Prevalence and Risk Factors of Abortion in Almajmaah City, Kingdom of Saudi Arabia

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Abstract— Background: Abortion (miscarriage) is a spontaneous loss of pregnancy before 24 weeks, formerly known as spontaneous abortion. A women is labeled as "recurrent abortion patient" when she had suffered three or more spontaneous abortions. Approximately 205 million pregnancies occur worldwide each year and 42 million of these pregnancies end in abortion. Objective: The objectives of the study are; to find the prevalence of spontaneous & recurrent abortion in last 3 years in Almajmaah City, to identify risk factors of abortion and its most common type(s) reported in last 3 years and to identify the most frequent gestational age of abortion. Methods: It was a retrospective cross-sectional study conducted from February 2012 – March 2015. The data was collected from Saudi women who were between 15-45 years of age with history of spontaneous or recurrent abortion admitted to King Khalid General Hospital, Almajmaah. Results: The prevalence of abortion (either spontaneous or recurrent) was 54.87 per 1000 live births. Spontaneous abortion represented 86.1% (47.22 per 1000 live birth) and the recurrent abortion represented 13.9% (7.64 per 1000 live birth). Majority of women who had spontaneous abortion were obese (34.32%). The common age for occurrence of recurrent and spontaneous abortions was between second and third decades. Conclusion: Prevalence of abortion (either spontaneous or recurrent) was high in Almajmaah City. The common age for occurrence of recurrent and spontaneous abortions was between second and third decades. Also, obese women were at higher risk of having abortion

Index Terms— abortion, almajmaah, miscarriage, pregnancy, prevalence, recurrent, spontaneous,

1 Introduction

Abortion (miscarriage) is a spontaneous loss of pregnancy before 24 weeks, formerly known as spontaneous abortion. In threatened miscarriage there is vaginal bleeding, often minimal, associated with mild period-type pains; the cervix is closed and ultrasound confirms a viable pregnancy. In inevitable miscarriage, vaginal bleeding is associated with crampy pelvic pains and an open cervix; the pregnancy has not yet been expelled, but eventually will be. The miscarriage is incomplete if the cervix remains open and the uterus still contains some fetal tissue. The miscarriage is complete if the cervix has closed and ultrasound scanning shows an empty uterus. A late miscarriage is one occurring after 20–24 weeks when the fetus has shown no signs of life after delivery. Recurrent miscarriage is the loss of three or more pregnancies consecutively; there are many possible causes, including antiphospholipid antibody syndrome[1]. The WHO classification of the stages of spontaneous miscarriage are "threatened miscarriage", "Inevitable miscarriage", "Incomplete miscarriage" and "Complete miscarriage"[2]. Approximately 205 million pregnancies occur worldwide each year and 42 million of these pregnancies end in abortion[3]

From 1990 to 2000 there were an estimated 1,030,000 spontaneous fetal losses in 6,401,000 pregnancies (16%) in the US [4]. There is no reason to suspect that overall spontaneous miscarriage rates are markedly different in other parts of the world, and a recent prospective longitudinal population-based study in Sweden reported clinical miscarriage in 12% of pregnancies[5]. However, the rate of spontaneous loss of unrecognized pregnancies after implantation has been estimated at up to 31% [6]. Recurrent miscarriages with the same partner affect 0.5% to 2% of otherwise healthy women[7]. Numerous risk factors are associated with an increased risk of pregnancy loss. The best documented risk factors for spontaneous abortion are advanced maternal age, previous spontaneous abortion, and maternal smoking[8].

A control study conducted in Japan showed that the risk of early spontaneous abortions was higher for women with a past history of early spontaneous abortions[9]. Previous research has identified common risk factors for repeat abortions, including higher age, higher parity, and lower socioeconomic status [10,11,12]. In Kingdom of Saudi Arabia, according to a study conducted at King Khalid University Hospital, Riyadh a positive association was observed when woman was married to a blood related husband than if married to a non-relative Other factors that had significant bivariate association with SA were a family history of SA, abdominal trauma, and infection during pregnancy[13]. According to Ministry of Health, Kingdom of Saudi Arabia (2012-2013) the prevalence of miscarriage was 0.18%. Riyadh has the highest prevalence of miscarriages (16.87%) and the lowest prevalence was in Qunfudah (0.66%)[14]. Therefore, we planned this study to; find the prevalence of spontaneous & recurrent abortion in last 3 years in Almajmaah City, to identify risk factors of abortion and its most common type(s) reported in last 3 years and to identify the most frequent gestational age of abortion.

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2 Material and Methods

It was a retrospective cohort study by design. The data was collected retrospectively from 201 patients' records from February 2012 – March 2015 using consecutive sampling method. The study was conducted at Maternity Department, King Khaled General Hospital (KKGH); it has capacity of 225 beds and is run by Ministry of Health in Almajmaah City. Which is located in the north central Saudi Arabia Riyadh region was founded in 820 AH. They bundled province and its largest city. The number of the combined population of about 90,000 people between the citizen and resident and the number of residential neighborhoods around the city (12) residential neighborhood and the number of housing units in these neighborhoods more than 4500 units. The study population was records of Saudi women between 15-48 years with history of spontaneous or recurrent abortion admitted to KKGH. The data was collected through self-validated pre-structured checklist comprising; age, age at abortion, gestational age, gestational number, abortion number, smoking history, family history, known chromosomal abnormality, weight, BMI, diabetes and Gestational DM. The data were entered and analyzed using SPSS version 23.0. Mean + S.D was given for quantitative variables. Frequencies and percentages were given for qualitative variables. Two independent sample t test was applied to compare age, weight and BMI of cases with type of abortion. Pearson Chi Square was applied to observe associations between qualitative variables. A p-value of <0.05 was considered as statistically significant. The study was approved by the ethical committee of Majmaah University. The approval from hospital administration to access the records were obtained. 2.2 Final Stage

3 Results

Overall, 201 files of women, fulfilling the inclusion criteria were enrolled in the study from April 2012 – March 2015. During this period a total number of 3663 deliveries were conducted at Maternity Department, King Khaled General Hospital, Almajmaah. The prevalence of abortion (either spontaneous or recurrent) was 54.87 per 1000 live births in which the spontaneous abortion represents 86.1% (47.22 per 1000 live birth) and the recurrent 13.9% (7.64 per 1000 live birth) respectively [Table 1]. The overall average age of cases was 34.67+7.35 years, mean age of cases having spontaneous and recurrent abortions was 34.52+7.58 years and 35.57+5.80 years. Those aged 26-35 years represented most of the sample n=91(45.3%). The average age of patients at first abortion was (31.18 years), second abortion (32.96) years, third abortion (32.93 years), fourth abortion (33.29 years), and average at fifth abortion was (30 years). Whereas, the average Gestational age at abortion (spontaneous and recurrent) was first week (12.16), second week (12.09), third week(12.04), fourth week (14.83), and fifth week (15.07) respectively. No significant difference was observed between ages of cases having spontaneous and recurrent abortion p=0.235. Mean weight of cases having spontaneous and recurrent abortions was 74.01+13.81 years and 77.03+15.63 kg respectively. There is a significant difference was observed between weight of cases having spontaneous and recurrent abortion (p=0.041). In addition, BMI also was significantly associated with type of abortion(p=0.001). Table 2 shows that out of 201 women had abortion, We found that cases who had spontaneous abortion majority of them were obese 69(34.32%), and cases who had recurrent abortion majority of them were severely obese 9(4.47%). Surprisingly, in the whole 201 records none of them recorded the risk factors i.e. smoking, family history, chromosomal abnormalities and other chronic diseases.

4 Discussion

The prevalence of abortion (either spontaneous or recurrent) was 54.87 per 1000 live births in which the spontaneous abortion represents 86.1% (47.22 per 1000 live birth) and the recurrent abortions represent 13.9% (7.64 per 1000 live birth). These findings relate to the global abortion rate of 29 and 28 abortions per 1000 women aged 15-44 years. In addition, from 1990 to 2000 there were an estimated 1,030,000 spontaneous fetal losses in 6,401,000 pregnancies (16%) in the US[15]. Recurrent miscarriages affect 0.5% to 2% of healthy women[7] estimated 2-5% of women have recurrent pregnancy loss (RPL) defined as ≥ 3 consecutive losses[15]. According to the official record of Ministry of Health, Saudi Arabia the prevalence of abortion in 2012-2013 was 0.18%[14]. The prevalence of abortion in our study was slightly higher than the International records, but in absence of national records the comparison is difficult. A study conducted in Denmark reported that the most common age of women who had spontaneous and recurrent abortions was between 20-24 years, whereas, in our study it was age-group between 26-35 years[18]. In our study we faced a big challenge to collect data for factors such as (smoking, family history of abortions, and chromosomal or genetic abnormalities etc) due to poorly maintained hospital record so we were unable to relate contextual literature. However, there was a study of risk factors regarding early spontaneous abortions among Japanese women; showed a significant association between smoking and early spontaneous abortions[9]. In addition, there was another study regarding risk factors of unexplained recurrent spontaneous abortion (RSA) in a population from southern China, showed that family history and recurrent spontaneous abortion were significantly associated[17]. A study conducted at King Khalid University Hospital, Riyadh regarding cytogenetic aspects and chromosomal abnormalities with cases of recurrent abortions was not significantly different from that reported worldwide[19]. In our study BMI and abortion types were significantly associated showing that majority of women who had spontaneous abortion were obese (34.32%), overweight (24.37%), and severely obese (17.91%), whereas, majority of women who had recurrent abortion were severely obese (4.47%), overweight (4.31%) and obese (3.98%). These findings are in concordance with a study conducted in China which reported high prevalence of abortions in women with BMI of 24.0 or greater (adjusted OR, 1.54; 95% CI, 1.12–2.14)[17]. In contrast, in study was conducted on Saudi Women showed. No significant association between abortion and BMI [13]. This is an area of further researches that need to figure out the relation is it causation or only relation.

5 Limitations of the Study

We faced a lot of difficulty in collecting data from hospital record related to abortions. Patient files were poorly maintained with lot of essential data missing especially the risk factors. The poor maintenance of record clutched us for not studying one of our study objectives. Future studies should be conducted in cosmopolitan cities like Jeddah, Riyadh and Dammam to find the correct prevalence of abortions.

6 Recommendations

1- All women presented with abortion should be screened for; chromosomal abnormality, smoking, passive smoking, and family history of abortion.
2- The type of abortion should be identified and documented in patient's file.
3- Maternity Departments should keep their record in a known place for easy retrieving.
4- After proper maintenance of patient's record by King Khaled General Hospital, Almajmaah, future research should be conducted to study the relation between risk factors and abortion (spontaneous and recurrent).
5- Awareness campaigns should be arranged for the community emphasizing upon risk factors, causes, and complications of abortion.

TABLE 1
Prevalence of abortion (spontaneous and recurrent) in Almajmaah City

Total	Abortion n=201	Live birth 3663
No. of spontaneous abortion	173 (86.1%)	47.22 per 1000 live birth
No. of recurrent abortion	28 (13.9%)	7.64 per 1000 live birth
No. of total abortion	201 (100%)	54.87 per 1000 live birth

TABLE 2
Association between BMI classification and types of abortion

BMI Groups	Spontaneous	recurrent	Total
Underweight (≤18.4)	0.0(0.0%)	2(0.95%)	2(0.95%)
Normal (18.5-24.9)	19(9.45%)	0.0(0.0%)	19(9.45%)
Overweight (25-29.9)	49(24.37%)	9(4.47%)	58(28.85%)
Obese (30-34.9)	69(34.32%)	8(3.98%)	77(38.30%)
Severely obese (≥35)	36(17.91%)	9(4.47%)	45(22.38%)
Total	173(86.06%)	28(13.93%)	201(100%)
Pearson Chi Square = 17.74 , p-value = 0.001			

TABLE 3
Comparison between age and weight with type of abortion

Scores	Spontaneous Mean + S.D n = 172	Recurrent Mean + S.D n = 28	p-value
Weight of Patient	75.01 ± 13.81	77.06 ± 15.63	0.041*
Patient's Age	34.52 ± 7.58	35.57 ± 5.80	0.675

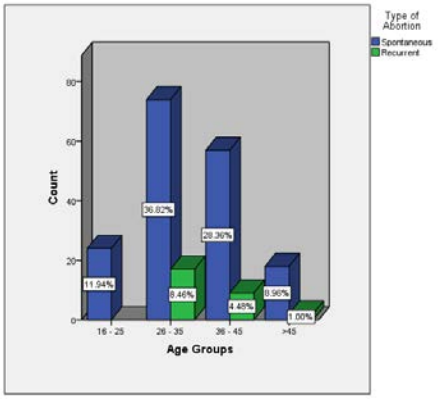

Fig. 1. Distribution of age among spontaneous and recurrent abortion patients

4 Conclusion

Prevalence of abortion (either spontaneous or recurrent) was high in Almajmaah City. The common age for occurrence of recurrent and spontaneous abortions was between second and third decades. Also, obese women were at higher risk of having abortion.

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