

Prevalence And Demographic Features of Miscarriages at Baljurashi General Hospital, Albaha, Saudi Arabia

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ABSTRACT

Background: Miscarriage is the most common encountered complication of pregnancy. It may be repeated for 3 or more times; a condition called habitual or recurrent miscarriage.

Aim: To determine the incidence of miscarriage at Baljurashi General Hospital, the demographic characteristics of women who presented with miscarriage, and the most common gestational age at time of miscarriage.

Materials and methods: A self-administered questionnaire was distributed to women attending Baljurashi General Hospital who suffer from miscarriage.

Results: The incidence of miscarriage was 10%. Ninety-two women responded to the questionnaire. Most of the respondents aged more than 25 years, had no job, and were in their first trimester. Half of the respondents had secondary education. Approximately one tenth suffered from repeated miscarriages.

Conclusion: The incidence of miscarriage, among patients presenting to Baljurashi hospital, was comparable to those reported in other regions. However, the percentage of repeated abortion is high and these cases were not appropriately investigated. We recommend for the introduction of routine genetic studies into the work up of repeated miscarriages.

Keywords: repeated miscarriage; abortion; pregnancy; survey.

INTRODUCTION

Miscarriage is defined as the loss of clinically recognized pregnancy, prior to 20 weeks gestation or less than 500 g^[1]. It is the most common complication of pregnancy affecting 10 to 15 % of clinically recognized pregnancies. The incidence is much higher if losses before the next menstrual cycle are considered; approaching 50 to 75% of all fertilized ova^[2]. Miscarriages may be repeated for three or more times; a condition termed "habitual abortion" or "repeated miscarriage"^[3].

More than 80 % of all miscarriages take place before 12 weeks of gestation (i.e. in the 1st trimester) and nearly half of them occur due to chromosomal abnormalities. Less than 20 % of all miscarriage occur between the 12th and 20th weeks of gestation (in the 2nd trimester) and are more likely to be caused by anatomical anomalies of the uterus rather than by chromosomal anomalies^[4].

Miscarriage may occur either due to maternal or fetal causes. Maternal factors that predispose to miscarriage include uterine defects such as septate uterus, leiomyomas, and intrauterine adhesions; infections; endocrinal disturbances such as thyroid disorders^[4], poorly controlled diabetes mellitus, polycystic ovarian syndrome, luteal phase defect; environmental conditions such as exposure to pesticides and other chemical pollutants and immunological disorders^[5].

The fetal factors that may result in miscarriage include: abnormal development of the zygote, embryo, fetus or placenta (resulting in blighted ovum); or chromosomal abnormalities such as autosomal trisomies (the most frequent), monosomy X, and triploidy (results in partial hydatiform mole)^[6]. Some risk factors have been recognized for miscarriage and these include: increased maternal and/ or paternal age, prior miscarriage, and infertility. Other risk factors were proposed, yet still controversial, such as smoking, alcohol and caffeine intake, and stressful life and work conditions^[7].

Up to the best of the authors' knowledge, no previous studies have assessed the incidence and epidemiology of miscarriages in Saudi women residing in Albaha region. The aim of this study was to determine the incidence of miscarriage at Baljurashi General Hospital, Albaha region; the demographic characteristics of women who presented with miscarriage, and the most common gestational age at time of miscarriage.

METHODS

Ethical considerations

This study was approved by the Research Ethics Committees of Albaha University and Baljurashi General Hospital. An informed consent was obtained from each participant.

Study design

This study had an observational, cross-sectional design that was used to assess the incidence and demographic characteristics of women presenting with miscarriage and to identify the most common gestational age and maternal age of miscarriage at Baljurashi General Hospital, Albaha Region, Saudi Arabia. The current study was carried out from March, 2016 to March, 2017.

During the study period, 2935 pregnant ladies presented to the obstetrics and gynecology department of the Baljurashi hospital; among which 300 had miscarriages. A self-administered questionnaire was distributed among the study participants. The questionnaire included questions about the demographic data of the participant (age, occupation, education, and socioeconomic level), past history of medical diseases, obstetric history (number of pregnancies, deliveries, abortions), the present condition (the gestational age), the method of uterine evacuation, complications of the intervention, the administered medications, and investigations that were performed for identifying the cause of miscarriage.

It was distributed to the participants by direct contact with them. The following data were retrieved from questionnaires answered by 92 respondents (including age, occupation, education, socioeconomic status, gravidity, number of abortions, gestational age,

Table (1): demographic characteristics of women who presented with miscarriage

		N	%
Age (Years)	15-20	4	4.30%
	>20 - 25	12	13.00%
	> 25 - 30	25	27.20%
	>30 - 35	20	21.70%
	>35	31	33.80%
	No. of respondents	92	100.00%
Occupation	Worker	9	9.80%
	House wife	83	90.20%
	No. of respondents	92	100.00%
Education	Illiterate	7	7.60%
	Primary	20	21.70%
	Secondary	46	50.00%
	Higher	19	20.70%
	No. of respondents	92	100.00%
Socioeconomic status	Good	49	57.00%
	Moderate	37	43.00%
	Poor	0	0.00%
	No. of respondents	86	100.00%

complications of abortion, treatment received, medical diseases, Rh factor, and blood groups), whereas data of 300 cases of miscarriage reported during the study period (such as the types of abortion and evacuation methods) were retrieved from medical records provided by the Department of Statistics. Data were confirmed then coded and entered into a personal computer. Thanks and appreciations were used to inspire the participants to be involved in the study.

Statistical Analysis

The results were tabulated and reported as frequencies and percentages for categorical variables. Bar charts were used to present visually some data.

RESULTS

In this study, the total number of pregnancies that presented at Baljurashi hospital during the study period was 2935. Three hundred patients suffered from miscarriages; among which, 92 responded to the questionnaire. The incidence of miscarriage was $300/2935 = 10\%$.

The most common age group was above 35 years (33.8%) and ">25 - 30" (27.2%). The majority (90.2%) were housewives. Half of the respondents had secondary education. All the respondents came from good or moderate socioeconomic background (Table 1, Figure 1).

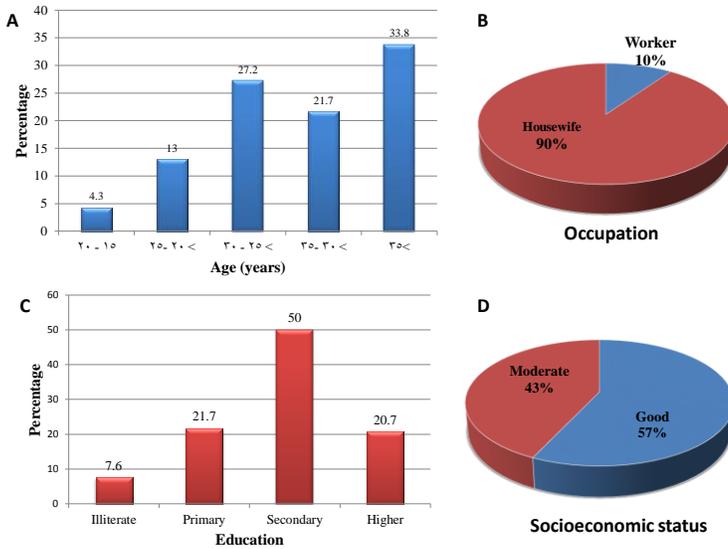


Figure (1): Demographic data of the respondents: A) age; B) Occupation; C) Education; and D) Socioeconomic status.

Most of the cases were multipara. Half the respondents had no previous miscarriage, while 39.1% had 1 or 2 miscarriages and 10.9% had 3 or more miscarriages. Most of the respondents were in the first trimester. The most prevalent types of miscarriage were missed (45%), followed by threatened (25.7%) and incomplete miscarriage (19.7%). The least encountered types were septic (2.3%) and complete miscarriage (2.7%). In 21.3% of the abortions, the contents of the uterus were expelled spontaneously. Surgical intervention was required in 36.7% of cases; and medical treatment sufficed in 42%. The most common encountered complication was bleeding (59.5%). Heparin and aspirin were prescribed only in one case (Table 2, Figures 2 & 3).

Table (2): Abortion (number, type), gestational age, method of evacuation, and complications

		N	%
Obstetrical code	Nullipara	11	12.8%
	Multipara	69	80.2%
	Grand multipara	6	7.0%
	No. of respondents	86	100.0%
Number of abortion(s)	0	46	50.0%
	1-2	36	39.1%
	3 or more	10	10.9%
	No. of respondents	92	100.0%
Gestational age	First trimester	79	85.9%
	Second trimester	13	14.1%
	No. of respondents	92	100.0%
Type of abortion	Septic	7	2.3%
	Inevitable	14	4.6%
	Threatened	77	25.7%
	Incomplete	59	19.7
	Missed	135	45.0%
	Complete	8	2.7
	N of respondents	300	100.0%

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		N	%
Evacuation method	Surgical (D & C)	110	36.7%
	Medical	126	42.0%
	Spontaneous	64	21.3%
	No. of respondents	300	100.0%
Complications	Bleeding	47	59.5%
	Others	7	8.9%
	None	25	31.6%
	No. of respondents	79	100.0%
Treatment received	Heparin	1	1.5%
	Aspirin	1	1.5%
	Progesterone	0	0.0%
	Others	41	60.3%
	None	25	36.8%
	No. of respondents	68	100.0%

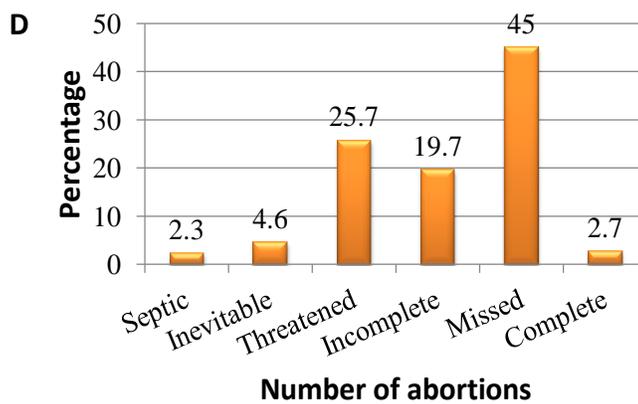
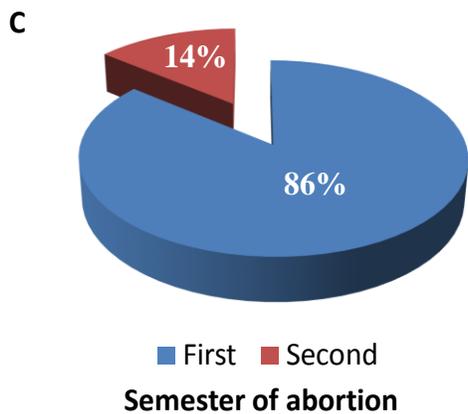
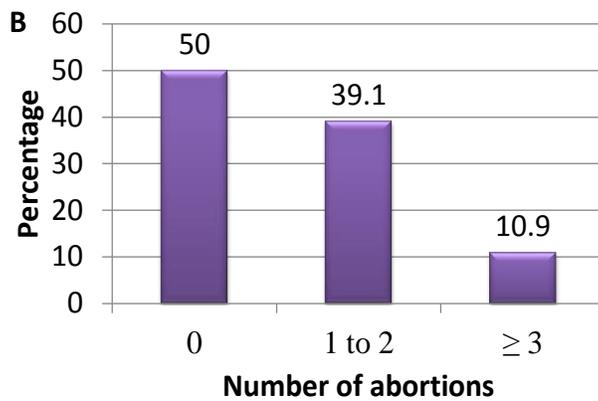
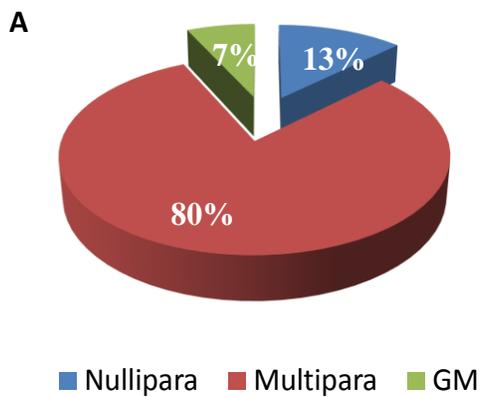


Figure (2): A) Obstetrical code; B) Number of abortions; C) Semester of abortion; and D) Number of abortions.

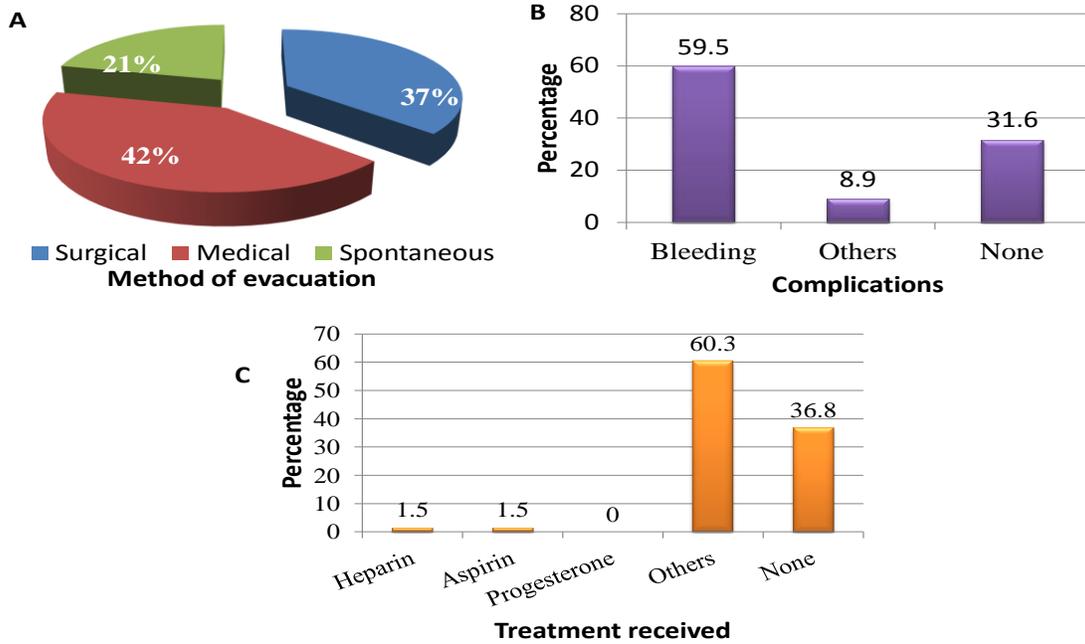


Figure (3): A) Method of evacuation; B) Complications; and C) Treatment received.

Most of the respondents did not suffer from medical diseases. Hypertension, thyroid disturbance, and diabetes mellitus were reported by 3, 2, and 1 cases respectively. Most of the respondents were Rh positive (96.3%) and had blood group O (58.7%). Half of the respondents had more than 4 pregnancies (Table 3, Figure 4).

Table (3): probable risk factors for miscarriage in the respondents.

		N	%
Medical disease	Diabetes Mellitus	1	1.60%
	Hypertension	3	4.90%
	Thyroid	2	3.30%
	None	54	88.50%
	Others	1	1.60%
	No. of respondents	61	100.00%
Rh factor	Rh -ve	3	3.70%
	Rh +ve	79	96.30%
	No. of respondents	82	100.00%
Blood group	O	54	58.70%
	A	17	18.50%
	B	6	6.50%
	AB	3	3.30%
	Not specified	12	13.00%
	No. of respondents	92	100.00%
Gravidity	Primigravida	9	9.80%
	1-2	17	18.50%
	3-4	20	21.70%
	>4	46	50.00%
	No. of respondents	92	100.00%

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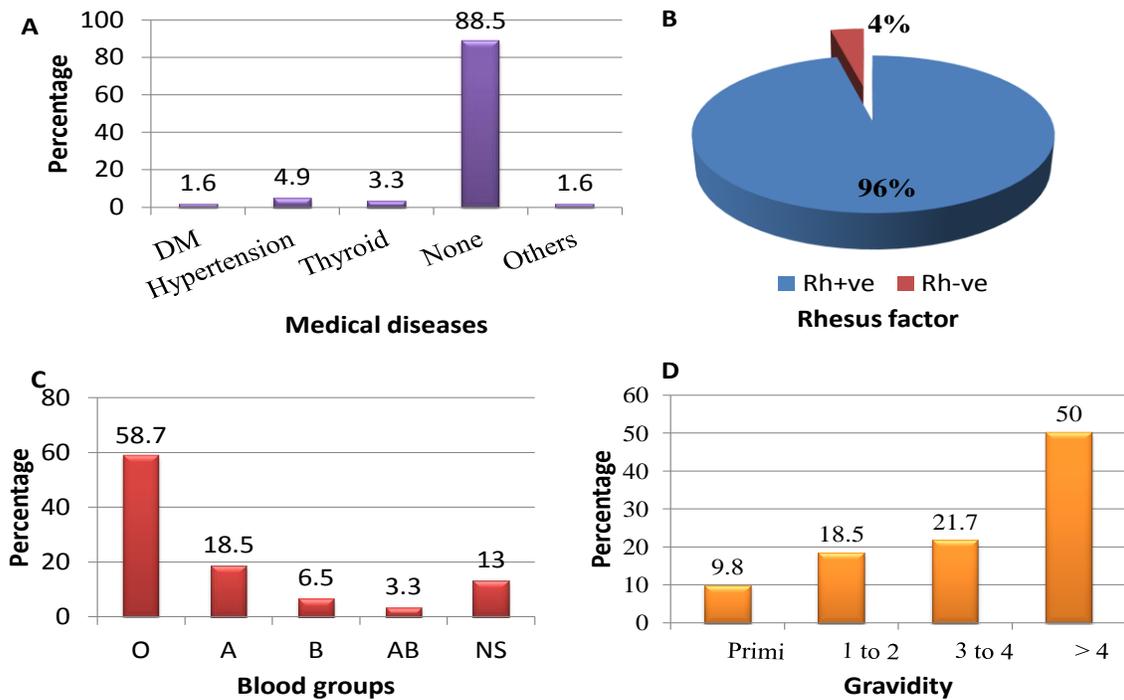


Figure (4): A) Medical diseases; B) Rhesus factor; C) Blood groups; and D) Gravidity.

Figure 5 demonstrates the investigations that were performed to identify the cause of miscarriage in the respondents. These laboratory investigations included complete blood picture (94.3%), chemistry (93.2%), and coagulation (90.9%), and urine analysis (76.8%).

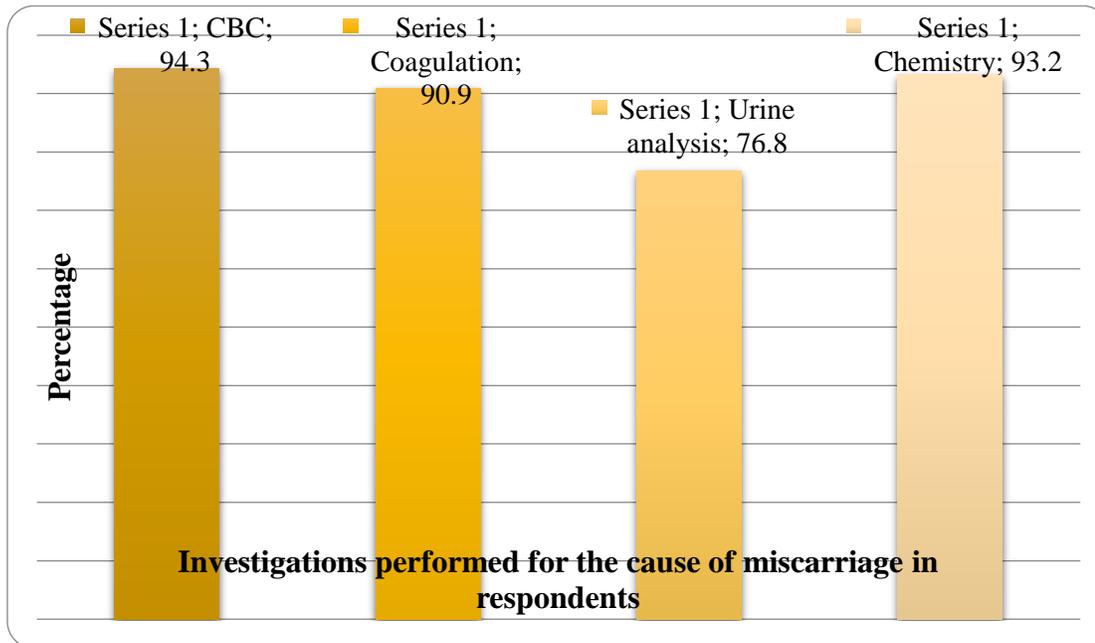


Figure (5): Bar chart showing investigations performed for the cause of miscarriage in the respondents.

DISCUSSION

Miscarriage is the most common complication that can affect early pregnancy. Studying the incidence and demographic profile of the patients can throw light on the magnitude of the problem and on possible risk factors. There is a paucity of studies that assessed incidence or prevalence of miscarriage in Saudi Arabia, particularly in Albaha region. Therefore, the aim of the present study was to determine the incidence of miscarriage at Baljurashi General Hospital, the demographic characteristics of women who presented with miscarriage, and the most common gestational age at time of miscarriage.

Statistical analysis of the questionnaires showed that the incidence of miscarriage cases presenting to Baljurashi hospital was 10%. Most of the respondents aged more than 25 years, were housewives, and were in their first trimester. Half the respondents had secondary education. All the respondents came from good or moderate socioeconomic background.

The incidence of miscarriage in this study is in accordance to previous reports. The observed increase in incidence of miscarriage with the increase of maternal age was also reported by other studies; and is attributed to increased chromosomal anomalies, particularly aneuploidy, in oocytes of older females. As the majority of the respondents were housewives, we could not assess the effect of work and work-related stress on the incidence of miscarriage. The percentage of respondents who had secondary school education was relatively high and this reflects the common level of education for women in the Saudi community.

In the present study, in addition to the previous findings, we found that half of the respondents had previous miscarriage and 10.9% suffered from repeated (habitual) abortion. This incidence of repeated miscarriage is far higher than those (0.8 to 3%) reported by previous studies^[8, 9]; and this requires further investigation into the cause, which may be related to chromosomal anomalies or immunologic disorders. Chromosomal anomalies could have a role in the increased incidence of recurrent abortion; since the rate of consanguineous marriages is high in Saudi Arabia and consanguinity may be associated with genetic disorders^[10, 11]. Higher gravidity and increased number of previous miscarriages appear to be associated with an increased risk of further miscarriages, and this association was reported also by other studies^[12]. The

most prevalent types of miscarriage in this study included missed, threatened and incomplete miscarriages. Sepsis and retention of products of conceptions were recorded in much smaller percentages. A study reported much lower incidence of missed abortion (0.9%) and higher percentages of septic and complete miscarriages (13.7% and 12.7% respectively)^[13]. These controversies may be due to differences in sample size, inclusion and exclusion criteria of the studies.

In the current study, medical treatment was the most used method of evacuating the uterus; while spontaneous expulsion of the uterine contents occurred in about one fifth of the cases. Bleeding occurred in 59.5%. Heparin and aspirin were prescribed in one case only. A combination of heparin and aspirin is usually prescribed for treatment of recurrent miscarriages which are caused by antiphospholipid antibody syndrome. However, some studies recommend the use of heparin and aspirin for treatment of unexplained recurrent abortion; presumably based on the hypothesis that thrombosis of decidual blood vessels plays a role in the pathogenesis of some of these cases^[14]. Other studies found no difference in live birth rate between women on the combination therapy and those on placebo^[15]. None of the respondents reported the intake of progesterone, which is prescribed for cases of luteal phase defect^[16].

In this study, most of the respondents did not report medical conditions that increase the risk of miscarriage: hypertension, thyroid disturbance, and diabetes mellitus were reported only by few cases. Thyroid disorders are prevalent in young women of the child bearing period more than other clinical disorders. Thyrotoxicosis is known to be associated with an increased risk of spontaneous abortion^[4]. Most of the respondents were Rh positive and had blood group O; which is similar to the reported distribution of ABO blood groups and Rhesus factor in the southwest region of Saudi Arabia^[17]. Incompatibility of the ABO blood group system is present in 20% of pregnancies; out of which 20% would suffer from hemolytic disease that is similar to, though milder than, Rh incompatibility and may result in abortion^[18].

The laboratory investigations that were requested from respondents to identify the cause of miscarriage included: complete blood picture, chemistry, coagulation, and urine analysis. Karyotyping was not reported by any of the

respondents; despite the fact that 10% of cases had recurrent miscarriages. Talib and Zaki investigated the incidence of chromosomal anomalies in Saudi couples with recurrent miscarriage and found them similar to the incidences reported worldwide [19]. Obstetricians and gynecologists should always remember that chromosomal anomalies are the main cause in at least 5% of couples presenting with recurrent miscarriages.

In conclusion, the incidence of miscarriage among patients presenting to Baljurashi hospital was comparable to those reported in other regions. However, the percentage of repeated abortion is high and these cases were not appropriately investigated. We recommend for the introduction of routine genetic studies into the work up of repeated miscarriages.

REFERENCES

1. **Halvorson L (2009):** Abortion. In: Williams Gynecology. 23th Ed. Spong, C., *et al.* (eds.). McGraw-Hill, New York. Pp: 215 - 237.
2. **Rai R, Regan L (2006):** Recurrent miscarriage. *The Lancet*, 368 (9535): 601-611.
3. **McNamee K, Dawood F, Farquharson R (2012):** Recurrent miscarriage and thrombophilia: an update. *Current Opinion in Obstetrics and Gynecology*, 24 (4): 229-234.
4. **Su P, Huang K, Hao J *et al.* (2011):** Maternal thyroid function in the first twenty weeks of pregnancy and subsequent fetal and infant development: a prospective population-based cohort study in China. *J Clin Endocrinol Metab.*, 96 (10): 3234-3241.
5. **Simpson J (2007):** Causes of fetal wastage. *Clin Obstet Gynecol.*, 50 (1): 10-30.
6. **Franssen M, Korevaar J, Leschot N *et al.* (2005):** Selective chromosome analysis in couples with two or more miscarriages: case-control study. *BMJ.*, 331 (7509): 137-141.
7. **Maconochie N, Doyle P, Prior S *et al.* (2007):** Risk factors for first trimester miscarriage--results from a UK-population-based case-control study. *BJOG.*, 114 (2): 170-186.
8. **Larsen E, Christiansen O, Kolte A *et al.* (2013):** New insights into mechanisms behind miscarriage. *BMC medicine*, 11 (1): 154.
9. **Christiansen O (2015):** The epidemiology of recurrent pregnancy loss. In: *Recurrent Pregnancy Loss: Causes, Controversies, and Treatment*. 2nd Ed. Carp, H. J. A. (ed.) CRC Press, New York.
10. **Hamamy H, Masri A, Al-Hadidy A *et al.* (2007):** Consanguinity and genetic disorders. Profile from Jordan. *Saudi medical journal*, 28 (7): 1015-1017.
11. **El Mouzan M, Al Salloum A, Al Herbish A *et al.* (2008):** Consanguinity and major genetic disorders in Saudi children: a community-based cross-sectional study. *Annals of Saudi medicine*, 28 (3): 169.
12. **Nybo A, Wohlfahrt J, Christens P *et al.* (2000):** Maternal age and fetal loss: population based register linkage study. *BMJ.*, 320 (7251): 1708-1712.
13. **Kalilani-Phiri L, Gebreselassie H, Levandowski B *et al.* (2015):** The severity of abortion complications in Malawi. *International Journal of Gynecology & Obstetrics*, 128(2): 160-164.
14. **Greer I (2010):** Antithrombotic therapy for recurrent miscarriage? *N Engl J Med.*, 362 (17): 1630-1631.
15. **Clark P, Walker I, Langhorne P *et al.* (2010):** SPIN (Scottish Pregnancy Intervention) study: a multicenter, randomized controlled trial of low-molecular-weight heparin and low-dose aspirin in women with recurrent miscarriage. *Blood*, 115 (21): 4162-4167.
16. **Palagianio A, Bulletti C, Pace M *et al.* (2004):** Effects of vaginal progesterone on pain and uterine contractility in patients with threatened abortion before twelve weeks of pregnancy. *Annals of the New York Academy of Sciences*, 1034: 200-210.
17. **Sarhan M, Saleh K, Bin-Dajem S (2009):** Distribution of ABO blood groups and rhesus factor in Southwest Saudi Arabia. *Saudi Med J.*, 30 (1): 116-119.
18. **Marwaha N, Dhawan H, Thakral B *et al.* (2009):** Severe ABO hemolytic disease of newborn with a positive direct antiglobulin test. *Indian J Pathol Microbiol.*, 52(2):292.
19. **Talib Z, Zaki O (2000):** Cytogenetic study in cases with recurrent abortion in Saudi Arabia. *Annals of Saudi Medicine*, 20 (3-4): 233-236.