

The Frequency of Risk Factors Associated with Pregnancy among Women Seeking Planned Pregnancy

Fatemeh Ghaffari Sardasht (MSc)^{1*}, Nahid Jahani Shourab (MSc)², Farzaneh Jafarnejad (MSc)³, Hibibollah Esmaily (PhD)⁴

¹ PhD Student of Reproductive Health, School of Nursing and Midwifery, Shahroud University of Medical Sciences, Shahroud, Iran

² PhD student of Reproductive Health, School of Nursing & Midwifery, Mashhad University of Medical Sciences, Mashhad, Iran

³ Lecturer, Department of Midwifery, School of Nursing and Midwifery, Mashhad University of Medical Sciences, Mashhad, Iran

⁴ Associate Professor, Department of Biostatistics and Epidemiology, School of Health, Mashhad University of Medical Sciences, Mashhad, Iran

ARTICLE INFO	ABSTRACT
<p><i>Article type:</i> Original article</p>	<p>Background & aim: Pre-pregnancy period is like a window of hope during which the doctors and midwives can help the mothers to solve or adjust the problems needing special care before pregnancy. Therefore, this study was carried out to determine the risk factors for pregnancy health among the females seeking planned pregnancy.</p> <p>Methods: This descriptive study was conducted on 350 females of childbearing age who referred to health centers of Mashhad, Iran to receive preconception care in 2013. The sampling was performed using the multistage sampling technique. The data were collected by a researcher-made questionnaire enquiring the patients' demographic and obstetric data. Data analysis was performed through the SPSS version 16 using mean and standard deviation (for quantitative variables), frequency (for qualitative variables), and Chi-square test (to assess the relationship between the variables). P-value less than 0.05 were considered statistically significant.</p> <p>Results: According to the results, the age of 2% and 4.9% of the participants were < 18 and > 35 years, respectively. The most frequent risk factors for pregnancy health were related to gestational diabetes (32%), preeclampsia (22%), abortion (19.1%), history of vaginal bleeding in the second half of pregnancy, and preterm delivery (13%). In addition, the most frequent underlying diseases were diabetes mellitus (22%), thyroid disorders (22%), heart disease, as well as asthma and allergies (13%).</p> <p>Conclusion: As the findings of the present study indicated, most of the risk factors in the pre-pregnancy period were related to diabetes mellitus and gestational diabetes.</p>
<p><i>Article History:</i> Received: 10- Dec -2015 Accepted: 20- Aug -2016</p>	
<p><i>Key words:</i> Planned pregnancy Preconception care Risk factors Women</p>	

► Please cite this paper as:

Ghaffari Sardasht F, Jahani Shourab N, Jafarnejad F, Esmaily H. The Frequency of Risk Factors Associated with Pregnancy among Women Seeking Planned Pregnancy. Journal of Midwifery and Reproductive Health. 2017; 5(3): 942-949. DOI: 10.22038/jmrh.2017.8736

Introduction

Annually, 529,000 females die from pregnancy and childbirth complications worldwide. Per one death, 118 women are complicated with acute and chronic disabilities resulting from pregnancy and childbirth (1). Furthermore, according to the report of the World Health Organization, about 111 females daily die due to the preventable causes related to pregnancy (2).

Pregnancy and childbirth are among the most important events in the life of every woman, and

therefore her family. This is an opportunity for hope and joy or time to fear, suffer, and even death (3). Pregnancy is a unique and natural physiological process in women's life; however, the underlying maternal diseases or the unexpected maternal and fetal diseases can lead to pregnancy complications bearing adverse effects (2).

Pregnancy, even in its best condition, is a stressful event for the mothers, which can result

* Corresponding author: Fatemeh Ghaffari Sardasht, School of Nursing and Midwifery, Mashhad University of Medical Sciences, Mashhad, Iran. Email: ghaffarif891@gmail.com

in maternal stress and anxiety in case of having pre-existing medical problems or pregnancy complications. High-risk pregnancy is referred to a condition in which the lives, health, and welfare of the mother and her growing fetus are in danger due to certain factors and circumstances (4). Pregnancy is considered high risk when the possibility of an adverse result in the presence of a risk factor is higher than that in the general population of pregnant women (i.e., reference population) (2).

The women who experience high-risk pregnancy encounter with physical, psychological, and socioeconomic consequences. These complications are imposed on this population due to the nature of the treatment and the potential need to receive long-term care at home or hospital. Regarding this, the women with high-risk pregnancy have to adapt their lifestyle with this new condition, which leads to the creation of stress and worry in these individuals and their family. Out of the four million births annually occurring in the United States, approximately 500,000 cases are placed in the high-risk pregnancy group due to the maternal and fetal complications (4).

The prevalence of high-risk pregnancy has been reported to be up to 20% worldwide; furthermore, 50% of the perinatal deaths are among the high-risk pregnancies (2). Teenage pregnancies are at greater risk of complications, such as anemia, stillbirth, premature delivery, and maternal mortality, compared to the other age groups. This is due to the fact that they have no physical and mental fitness in this respect. The risk of mortality is 2-5 times higher in the teenage mothers than that in the mothers of 20-29 years of age. According to the literature, many teenage girls and young women become pregnant while they have insufficient knowledge and expertise in this regard (5).

Another problem that currently afflicts the pregnant women is the global burden of non-communicable diseases. Almost 60% of all deaths and 43% of the global burden of diseases are resulting from the coronary heart diseases, cerebrovascular diseases, cancer, and diabetes mellitus type II. In the low- and middle-income countries, 79% and 85% of the deceases are caused by the non-communicable diseases and the related disabilities, respectively (6).

In Iran, the non-communicable diseases account for much of the burden of diseases, i.e., they are responsible for 45% and 33% of the illnesses occurring in the males and females, respectively. Overweight and obesity, hypertension, inadequate physical activity, high cholesterol, and addiction are major five risk factors that allocated 68% of the burden attributable to the risk factors and 11% of the total burden of diseases that is equivalent to 1.6 million disability-adjusted life year (DALY) (7).

According to the international agreement, the reduction of maternal mortality requires the continuity of health care. This care starts from pregnancy and childbirth and continues to the postpartum, neonatal period, and childhood. However, there is a gap in care provision, especially for the teenage and young females who receive little if any care until they become pregnant (5).

Regarding this, after the implementation of prenatal care, a gap was gradually noticed in the regular maternal care. Therefore, the preconception care was found to be the missing link in the chain, which could improve the outcomes of pregnancy, birth, and child's health if it was carried out optimally (8). Pre-pregnancy period has been identified as one of the most sensitive periods of human development (9).

The implementation of preconception care as a part of primary health care have been started since 1980 in the United States. Nevertheless, long before this time, in 1825, William Pott emphasized on the importance of preconception care for having a healthy child. Pott was the first health scientist who reported that planning before pregnancy is necessary to prevent from the incidence of physical diseases in children (10).

At first, the preconception care was delivered to the females who had a complication in their previous pregnancies. However, these cares were gradually provided for all women (11). In Iran, the pilot implementation of this project was started since 1993. After the pilot implementation and revision by service providers and family health managers, this project was carried out almost in all over the country (12).

The preconception care has potentially positive impact on 208 million pregnancies that occur each year in the world. Many of the young women and teenage girls in the low- and middle-income

countries bear the greatest burden of maternal mortality. These females are deprived from the benefits of receiving pre-conception care due to the lack of access to this kind of care or its irregular provision (13). The combination of the preconception care with routine health care prevents from the unwanted pregnancies and reduce the incidence of septic abortion (11).

Therefore, the identification of the risk factors for pregnancy can not only be considered as a step toward prevention, but also properly decrease the risks endangering the mother and fetus by facilitating the appropriate treatment measures. According to Anderson, a large proportion of women become pregnant while they have at least one risk factor affecting the pregnancy consequences (14). With this background in mind, the present study aimed to determine the risk factors for pregnancy health among the females seeking for planned pregnancy in 2013.

Materials and Methods

This descriptive study was conducted on 350 women of childbearing age, who referred to 22 health centers in Mashhad within 1, March to 31, August in 2013. Given the lack of access to a similar study, a pilot study was conducted on 50 women of childbearing age, and the sample size was calculated as 350 cases with confidence level of 95%, accuracy of 5%, and loss of 2%.

The sampling was performed using the multistage and non-probability methods. Accordingly, after the classification of Mashhad health centers into five groups, the health centers No. 1, 2, 3, and 5 as well as Samen were selected. Subsequently, the clinics, which were covered by these centers were listed and considered as clusters. In the next step, the eligible women who referred to Mashhad health centers to receive the preconception care were selected through the convenience sampling method.

The inclusion criteria were: 1) having Iranian nationality and living in Mashhad, 2) being at reproductive age, 3) referring to health centers to receive preconception counseling, 4) Speaking Persian, 5) having minimum literacy level, and 6) having physical and mental health. On the other hand, the exclusion criteria included: 1) being a member of the health team, 2) infertility, 3) pregnancy, 4) mental illness and using psychiatric medication at present or in the past.

The data were collected using a researcher-made questionnaire collecting the patients' demographic and obstetric data. This questionnaire consisted of three sections enquiring about the participants' general information. The first section entailed the demographic characteristics including nine questions about age, education, spouse's education, employment status, spouse's job, housing status, and family income.

The second section was related to the history of pregnancy and childbirth, which contained 11 questions about the history and number of pregnancy, delivery, and previous abortion, history of complications in previous pregnancy, having an underlying disease, and receiving follow-up for that disease. The third section included five questions enquiring about having information on the preconception care.

After submitting the proposal to the Health Department of the university, the project was confirmed by the ethics committee. Subsequently, the introduction letter was presented to the heads of the health centers in order to obtain the license for the implementation of the project in the respective centers. Then, the researcher provided the recipients of the preconception care with necessary explanations about the study. After obtaining their agreement, the relevant questionnaire was filled out by the investigator through an interview.

The validity of the questionnaire was examined using the content validity. To this aim, the study instrument was given to 10 members of the faculty of Mashhad University of Medical Sciences, Mashhad, Iran to be assessed. Subsequently, we received their comments and obtained their final approval. Since this questionnaire contained obvious questions and were repeatedly employed in numerous studies (which reported it as reliable), we felt no need to re-examine the reliability of this instrument.

The data were analyzed by the SPSS version 16. The quantitative and qualitative variables were presented as mean/standard deviation and frequency, respectively. In addition, the Chi-square test was used to assess the relationship between the variables. P-value less than 0.05 was considered statistically significant.

Results

This study was conducted on 350 women of

Table 1. Distribution of the women of childbearing age regarding the age group

Age group	Number	Percentage
<18 years	7	2
18-35 years	325	93.1
>35 years	17	4.9

childbearing age with the mean age of 26.93±5.22 (age range: 14 and 41 years). The majority of the participants (93.1%) were within the age group of 18-35 years (Table 1).

In terms of education, the highest frequency in two groups of spouse and women was related to the secondary school level (40% and 44%, respectively). However, reading and writing literacy had the lowest frequency (1.7% and 2.6% in spouse and women, respectively). Regarding the employment status, housewifery and employment had the highest (90.9%) and lowest (0.6%) frequency, respectively. Furthermore, 54% of the participants lived in the mortgage or rental houses, and the majority of the samples (76.6%) reported a satisfactory income level.

In addition, 67.4% of the females had history of pregnancy ranging from 1-6 pregnancies. Regarding the history of abortion, 19.1% of the participants had such an experience, which ranged from 1-4 abortions. Furthermore, 62.1% of the subjects had a history of delivery, ranging from 1-4 deliveries. The results showed that 1.4% of the women in this study had a history of stillbirth ranging from 1-2 stillbirths.

A history of neonatal death was observed in 95.4% of the participants, and 4.6% of the females reported to have a history of one neonatal death. The results showed that 99.4% of the women had no history of infant death, and 0.6% of them reported to have a history of one infant death. Moreover, 18.6% of the subjects had a history of one complication in their previous pregnancies, which was mostly gestational diabetes (Table 2).

Table 2. Distribution of the incidence of pregnancy complications in the women of childbearing age

Pregnancy complications	Number	Percentage
Gestational diabetes	14	32
Preeclampsia and pregnancy hypertension	10	22.7
Second trimester bleeding	6	13.6
Threatened abortion	1	2.2
Preterm delivery	6	13.6
Severe nausea and vomiting	1	2.2
Organ disorders (e.g., metacarpal tunnel syndrome, foot cramps, etc.)	2	4.5
Urinary infection	4	9.2
Total	44	100.0

In this study, 8.3% of the women were afflicted with at least one underlying disease. Diabetes and thyroid disorders were the most frequent underlying diseases (22%) in the participants (Table 3). Almost 68.8% of the subjects suffering from a type of underlying disease were under medical control. The results revealed that 52.8% of the women in this study had at least one risk factor before pregnancy.

The Chi-square test demonstrated a significant association between the history of pregnancy complications and monitoring the, underlying disease (P=0.034). In other words the findings showed that the women who had an underlying disease in their previous pregnancies referred for medical control more than those who did not have such an experience.

The results related to the participants' health information revealed that 53.6% of the women received information on the preconception care; however, 61.5% of them reported very little information in this regard (Table 4). In terms of getting information about the preconception care in the three age groups, the results showed that 57%, 44%, and 70% of the subjects in the age groups of

Table 3. Distribution of the underlying diseases in the women of childbearing age

Underlying diseases	Number	Percentage
Diabetes	6	22
Thyroid disorders	6	22
Cardiac disease	4	13
Chronic hypertension	3	11
Renal disease	1	3
Hyperlipidaemia	2	6
Orthopaedic disorders	1	1
Diabetes and thyroid disorder	1	3
Allergy and asthma diseases	4	13
Arthritis	2	6
Total	30	100

Table 4. Distribution of the women of childbearing age in terms of having information about preconception care

Variable	Number	Percentage
Information about preconception care		
Yes	188	53.6
No	162	46.4
Total	350	100.0
The level of receiving information about preconception care		
Very little	24	61.5
Little	47	17.7
Average	99	37.4
High	17	6.4
Very high	1	4.0
Total	188	100.0

< 18, 18-35 years, and > 35 years, respectively, had no information in this regard.

Discussion

As the findings of the present study indicated, the majority of the participants had pre-pregnancy risk factors. In a study conducted by Anderson, 54.4% of the subjects had one or more than one risk factors prior to pregnancy, which is consistent with the present study (14). In the mentioned study, 52.8% of the women reported at least one risk factor before pregnancy. According to the literature, this rate involved only one-third of the women becoming pregnant. Two-thirds of the subjects became pregnant without receiving the preconception care (15). Inconsistent with our finding, in a study carried out by Azizi et al. (2011), 26% of the women had at least one risk factor before pregnancy (2).

Since getting pregnant earlier or later than the reproductive age increases its respective problems and consequences (16), in this part, we elaborate on the age factor using the findings of different studies. In the present study, the subjects' age ranged within 14-41 years. Inconsistent with the present study, in a study conducted by Anderson, the age range of the women was reported to be 18-44 years. Additionally, in a study carried out by Azizi in Sonqor city, Kermanshah, Iran, the age range of the subjects was 15-53 years. The incidence of pregnancy has been reported even at age > 50 years. This difference in the age range reported in these studies may be due to the cultural, social, and economic differences as well as the health services accessibility.

The teenage females participating in the

present study comprised 2% of the participants. Similarly, in a study by Azizi, 2.7% of the pregnant women were younger than 18 years (2). However, several studies have suggested low maternal age at pregnancy as an important factor of adverse pregnancy outcomes. Since most of the pregnancies in the teenage mothers are unplanned, they rarely receive preconception counseling.

Annually, more than one million people younger than 20 years become pregnant in the United States, and less than 50% of them end their pregnancies. In addition, 23% of the pregnancies in the United States and Africa occur in teenage females who are less than 20 years old, which constitutes 13% of the total deliveries if considering only the white American women (17). Likewise, in a study conducted by Hekari, low age at marriage was reported as one of the barriers to receive care (3).

About 5% of the participants in the current study were 35-41 years, who had intended to become pregnant and did not use a contraceptive method. In a study carried out by Azizi, 3.8% of the pregnant women were over 35 years old. Studies have shown that the risk of pregnancy complications and perinatal mortality increases in the women older than 35 years. The age of a woman at pregnancy is the most important factor that has an undeniable effect on the process of pregnancy and childbirth (2).

In a study conducted by Aghamohammadi, the women with more than 35 years of age were afflicted with such complications as preeclampsia, gestational diabetes, premature birth, cesarean, and low birth weight more than the women aged 18-35 years (18). Moreover, 50% of the perinatal deaths occur

among the high-risk pregnancies. Important pregnancy risk factors in terms of care principles and family planning include the pregnancies under the age of 18 years or over 35 years, inter-pregnancy interval of less than three years, and fifth or higher pregnancy. These factors are also important causes of maternal mortality (2).

In the present study, gestational diabetes was the most common complication in the previous pregnancies. In addition, diabetes was reported to be the most frequent underlying disease. Out of the 350 participants, 6 and 14 cases were afflicted with overt diabetes and gestational diabetes during their pregnancy, respectively. Nevertheless, in a study conducted by Anderson, despite the fact that 22% of the women participating in the study had a body mass index of > 30 kg/m², only 2% of them were suffered from diabetes that was inconsistent with the present study (14).

In a study by Azizi, the greatest risk factors for pregnancy were related to urinary tract infection, history of abortion, and age of < 18 and > 35 years. In the mentioned study, gestational diabetes was reported to have a rate of 48% and overt diabetes was not reported (2). Based on the results of the present study, 31% of the women with an underlying disease had not referred for the treatment and control of their disease. Perhaps this is due to having poor level of awareness about the impact of some diseases on pregnancy outcomes. However, these women were referred to receive follow-up on their medical problems after the provision of preconception care by the care providers.

Furthermore, the women with an underlying disease who had experienced one or more complications had more follow-up for the treatment and control of their respective disease than other women. In this regard, Dunlop et al. reported that women participating in the study had greater awareness on the importance of folic acid intake after receiving the preconception care. Furthermore, they indicated that the women with an underlying disease understood that they should control and treat their disease prior to pregnancy (19).

In this study, more than one-fifth of the women had one risk factor before pregnancy that was under the care and control. However,

all the women who tend to get pregnant do not refer to health centers to receive the preconception care. In this regard, Aghasi Yazdi et al. (2014) reported that 42% of the women who desired to get pregnant referred for receiving the preconception care and services, and the rest of them ended their pregnancy with passing abundant risks, i.e., some mothers lost their lives or some of them were afflicted with complications or disability (20).

In the current study, half of the women had no information about the preconception care before receiving such care, and about 80% of them reported to have low and very low levels of awareness in this regard. It is worth mentioning that the largest group in this study, which had no information on preconception care were the women who were > 35 years old. Furthermore, more than 50% of the group under 18 years of age had no information about this field. According to the results, the women within the age range of 18-35 years sought for information more than other age groups in order to have a better pregnancy.

One of the limitations of this study was that the detection of the underlying diseases, such as mental problems and illnesses, was based on the subjects' statements. In addition, the individual and personal differences as well as the psychological status of the subjects affected their responses to the questions; however, it was impossible to control this factor. The strength of the study was the identification of the most common risk factors before pregnancy. This study can inform the health policy makers on the risk of an epidemic in the field of diabetes.

Conclusion

As the findings of the present study demonstrated, gestational diabetes was the most frequent disease in the previous pregnancies. Furthermore, the most frequent underlying disease was related to diabetes. Nowadays, the sedentary lifestyle is associated with disorders and complications like diabetes that is growing, and the women tend to get pregnant are not the exception. Therefore, these results highlight the need for further efforts to identify and control the high risk females before pregnancy in order to reduce the respective

risks during this period.

Acknowledgements

This article is the result of a research project with a code number of 910087, which was approved by the Health Deputy of Mashhad University of Medical Sciences. Hereby, express our gratitude to the Mashhad University of Medical Sciences, which funded the study and also the authorities of Mashhad Faculty of Nursing and Midwifery, the professors, instructors, and personnel of the health centers helping us in this study.

Conflicts of Interest

The authors declare no conflicts of interest.

References

- Hafez S, Dorgham LS, Sayed SA. Profile of high risk pregnancy among Saudi women in Taif-Kingdom of Saudi Araba. *World Journal of Medical Sciences*. 2014; 11(1):90-97.
- Azizi A. The prevalence of the causes of high-risk pregnancies in pregnant women of Sonqor city, 2011. *The Iranian Journal of Obstetrics Gynecology and Infertility*. 2015; 18(153):10-19 (Persian).
- Hekari D, Mohammadzadeh R, Velayati A, Bolorian M. Barriers of receipt of prenatal care and its relationship to pregnancy outcome among women visited to Tabriz hospitals in 2009. *Medical Sciences*. 2011; 21(3):206-213 (Persian).
- Safari M, Yazdanpanah B, Yazdanpanah S. High risk pregnancy and some of related factors in women who referred to Vasouj Health and Medical Centers. *Scientific Journal of Hamadan Nursing & Midwifery Faculty*. 2008; 16(2):18-28 (Persian).
- Dean SV, Lassi ZS, Imam AM, Bhutta ZA. Preconception care: promoting reproductive planning. *Reproductive Health*. 2014; 11(3):S2.
- Nasehi MM, Moosazadeh M, Amiresmaeili M, Zakizadeh R, Mirzajani M. Prevalence of five main risk factors of non-communicable diseases in Mazandaran province: a population based study. *Journal of Mazandaran University of Medical Science*. 2012; 22(86):193-202 (Persian).
- Asgari F, Aghajani H, Haghazali M, Heidarian H. Non-communicable diseases risk factors surveillance in Iran. *Iranian Journal of Public Health*. 2009; 38(1):119-122.
- World Health Organization. Preconception care to reduce maternal and childhood mortality and morbidity. Geneva: World Health organization; 2012.
- Mumford S, Michels K, Salaria N, Valanzasca P, Belizan JM. Preconception care: it's never too early. *Reproductive Health*. 2014; 11(1):73-76.
- Atrash H, Jack BW, Johnson K. Preconception care: a 2008 update. *Current Opinion in Obstetrics and Gynecology*. 2008; 20(6):581-589.
- Bialystok L, Poole N, Greaves L. Preconception care, call for national guidelines. *Canadian Family Physician*. 2013; 59(10):1037-1039.
- Merghati Khuiiee E, Adab Z, Vahedi F, Farajvand N, Afzalnia T, Rahmanpour L. Compare the checklist and guideline of preconception care between Iran and some developed countries. *Iranian Journal of Behdad*. 2011; 3(10):33-35.
- Dean S, Rudan I, Althabe F, Girard AW, Howson C, Langer A, et al. Setting research priorities for preconception care in low-and middle-income countries: aiming to reduce maternal and child mortality and morbidity. *PLOS Medicine*. 2013; 10(9):e1001508.
- Anderson JE, Ebrahim S, Floyd L, Atrash H. Prevalence of risk factors for adverse pregnancy outcomes during pregnancy and the preconception period-United States, 2002-2004. *Maternal and Child Health Journal*. 2006; 10(1):101-106.
- Ghaffari Sardasht F. The assessment of quality of preconception care provided to reproductive age's women in health centers of Mashhad in 2012. [Master Thesis]. Mashhad, Iran: School of Nursing and Midwifery, University of Medical Sciences; 2012 (Persian).
- Keshavarzi F, Rezaie M, Iranfar S, Fakheri T, Nankeli A, Imani A. The relationship between increases of maternal age with pregnancy outcome. *Journal of Kermanshah University of Medical Sciences*. 2011; 15(3):193-199 (Persian).
- Rezavand N, Zangane M, Malek Khosravi SH, Rezaee M. A comparative study of pregnancy results in adolescents and young mothers referred to the Motazedi Hospital in Kermanshah. *Journal of Urmia Nursing and Midwifery Faculty*. 2009; 7(3):136-141 (Persian).
- Aghamohammadi A, Nooritajer M, Kheyrikhah M, Hoseyni AF. Comparative Study of the pregnancy outcomes in nulliparous women over and under age 35. *Iranian Journal of Nursing*. 2010; 23(63):69-77.
- Dunlop AL, Logue KM, Thorne C, Badal HJ. Change in women's knowledge of general and personal preconception health risks following targeted brief counseling in publicly funded primary care settings. *American Journal of Health Promotion*. 2013; 27(3 Suppl):S50-S57.
- Aghasiyazdi Z, Ghazavi H, Ahadi M, Behzadmehr A. Assessment of preconception care and

screening high risk women in order to get pregnant in healthcare centers of medical sciences university of Mashhad in 2009 and

2010. In: 2nd Iranian Congress of Health Promotion of Newborn, Mashhad, Iran; 2013.