actions focused on preconception based on personal experiences or those of their family members.

Table 2 presents a synthesis of women's knowledge concerning preconception care and DM.

Table 2 – Distribution of the number of women with DM according to knowledge concerning preconception care – Hypertension and Diabetes Integrate Center – Fortaleza, CE, Brazil – 2009

Preconception care*	N	%	CI 95%
Glycemic control	72	67,9	58,2 – 76,7
Controlled blood pressure	71	67,0	57,2 – 75,8
Healthy diet	39	36,8	27,6 – 46,7
Appropriate weight	13	12,3	6,7 – 20,1
Level of knowledge of women with DM			
None	27	25,5	17,5 – 34,9
Limited	4	3,8	1 – 9,4
Moderate	44	41,5	32,6 – 51,5
Substantial	23	21,7	14,3 – 30,8
Extensive	8	7,5	3,3 – 14,3

None (no care was mentioned); Limited (at least one care action was mentioned); Moderate (two care actions); Substantial (three) and Extensive (all care required was mentioned). *The sum of N was greater than the sample (106) because one woman could report more than one care action.

According to Table 2, the greatest amount of knowledge was related to the maintenance of glycemic control and blood pressure parameters within normal levels, mentioned by 72 (67.9%) and 71 (67%) of the participants, respectively. From 57.2% to 76.7% of women with DM are aware of such care (keeping glycemic control and blood pressure levels within normal levels), a relatively positive result. Knowledge concerning appropriate weight was the least frequently mentioned; 13 (12.3%) women reported such care. Another important care action refers to appropriate diet, knowledge of which was reported by 39 (36.8%) women (CI=95%).

In relation to knowledge of women with DM concerning preconception care, 27 (25.5%) were unaware of all the required care and only eight (7.5%) presented extensive knowledge concerning proper care. From 32.6% to 51.5% of the women with DM presented moderate knowledge concerning preconception care (CI=95%), that is, more than half of the women would be able to compensate for DM before a pregnancy, reducing maternal and fetal risks due to an association with pregnancies involving DM.

It is worth noting that 15 (14.1%) women mentioned other care actions they deemed to be required for women with DM with an intention to become pregnant, such as: not smoking, be more carefully monitored by a physician, comply with DM pharmacological treatment and take periodical exams, avoid strong emotions and rest. Such care is relevant to promoting a healthy pregnancy, however, since these are general care required by pregnant women in general and are not specifically related to pregnancies associated with DM, they were not listed in the scales to evaluate knowledge.

Knowledge of women with DM concerning maternal and fetal risks

Table 3 presents the level of knowledge of women with DM concerning maternal and fetal risks.

Table 3 – Distribution of the number of women with diabetes mellitus according to the level of knowledge concerning maternal and fetal risks – Integrated Hypertension and Diabetes Center – Fortaleza, CE, Brazil – 2009

Maternal and fetal risks*	N	%	CI 95%
Fetal malformation	48	45,3	35,6 – 55,2
Miscarriage	42	39,6	30,3 – 49,6
Stillbirth	12	11,3	6,0 – 18,9
Macrosomia	4	3,8	1,0 – 9,4
Weight gain above normal levels	2	1,9	0,2 – 6,6
Polyhydramnios	---	---	---
Level of knowledge of women with DM			
None	42	39,6	30,3 – 49,6
Limited	58	54,7	44,8 – 64,4
Moderate	6	5,7	2,1 – 11,9
Substantial	---	---	---
Extensive	---	---	---

None (no risk was mentioned); Limited (at least one risk was mentioned); Moderate (two risks); Substantial (three) and Extensive (all potential risks were mentioned). *The sum of N was greater than the sample (106), because one woman could mention more than one risk.

None of the women reported knowledge concerning polyhydramnios, while this is the most common risk. Among the women with DM who retained some knowledge, 64 (60.3%) acknowledged the risks of fetal malformation and miscarriage: 48 (45.3%) and 42 (39.6%) women, respectively. Other risks identified in the scale included: macrosomia, stillbirth and weight gain above normal levels, respectively mentioned by 12 (18.8%), four (6.2%) and two (3.1%) women.

From 35.6% to 55.2% of the women were aware of the risk of fetal malformation and 30.3% to 49.6% of the women were aware of the risk of miscarriage. This fact reflects a favorable condition, since knowledge concerning such risks can positively influence self-care of these women (CI=95%).

Other risks to which women with DM and their children are exposed were mentioned by 36 (33.9%) women, while 21 (58.3%) reported the risk of children of women with DM being born with DM, ten (27.7%) reported worsening of hypertension and DM, eight (22.2%) reported maternal death and six (16.6%) reported complications during delivery and post delivery. These risks are real but not specifically related to DM events and pregnancy. Hence, they were not included in the scale developed by the authors to evaluate women's knowledge because the risk of a woman with DM bearing a child with diabetes are the same as found in the population without DM.

A total of 23 (21.6%) out of 106 (100%) women reported experiencing DM related problems during the process of becoming pregnant, pregnancy or delivery when repercussions of DM were investigated. Fourteen (13.2%) women reported an abortion, a fact that may explain the number of women aware of such a risk; experiencing the fact personally leads to knowledge. A total of 12 (11.3%) women with DM reported the fetus was Large for Gestational Age (LGA), which is a common event among these women. Other complications mentioned by women included fetal malformation, stillbirth and weight gain above normal levels.

DISCUSSION

The reproductive profile of part of these women with DM presented satisfactory reproductive characteristics, considering that becoming pregnant and delivering more than four children increases the risks for mothers and children during pregnancies and deliveries[12]. Even though the causal relationship between abortions and DM was not assessed in this study, it is known that abortions are frequent among women whose pregnancy occurs amid unfavorable clinical conditions. To reduce the number of spontaneous abortions and congenital malformations in the case of children of women with DM, diabetes should be controlled and guidance provided to women in the preconception period. It is crucial that women achieve favorable glycemic control in their daily lives, which is necessary to impede congenital malformation and miscarriages[13].

The numbers of normal deliveries and C-sections were similar in the study sample. This result differs from what is found in the literature. A case-control study compared the perinatal results of 90 pregnant women with DM with two control groups of women without diabetes and a greater number of C-sections was found among those with DM[6].

Identifying systemic hypertension in the reproductive profile of women with DM as a reason for surgical births is expected since it affects most DM patients[8]. However, hypertension before or during pregnancy is not an indication for a surgical birth. It is necessary to evaluate the existence of favorable conditions in the uterine cervix and appropriate maternal and fetal conditions to control this type of pregnant women[14].

Fetal macrosomia is defined as newborn weight above or equal to 4,000kg. Macrosomic infants are at a high risk of shoulder dystocia, plexus and skeletal injury, meconium

aspiration syndrome, perinatal asphyxia, hypoglycemia and death. A study that sought to identify maternal and perinatal factors related to macrosomia in 411 cases revealed a prevalence of macrosomia four times greater among women with DM[15]. Fetal macrosomia, a complication directly related to DM, may explain post term deliveries, that is, after 42 weeks. In this case, given these findings, C-sections are justified[16].

The result of premature rupture of membranes in women with DM can be explained by the fact that DM increases the likelihood of urinary tract infections since these are frequent in pregnant women and those with DM[17]

The results of unplanned pregnancies need to be reduced, which is possible through accessing women via the family planning service of the primary healthcare service. A study describing DM related fetal complications evaluated 50 pregnant women with this pathology and observed that pregnancies in these women were poorly planned, which highlights the importance of keeping glucose parameters within normal levels in the preconception phase since abnormal levels in the first trimester of pregnancy make DM related neonatal complications more likely[18].

One of the care actions most important to minimizing adverse conditions during the pregnancies of women with DM is glycemic compensation. For this reason, these women should be instructed to plan their pregnancies so that glucose parameters are normalized from the time of conception[19]. Hypertension and pre-gestational DM are directly associated with tissue damage and cardiovascular disorders. These may occur separately or together in pregnant women and are associated with a significant increase of maternal and perinatal morbidity and mortality[14].

Weight gain during pregnancy is a prognostic factor in the evolution and outcome of pregnancy. An increase in the prevalence of pregnant women with weight gain above acceptable levels has been verified in recent years, with harmful consequences for mothers and children. A study addressing risk factors and consequences related to excessive weight gain during pregnancy identified the more relevant risk factors as including nutritional state prior to pregnancy, educational level, parity, maternal age, marital situation, psychological factors, smoking, exercise, height and eating habits. Among the harmful effects we highlight weight retention after delivery, obesity over a lifetime, streaks on the skin, edema, preeclampsia, hypertensive disorders, diabetes, dystocia, macrosomia, surgical delivery, and hemorrhaging[20]. Therefore, it is necessary for DM women to control their weight and keep a healthy diet previous to pregnancy, particularly in the case of women with DM.

Hence, the scale applied in this study enabled the identification of women with all levels of knowledge (none, limited, moderated, substantial or extensive), though women with moderate knowledge were predominant (44/41.5%) followed by 27 (25.5%) women with no knowledge. Therefore, a significant number of women with DM are getting pregnant without proper planning and knowledge concerning required preconception care.

When we observed negative repercussions in the process of becoming pregnant, during pregnancy and delivery in the obstetrical profile of women with DM, the need for preconception care to reduce such disorders becomes apparent. We highlight the role of nurses in the preconception control of these women so that they are able to become pregnant in a better clinical timing.

Pregnancy in women with DM is considered to cause diabetes because DM is characterized by resistance to insulin associated with an increase in serum estrogen levels, prolactin, progesterone, cortisol and chorionic gonadotropin, aiming to keep a constant supply of glucose to the fetus. In a normal pregnancy, inconsistency is compensated by an increase in the pancreatic secretion of insulin[5]. In patients with an altered metabolism of carbohydrates prior to pregnancy and in those who do not adjust to the changes inherent to pregnancy, an elevated maternal glycemia leads to hyperglycemia and hyperinsulinemia, which intensifies perinatal morbidity and mortality. The advancements observed in the last two decades in the fields of Obstetrics and Pediatrics and the improvement of glucose control during pregnancy significantly reduced perinatal morbidity and mortality associated with diabetes during pregnancy[19].

Women with DM presented the following levels of knowledge based on the scale adopted to assess their knowledge concerning maternal and fetal risks: none, limited, or moderate knowledge. This result reflects a lack of information provided to these patients by the health services. It is necessary to guide all women concerning the risks to which they are exposed, which can contribute to their adherence to care before and during pregnancy.

The proposal of the current care model based on health promotion considers the right to information on the part of users so that knowledge is the essential element in a decision-making process. Hence, there is a need to train health workers so their practice is in agreement with the current health policy model, and they are committed to the democratization of health knowledge and the development of the patients' potential[21].

CONCLUSION

The reproductive profile of women with DM enabled us to recognize that the studied group accumulates risks and negative repercussions in their reproductive trajectory, which can be prevented in new patients through the commitment of managers and their health teams to provide information regarding the relationship existing between pregnancy and DM, particularly in the context of preconception care and maternal and fetal risks. Once they are aware of such a relationship, these women will be more capable of keeping metabolic control and self-care in the event of a pregnancy and in its planning.

The amount of knowledge of the studied women concerning both preconception care and maternal and fetal risks was deficient, indicating the need for women with DM to acquire information so their level of knowledge of maternal and fetal risks as well as preconception care is acceptable and they attain higher knowledge. A total of 27 (25.5%) women had no knowledge concerning preconception care (CI= 17.5%-34.9%) and only eight (7.5%) presented extensive knowledge (CI=3.3-14.3%). The following stood out among the most known acts of preconception care: glucose control was mentioned by 72 (67.9%) women (CI=58.2-76.7%), and maintenance of blood pressure within normal parameters was mentioned by 71 (67.0%) women (CI=57.2-75.8%). In relation to knowledge concerning maternal and fetal risks, 42 (39.6%) (CI=30.3-49.6%) had no knowledge and none had extensive knowledge. The most frequently mentioned maternal and fetal risks were fetal malformation, reported by 48 (45.3%) women (CI=35.6-55.2%), and abortion, reported by 42 (39.6%) (CI=30.3-49.6%).

Given the preceding discussion, we question the knowledge of health professionals working in this field concerning preconception care provided to women with DM, and the maternal and fetal risks to which they are exposed, as well as the strategies used by these professional to inform users. These questions can be further investigated in future studies.

A limitation of this study, already mentioned in the text, refers to a lack of investigation of the type of abortions (spontaneous or induced) when the reproductive profile of these women with DM was investigated.

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