https://doi.org/10.15218/ejnm.2024.01 Erbil j. nurs. midwifery, Vol. 7, No. (1), May, 2024
Original Article

Physical Factors of Spontaneous Abortion in Maternity Teaching Hospital in Erbil City

Jwan Kareem Salh; *Department of Nursing, College of Nursing, Hawler Medical University, Erbil, Iraq.*
(Correspondence: jwan.salh@hmu.edu.krd).
Hamdia Mirkhan Ahmed; *College of Health Sciences , Hawler Medical University, Erbil, Iraq.*

ABSTRACT

Background and objectives: Abortion is considered a major reproductive health issue that acts as a health risk factor for mothers' well-being and threatens their lives and comfort. This study will contribute to recognize and be a better understanding of the physical risk factors for spontaneous abortion. The aim of the study was to find out the physical factors, which include previous and current medical factors of different types of spontaneous abortion by comparing the case and control groups among women in the Maternity Teaching Hospital in Erbil City.

Methods: A quantitative case-control study was conducted on 850 women with spontaneous abortions and pregnant women (each group was 425) pregnant women. However, the sample size of the study was 770 for both groups (each group was 385), however, 850 women were chosen who were admitted to Maternity Teaching Hospital and were selected through non-probability purposive sampling. A questionnaire was developed for the purpose of data collection, which included socio-demographic characteristics of the study sample and questions about physical characteristics. Frequency, percentage, the inferential statistical analysis of the Chi-square test (fissure exact test), and binary logistic regression were used for data analysis.

Results: There was a significant difference between spontaneous abortion and physical factors which included medical conditions such as cardiovascular, urinary tract, neurological, and immune diseases. Additionally, medical history such as obstetrical and gynecology surgery, gynecology disease, family history of chronic disease, and family history of spontaneous abortion. Cardiovascular diseases (OR:2.710; CI:1.636-4.483), immune diseases (OR:0.230; CI:0.113-0.466), history of obstetrics and gynecology surgeries (OR:0.599; CI:0.436-0.824), family history of chronic diseases (OR:1.834; CI:1.336-2.518), family history of spontaneous abortion (OR:0.098; CI:0.050-0.193) were predictors of the spontaneous abortion.

Conclusion: Some physical factors are risk factors for spontaneous abortion.

Keywords: Spontaneous abortion; Physical factors; Pregnant women.

Received: 19/07/2022 *Accepted: 29/09/2022* *Published: 30/05/2024*

INTRODUCTION

Abortion is considered a major reproductive health issue and acts as a health risk factor for mothers' well-being and threatens their lives and comfort [1]. Abortion is defined as the induced termination of a spontaneous pregnancy before fetal viability [2]. Spontaneous abortion is another term for miscarriage, which refers to a pregnancy loss that happens before the 20th week of gestation or the expulsion of a fetus weighing 500 grams or less [3]. According to the clinical features and different stages of development, spontaneous abortion can be divided into threatened abortion, inevitable abortion, incomplete abortion, complete abortion, missed abortion, recurrent abortion, and infection abortion [4]. A study was done in Kurdistan by Azo and Akbay reported that the total prevalence of abortion among Kurdish married women was 27.7% [5]. Another study was done in Kermanshah provenance in Iran by Moradinazar et al, which found that about 25.7% of women had a history of spontaneous abortion [6]. It is the most common complication during pregnancy, affecting thousands of couples in the United Kingdom every year. The average risk of spontaneous abortion has been calculated to be 15.3% of all recognized pregnancies [7].Risk factors for spontaneous abortion include maternal age of more than 35 years, less education, women who had up to eight years of study, lower family income, and health conditions such as hypertension, heart disease, overweight, and obesity. Additionally, there were infectious factors, which include infection by cytomegalovirus, rubella, toxoplasmosis, and bacterial vaginosis. Hormonal changes include progesterone, hyperinsulinemia, and hyperandrogenism [8]. The research on the effects of viral respiratory infections on pregnancy, particularly during the first half of pregnancy, has been inconsistent. At the beginning of the COVID-19 pandemic, there were risks that SARS-CoV-2 infection could increase the risk of spontaneous abortion [9]. Prevention of spontaneous abortion can occasionally be accomplished by reducing risk factors. This may include good antenatal care, avoiding medications and alcohol, preventing infectious diseases, and avoiding X-rays. Detecting the reason for the spontaneous abortion may help prevent future pregnancy losses, specifically in cases of recurrent abortion [10]. This study will contribute to recognize and be better understanding of the physical risk factors for spontaneous abortion. The study aimed to find out the physical factors which include previous and current medical factors of different types of spontaneous abortion by comparing the case and control groups among women in the Maternity Teaching Hospital in Erbil City.

METHODS

A quantitative case-control study of a non-probability purposive sample was conducted on 850 women with spontaneous abortion and pregnant women (each group 425) who were admitted to Maternity Teaching Hospital and were available during data collection. However, the sample size of the study was 770 for both groups (each group 385), but I took 850 women with spontaneous abortions and pregnant women. By using calculator.net (Sample size calculator) following values were entered confidence interval was 95 %, the margin of error was 5 % and the population proportion was 50%. The inclusion criteria for the case group included women who agreed to participate in the study, women with spontaneous abortions, and the control group included pregnant women at the end of the second and third trimesters of pregnancy and women who progressed

to labor . The exclusion criteria for the case group included those who refused to be interviewed, women with induced abortions and women who were not talking in the Kurdish language. Also, the control group was the pregnant women in the first, and beginning of the second trimester of pregnancy, and not talk in the Kurdish language. Data was collected in the period from October 25th 2021to May 25th, 2022. The sample was selected from the emergency department, delivery room, postpartum unit, high-risk department, and outpatient unit. A questionnaire was developed for the data collection for the study. In the first part socio-demographic characteristics included women's age, level of education, occupation, residential status, type of family, possession of a car, and possession of a house. The socioeconomic status index was constructed using the index, it was depending on the patient's age, level of education, patient occupation and also the husband's occupation, car, and house. The socioeconomic status index is divided into three levels: low, middle, and high economic level. Physical characteristics included medical conditions and medical history.23 experts in the field reviewed the questionnaire and checklist and suggested some modifications to improve the internal validity of the tool. This study was approved by the scientific and ethical committee at Hawler Medical University / College of Nursing. The code number was 102 and the date was 7 / 10/ 2021. Formal permission was given by the administration of the hospital. Before data collection, all study participants were informed about the aims and characteristics of the study. Informed consent was obtained after confirmation of confidentiality and was collected through a face-to-face interview technique, and analyses were assessed using the statistical package for social science (version 26).Variables were analyzed utilizing descriptive and inferential statistics. Descriptive statistical analyses include frequency and percentage, the inferential statistical analysis of the Chi-square test (fissure exact test), and logistic regression analysis.

RESULT

Table 1 shows the differences between women with spontaneous abortions and pregnant women regarding socio-demographic characteristics. There were significant to highly significant differences between the scores of the items of the woman with spontaneous abortion and the pregnant woman with regards to socio -demographic characteristics except for the items ;(level of education, possession of a car, and socioeconomic status) which represented no significant difference at P≥0.05.

Table 2-1 illustrates the differences between women with spontaneous abortions and pregnant women regarding physical factors. There were significant to highly significant differences between the scores of the items of the women with spontaneous abortions and pregnant women with regards to physical factors, which including medical conditions, except for the items ; (Respiratory diseases, gastrointestinal diseases, endocrine diseases, hematological diseases, reproductive diseases, and musculoskeletal diseases) which represented no significant difference at P≥0.05.

Table 1: Difference between case and control groups regarding socio-demographic characteristics.

Socio-demographic characteristics	Case F (%)	Control F (%)
Age group		
≤ 19 years old	34 (44.2)	43 (55.8)
20-29 years old	169 (45.1)	206 (54.9)
30-39 years old	181 (53.7)	156 (46.3)
40-49 years old	41 (67.2)	20 (32.8)
Level of education		
Illiterate	100 (51.5)	94 (48.5)
Primary (or read and write)	149 (52.3)	136 (47.7)
Intermediate	78 (54.2)	66 (45.8)
High school or vocational	45 (45.5)	54 (54.5)
Institute (2 years)	28 (39.4)	43 (60.6)
College (Bachelor degree)	23 (41.8)	32 (58.2)
College (Master degree)	2 (100)	0 (0)
Occupation status		
Unskilled Manual	23 (60.5)	15 (39.5)
Semi-Skilled Manual	322 (47.6)	354 (52.4)
Skilled manual and non-manual	40 (62.5)	24 (37.5)
associate professional	30 (51.7)	28 (48.3)
Skilled professional or senior managerial	10 (71.4)	4 (28.6)
Residential area		
Urban	210 (55)	172 (45)
Rural	46 (48.4)	49 (51.6)
Sub-urban	169 (45.3)	204 (54.7)
Type of family		
Nuclear	327 (55.1)	266 (44.9)
Extended	98 (38.1)	159 (61.9)
Possession of car		
No	162 (46.4)	187 (53.6)
Yes	263 (52.5)	238 (47.5)
Possession of house		
No	218 (46.8)	248 (53.2)
Yes	207 (53.9)	177 (46.1)
Economic status		
Low economic level	310 (51.1)	297 (48.9)
Middle economic level	113 (46.9)	128 (53.1)
High economic level	2 (100)	0 (0)
Total	425 (50)	425 (50)

Table 2-1: Difference between case and control groups regarding physical factors (medical condition)

Medical conditions	Case F (%)	Control F (%)
Cardiovascular diseases		
No	394 (53.1)	348 (46.9)
Yes	31 (28.7)	77 (71.3)
Respiratory diseases		
No	422 (49.9)	423 (50.1)
Yes	3 (60)	2 (40)
Gastrointestinal disease		
No	414 (50.2)	411 (49.8)
Yes	11 (44)	14 (56)
Endocrine diseases		
No	384 (50.1)	383(49.9)
Yes	41 (49.4)	42 (50.6)
Hematological diseases		
No	343 (50.3)	339 (49.7)
Yes	82 (48.8)	86 (51.2)
Urinary tract disease		
No	386 (51.3)	366 (48.7)
Yes	39 (39.8)	59 (60.2)
Neurological disease		
No	411 (49.3)	422 (50.7)
Yes	14 (82.4)	3 (17.6)
Reproductive disease		
No	363 (50.1)	361 (49.9)
Yes	62 (49.2)	64 (50.8)
Immune disease		
No	375 (47.5)	414 (52.5)
Yes	50 (82)	11 (18)
Musculoskeletal disease		
No	419 (49.7)	424 (50.3)
Yes	6 (85.7)	1 (14.3)

Table 2-2 2 illustrates the differences between women with spontaneous abortions and pregnant women regarding medical history. There were significant to highly significant differences between the scores of the items of the woman with abortion and the pregnant woman with regards to physical factors, which including medical history, except for the items ; (coronavirus disease, receiving coronavirus vaccine, history of surgical operation, drug history and drug allergy) which represented no significant difference at P≥0.05.

Table 2-2: Difference between case and control groups regarding physical factors (medical history)

Medical history	Case F (%)	Control F (%)
Coronavirus		
No	340 (51.8)	316 (48.2)
Yes	85 (43.8)	109 (56.2)
Receive corona virus vaccine		
No	414 (49.6)	421 (50.4)
Yes	11 (73.3)	4 (26.7)
History of surgical operation		
No	360 (50.6)	352 (49.4)
Yes	65 (47.1)	73 (52.9)
History obstetrical and gynecological surgeries		
No	235 (45.2)	285 (54.8)
Yes	190 (57.6)	140 (42.4)
History of past gynecological diseases		
No	360 (48.5)	382 (51.5)
Yes	65 (60.2)	43 (39.8)
Drug history		
No	400 (49.7)	405(50.3)
Yes	25 (55.6)	20 (44.4)
Drug allergies		
No	414 (49.8)	418 (50.2)
Yes	11 (61.1)	7 (38.9)
Family history of chronic diseases		
No	268 (54.7)	222 (45.3)
Yes	157 (43.6)	203 (56.4)
Family history of spontaneous abortion (mother, sister)		
No	342 (45.3)	413 (54.7)
Yes	83 (87.4)	12 (12.6)

*Fissures exact test was used

Table 3 indicates that woman from sub-urban (P= 0.015 ;OR:1.465; CI:1.077-1.992) times more likely expose to be spontaneous abortion, compare with women who had from urban, woman having extended family (P= 0.003 ;OR:1.766; CI:1.217-2.564) times more likely expose to be spontaneous abortion, compare with women who having nuclear family, cardiovascular diseases (P= <0.001 ;OR:2.710; CI:1.636-4.483) times more likely expose to be spontaneous abortion, compare with women who had not disease, immune diseases (P= <0.001;OR:0.230; CI:0.113-0.466) times more likely expose to be spontaneous abortion, compare with women who had not disease, history of obstetrics and gynecology surgeries (P= 0.002 ;OR:0.599; CI:0.436-0.824) times more likely expose to be spontaneous abortion, compare with women who had not history, family history of chronic diseases (P= <0.001 ;OR:1.834;CI:1.336-2.518) times more likely expose to be spontaneous abortion, compare with women who had not history, family history of spontaneous abortion (P= <0.001 ;OR:0.098; CI:0.050-0.193) times more likely expose to be spontaneous abortion, compare with women who had not history the predictors for spontaneous abortion.

Table 3: Logistic regression analysis of spontaneous abortion with some variables

Variables	Odds Ratio	95% CI	P-value
Residential area			
Urban	Reference category		
Sub-urban	1.465	1.077-1.992	0.015
Type of family			
Nuclear	Reference category		
Extended	1.766	1.217-2.564	0.003
Cardiovascular diseases			
No	Reference category		
Yes	2.710	1.636-4.483	<0.001
Immune disease			
No	Reference category		
Yes	0.230	0.113-0.466	<0.001
History obstetrical and gynecological surgeries			
No	Reference category		
Yes	0.599	0.436-0.824	0.002
Family history of chronic diseases			
No	Reference category		
Yes	1.834	1.336-2.518	<0.001
Family history of spontaneous abortion (mother, sister)			
No	Reference category		
Yes	0.098	0.050-0.193	<0.001

DISCUSSION

The present study shows that there is a significant difference between case and control regarding medical conditions such as cardiovascular, urinary, neurological, and immune diseases and medical histories such as obstetrics diseases, gynecological surgery, gynecological diseases, family history with chronic diseases, and family history with spontaneous abortion. Regarding another study, the results of the study were done by Makharadze et al. (2019) disagree with our study, their study concluded that there was no difference between spontaneous abortion and medical conditions [11].Regarding logistic regression in the present study sub-urban (OR:1.465; CI:1.077-1.992) is the predictor for spontaneous abortion and, also having an extended family (OR:1.766; CI:1.217-2.564) .The study was done by Zheng et al. (2017) their results disagree with our study. In their study, increased risk of spontaneous abortion in rural areas was 1.68 times greater than in urban areas (OR = 1.68 ;CI: 1.54–1.84) [12].Cardiovascular diseases(OR:2.710;CI:1.636-4.483), immune diseases (OR:0.230; CI:0.113-0.466),history of obstetrics and gynecology surgeries (OR:0.599; CI:0.436-0.824),family history of chronic diseases (OR:1.834;CI:1.336-2.518), family history of spontaneous abortion (OR:0.098; CI:0.050-0.193) are the predictors for spontaneous abortion. Also, a study was done by Magnus et al. (2021) their results agree with our study. In their study, observed an increased risk of spontaneous abortion among women with cardiometabolic diseases (OR 1.25, CI 1.20 to 1.31) [13]. The study was conducted by Sunil and Valsan (2020) Their results disagree with our study, in their study in the family history of abortion (OR:0. 79; CI 0.31-2.03) had risks for spontaneous abortion [14].

CONCLUSION

Medical conditions such as cardiovascular, urinary tract, neurological, and immune diseases. Medical history such as obstetrical and gynecology surgery, gynecology disease, family history with chronic disease, and family history of spontaneous abortion are risk factors for spontaneous abortion.

REFERENCES

[1] Umar NJ, Olubiyi SK, Aliyu U, Aminat GU, Imam AA, Ibraheem MA et al.Spontaneous abortion among women admitted into gynaecology wards of three selected hospitals in Maiduguri, Nigeria. *International journal of Nursing and Midwifery*. 2014 Apr 30;6 (2):24-31.

[2] Cunningham FG, Leveno KJ, Bloom SL, Spong CY, Dashe JS. *Williams obstetrics,* 24e. New York, NY, USA: Mcgraw-hill.2014:pp 350.

[3] Buzad P, McCoy TW, Mularz A, Dalati S, Pedigo R. Spontaneous abortion and recurrent pregnancy loss. Ob/Gyn Secrets,4e. USA: Elsevier.2016:pp 113. Available from:https://books.google.iq/books?hl=en&lr=&id=J8VDAAAQBAJ&oi=fnd&pg=PA113&dq=Buzad+P,+McCoy+TW.+Spontaneous+abortion+and+recurrent+pregnancy+loss.&ots=5VGvsXP8W3&sig=mXtTzEVg2Q0UUJVl8GhQ6dWmimc&redir_esc=y#v=onepage&q&f=false

[4] Hu X, Miao M, Bai Y, Cheng N, Ren X. Reproductive factors and risk of spontaneous abortion in the jinchang cohort. *International Journal of Environmental Research and Public Health.* 2018 Nov;15(11):2444.

[5] Azo FM, AKBAY CA. Prevalence and risk factors of abortion among a sample of married women in Kurdistan Region of Iraq. *Zanco Journal of Medical Sciences.* 2016 Dec 15;20 (3):1424_1432-.

[6] Moradinazar M, Najafi F, Nazar ZM, Hamzeh B, Pasdar Y, Shakiba E. Lifetime prevalence of abortion and risk factors in women: evidence from a cohort study. *Journal of Pregnancy.* 2020;2020 (4871494).

[7] Quenby S, Gallos ID, Dhillon-Smith RK, Podesek M, Stephenson MD, Fisher J, et al. Miscarriage matters: the epidemiological, physical, psychological, and economic costs of early pregnancy loss. *The Lancet*. 2021 May 1;397(10285):1658-67.

[8] Bellieni CV, Buonocore G. Abortion and subsequent mental health: Review of the literature. *Psychiatry and Clinical Neurosciences Journal.* 2013 Jul;67(5):301-10.

[9] Favre G, Pomar L, Musso D, Baud D. 2019-nCoV epidemic: what about pregnancies? *Lancet* .2020 Feb 22;395(10224): e40.

[10] Lassi ZS, Imam AM, Dean SV, Bhutta ZA. Preconception care: caffeine, smoking, alcohol, drugs and other environmental chemical/radiation exposure. *Reproductive Health.* 2014 Dec;11(3):1-2.

[11] Makharadze M, Sulukhia R, Tsiklauri M, Melia L and Taboridze I.Risk Factors for Spontaneous Abortion in Georgian Population.*European Scientific Journal.*2019;15 (33): e 1857- 7431.

[12] Zheng D, Li C, Wu T, Tang K. Factors associated with spontaneous abortion: a cross-sectional study of Chinese populations. *Reproductive Health.* 2017 Dec;14(1):1-9.

[13] Magnus MC, Morken NH, Wensaas KA, Wilcox AJ, Håberg SE. Risk of miscarriage in women with chronic diseases in Norway: A registry linkage study. *PLoS Medicine*. 2021 May 10;18(5):e1003603.

[14] Sunil V, Valsan SM. A study on risk factors of abortion in a tertiary care hospital in Thrissur District, Kerala. *International Journal of Reproduction, Contraception, Obstetrics and Gynecology.* 2020 Oct 1;9(10):4118-23.