ORIGINAL ARTICLE

Case Control Study of Anxiety and Depression Among Patients with Miscarriage Compared to Those with Successful Pregnancy

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ABSTRAK

Keguguran merupakan salah satu komplikasi yang agak biasa di kalangan wanita mengandung. Terdapat bukti yang menunjukkan bahawa kesan psikologi selepas keguguran bukanlah suatu perkara yang luar biasa. Pemahaman tentang morbiditi psikologi adalah penting dalam pengendalian kes keguguran. Kajian ini bertujuan untuk membandingkan purata skor Hospital and Depression Scale (HADS) di antara wanita yang mengalami keguguran dengan wanita yang berjaya hamil dan mengenalpasti faktor sosial demografik dan ciri klinikal kegelisahan dan kemurungan. Satu kajian deskriptif kes-kawalan telah dijalankan di sebuah hospital selama dua belas bulan (dari Oktober 2014 sehingga September 2015). Sejumlah 65 orang wanita telah menyertai kajian ini iaitu 32 orang wanita yang mengalami keguguran (kumpulan kajian) dan 33 wanita yang berjaya hamil (kumpulan kawalan). Purata skor HADS-kegelisahan lebih tinggi dalam kumpulan kajian jika dibandingkan dengan kumpulan kawalan walaupun ia tidak mencapai statistik yang signifikan (6.53 ± 3.427 vs 5.73 ± 2.875, p=0.309). Manakala, purata skor HADS-kemurungan adalah lebih tinggi di kalangan kumpulan kawalan (4.34 ± 2.695 vs 4.45 ± 3.073, p=0.878). Wanita yang berumur 35 tahun ke atas dan mempunyai sejarah keguguran mempunyai kecenderungan yang lebih tinggi mendapat kegelisahan dan kemurungan dengan purata skor HADS yang lebih tinggi. Tiada kaitan didapati di antara data sosial demografik dan ciri klinikal dengan risiko kegelisahan dan kemurungan. Sebagai kesimpulan, tiada perbezaan di antara wanita yang mengalami keguguran jika dibandingkan dengan wanita yang berjaya hamil. Walau bagaimanapun, wanita yang lebih berusia mempunyai kecenderungan mengalami kedua-dua masalah kegelisahan dan kemurungan.

Kata kunci: kegelisahan, kemurungan, keguguran, morbiditi, psikologikal

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ABSTRACT

Miscarriage is one of the most common complications in pregnancy. There is emerging evidence that psychological impact following miscarriage is not unusual. Understanding the magnitude of psychological morbidity is important in the management of miscarriage. The main objective of this study was to compare the mean Hospital Anxiety and Depression Scale (HADS) score between women with miscarriage and women with successful pregnancy and to determine the socio-demographic factor and clinical characteristic that are associated with anxiety and depression. A descriptive case control study was conducted in a teaching hospital, over a period of 12-months (from October 2014 till September 2015). A total of 65 women were recruited with 32 women as the study group (miscarriage) and another 33 women as the control group (women with successful pregnancy). Mean HADS-anxiety score was higher in the study group compared to control group although it was not statistically significant (6.53 ± 3.427 vs 5.73 ± 2.875, p=0.309). Mean HADS-depression score was higher in the control group (4.34 ± 2.695 vs 4.45 ± 3.073, p=0.878). Women with maternal age more than 35 years and history of previous miscarriage had a higher tendency of anxiety and depression with higher mean HADS score. There was no association between other socio-demographic data and clinical characteristic with risk of anxiety and depression. As conclusion, there was no significant difference in women with miscarriage as compared to those with successful pregnancies, although older women with history of miscarriage had a preponderance to both disorders.

Keywords: anxiety, depression, miscarriage, morbidity, psychological

INTRODUCTION

Miscarriage is defined by World Health Organization (WHO) as premature loss of fetus up to 23 wks of pregnancy and weighing up to 500 gm (WHO 2001). Miscarriage is one of the most common complications in pregnancy, with 10-25% of clinically recognized pregnancies end up with spontaneous miscarriages (Venture et al. 2012). Miscarriage is hardly life threatening, medical procedure involved is comparatively straightforward and serious medical complication is relatively uncommon. These factors tend to obscure the psychological sequelae that miscarriage has on a woman (Neugebauer et al. 1997; Lok & Neugebauer et al. 2007; Bottomley & Bourne 2009 Lok et al. 2010; George et al. 2016). Thus, psychological impact of miscarriage is often overlooked. A study suggested that grief and depression after miscarriage are often unrecognized by medical professionals and up to 61% of women received care were dissatisfied with the information they received from their general practitioner (Friedman 1989).

There has been emerging evidence that psychological impact following miscarriage is not unusual. Depressive symptoms are common, with 10-55% of women reported to have elevated levels of depressive symptoms shortly after miscarriage (Sham et al. 2010; Neugebauer 2003; Prettyman et al. 1993). Neugebauer et al. (1992) documented that in the early weeks after loss, 36% of patients were found to have moderate to severe depressive symptoms; this is 3.4 times that among pregnant women and 4.3 times that among community women not exposed to recent pregnancy loss. This symptom might be persisted even up to one year after miscarriage (Lok et al. 2010).

However, some studies reported no elevation in depressive symptoms after a miscarriage (Kirkan et al. 2015). Prettyman et al. (1993) found that anxiety rather than depressive symptoms predominate at 1, 6, 12 wks after miscarriage by using Hospital Anxiety Depressive Score. The authors concluded that 41% of women had anxiety symptoms and only 22% had depressive symptoms, one-week after miscarriage. Thapar and Thapar (1992) reported similar finding of greater anxiety within 24 hrs and at 6 wks, following loss compared to a normal pregnant women.

Psychological distress after miscarriage had been frequently assessed using various self- reporting questionnaires, such as the Hospital Anxiety and Depression Scale (HADS), the Center for Epidemiological Studies-Depression Scale (CES-D), Self-rating Anxiety Scale (SAS) and General Health Questionnaire-12 (Prettyman et al. 1993; Gong et al. 2013; Kong et al. 2013). Hospital Anxiety and Depression Scale is a self-assessment scale that has been developed and found to be a reliable and validate instrument for detecting states of anxiety and depression in the setting of a hospital medical outpatient clinic (Zigmoid and Snaith 1983). It gave clinically meaningful result as a psychological screening tool and predict psychosocial outcome (Hermann 1997). In HADS, responses are based on the relative frequency of anxiety and depressive symptoms over the past week. Responses are summed to provide separate scores for anxiety and depression symptomology; each of anxiety or depression scale has a score range of 0-21. Higher scores indicate greater likelihood of depression or anxiety.

Several factors were investigated to observe their association with higher prevalence of psychological morbidity among miscarriage women. These factors included women's age, parity, educational level, loss of a planned pregnancy, history of subfertility, conception via artificial reproductive technique (ART), prior miscarriage or induced abortion, low socio-economical income and presence of marital conflict (Mahenge et al. 2015; Fergusson et al. 2013; Chalana and Sachdeva 2012; McCarthy et al. 2015; Cheung et al. 2013). To date, the results have been contradictory.

Understanding the magnitude of psychological morbidity is important in the management of miscarriage. The main aim of this study was to compare

the risk of anxiety and depression among women who had miscarriage and those with successful pregnancies. The socio-demographic and clinical characteristic of the women were analysed to identify the risk factors of such psychological sequelae following miscarriage.

MATERIALS AND METHODS

STUDY DESIGN

This was a descriptive case control study conducted in a teaching hospital with more than 6000 deliveries/ year. Over 12-months period (from October 2014 till September 2015), with convenient sampling method, patients who were diagnosed to have missed, incomplete and complete miscarriage and consented to the study were recruited. The control group comprise those pregnant women with successful pregnancy registered at Obstetrics & Gynaecology Admission Centre (OGAC), O&G ward and clinics with similar trimester and parity within the same hospital. This study was approved by UKM Research Ethics Committee (UKMREC).

Miscarriage was categorized as missed when patient had vaginal bleeding but the cervical os remained close and the pregnancy was deemed not viable (via ultrasonography), incomplete when bleeding occurred with cervical os open and product of conception remained within the uterine cavity. Patients who had heavy vaginal bleeding with abdominal pain followed by spontaneous expulsion of

product of conception, after which the bleeding and abdominal pain resolved and the cervical os closed were being diagnosed as complete miscarriage (Neugebauer et al. 1992).

Patients were excluded if they: (1) were diagnosed to have threatened miscarriage, (2) had medical disease and pre-existing psychiatry illness, or (3) had recurrent miscarriages. The approval from the clinical research ethics committee of the institution was obtained. All eligible patients were provided with explanation regarding the study and patient information sheet. The written consent was taken. All patients were managed according to the hospital protocol, either with conservative management (i.e. awaiting spontaneous expulsion of product of conception), medical treatment with vaginal misoprostol or surgical evacuation with uterine curettage. The patients' socio-demographics were collected by means of a semi-structured interview that included age, ethnicity, educational level, marital status, and income. Patient's clinical characteristics were documented which included parity, planned or unplanned pregnancy, current conception either spontaneous or assisted reproduction, previous miscarriage/ induced abortion, gestational age, history of infertility and marital dissolution.

The Hospital Anxiety and Depression Scale (HADS) were used to assess patient's emotional response in both women with miscarriage and successful pregnancy. Both Malay and English version oh HADS were used according to the patients' preferences. Patients were asked to answer 14

items questionnaire relevant to general anxiety and depression (7 regarding anxiety and 7 regarding depression), on a four-point (0–3) response category. The possible scores ranged from 0 to 21 for both anxiety and depression. A score of 0 to 7 for either subscale was regarded as being in the normal range, a score of 11 or higher indicating probable presence ('caseness') of the mood disorder and a score of 8-10 being suggestive of the presence of the respective state (Snaith 2003). In this study, the score of 8 for each subscale was used to include all possible cases. Patient who had scored 11 or more was referred to psychiatric team for further evaluation.

The questionnaire and semi-structured interview were conducted before patient was discharged after either medical or surgical evacuation and after complete expulsion of product of conception for those opted for conservative management. For those who had complete miscarriage, questionnaires were given in OGAC. The HADS only took 5-10 mins to complete.

A control of similar parity and trimester were recruited and analyzed in above aspects (Figure 1).

STATISTICAL ANALYSIS

All data in the checklist was collected in an electronic database and analysed using SPSS version 22.0. The normally distributed variables were evaluated with parametric test. Categorical variables were compared using χ^2-test. The student T-test and χ^2-test were applied accordingly. Statistical significance was defined as $p < 0.05$.

RESULTS

SAMPLE CHARACTERISTICS

A total of 76 patients were eligible and recruited into the study. Five patients from the study group opted for conservative management outpatients were lost from follow up and were unable to be contacted. Six patients from control group were excluded from the study, as they did not return the HADS questionnaires. Thus, 32 women from study group and 33 women from control group were included in our analysis. The trimester and parity was paired between both groups.

The demographic data and clinic characteristic of the study subjects were shown in Table 1. Upon analysis, they well matched for demographic data and clinical characteristic except their income. The mean age of study subjects was 30.7 ± 3.933 and 31.2 ± 3.407 in control group. Most of the respondents were Malays (81.5%) followed by Chinese (13.8%), Indians and others (4.6%). Most of the respondents received tertiary educational level and 96.9% of them were married (Table 1).

With regard to respondent's clinical characteristics, more than half (64.6%) of respondents were multiparous and 69.2% of them were at their 1st trimester upon recruited into the study. More than half (52.3%) of their pregnancies were planned and one third of
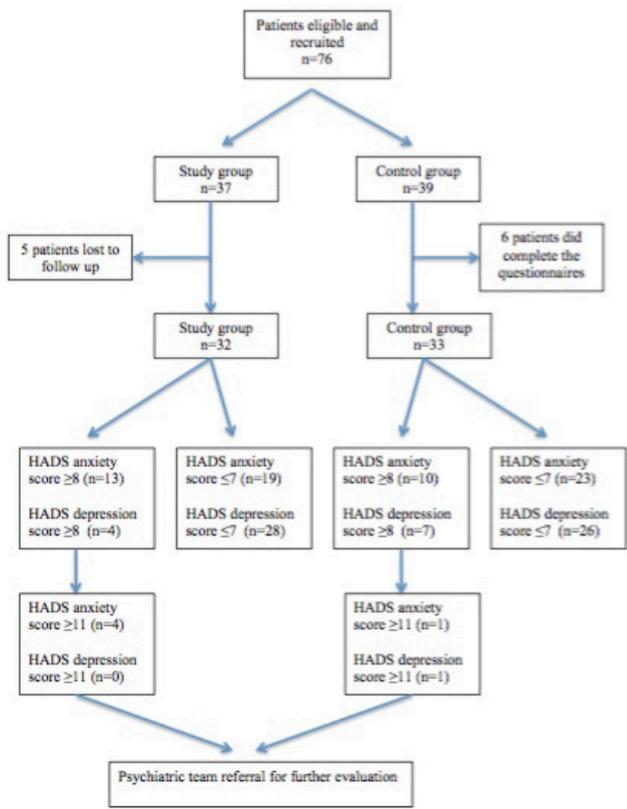
Figure 1: Flow chart

respondents gave a history of previous miscarriage. There was only one patient had previous induced abortion and 95.4% were able to conceive without history of subfertility. Two patients required assisted reproduction in this current pregnancy and almost 97% of patient had a harmony family without marital dissolution (Table 2).

HADS-ANXIETY AND DEPRESSION SCORE

The mean HADS-anxiety score was higher in the study group as compared to control group (6.53 ± 3.427 vs 5.73 ± 2.875) but this was not statistically significant. On the other hand, the mean HADS-depression score was lower in the study as compared to control group (4.34 ± 2.695 vs 4.45 ± 3.073, p=0.878). When HADS score of 8 was used as a cut off point to include all possible cases, there was no statistically significance in detecting anxiety or depression in both study and control groups. Control group showed higher tendency of being depressed compared to study group as there were 7 patients scored 8 and above in HADS-depression score compared to only 4 patients in study group but again this finding was statistically insignificant (p=0.511) (Table 3, Figure 2).

Table 1: Socio-demographic data of respondents

	All, n=65	Study group, n=32	Control group, n=33	p value
Age, years	31.0 ± 3.653	30.7 ± 3.933	31.2 ± 3.407	p=0.638
Ethnicity, n (%)				χ^2=2.155 p=0.541
Malay	53(81.5)	28(87.5)	25(75.8)	
Chinese	9(13.8)	3(9.4)	6(18.2)	
Indian	1(1.5)	-	1(3.0)	
Others	2(3.1)	1(3.1)	1(3.0)	
Educational level, n (%)				χ^2=3.557 p=0.169
Primary	2(3.1)	-	2(6.1)	
Secondary	21(32.3)	13(40.6)	8(24.2)	
Tertiary	42(64.6)	19(59.4)	23(69.7)	
Marital status n (%)				χ^2=2.001 p=0.157
Single	2(3.1)	-	2(3.1)	
Married	63(96.9)	32(100)	31(93.9)	
Income,n (%)				χ^2=17.702 p=0.003
<1000	6(9.2)	3(9.4)	3(9.1)	
1000-2000	13(20.0)	7(21.9)	6(18.2)	
2001-3000	22(33.8)	16(50.0)	6(18.2)	
>3000	24(36.9)	6(18.8)	18(54.5)	

All parameters expressed in mean ± SD unless specified

HADS-ANXIETY SCORE AMONG STUDY AND CONTROL GROUP OVERALL AND BY SELECTED SOCIO-DEMOGRAPHIC CHARACTERISTICS

Maternal age was one of the socio-demographic factors of great interest that was studied previously. Among miscarriage women (study group), anxiety symptoms were increased with age but this was statistically insignificant. In contrast, anxiety symptoms were not associated with age in control group. Within the study group, anxiety symptoms were greater with higher educational level and income, second trimester of pregnancy, nulliparity, planned pregnancy, and previous spontaneous miscarriage and history of subfertility, but it did not reach statistically significant. Interestingly, among those who had miscarriage, women with history of previous induced abortion and those conceived via assisted reproduction exhibited less anxiety level compared with their counterpart although the findings were not significant. Within the control group, not surprisingly, single mother at their first trimester and those with history of subfertility were

Table 2: Respondents clinical characteristic

	All, n=65	Study group, n=32	Control group, n=33	p value
Parity, n (%)				χ^2=0.123 p=0.725
Nulliparous	23(35.4)	12(37.5)	11(33.3)	
Multiparous	42(64.6)	20(62.5)	22(66.7)	
Trimester, n (%)				χ^2=0.007 p=0.573
1st trimester	45(69.2)	22(68.8)	23(69.7)	
2nd trimester	20(30.8)	10(31.3)	10(30.3)	
Gestational age, days	79.5 ± 23.907	81.1 ± 24.497	78.0 ±23.596	p=0.602
Planned pregnancy,n (%)				χ^2=0.135p=0.714
Yes	34(52.3)	16(50.0)	18(54.5)	
No	31(47.7)	16(50.0)	15(45.5)	
Previous spontaneous miscarriage, n (%)				χ^2=0.757 p=0.384
Yes	23(35.4)	13(40.6)	10(30.3)	
No	42(64.6)	19(59.4)	23(69.7)	
Previous induced abortion, n (%)				χ^2=1.047 p=0.306
Yes	1(1.5)	1(3.1)	-	
No	64(98.5)	31(96.9)	33(100.0)	
History of subfertility, n (%)				χ^2=0.318 p=0.573
Yes	3(4.6)	1(3.1)	2(6.1)	
No	62(95.4)	31(96.9)	31(93.9)	
Current pregnancy, n (%)				χ^2=2.128p=0.238
Spontaneous conception	63(96.9)	30(93.8)	33(100)	
Assisted reproduction	2(3.1)	2(6.3)	-	
Marital dissolution,n (%)				χ^2=0.000p=1.000
Yes	2(3.1)	1(3.1)	1(3.0)	
No	63(96.9)	31(96.9)	32(97.0)	

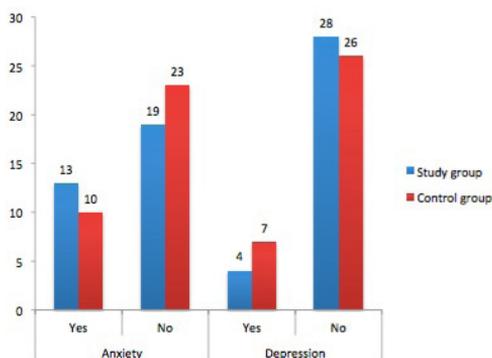All parameters expressed in mean ± SD unless specified

Figure 2: Number of patients with probable anxiety and depression (HADS score ≥ 8)

demonstrated higher anxiety score but it was not statistically significant (Table 4).

HADS-DEPRESSION SCORE AMONG STUDY AND CONTROL GROUP OVERALL AND BY SELECTED SOCIO-DEMOGRAPHIC CHARACTERISTICS

Subgroup analysis of HADS-depression score showed that increased maternal age (age more than 35) had higher

Table 3: Hospital Anxiety and Depression Scale between study and control group

	All, n=65	Study group,n=32	Control group, n=33	p value
HADS-Anxiety score	6.12 ± 3.160	6.53 ± 3.427	5.73 ± 2.875	p=0.309
Anxiety (Score 8), n (%)				χ^2=0.757 p=0.443
Yes	23(35.4)	13(40.6)	10(30.3)	
No	42(64.6)	19(59.4)	23(69.7)	
Anxiety (Score 11), n (%)				χ^2=2.052 p=0.197
Yes	5(7.7)	4(12.5)	1(3.0)	
No	60(92.3)	28(87.5)	32((7.0)	
HADS-Depression score	4.40 ± 2.871	4.34 ± 2.695	4.45 ± 3.073	p=0.878
Depression (Score 8), n (%)				χ^2=0.877 p=0.511
Yes	11(16.9)	4(12.5)	7(21.2)	
No	54(83.1)	28(87.5)	26(78.8)	
Depression (Score 11), n (%)				χ^2=0.985 p=1.000
Yes	1(1.5)	0	1(3.0)	
No	64(98.5)	32(100.0)	32(97.0)	

All parameters expressed in mean ± SD unless specified
HADS: Hospital Anxiety Depression Scale

impact on depressive symptoms in the study group than the control group, although it was not statistically significant. Single mother, lower income, higher educational level, previous spontaneous miscarriage and history of subfertility, and those with marital dissolution had higher tendency to have depressive symptoms in the control group. Within the study group, planned pregnancy, in second trimester and being multiparous, history of subfertility and conceived via assisted reproduction were noted to have higher HADS-depression score although it was statistically insignificant (Table 5).

DISCUSSION

Pregnancy is supposed to be a joyful moment for a woman and her family but miscarriages and early pregnancy loss are shocking and considered as traumatic events. Data published in 2012 at United States revealed a total of 6.5 million pregnancies, which resulted in 4.2 million live births but with 1.2 million of induced abortion and 1.1 million of fetal losses (WHO 2001). Thus, miscarriage is regarded as a common pregnancy complication and an important public health care issues (Venture et al. 2012).

During miscarriage, some women would experience a normal grief and recovered but majority of women experienced a period of intense emotional distress that resulted in some form of psychological sequelae. In miscarriage, the loss is often unexpected and sudden. Moreover, the society and even healthcare provider may not recognise the significance of this traumatic event to the parents (Friedman 1989). Study by Kong et

Table 4: HADS-anxiety score among study and control group overall and by selected socio-demographic characteristics

	Study group Mean (SD)	Control group Mean (SD)	P value
Age			
<30 (n=14; N=11)	6.07 (0.898)	4.55 (0.529)	0.186
30-35 (n=11; N=17)	6.36 (1.020)	6.76 (0.730)	0.746
>35 (n=7; N=5)	7.71 (1.459)	4.80 (1.594)	0.213
Educational level			
Primary (n=0; N=2)	0	7.00 (0.000)	-
Secondary (n=13; N=8)	5.77 (0.942)	5.75 (0.881)	0.989
Tertiary (n=19; N=23)	7.05 (0.789)	5.61 (0.656)	0.163
Marital Status			
Single (n=0; N=2)	0	11.5 (3.500)	-
Married (n=32; N=31)	6.53 (0.606)	5.35 (0.426)	0.119
Income			
<1000 (n=3; N=3)	5.67 (2.028)	4.67 (0.882)	0.675
1000-2000 (n=7; N=6)	6.71 (1.169)	6.17 (1.014)	0.735
2001-3000 (n=16; N=6)	6.88 (0.978)	5.50 (0.671)	0.260
>3000 (n=6; N=18)	5.83 (1.222)	5.83 (0.829)	1.000
Trimester			
First (n=22; N=23)	6.32 (0.801)	6.04 (0.581)	0.781
Second (n=10; N=10)	7.00 (0.843)	5.00 (0.978)	0.139
Parity			
Nulliparous (n=12; N=11)	7.17 (0.878)	5.45 (0.638)	0.135
Multiparous (n=20; N=22)	6.15 (0.818)	5.86 (0.688)	0.789
Planned pregnancy			
Yes (n=16; N=18)	6.69 (0.778)	6.22 (0.521)	0.616
No (n=16; N=15)	6.38 (0.953)	5.13 (0.904)	0.354
Previous spontaneous miscarriage			
Yes (n=13; N=10)	7.23 (1.063)	5.60 (0.618)	0.235
No (n=19; N=23)	6.05 (0.719)	5.78 (0.674)	0.786
Previous induced abortion			
Yes (n=1; N=0)	6.00 (-)	-	-
No (n=31; N=33)	6.55 (0.625)	5.73 (0.501)	0.306
History of subfertility			
Yes (n=1; N=2)	11.0 (-)	7.50 (0.500)	-
No (n=31; N=31)	6.39 (0.608)	5.61 (0.526)	0.306
Type of conception			
Spontaneous conception (n=30; N=33)	6.60 (0.623)	5.73 (0.501)	0.275
Assisted reproduction (n=2; N=0)	5.50 (3.5)	-	-
Marital dissolution			
Yes (n=1; N=1)	2.00 (-)	8.00 (-)	-
No (n=31; N=32)	6.68 (0.607)	5.66 (0.511)	0.202

n: sample size for study group; N: sample size for control group

al. (2010) revealed that healthcare providers were less aware of the psychological impact of miscarriage and they believed that this impact was less significant as compared with women with post-natal depression. On the other hand, patients believed that psychological impact after miscarriage

Table 5: HADS-depression score among study and control group overall and by selected socio-demographic characteristics

	Study group Mean (SD)	Control group Mean (SD)	P value
Age			
<30 (n=14; N=11)	4.36 (0.716)	3.73 (0.875)	0.576
30-35 (n=11; N=17)	3.45 (0.908)	4.65 (0.771)	0.332
>35 (7; N=5)	5.71 (0.680)	5.40 (1.503)	0.837
Educational level			
Primary (n=0; N=2)	0	7.50 (3.500)	-
Secondary (n=13; N=8)	4.08 (0.711)	3.50 (0.926)	0.625
Tertiary (n=19; N=23)	4.53 (0.651)	4.52 (0.635)	0.996
Marital Status			
Single (n=0; N=2)	0	7.50 (1.5)	-
Married (n=32; N=31)	4.34 (0.476)	4.26 (0.547)	0.906
Income			
<1000 (n=3; N=3)	7.00 (1.528)	2.00 (1.155)	0.059
1000-2000 (n=7; N=6)	2.57 (0.612)	4.83 (1.078)	0.084
2001-3000 (n=16; N=6)	4.31 (0.723)	4.67 (1.498)	0.814
>3000 (n=6; N=18)	5.17 (0.872)	5.67 (0.750)	0.725
Trimester			
First (n=22; N=23)	4.27 (0.593)	4.43 (0.685)	0.859
Second (n=10; N=10)	4.50 (0.833)	4.50 (0.841)	1.000
Parity			
Nulliparous (n=12; N=11)	4.33 (0.829)	3.64 (0.622)	0.515
Multiparous (n=20; N=22)	4.35 (0.595)	4.86 (0.734)	0.594
Planned pregnancy			
Yes (n=16; N=18)	5.50 (0.563)	4.78 (0.726)	0.446
No (n=16; N15)	3.19 (0.666)	4.07 (0.808)	0.405
Previous spontaneous miscarriage			
Yes (n=13; N=10)	5.15 (0.619)	3.40 (0.819)	0.096
No (n=19; N=23)	3.79 (0.665)	4.91 (0.668)	0.245
Previous induced abortion			
Yes (n=1; N=0)	4.00 (-)	-	-
No (n=31; N=33)	4.35 (0.492)	4.45 (0.535)	0.892
History of subfertility			
Yes (n=1; N=2)	7.00 (-)	6.00 (2.000)	0.821
No (n=31; N=31)	4.26 (0.484)	4.35 (0.558)	0.896
Type of conception			
Spontaneous conception (n=30; N=33)	4.27 (0.491)	4.45 (0.535)	0.798
Assisted reproduction (n=2; N=0)	5.50 (2.500)	-	-
Marital dissolution			
Yes (n=1; N=1)	3.00 (-)	6.00 (-)	-
No (n=31; N32)	4.39 (0.490)	4.41 (0.550)	0.979

n: sample size for study group; N: sample size for control group

could seriously affect women as compared to their healthcare provider.

Lok et al. (2010) conducted a 1-year longitudinal study among 250 miscarrying women and 150 non-pregnant women reported that 55% of miscarriage women were distressed immediately after the event, 17.8% symptoms persisted at 6 months and 10.8% at one year following miscarriage. She also concluded that women who were more distressed initially continued to be so throughout the one-year course. Where as, study by Neugebauer (2003) showed that miscarriage women were two-fold more likely symptomatic compared to community women.

When compared miscarriage women with pregnant women with successful pregnancy, Neugebauer et al. (1992) reported that miscarriage women were found to remain highly symptomatic on CESD scale i.e. 3.4 times higher compared to pregnant women with successful pregnancy. Whereas, Sham et al. (2010) reported 10% of their study subjects were diagnosed to have depressive disorder 3 months after miscarriage. These findings were contradicted by our result. In this current study, miscarriage women (study group) demonstrated lower mean score on HADS-depression compared to control group (4.45 vs 4.34) although it was not statistically significant (p=0.878). When using cut off score of 8, there were 7 patients in control group was regarded as probable of depression (21.2%), as compared with only 4 patients in study group (12.5%). This could be due to the small sample size of women that were

recruited into the study thus the finding must be interpreted with cautious.

Study of mental health morbidity among pregnant women attending antenatal care also showed conflicting result. Reported prevalence of depression ranged from 6.9% to 78.2% (Mahenge et al. 2015; Raja Lexshimi et al. 2003; Rwakarema et al. 2015). This current study reported 12.5% of women had probable depression. A study in Northern Tanzania reported over 397 pregnant women with 33.8% of them suffering from antenatal depression (Rwakarema et al. 2015). Another recent study by Waldie et al. (2015) showed similar results compared to our study in which 11.9% of women were noted to had Edinburgh Postnatal Depression Scale (EPDS) scores and this indicated probable antenatal depression. On the other hand, some study showed that prevalence of depression or anxiety was not associated with pregnancy (Leach et al. 2014). Surprisingly, in this current study, despite the small sample size, prevalence of depression was higher in pregnant women with successful pregnancy compared to miscarriage women.

The uncertainties that women experienced after pregnancy loss contribute to higher anxiety symptoms rather than depressive symptoms. The present study showed higher mean HADS-anxiety score in study group than control group (6.5 vs 5.7) and the prevalence of probable anxiety was 40.6% compared to 30.3% in control group. This finding was consistent with study by Prettyman et al. (1993) where 41% of their subjects had clinically important level of anxiety compared

to 22% of depression in the first week after miscarriage. The symptoms declined to 32% and 6%, respectively after 3 months. Sometimes, this symptom might persist even up to one year after pregnancy loss (Cumming et al. 2007). Thus, an attitude of empathy is desirable when dealing with women who had a recent loss so that it would not jeopardies the chance of her getting a normal future pregnancy.

Majority of women who experienced miscarriage would become pregnant again. Women might often have intense and conflicting emotions during her next pregnancy. Concerns include risk of repeat miscarriage and future reproductive abilities. Several studies were looking at the association between socio-demographic data and clinical characteristics with subsequent risk of psychological morbidity following miscarriage. This current study showed that increased maternal age was associated with higher mean HADS score for both anxiety and depression in the study group although it did not reach statistically significance. This was contrary to the earlier studies reported by Sham et al. (2010) and Huffman et al. (2015).

A previous miscarriage is also a risk factor in developing anxiety and depression during subsequent pregnancy. Study by Huffmans et al. (2015) showed that couple with infertility were more devastated and felt more isolation and guilt after pregnancy loss. Chalana and Sachdeva (2012) reported similar finding in their review in which, high

level of anxiety and depression were found up to one third of their subjects with history of previous miscarriage. This was consistent with other studies by Gong et al. (2013) and McCarthy et al. (2015). In contrast, Morylowska-Topolska et al. (2014) reported unplanned pregnancy was the most crucial variables determining higher sensitivity of anxiety and depression as compared to history of miscarriage.

This study had several limitations. First, we recruited patients after miscarriage had occurred with the assumption that all subjects were healthy without psychological disturbances. We did not assess the score again after discharge at certain timing i.e. 1, 3, 6 or even 12 months later. Thus, the long-term impact of psychiatric morbidity was not known in our subjects. Lastly, due to relatively small sample size of this study, caution should be practiced to generalize the result, as this may not be representing the whole population. We therefore suggest a further larger scale research is needed to understand and assess the psychological impact of miscarriage.

CONCLUSION

Managing women with history of miscarriage is challenging as these women are at risk of psychiatric morbidity. Women with miscarriage were at risk of developing anxiety compared to those with successful pregnancies, although older women with history of miscarriage had preponderance to both disorders.

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