

# Procrastination as a Key Factor in Postpartum Screening for Diabetes: A Qualitative Study of Iranian Women with Recent Gestational Diabetes

Forough Rafii,<sup>1,2</sup> Seyedeh Fatemeh Vasegh Rahimparvar,<sup>1,3,\*</sup> Afsaneh Keramat,<sup>4</sup> and Neda Mehrdad<sup>5</sup>

<sup>1</sup>Nursing Care Research Center, Iran university of Medical Sciences, Tehran, Iran

<sup>2</sup>Nursing and Midwifery Faculty, Iran University of Medical Sciences, Tehran, Iran

<sup>3</sup>Nursing and Midwifery Faculty, Tehran University of Medical Sciences, Tehran, Iran

<sup>4</sup>Nursing and Midwifery Faculty, Shahrood University of Medical Sciences, Shahrood, Iran

<sup>5</sup>Endocrinology and Metabolism Research Center, Endocrinology and Metabolism Clinical Sciences Institute, Tehran University of Medical Sciences, Tehran, Iran

\*Corresponding author: Seyedeh Fatemeh Vasegh Rahimparvar, Nursing and Midwifery Faculty of Tehran University of Medical Sciences, Eastern Nosrat St, Tohid Sq, Tehran, Iran. Tel: +98-2161054101, Fax: +98-2166904252, E-mail: vaseghrh@tums.ac.ir

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## Abstract

**Background:** Women with previous gestational diabetes mellitus (GDM) are at elevated risk for developing Type 2 diabetes. Despite the recommendation for postpartum diabetes screening for these women, the rate of screening is low.

**Objectives:** The present study aimed at conducting an in-depth exploration of the experiences of Iranian women with recent GDM in the process of diabetes screening.

**Methods:** This grounded theory qualitative study was conducted in Tehran, Iran, from 2013 to 2016. In this study, 22 women with recent GDM, who gave birth at least 6 months before the interview, were selected by purposeful sampling method; then, to achieve saturation, the participants were followed using theoretical sampling method. The participants were asked about their postpartum experiences, specially about the process of attendance/not attendance in diabetes screening at 6 weeks to 6 months after child birth, using semi-structured interviews. Data were analyzed using Corbin and Strauss method (2008).

**Results:** Three main categories were extracted as postpartum diabetes screening process in women with a recent GDM: to be aware, to be sensitive, and to perceive severity of the threat. Also, the outcomes have been classified into 4 levels: selective screening, accidental screening, primary lack of screening, and secondary lack of screening. In our study, the participants had a range of procrastination in screening, from no procrastination in selective screening to high procrastination in secondary lack of screening. Sometimes, the participants had the intention to be screened but they took no action, did not do the screening due to self-deception, or perceived screening as lacking immediate reward (3 main features of procrastination). Thus, due to procrastination, they did not do the screening. Screening in the range of procrastination, as the core category, was the most obvious concept that implicitly existed in all the data.

**Conclusions:** Even when sensitivity and perceiving a threat about diabetes were activated in women with recent GDM, they did not undertake screening due to procrastination. Procrastination is an important and missed factor in screening. Conducting further studies is recommended to develop evidence-based strategies to decrease women's procrastination in screening.

**Keywords:** Gestational Diabetes Mellitus, Postpartum, Qualitative Research, Screening

## 1. Background

Gestational diabetes mellitus (GDM) is a common disease in pregnancy and its incidence is increasing (1). The prevalence of GDM in Iran has estimated to be 4.9% (CI%95: 3.9 - 5.8) (2). GDM due to placental hormones is associated with insulin resistance, so it is close to Type 2 diabetes (3). Glucose intolerance will remain in about 30% of women with GDM after delivery (4), and most women with GDM will return to normoglycemia in postpartum. However, these women are at higher risk of developing Type 2 diabetes in the future (5). Women with a history of GDM are in 7 times higher risk of diabetes (1). Thus, GDM can predicte

diabetes (6). Health care providers are responsible to give fair warning to GDM women about this risk and to propel them towards a healthier lifestyle to prevent or delay the onset of diabetes (7).

American diabetes association (2016) recommended an oral glucose tolerance test (OGTT) at 6 to 12 week postpartum visits for diabetes screening in women with recent GDM (8). Despite this recommendation, the rate of screening is low (9, 10), ranging from 18% to 57% (10). In Iran, postpartum diabetes screening rate was reported to be 48.7% (11). However, the reasons for poor follow-up, especially in particular groups of women, are unclear (12), moreover, most researches are from high-income coun-

tries (13). Asian ethnicity is a risk factor for GDM (13, 14) and is related to higher postpartum diabetes screening (9, 10, 15). Therefore, Asian women are good candidates for screening studies. Nonetheless, most studies about postpartum glucose screening have included Asians as a minor population (10).

To our knowledge, very few studies have used qualitative methods to explore the experiences of women with recent GDM in doing postpartum diabetes screening (5); also, in Iran, as an Asian country, no qualitative study has been conducted on postpartum diabetes screening. Therefore, according to previous studies, understanding Iranian women's experiences in diabetes screening after child birth is necessary and could provide the knowledge to develop interventions for improving the rate of postpartum diabetes screening.

## 2. Objectives

The present study aimed at conducting an in-depth exploration of the experiences of Iranian women with recent GDM in the process of postpartum diabetes screening.

## 3. Methods

### 3.1. Design

A qualitative grounded theory approach was used in the present study to understand the deep experiences of women with recent GDM in the process of diabetes screening after child birth. This approach was an appropriate selection for systematically analyzing a phenomenon to explain how the process occurs inductively (16).

### 3.2. Setting and Participants

This study was conducted from 2013 to 2016 in Tehran, Iran. Inclusion criteria were as follow: having GDM in previous pregnancies according to their hospital files, and giving birth at least 6 months ago. The participants were selected by reviewing the hospital files and through purposeful sampling method. We removed the phone numbers of the selected women from their files. Then, we called them, and described the details of the study. The first participants were selected from a governmental and referral hospital; then, considering theoretical sampling method we also looked into private hospitals in different parts of Tehran. Women with different characteristics were selected using hospital files. Sampling was continued until no new category emerged from the data. If the participants did not wish to continue their contribution, they were excluded. In our study, no one was excluded.

### 3.3. Data Collection

A semi-structured interview was used for data collection. The interview guide was used to allow the participants to express their experiences and perceptions in detail. The participants were asked about their general well-being, and their postpartum experiences, specially about the process of attendance/not attendance in diabetes screening; later questions were based on their previous answers. For instance, after several women spontaneously discussed their difficulties about caring for the baby while they went to the lab for screening, the interviewer merged some indirect questions about this issue. Also, reflective probes were used to encourage the participants to describe their perceptions better. All interviews were accompanied by a PhD student as a trained researcher (the corresponding author) at a place and time of the participants' choice, usually in their home; and the interview lasted 25 to 45 minutes.

In the present study, postpartum diabetes screening was defined as referring the participants to the lab for fasting blood sugar or 75 gram OGTT from 6 weeks to 6 months after child birth.

### 3.4. Data Analysis

For data analysis, grounded theory methodology developed by Corbin and Strauss (2008) (16) and MAXQDA Version 10 were used. After the first interview, data analysis for concepts was started by the coding process. For this purpose, the recorded interviews were transcribed and read for several times. Then, raw data were taken and raised to conceptual level, and categories were developed by cutting or connecting concepts to each other. Also, data analysis for context was done similar to data analysis for concepts. To bring the process into the analysis, a continuing flow of action, interaction, and emotions happening in the reaction to events or problems, or as a part of reaching a goal, were surveyed. The last step was to integrate the categories. In this step, categories were linked around a core category, and after refining and trimming, the theory of the study was constructed (16).

Considering the categories emerging from the initial interviews, data collection was continued until data saturation with maximum variation in participants by theoretical sampling method. For instance, after the initial interviews, it seemed that new borns' sickness might have been related to the participants' attendance in diabetes screening. Thus, at the follow-up, we interviewed those women who had an unhealthy baby.

### 3.5. Trustworthiness

To ensure data trustworthiness, Lincoln and Guba's Evaluative Criteria (17) was used. Member checking tech-

nique was used to achieve credibility. For this purpose, the emerged categories from participants' interviews were approved by the same participants. Also, the researcher tried to gain women's trust by developing a good relationship with them to perceive their situation better. To enhance dependability, 3 experts in qualitative research rechecked the research process, as external audits. We documented and reported the details of the study to ensure the confirmability of the finding.

### 3.6. Ethical Considerations

This study was supported and sponsored by Iran University of Medical Sciences, research No. 93-02-123-24619, and was approved by the ethics committee of Iran University of Medical Sciences. Informed consent was obtained from all participants. We informed the participants that they could stop the interview at any time they wished. We obtained the participants' permission to audiotape the interviews.

## 4. Results

In this study, 25 interviews were conducted with 22 participants. In the interviews, we found the following points: The mean age of the participants:  $32.0 \pm 4.9$  years; babies' age:  $11.9 \pm 4.8$  months; number of children:  $1.7 \pm 0.6$ ; the percentage of educational level  $\leq$  diploma: 68.1%; working out of home: 36.3%; diabetes in family: 50%; of the participants, 54.5% used insulin in GDM; prior GDM was 18.2%; of women, 72.6% did not have any known illness; 27.7% of the participants gave birth in private hospitals; 31.9% had sick babies; 81.9% breastfed; and 50% did the screening. The details of demographic and clinical characteristics are demonstrated in [Table 1](#). A summary of the categories of this study are presented in [Table 2](#).

### 4.1. To Be Aware

Participants' statements indicated that sufficient awareness and insufficient awareness about postpartum screening for diabetes were given to them by the health care providers. Some of the participants had a previous knowledge about screening.

Usually, women during pregnancy or postpartum were collecting information about postpartum screening for diabetes. For example, participant 11 said, "After giving birth in the maternity hospital and at the time of discharge, I was told by my doctor that I should do blood glucose test in 6 weeks and even wrote it down in my insurance booklet."

Sometimes, information was not given to women about screening, especially women who were not using insulin injection to control GDM, and were only controlling

their blood glucose by diet. Participant 3 who was controlling her GDM only with diet said, "When I was in hospital, nobody told me that I should test my blood glucose, but, a patient in my next bed who was injecting insulin told me to do so."

Some participants, because of the books they had read or having a college education, or having a family history of diabetes, were aware of postpartum screening. For example, participant 8 stated, "Nobody told me to do postpartum screening for diabetes after giving birth, but I knew it myself because my mother had diabetes, and I have read some books about diabetes."

### 4.2. To be Sensitive

Sensitivity of women about diabetes and its consequences in the future was the next stage after awareness. The level of sensitivity from exacerbated sensitivity to limited sensitivity created a range in such way that those women with more sensitivity, had more intention of doing the screening. However, the results of the study revealed that intention for screening was not necessarily leading to screening because sometimes the participants who had exacerbated sensitivity did not do the screening due to procrastination.

Women who felt at the risk of developing diabetes in the future and watched their diet to not to develop diabetes in the future had exacerbated sensitivity. Participant 2 said, "When I know that gestational diabetes can pose a risk to me in the future and increase the risk of diabetes for me, and because I also have a favorable genetic background, I should prevent it."

Participants who had limited sensitivity, felt safe and healthy and felt no need for follow up, did not feel any need for screening. Some women assumed that diabetes can only happen during pregnancy and it will not happen after birth. They did not believe they may develop diabetes in the future and were feeling healthy. Participant 13 said, "After my delivery, the doctor wrote me a test and asked me to do it. I thought, perhaps it is for the kids, so I did not do it." Also, some of the women thought that because they comply with the diet and exercise and because they breastfeed their babies, they will not develop diabetes. "As I comply with my diet and exercise, and as I also breastfeed my baby, I don't think my blood glucose would be that high. I am very careful and compliant." (Participant 8).

### 4.3. To Perceive the Severity of the Threat

Statements of the participants showed a range of perceived threat of diabetes. At the one end of the spectrum, there was the perceived threat and at the other there was the lack of perceived threat. The more the women perceived diabetes as a threat in the future, the more likely

**Table 1.** Demographic and Clinical Characteristics of the Participants

Participant No.	Age, y	Educational Level	Occupation	Prior GDM	Using Insulin in GDM	Diabetes In family	Woman's Healthy/Sick Status	Birthing Hospital	Baby's Age, mo	Baby's Healthy/Sick Status	Children No.	Breastfeeding	Screening
P1	30	primary	housekeeper	no	yes	mother	healthy	governmental	8	healthy	2	yes	no
P2	33	university	governmental job	no	yes	father	healthy	governmental	6	healthy	1	yes	yes
P3	24	university	governmental job	no	no	no	healthy	governmental	11	sick	1	yes	no
P4	32	university	governmental job	no	yes	mother	sick	governmental	17	sick	2	yes	yes
P5	31	university	housekeeper	no	no	no	healthy	governmental	15	sick	2	no	yes
P6	37	illiterate	housekeeper	yes	yes	no	sick	governmental	12	sick	2	no	yes
P7	31	diploma	housekeeper	no	no	mother	sick	governmental	10	sick	2	no	yes
P8	32	high school	self-employed	yes	no	father	healthy	governmental	7	healthy	2	yes	no
P9	31	diploma	housekeeper	no	no	no	healthy	governmental	12	healthy	1	yes	no
P10	32	diploma	housekeeper	no	yes	no	healthy	private	14	healthy	2	yes	yes
P11	40	primary	housekeeper	no	yes	no	healthy	governmental	18	healthy	1	yes	yes
P12	42	diploma	self-employed	no	no	mother, sisters	healthy	governmental	19	healthy	2	yes	yes
P13	25	primary	housekeeper	no	yes	no	healthy	governmental	10	sick	1	yes	no
P14	32	diploma	housekeeper	yes	yes	mother	sick	governmental	21	sick	1	yes	no
P15	26	high school	housekeeper	no	no	mother, father	sick	governmental	8	healthy	1	yes	yes
P16	31	diploma	housekeeper	no	no	no	healthy	governmental	18	healthy	3	yes	no
P17	33	university	governmental job	no	yes	no	healthy	private	8	healthy	2	yes	no
P18	31	diploma	governmental job	no	yes	mother	healthy	private	7	healthy	2	yes	no
P19	25	high school	housekeeper	no	yes	father	sick	private	8	healthy	1	no	yes
P20	42	university	housekeeper	yes	no	no	healthy	governmental	18	healthy	3	yes	yes
P21	33	university	housekeeper	no	no	no	healthy	governmental	7	healthy	2	yes	no
P22	31	diploma	housekeeper	no	yes	mother	healthy	private	8	healthy	2	yes	no

they had a postpartum diabetes screening plan. However, some participants, despite having a high perceived threat, did not do the screening due to procrastination. Sometimes, women did not perceive the severity of the threat as they were not taking diabetes seriously, and were prioritizing the current problems over the future ones. For example, participant 14 said, "I told myself, I do not show any symptoms, which means there is nothing to be worried about. If I had any symptoms, then I go for the test."

Sometimes incorrect beliefs about gestational diabetes were leading to not taking the possibility of diabetes in the future seriously. Thus, some of the women, despite knowing about the possibility of diabetes in the future, only believed they may develop diabetes during pregnancy due to stress and that after giving birth, they are not at risk of diabetes anymore. Participant 14 in said, "I told myself, I have developed diabetes because of stress I had during my pregnancy ... I was so nervous during my pregnancy and my glucose level was elevated."

Sometimes, blood glucose in some women was at the

border line, so they thought they do not have GDM and ignored it. This is despite they had been diagnosed with GDM and this was outlined in their medical record. "My glucose level was not too high. It wasn't gestational diabetes. My glucose level was only 100 or 105, the amount that was manageable by diet." (Participant 8).

Perceiving severity of diabetes' outcomes as a risk as well as impaired performance was one of the steps in the process of women's participation in postpartum screening for diabetes. Statements of some participants showed that the fear of diabetes consequences, and seriousness of diabetes, would increase their interest in screening for postpartum diabetes. "Yeah, I hate diabetes. I heard that diabetes imbalances the body system, so I am afraid of diabetes ... That's why I'm screening." (Participant 12).

Furthermore, maintaining health to protect the baby, serve other children, and undertake nonmaternal roles also led to perceived severity of threat. In this regard, participant 12 stated, "I always say God, keep me healthy. I want to be with my children. If I am not healthy, how am I sup-

**Table 2.** List of Categories

categories	Subcategories	Primary Categories	Frequency <sup>a</sup>
<b>To be aware</b>	To be aware of screening	Given sufficient awareness by healthcare providers	134 (31.9)
		Given insufficient awareness by healthcare providers	109 (15.9)
		Previous awareness	12 (2.9)
<b>To be sensitive</b>	Limited sensitivity	Felling safe and healthy	58 (13.8)
		Feeling of no need for follow up	40 (9.5)
	Exacerbated sensitivity	Sense of being at the risk of developing diabetes in the future	130 (30.5)
		Controlling in order not to develop diabetes in the future	30 (7.1)
<b>To perceive severity of threat</b>	Lack of understanding severity of threat	Prioritizing current problems over the future ones	120 (28.6)
		Incorrect beliefs about gestational diabetes	69 (16.4)
		Not taking diabetes seriously	159 (37.8)
	Understanding severity of threat	Fear of diabetes' consequences	98 (23.3)
		Maintaining health to protect the baby	86 (20.5)
		Maintaining health to serve other children	19 (4.5)
		Maintaining health to undertake non-maternal roles	54 (12.8)

<sup>a</sup>Values are presented as No. (%).

posed to look after my children? As a mother I must maintain my health ... and I also have other roles.”

#### 4.4. Outcomes

In the present study, the outcomes have been classified into 4 levels:

##### 4.4.1. Selective Screening

If a participant knew about the screening and during the allocated time (6 weeks to 6 months after child-birth) voluntarily attended the laboratory for screening, her screening was classified as selective screening. In fact, she first became aware of the screening, and then through the stages of exacerbated sensitivity, perceived severity of treat, self-regulation, and planning overcame the problems and attended the laboratory for screening. Thus, these women did not procrastinate in their screening.

The tests undertaken by the participants were not the same. The tests included FBS or 75 gr OGTT, which were done alone or in combination of 2. Six weeks after giving birth was often the time recommended for screening. Participant 7 who had a selective screening said, “I knew that I should go for postpartum glucose test after giving birth. I did the test 4 months after my delivery.”

##### 4.4.2. Accidental Screening

Sometimes due to some symptoms and problems, the participants had to visit the doctor and the doctor would suggest a diabetes test due to the nature of their symptoms, then the participants did the test. For example, caesarean section wound infection was one of the reasons for blood glucose test. However, this test was done 6 weeks to 6 months after child birth. Participant 6 said, “They said my cesarean section surgical site is infected and that’s why they asked for diabetes test which I did, my glucose level was good.”

Women who were in the category of accidental screening, if lacked the symptoms, might have undertaken the blood sugar test, or might have not. Nonetheless, with the existence of a problem that needed a glucose test, the women were more likely to do the screening and did not procrastinate.

##### 4.4.3. Primary Lack of Screening

Failure to do the screening, due to lack of awareness was named primary lack of screening. Some of the women, after being informed by the researcher, started to be worried and had a desire to do the screening. For example, participant 13 said, “If I knew, I would have done it. Can I do it now?”



#### 4.4.4. Secondary Lack of Screening

Statements of the participants indicated that some women despite being aware of screening, did not undertake the test due to different reasons, and this was named secondary lack of screening.

In fact, women who were fitted in the category of secondary lack of screening, became aware of diabetes screening at first, then they developed a range of sensitivity (exacerbated to limited) and severity of perceived threat (low to high). These women had a high level of procrastination, which led to lack of screening.

Several categories as barriers to screening were emerged in this study. These categories were responsible for the secondary lack of screening. All of these barriers refer to procrastination in different ways. For instance, sometimes in the interviews, the researcher felt that the reasons for some participants not doing the screening was not real. It seemed that those participants were deceiving themselves. Because the other participants had similar problems, yet they managed to do the screening. Lack of opportunity and time for screening was one of the reasons raised by a number of participants. Meanwhile, their statements were inconsistent and showed that they were spending a lot of time for recreation and leisure. It seemed that their reasoning was false. Sometimes, even the participants admitted that these reasons were excuses for not doing the test. For example, participant 17 said, "I did not have time to go to the lab...I knew that I was looking for excuses ... I think people who say they have no time, they waste their time."

There are models that refer to perceived threat as the main factor in health promotion. However, in postpartum diabetes screening, perceived threat will not exacerbate the same way as cases of illness, even in the time when sensitivity and perceiving thereat have been activated. Despite doctor's order and during stages of "to be aware" and "perceiving the threat", procrastination caused the women not to undertake screening. Therefore, procrastination, in this regard, is very powerful. Even other categories refer to procrastination in different ways such as feeling of difficulty to do the screening, which implicitly refers to procrastination. Therefore, screening in the range of procrastination was the most obvious concept that implicitly existed in the data, and was a category that could include and connect other categories in different ways. Thus, it was identified as the core category.

To explain the theory which resulted in conducting this study, it could be stated that if the process of becoming aware and sensitive, and perceiving the threat occurs, and if procrastination about postpartum diabetes screening be at the low level, the screening will take place (selective screening). If a women, due to illness or health condition, is forced to test her blood glucose (Accidental screening), it could be said that awareness as well as a range of sensitivity and severity of perceived threat along with a range of procrastination exist.

Sometimes, lack of screening is due to the lack of awareness about screening (primary lack of screening). Sometimes, awareness about screening exists, but sensitivity and severity of perceived threat do not occur or procrastination is at the high level, so consequently, screening does not happen (secondary lack of screening).

Sometimes, awareness about screening exists, but sensitivity and severity of perceived threat do not occur or procrastination is at the high level, so consequently, screening does not happen (secondary lack of screening).

## 5. Discussion

This study revealed the process of attendance/not attendance of women with recent GDM to postpartum diabetes screening. In our study, 3 main categories were extracted as the postpartum diabetes screening process: to be aware, to be sensitive, and to perceive severity of threat.

To be aware about the screening was the first step of the process. There was a range of awareness from sufficient awareness to insufficient awareness about screening. At confirmation of our findings, previous studies have shown that education and awareness of women with recent GDM about postpartum diabetes screening had several levels, moreover, education had an important role in doing the screening (18-20).

We found that most women who did not inject insulin to control their GDM, were not educated about postpartum diabetes screening. Thus, they did not do the screening. In previous studies, there was controversy about the relationship between using insulin in GDM and doing the screening. Some studies reported a positive relationship between insulin use in GDM and screening (15, 21). Another study reported a negative relationship (22), and some studies reported no relationship (19, 23). We suggest that one of the important reasons for difference in the previous studies is due to the difference in the education given about screening to women with and without using insulin in their GDM in different populations. To our knowledge, this was the first time that such a reason was given.

Our findings indicated that women with more sensitivity or more perceived severity of threat about diabetes, had more intention of doing the screening. As similar studies, in relation to breast screening, based on the Health Belief Model, after perceiving the threat, women will follow the screening methods (24-26).

Also in our study, those women who had exacerbated sensitivity or perceived severity of the threat, sometimes did not do the screening. In a follow-up survey, Keely et al. demonstrated that women with a history of GDM valued

the importance of postpartum diabetes screening. However, there were barriers that affected screening rates despite the perceived importance of screening by women. Keely et al. recommended to study this barrier (27). Considering our findings, it seems that procrastination was the main barrier related to postpartum diabetes screening in women with perceived threat of diabetes. To our knowledge, procrastination was the main barrier in Keely's study as well. Also, in a few studies, procrastination was reported as a key barrier to breast cancer screening (28, 29).

In the procrastination-health model, procrastination is suggested to result in less frequent practice of health-promoting behaviors (30, 31). Procrastination is defined as a voluntary and irrational gap between intention and action despite expecting a potential negative outcome (32-34). All procrastination is delay but not all delay is procrastination (34). When a task is perceived as lacking immediate reward, procrastination may often occur (35). Also, self-deception and self-handicapping occur in procrastination (36-38). Our findings were matched with these considered characteristics of procrastination. In our study, the participants had a range of procrastination; they had the intention of doing the screening with or without action. Sometimes, they did not do the screening due to self-deception. Finally, some of our participants perceived screening as lacking immediate reward, so they did not do it due to procrastination.

Despite the previous health promotion models that referred to perceived threat as the main factor in health promotion, such as Pender Model (39), we suggest that procrastination play a main role in the process of screening.

About the limitation of our study, similar to other qualitative studies, the findings of our study were derived from perspective of those women with a recent GDM, who gave birth in hospitals of Tehran, capital of Iran. Thus, the transferability of the findings will be limited to comparable setting.

### 5.1. Conclusions

Screening in the range of procrastination, as the core category, was the most clear concept that implicitly existed in all the data. Thus, we recommended conducting further studies to develop evidence-based operational strategies to decrease women's procrastination in doing postpartum diabetes screening.

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### Footnotes

**Authors' Contribution:** Seyedeh Fatemeh Vasegh Rahimparvar designed the study, conducted the interviews and analyzed the data, and involved in first drafting of the manuscript. Forough Rafii supervised this study in all stages. Neda Mehrdad and Afsaneh Keramat were as a constant of this research.

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