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RESEARCH ARTICLE

PREVALENCE AND RISK FACTORS OF ABORTION AMONG WOMEN IN KSA: A CROSS-SECTIONAL STUDY

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Abstract

Objective: To investigate the prevalence of abortion among women in the Kingdom of Saudi Arabia (KSA) and to identify the associated risk factors contributing to its occurrence.

Methods: This research will employ a cross-sectional study design to gather data on the prevalence of abortion and its associated risk factors among women in the Kingdom of Saudi Arabia (KSA). A cross-sectional approach allows for collecting data from a diverse population at a single point in time.

Results: The study included 242 participants. The most frequent weight among them was 51-65 kg (n= 81, 33.5%) followed by 66-75 kg (n= 75, 31%). The most frequent height among study participants was 1.51-1.60 m (n= 144, 59.5%) followed by 1.61-1.70 m (n= 59, 24.4%). The most frequent educational level among study participants was university (n= 195, 80.6%) followed by school (n= 40, 16.5%). Participants were asked about their relatives with their husbands. The most frequent was no (n= 160, 66.1%) followed by yes (n= 82, 33.9%). Diagnosis of abortion among study participants with most of them had Missed (n= 77, 31.8%) followed by Incomplete (n= 55, 22.7%), and the least was Induced (n= 9, 3.7%). The number of pregnancy follow-ups was average among most of the participants more than 4 visits(n= 159, 65.7%) and 1-3 visits 60 participants (24.8%) at the least no visits were 23 participants (9.5%).

Conclusion: Study results showed that most of the study participants are university educational level. Most of them don't smoke and don't do passive smoking. Most of the study participants are Obesity according to their BMI. In addition, most of study participants had good social connection.

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Introduction:-

A significant number of women worldwide experience mortality as a result of difficulties associated to childbirth and pregnancy, with about 99.0% of maternal deaths occurring in countries categorized as low- and middle-income [1]. Abortion has been shown as a significant contributor to maternal mortality rates. According to a recent research including 115 countries over the period from 2003 to 2009, it was shown that 7.9% of maternal fatalities were attributed to abortion [2]. The potential exists for an underestimation of abortion-related mortality, hence suggesting that the actual number of fatalities may surpass reported figures [3]. Unsafe abortion is identified as a significant contributing cause to maternal mortality in low- and middle-income countries [1]. According to available data, it has been shown that abortion ranks as the third most prevalent factor contributing to maternal mortality in low- to middle income countries [4]. The legalization of abortion services occurred in 2002, followed by the commencement of services in 2004 [5]. These services are now offered by both public and private sectors, including surgical and medicinal abortion options throughout the nation.

The termination of a pregnancy may occur either spontaneously or purposefully, with the latter referred to as induced abortion. Induced abortion can be categorized as either safe or dangerous. The practice of abortion, particularly when performed in hazardous conditions, may lead to significant health risks and give rise to complications such as bleeding, infection, and uterine perforation [6, 7]. The worldwide incidence of abortion has remained stable at a rate of 28-29 per 1000 women aged 15-44 years between 2003 and 2008. However, there has been a rise in the percentage of unsafe abortions, increasing from 44.0% in 1995 to 49.0% in 2008 [8]. The prevalence of unsafe abortion in the South-Asian region, which encompasses about one-third of the global population, may be attributed to the presence of stringent anti-abortion laws in several nations within this region [9]. The prevalence of sex-selective abortion in this area is elevated as a result of the cultural preference for male offspring [10,11,12,13].

Nevertheless, a significant number of women residing in this particular geographical area remain uninformed of the existing legal framework around abortion and the potential ramifications associated with it. A previous survey conducted in low- to middle income countries revealed that a mere 44.0% of women have knowledge of the legal provisions surrounding abortion in low- to middle income countries [14]. According to a separate research, it has been shown that a significant proportion of women in low- to middle income countries lack awareness about the range of abortion options that are accessible to them [15]. Individuals who are young, economically disadvantaged, and without a supporting male partner are most vulnerable to experiencing unsafe abortion [16]. A previous research indicated that women of higher socioeconomic status and educational attainment have a higher likelihood of undergoing abortion procedures compared to those of lower socioeconomic status and educational attainment [17-20]. Nevertheless, the available information about this matter remains inconclusive, particularly in low- and middle-income nations. The objective of this research was to examine the incidence of abortion and unsafe abortion, as well as identify the variables associated with these outcomes, using a sample of Saudi women that is typical of the country as a whole.

The research problem addressed in this study is to investigate the prevalence of abortion among women in the Kingdom of Saudi Arabia (KSA) and to identify the associated risk factors contributing to its occurrence. Abortion is a complex and sensitive issue with profound implications for women's reproductive health and societal norms. Despite the conservative cultural and legal environment surrounding reproductive matters in KSA, there is a lack of comprehensive empirical data on the prevalence of abortion and the factors that influence its occurrence. Understanding the extent of abortion in KSA and its underlying risk factors is essential for informed policy-making, healthcare planning, and addressing women's reproductive needs within the cultural context of the country.

Methods:-

Study design

This research will employ a cross-sectional study design to gather data on the prevalence of abortion and its associated risk factors among women in the Kingdom of Saudi Arabia (KSA). A cross-sectional approach allows for the collection of data from a diverse population at a single point in time.

Study approach
The study will be conducted across various regions of the Kingdom of Saudi Arabia to ensure representation from different cultural, socio-economic, and geographic backgrounds.

Study population
The target population for this study consists of women of reproductive age (18-49 years) residing in the Kingdom of Saudi Arabia.

Study sample
A multistage stratified sampling technique will be employed to ensure representative sampling. In the first stage, different regions of KSA will be selected. In the second stage, cities or districts within each region will be chosen. Finally, households within these cities or districts will be randomly selected. Within the households, eligible women meeting the criteria will be invited to participate.

Study tool
The questionnaire will consist of several sections:
1. Socio-demographic information: Age, education, marital status, occupation, income, etc.
2. Reproductive history: Number of pregnancies, live births, miscarriages, induced abortions, contraceptive use, etc.
3. Risk factors: Access to healthcare, awareness of contraception methods, religious beliefs, marital satisfaction, etc.

Data collection
Data will be collected through structured interviews using a standardized questionnaire. Trained interviewers will conduct face-to-face interviews with participants in a private and confidential setting.

Data analysis
Descriptive statistics will be used to characterize the demographic profile of the participants, the prevalence of abortion, and risk factors. Inferential statistics such as chi-square tests, logistic regression, and odds ratios will be employed to examine associations between risk factors and abortion prevalence.

Ethical considerations
Informed Consent: Participants will be provided with detailed information about the study objectives and procedures. Written informed consent will be obtained from all participants.

Confidentiality:
Participant data will be treated with strict confidentiality, and all identifying information will be anonymized.

Ethical Approval:
The study protocol will be submitted to the relevant institutional review board or ethics committee for approval before data collection begins.

Results:-

The study included 242 participants. The most frequent weight among them was 51-65 kg (n= 81, 33.5%) followed by 66-75 kg (n= 75, 31%). Figure 1 shows the weight distribution among study participants. The most frequent height among study participants was 1.51-1.60 m (n= 144, 59.5%) followed by 1.61-1.70m (n= 59, 24.4%). Figure 2 shows the height distribution among study participants. The most frequent educational level among study participants was university (n= 195, 80.6%) followed by school (n= 40, 16.5%). Figure 3 shows the educational level distribution among study participants.

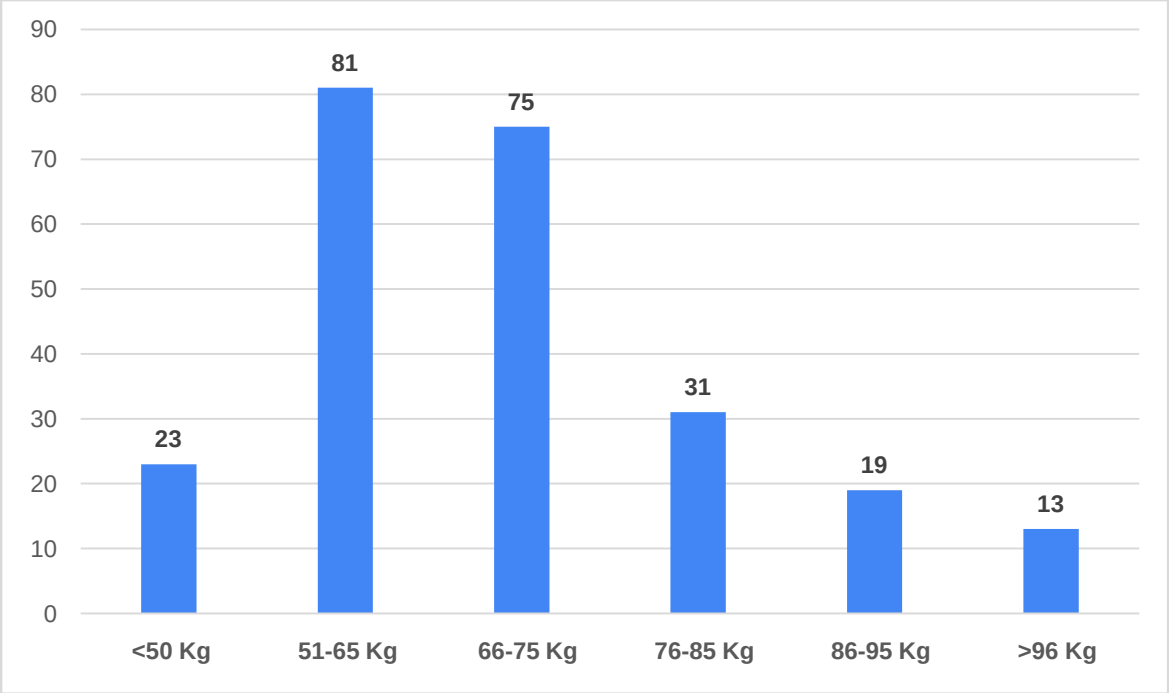

Figure 1:- Weight distribution among study participants.

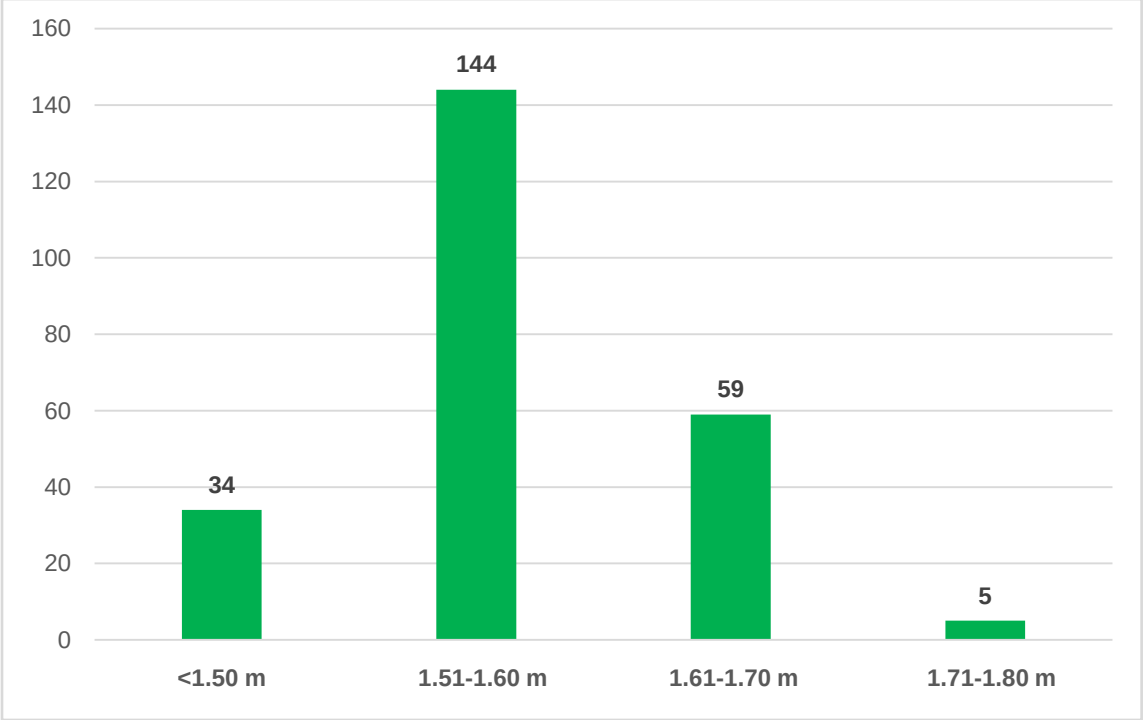

Figure 2:- Height distribution among study participants.

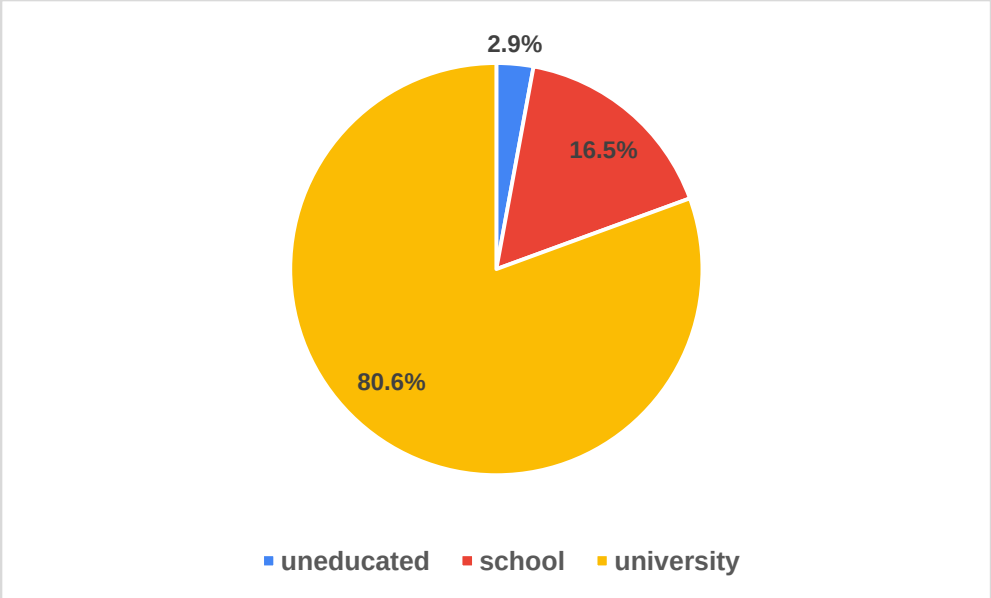

Figure 3:- Educational level distribution among study participants.

Participants were asked about their relatives with their husbands. The most frequent was no (n= 160, 66.1%) followed by yes (n= 82, 33.9%).

Diagnosis of abortion among study participants with most of them had Missed (n= 77, 31.8%) followed by Incomplete (n= 55, 22.7%), and the least was Induced (n= 9, 3.7%). Figure 4 shows the diagnosis of the abortion among the study participants.

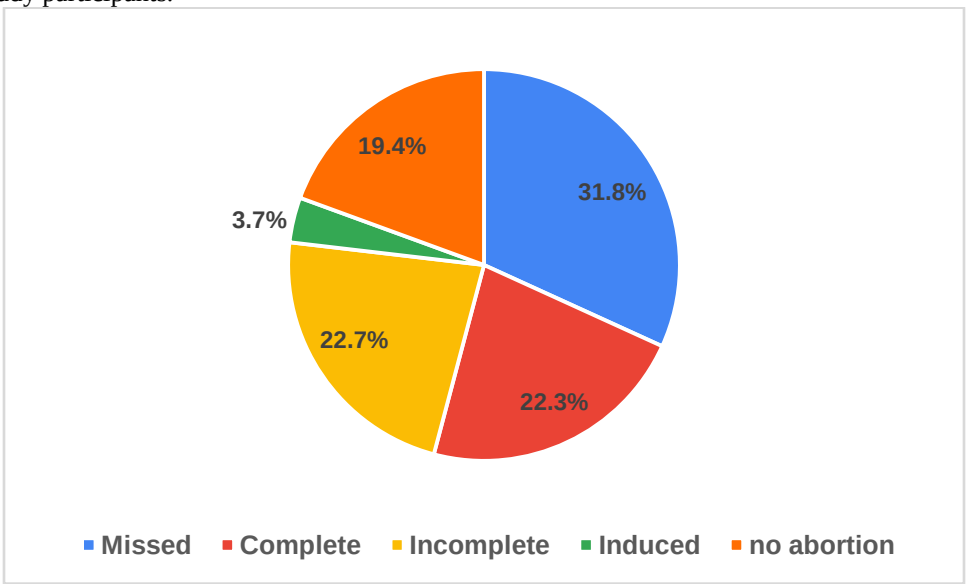

Figure 4:- Diagnosis of abortion distribution among study participants.

Participants were asked to assess their Risk Factors. Their responses and results are presented in Table 1. And Table 2 shows the results of diseases participant's questions.

Table 1:- Risk factors among study participants.

Risk Factors	Yes	No
Environmental exposure to pesticide	26 (10.7%)	216(89.3%)
Smoking	32 (13.2%)	210 (86.8%)
Passive smoking	99 (40.9%)	143 (59.1%)

Drinking coffee	210(86.8%)	32 (13.2%)
Previous abortion	120 (49.6%)	122 (50.4%)
RH incompatibility	34 (14%)	208 (86%)

Table 1:- Diseases among study participants.

Comorbidity	**Yes**	**No**
Obesity (BMI > 25)	139 (57.4%)	103 (42.6%)
Diabetes	36 (14.9%)	206(85.1%)
Anemia	61 (25.2%)	181 (74.8%)
Pregnancy-induced hypertension	31 (12.8%)	211 (87.2%)
Hypothyroidism	26 (10.7%)	216 (89.3%)

The number of pregnancy follow-ups was average among most of the participants more than 4 visits(n= 159, 65.7%) and 1-3 visits60 participants (24.8%) at the least no visits were 23 participants (9.5%).

Discussion:-

Spontaneous abortion, often known as miscarriage, is a prevalent condition that frequently occurs during pregnancy [21]. Abortion, as a term, refers to the termination of an embryo or fetus before to reaching a viable stage of development [22]. Research findings suggest that the prevalence of spontaneous abortion ranges from 10% to 20% [23–25]. It is important to acknowledge that a majority of spontaneous abortions occur during the first weeks of pregnancy, which might lead to confusion with menstrual bleeding [21, 26, 27]. Determining the prevalence of spontaneous and induced abortions poses significant challenges due to the potential for underreporting in countries where legal abortion is restricted. Additionally, the examination of spontaneous abortion in low- and middle-income countries presents significant difficulties due to the underreporting and lack of documentation of most abortions within their formal healthcare systems [28].

Genetic diseases and chromosomal abnormalities have been identified as the predominant causes of abortion in over 50% of instances [29, 30]. However, there are various factors that can impact the occurrence of abortion. These include uterine abnormalities [31, 32], infectious diseases and untreated maternal illnesses [21, 24], maternal age during pregnancy, previous history of abortion [21, 33, 34], age at the onset of menstruation [35], menstrual disorders [21], use of contraceptive medications [21, 34], body mass index (BMI) exceeding 25 kg/m2 [36–39], environmental conditions and maternal lifestyle choices such as smoking [40, 41] and caffeine consumption [32, 33], exposure to secondhand smoke [42, 43], stress [42, 44], exposure to radiation from mobile phones [45], and low socioeconomic and employment status [46]. These factors have been found to have an impact on the occurrence of abortion.The act of terminating a pregnancy, often known as abortion, is a profoundly traumatic event that has a range of effects on the mother. These effects manifest via emotional changes and may ultimately lead to the development of psychiatric illnesses, including depression [47].

There are notable variations in the regulatory frameworks governing abortion on a global scale [48]. Unsafe abortions are often more prevalent in regions characterized by stringent abortion laws, such as Sub-Saharan Africa and Latin America [48]. In the African continent, it is noteworthy to mention that the estimated mortality resulting from unsafe abortion in the year 2008 exhibited the highest figures in East and Western Africa, namely 13,000 and 9700 respectively. It is important to highlight that these regions have the most stringent abortion laws [41]. Southern Africa, which encompasses nations such as South Africa, Mozambique, and Zambia, is notable for having some of the most permissive abortion regulations globally [41]. Consequently, this region exhibits the lowest abortion rates, estimated at 500 [41]. In the majority of nations, women and providers may face legal repercussions when abortions are conducted outside of established facilities [49].

Abortions were documented in both low-income and high-income countries. The primary concerns in low-income countries were identified as lengthy waiting lists, financial burdens, and limited knowledge regarding the legal status of abortion. Conversely, certain studies conducted in high-income countries highlighted privacy concerns and

inadequate insurance coverage as contributing factors. Within the cohort of research participants, the discourse around unsafe abortion extended beyond considerations of medical and physical well-being, including dimensions of social and economic stability as well. Abortion clinics that failed to uphold women's confidentiality were seen to be lacking in safety measures. The primary reason for this might be attributed to the prevailing unfavorable cultural views towards abortion, which carried significant consequences such as loss of employment and social ostracism if one's involvement in obtaining an abortion was revealed [37]. Although ISA's are generally considered safe, the majority of research included in this review indicate that women often use risky practices, such as consuming herbal mixtures, utilizing contraception and pain relievers, or introducing foreign objects into the uterus. While certain studies have documented the utilization of a combination of mifepristone and misoprostol for the safe induction of early term abortions, it has been observed that the methods employed in the informal sector to induce abortions are frequently unsafe. This highlights the potential health risks associated with inadequate information provision, indicating that individuals seeking informal sector abortions are at an elevated risk of harm.

Several limitations need to be taken into account when evaluating the conclusions derived from this research. Despite our diligent efforts to contact the authors [45, 46], we were unable to discover two studies that met our specified criteria. The presence of language barriers posed an additional constraint on our search, since it limited the inclusion of publications written only in English and French. This selective inclusion may have introduced a possible linguistic bias into our study. One additional constraint pertained to the omission of grey literature, including reports and conference abstracts, which may have potentially caused publication bias. In addition, it should be noted that our search did not include specific phrases such as 'self-abortion' and 'self-managed abortion'. However, we posit that these terms would likely have been included in our search results for 'self-induction' and 'self-use'. Notwithstanding these limitations, we contend that this analysis constitutes a significant addition to the current body of information about the motivations behind women's persistence in engaging in informal abortion practices, despite the presence of legal alternatives. One notable constraint to consider is the considerable heterogeneity in the abortion legislation across the countries encompassed in this analysis. The existence of diverse laws, regulations, and stipulations governing the practice of abortion among different countries poses a significant challenge in attempting to classify countries based on their abortion laws. Based on its official regulatory framework, Northern Ireland can be perceived as a jurisdiction with comparatively minimal abortion restrictions, particularly due to the presence of exceptions aimed at safeguarding women's mental well-being. However, the actual accessibility of abortion services for women in Northern Ireland is significantly constrained.

Annex 1:- Data Collection Tool.

Age			Menarche			
Educational level	Not educated		School	University		
Work status	Yes	No	Family income	Low	Good	High
Weight (kg)			Height (m)			
Age at first birth			ANC visits	No	1-3	4 or more
Consanguinity	Yes	No	Current gestational age			
Parity			Gravida			
Previous abortion	Yes	No	If yes, how many?			
Use of contraceptive	Yes	No	Desire for pregnancy	Wanted		Unwanted

Comorbidity	**Yes**	**No**
Obesity (BMI > 25)		
Diabetes		
Anemia		
Pregnancy-induced hypertension		
Hypothyroidism		
Others		

Risk Factors	**Yes**	**No**
Environmental exposure to pesticide		
Smoking		
Passive smoking		
Drinking coffee		

Previous abortion		
RH incompatibility		
Other risk factors		

Diagnosis of abortion			
Missed	Complete	Incomplete	Induced
Management			

Appendix 2:- Participants responses to scale items.

Age	18-28	43	17.8%
	29-39	83	34.3%
	40-less than50	116	47.9%
educational level	uneducated	7	2.9%
	school	40	16.5%
	university	195	80.6%
weight	<50 Kg	23	9.5%
	51-65 Kg	81	33.5%
	66-75 Kg	75	31.0%
	76-85 Kg	31	12.8%
	86-95 Kg	19	7.9%
	>96 Kg	13	5.4%
height	<1.50 m	34	14.0%
	1.51-1.60 m	144	59.5%
	1.61-1.70 m	59	24.4%
	1.71-1.80 m	5	2.1%
work	yes	130	53.7%
	no	112	46.3%
husband relative	yes	82	33.9%
	no	160	66.1%

Diagnosisof the abortion		
	Frequency	**Percent**
Missed	77	31.8%
Complete	54	22.3%
Incomplete	55	22.7%
Induced	9	3.7%
no abortion	47	19.4%

Age at first birth	0	12	5.0%
	18-24	139	57.4%
	25-31	76	31.4%
	32-38	12	5.0%
	39-45	3	1.2%
number of births	0	13	5.4%
	(1-4)	166	68.6%
	(5-8)	60	24.8%
	(9-12)	3	1.2%
number of pregnancies	0	10	4.1%
	(1-4)	135	55.8%
	(5-8)	85	35.1%
	(9-12)	12	5.0%
number of pregnancy follow-up	nothing	23	9.5%
	(1-3)	60	24.8%
	4 visits or more	159	65.7%

Risk Factors	**Yes**	**No**
Environmental exposure to pesticide	26 (10.7%)	216 (89.3%)
Smoking	32 (13.2%)	210 (86.8%)
Passive smoking	99 (40.9%)	143 (59.1%)
Drinking coffee	210 (86.8%)	32 (13.2%)
Previous abortion	120 (49.6%)	122 (50.4%)
RH incompatibility	34 (14%)	208 (86%)

number of abortions		
	Frequency	**Percent**
0	125	51.7%
1	69	28.5%
2	27	11.2%
3	5	2.1%
4	12	5.0%
5	1	0.4%
6	1	0.4%
7	2	0.8%

Comorbidity	**Yes**	**No**
Obesity (BMI > 25)	139 (57.4%)	103 (42.6%)
Diabetes	36 (14.9%)	206 (85.1%)
Anemia	61 (25.2%)	181 (74.8%)
Pregnancy-induced hypertension	31(12.8%)	211 (87.2%)
Hypothyroidism	26 (10.7%)	216 (89.3%)

gestational age in a week	**freq.**	**%**
there is no pregnancy	159	65.7%
(1-4)	10	4.1%
(5-8)	12	5.0%
(9-13)	12	5.0%
(14-17)	10	4.1%
(18-21)	8	3.3%
(22-26)	10	4.1%
(27-30)	6	2.5%
(31-35)	3	1.2%
(36-40)	12	5.0%

Chi-square
previous.abortion * menstruation

Crosstab											
			menstruation								Total
			9	10	11	12	13	14	15	16	
previous.abortion	yes	Count	9	1	14	26	25	27	11	7	120
		% of Total	3.7%	0.4%	5.8%	10.7%	10.3%	11.2%	4.5%	2.9%	49.6%
	no	Count	4	4	5	32	28	23	19	7	122
		% of Total	1.7%	1.7%	2.1%	13.2%	11.6%	9.5%	7.9%	2.9%	50.4%
Total		Cou	13	5	19	58	53	50	30	14	242

	nt									
	% of Total	5.4 %	2.1 %	7.9 %	24.0 %	21.9 %	20.7 %	12.4 %	5.8 %	100.0 %

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	11.214[a]	7	.130
Likelihood Ratio	11.595	7	.115
Linear-by-Linear Association	1.797	1	.180
N of Valid Cases	242		

Previousabortion * follow-upvisit

Crosstab						
			Follow-upvisit			Total
			Nothing	1-3	4 visit and more	
previous.abortion	yes	Count	2	23	95	120
		% of Total	0.8%	9.5%	39.3%	49.6%
	no	Count	21	37	64	122
		% of Total	8.7%	15.3%	26.4%	50.4%
Total		Count	23	60	159	242
		% of Total	9.5%	24.8%	65.7%	100.0%

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	24.992[a]	2	.000
Likelihood Ratio	27.658	2	.000
Linear-by-Linear Association	24.657	1	.000
N of Valid Cases	242		

Previousabortion * husbandrelative

Crosstab					
			husband.relative		Total
			yes	no	
previous.abortion	yes	Count	37	83	120
		% of Total	15.3%	34.3%	49.6%
	no	Count	45	77	122
		% of Total	18.6%	31.8%	50.4%
Total		Count	82	160	242
		% of Total	33.9%	66.1%	100.0%

Chi-Square Tests					
	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.989[a]	1	.320		
Continuity Correction[b]	.737	1	.391		
Likelihood Ratio	.990	1	.320		
Fisher's Exact Test				.344	.195
Linear-by-Linear Association	.985	1	.321		
N of Valid Cases	242				

Previousabortion * Contraceptives

Crosstab					
			Contraceptives		Total
			yes	no	
Previousabortion	yes	Count	79	41	120
		% of Total	32.6%	16.9%	49.6%
	no	Count	62	60	122
		% of Total	25.6%	24.8%	50.4%
Total		Count	141	101	242
		% of Total	58.3%	41.7%	100.0%

Chi-Square Tests					
	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	5.608[a]	1	.018		
Continuity Correction[b]	5.007	1	.025		
Likelihood Ratio	5.634	1	.018		
Fisher's Exact Test				.019	.013
Linear-by-Linear Association	5.585	1	.018		
N of Valid Cases	242				

Previousabortion * Desirecurrentpregnancy

Crosstab					
			Desirecurrentpregnancy		Total
			yes	no	
Previousabortion	yes	Count	35	85	120
		% of Total	14.5%	35.1%	49.6%
	no	Count	40	82	122
		% of Total	16.5%	33.9%	50.4%
Total		Count	75	167	242
		% of Total	31.0%	69.0%	100.0%

Chi-Square Tests					
	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.371[a]	1	.543		
Continuity Correction[b]	.221	1	.638		
Likelihood Ratio	.371	1	.542		
Fisher's Exact Test				.580	.319
Linear-by-Linear Association	.369	1	.543		
N of Valid Cases	242				

Previousabortion * BMI.morethan25

Crosstab					
			BMI.morethan25		Total
			yes	no	
previous.abortion	yes	Count	77	43	120
		% of Total	31.8%	17.8%	49.6%
	no	Count	62	60	122
		% of Total	25.6%	24.8%	50.4%
Total		Count	139	103	242
		% of Total	57.4%	42.6%	100.0%

Chi-Square Tests					
	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	4.408[a]	1	.036		
Continuity Correction[b]	3.879	1	.049		
Likelihood Ratio	4.424	1	.035		
Fisher's Exact Test				.038	.024
Linear-by-Linear Association	4.390	1	.036		
N of Valid Cases	242				

Previousabortion * Diabetes

Crosstab					
			Diabetes		Total
			yes	no	
previous.abortion	yes	Count	19	101	120
		% of Total	7.9%	41.7%	49.6%
	no	Count	17	105	122
		% of Total	7.0%	43.4%	50.4%
Total		Count	36	206	242
		% of Total	14.9%	85.1%	100.0%

Chi-Square Tests					
	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.172[a]	1	.678		
Continuity Correction[b]	.055	1	.815		
Likelihood Ratio	.172	1	.678		
Fisher's Exact Test				.720	.407
Linear-by-Linear Association	.172	1	.679		
N of Valid Cases	242				

Previous.abortion * Anemia

Crosstab					
			Anemia		Total
			yes	no	
previous.abortion	yes	Count	35	85	120
		% of Total	14.5%	35.1%	49.6%
	no	Count	26	96	122
		% of Total	10.7%	39.7%	50.4%
Total		Count	61	181	242
		% of Total	25.2%	74.8%	100.0%

Chi-Square Tests					
	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	1.980[a]	1	.159		
Continuity Correction[b]	1.585	1	.208		
Likelihood Ratio	1.985	1	.159		
Fisher's Exact Test				.184	.104
Linear-by-Linear Association	1.972	1	.160		
N of Valid Cases	242				

Previous.abortion * hypertension

Crosstab					
			hypertension		Total
			yes	no	
previous.abortion	yes	Count	13	107	120
		% of Total	5.4%	44.2%	49.6%
	no	Count	18	104	122
		% of Total	7.4%	43.0%	50.4%
Total		Count	31	211	242
		% of Total	12.8%	87.2%	100.0%

Chi-Square Tests					
	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.833[a]	1	.362		
Continuity Correction[b]	.519	1	.471		
Likelihood Ratio	.836	1	.361		
Fisher's Exact Test				.443	.236
Linear-by-Linear Association	.829	1	.363		
N of Valid Cases	242				

Previous.abortion * Hypothyroidism

Crosstab					
			Hypothyroidism		Total
			yes	no	
previous.abortion	yes	Count	14	106	120
		% of Total	5.8%	43.8%	49.6%
	no	Count	12	110	122
		% of Total	5.0%	45.5%	50.4%
Total		Count	26	216	242
		% of Total	10.7%	89.3%	100.0%

Chi-Square Tests					
	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.211[a]	1	.646		
Continuity Correction[b]	.064	1	.801		
Likelihood Ratio	.212	1	.646		
Fisher's Exact Test				.683	.401
Linear-by-Linear Association	.211	1	.646		
N of Valid Cases	242				

Previous.abortion * Environmental.Exposure.pesticide

Crosstab					
			Environmental.exposure.pesticide		Total
			yes	no	
previous.abortion	yes	Count	15	105	120
		% of Total	6.2%	43.4%	49.6%
	no	Count	11	111	122
		% of Total	4.5%	45.9%	50.4%
Total		Count	26	216	242
		% of Total	10.7%	89.3%	100.0%

Chi-Square Tests					
	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.766[a]	1	.382		
Continuity Correction[b]	.445	1	.505		
Likelihood Ratio	.768	1	.381		
Fisher's Exact Test				.413	.253
Linear-by-Linear Association	.762	1	.383		
N of Valid Cases	242				

Previous.abortion * smoker

Crosstab					
			smoker		Total
			yes	no	
previous.abortion	yes	Count	15	105	120
		% of Total	6.2%	43.4%	49.6%
	no	Count	17	105	122
		% of Total	7.0%	43.4%	50.4%
Total		Count	32	210	242
		% of Total	13.2%	86.8%	100.0%

Chi-Square Tests					
	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.108[a]	1	.742		
Continuity Correction[b]	.019	1	.889		
Likelihood Ratio	.109	1	.742		
Fisher's Exact Test				.850	.445
Linear-by-Linear Association	.108	1	.742		
N of Valid Cases	242				

Previous.abortion * Passive.smoking

Crosstab					
			Passive.smoking		Total
			yes	no	
previous.abortion	yes	Count	50	70	120
		% of Total	20.7%	28.9%	49.6%
	no	Count	49	73	122
		% of Total	20.2%	30.2%	50.4%
Total		Count	99	143	242
		% of Total	40.9%	59.1%	100.0%

Chi-Square Tests					
	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.057[a]	1	.812		
Continuity Correction[b]	.011	1	.915		
Likelihood Ratio	.057	1	.812		
Fisher's Exact Test				.896	.457
Linear-by-Linear Association	.056	1	.812		
N of Valid Cases	242				

Previous.abortion * Drinkingcoffee

Crosstab					
			Drinking.coffee		Total
			yes	no	
Previous.abortion	yes	Count	107	13	120
		% of Total	44.2%	5.4%	49.6%
	no	Count	103	19	122
		% of Total	42.6%	7.9%	50.4%
Total		Count	210	32	242
		% of Total	86.8%	13.2%	100.0%

Chi-Square Tests					
	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	1.185[a]	1	.276		
Continuity Correction[b]	.808	1	.369		
Likelihood Ratio	1.191	1	.275		
Fisher's Exact Test				.343	.185
Linear-by-Linear Association	1.180	1	.277		
N of Valid Cases	242				

Previous.abortion * HR incompatibility

Crosstab					
			HR incompatibility		Total
			yes	no	
previous.abortion	yes	Count	19	101	120
		% of Total	7.9%	41.7%	49.6%
	no	Count	15	107	122
		% of Total	6.2%	44.2%	50.4%
Total		Count	34	208	242
		% of Total	14.0%	86.0%	100.0%

Chi-Square Tests					
	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.627[a]	1	.428		
Continuity Correction[b]	.368	1	.544		
Likelihood Ratio	.628	1	.428		
Fisher's Exact Test				.464	.272
Linear-by-Linear Association	.625	1	.429		
N of Valid Cases	242				

Previous.abortion * Diagnosis.Of the abortion

Crosstab								
			Diagnosisof the abortion					Total
			Missed	Complete	Incomplete	Induced	no abortion	
previous.abortion	yes	Count	25	48	40	5	2	120
		% of	10.3%	19.8%	16.5%	2.1%	0.8%	49.6%

		Total						
	no	Count	52	6	15	4	45	122
		% of Total	21.5%	2.5%	6.2%	1.7%	18.6%	50.4%
Total		Count	77	54	55	9	47	242
		% of Total	31.8%	22.3%	22.7%	3.7%	19.4%	100.0 %

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	92.939[a]	4	.000
Likelihood Ratio	107.358	4	.000
Linear-by-Linear Association	10.584	1	.001
N of Valid Cases	242		

Logistic Regression

Case Processing Summary			
Unweighted Cases[a]		N	Percent
Selected Cases	Included in Analysis	242	100.0
	Missing Cases	0	.0
	Total	242	100.0
Unselected Cases		0	.0
Total		242	100.0

Dependent Variable Encoding	
Original Value	Internal Value
yes	0
no	1

Block 0: Beginning Block

Classification Table[a,b]					
	Observed		Predicted		
			previous.abortion		Percentage Correct
			yes	no	
Step 0	previous.abortion	yes	0	120	.0
		no	0	122	100.0
	Overall Percentage				50.4

Variables in the Equation							
		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	.017	.129	.017	1	.898	1.017

Variables not in the Equation					
			Score	df	Sig.
Step 0	Variables	age	10.120	1	.001
		weight	1.197	1	.274
		height	.141	1	.707
		age.first.age	13.699	1	.000
		follow.up.visit	24.759	1	.000
		husband.relative	.989	1	.320

		BMI.morethan25	4.408	1	.036
		Diabetes	.172	1	.678
		Anemia	1.980	1	.159
		hypertension	.833	1	.362
		Hypothyroidism	.211	1	.646
		Environmental.exposure.pesticide	.766	1	.382
		smoker	.108	1	.742
		Passive.smoking	.057	1	.812
		Drinking.coffee	1.185	1	.276
		HR incompatibility	.627	1	.428
		Diagnosis.of.abortion	10.628	1	.001
	Overall Statistics		42.285	17	.001

Block 1: Method = Enter

Omnibus Tests of Model Coefficients				
		Chi-square	df	Sig.
Step 1	Step	46.394	17	.000
	Block	46.394	17	.000
	Model	46.394	17	.000

Model Summary			
Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	289.073[a]	.174	.233

Classification Table[a]					
	Observed		Predicted		
			previous.abortion		Percentage Correct
			yes	no	
Step 1	previous.abortion	yes	94	26	78.3
		no	48	74	60.7
	Overall Percentage				69.4

Variables in the Equation							
		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	age	-.020	.021	.886	1	.347	.980
	weight	.005	.012	.177	1	.674	1.005
	height	-.317	2.532	.016	1	.900	.729
	age.first.age	-.049	.027	3.293	1	.070	.952
	follow.up.visit	-.827	.261	10.014	1	.002	.437
	husband.relative	-.071	.317	.050	1	.823	.931
	BMI.morethan25	.447	.323	1.915	1	.166	1.563
	Diabetes	.164	.425	.149	1	.700	1.178
	Anemia	.459	.346	1.767	1	.184	1.583
	hypertension	-.743	.447	2.759	1	.097	.476
	Hypothyroidism	-.200	.460	.188	1	.664	.819
	Environmental.exposure.pesticide	.328	.494	.441	1	.507	1.389
	smoker	-.117	.475	.061	1	.805	.889
	Passive.smoking	.095	.338	.079	1	.778	1.100
	Drinking.coffee	.168	.455	.136	1	.713	1.182
	HR incompatibility	.083	.422	.039	1	.843	1.087
	Diagnosis.of.abortion	.205	.108	3.628	1	.057	1.228
	Constant	2.924	4.446	.433	1	.511	18.620

Conclusion:-

Study results showed that most of the study participants are university educational level. Most of them don't smoke and don't do passive smoking. Most of the study participants are Obesity according to their BMI. In addition, most of the study participants had good social connections.

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