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Longitudinal study of emotional experiences, grief and depressive symptoms in women and men after miscarriage

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ABSTRACT

Objective: Although miscarriage is common and affects up to 20% of pregnant women, little is known about these couples' short term and long term experiences after miscarriage. The aim of the present study was to study emotional experience, grief and depressive symptoms in women and men, one week and four months after miscarriage.

Research design /setting: Women, ($n = 103$), and their male partner ($n = 78$), were recruited at the gynecological clinic after miscarriage. Control women were recruited from the general population. Three validated questionnaires concerning psychological wellbeing and mental health, RIMS, PGS and MADRS-S were answered by the participants one week and four months after the miscarriage.

Findings: It was shown that for women, the emotional experiences of miscarriage, grief and depressive symptoms were more pronounced than for their male partners. Grief and depressive symptoms were reduced with time, which was not the case for the emotional experiences of miscarriage. Previous children was favorable for emotional experience while previous miscarriage or infertility treatment made the emotional experience worse.

Conclusion: Grief and depressive symptoms is reduced over time while emotional experiences such as isolation, loss of baby and a devastating event persist for longer time than four months. Lack of previous children, previous miscarriage and infertility diagnosis could increase negative emotional experiences after miscarriage, this was especially pronounced for grief reaction. The questionnaires could be used both clinically and in research to understand the emotional experiences after miscarriage.

Introduction

The incidence of miscarriage is common in early pregnancy and has been estimated to be as high as 15% to 20%, generally occurring before 12 weeks of gestation (Regan and Rai, 2000). The etiology of miscarriage is most commonly genetic abnormalities, but other causes such as anatomical abnormalities infections and endocrine, autoimmune and thrombotic disorders have also been described (Regan and Rai, 2000). However, the causes of miscarriage are seldom investigated and therefore often remain unknown.

Miscarriage is an emotionally stressful experience for both the woman and her partner. The loss of a desired pregnancy can lead to both immediate and long-term stress reactions such as guilt, grief, and depressive reactions (Robinson, 2014). Men experience the loss of an expected baby in the same way as the women (Turton et al., 2006), but this is shown less openly (Beutel et al., 1996).

The experiences after miscarriage have been measured in couples using the revised impact of miscarriage scale (RIMS), and it was shown that experiences included feelings of isolation, guilt, loss of baby and a devastating event (Huffman et al., 2014). However, there are, as far as we know, no studies on long-term experiences of women and men in Sweden.

Grief is common in both women and men after miscarriage (Beutel et al., 1995; Kersting and Wagner, 2012; Kong et al., 2013). Depression and grief are more commonly reported for women suffering from miscarriage (Lok and Neugebauer, 2007; Brier, 2008; Swanson et al., 2009), the depressive symptoms in women remain elevated for at least 6 months after the miscarriage (Neugebauer et al., 1992). Less is known about the emotional experience in men after their partners

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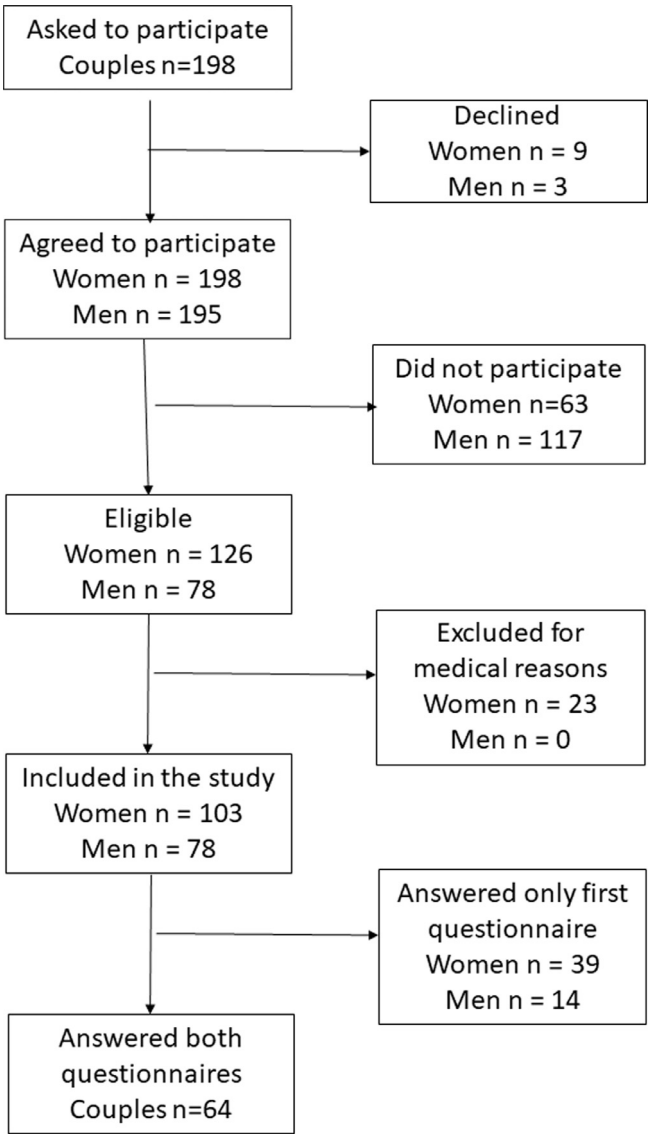

Fig. 1. The figure show the number of participants and drop out.

miscarriage, but feelings of loss, sadness and helplessness has been described (Puddifoot and Johnson, 1997; Murphy, 1998). However, men seem to be less distressed and depressed than women (Kong et al., 2010). Most studies show immediate reaction, less is known about longitudinal grief and depressive symptoms in women and men. The perinatal grief scale (PGS) has commonly been used for women after miscarriage, and is designed to quantify grief based on self-reported levels of emotional response in men and women (Johnson and Puddifoot, 1996; Cumming et al., 2007).

The purpose of this longitudinal study was to describe Swedish women's and men's emotional experience, grief and depressive symptoms one week and four months after miscarriage.

Methods

Study subjects

For the present longitudinal study, 198 couples were randomly asked to participate. Of these, 103 women, (52%) and 78 men (39%) were included (Fig. 1). All study subjects were recruited between January 2013 and December 2014.

The included women had experienced a miscarriage up to 21 + 6 weeks of pregnancy. Women experiencing intrauterine fetal death pregnancy in week 22 or later were excluded from the study. Other exclusion criteria were recurrent pregnancy loss, defined as three or more consecutive pregnancy losses, ectopic pregnancy, molar pregnancy, and not enough language skills in Swedish or English.

Control women, between 25–40 years of age, were selected from the Swedish Population registry and invited by letter, ($n = 93$). These women were included in the study to compare the results of the depression scale of women with miscarriage with women of the same age from the general population. Exclusion criteria were ongoing grief, experience of miscarriage without having giving birth after the miscarriage.

Questionnaires

The participants answered questionnaires at two occasions, the first one week after the miscarriage was completed and the second four months later. The first questionnaire was answered either at home or at a follow-up visit to the clinic. The second questionnaire was sent by letter to the participants to be answered at home. Reminders were sent once or twice. For the control women, invitation to be included in the study was sent to the participants by letter, the questionnaire was answered at home and returned.

The questionnaires included four parts. The first part was general questions on socio-demographics data, such as health, lifestyle factors, and fertility. The second part was revised impact of miscarriage scale (RIMS), the third part was Perinatal Grief Scale (PGS) and the fourth part was Montgomery Åsberg Depression Rating (MADRS-S). The questionnaires for men were slightly adjusted to suit the men where it was needed. The control women answered the first general questionnaire and MADRS-S.

The RIMS consisted of 16 questions and the scores and responses on how they felt at the time of answer were (1) "Definitely true for me", (2) "Quite true for me", (3) "Rarely true for me" and (4) "Definitely not true for me". The items in RIMS were analyzed by reverse coding, higher scores represented higher significance and meaning as previously described (Huffman et al., 2014). The responses were divided into three factors, "Isolation/guilt", "Loss of baby" and "Devastating event" . RIMS was recently validated for Swedish conditions (Jansson et al., 2017).

The short version of PGS included 33 questions, the scores and responses on how they felt at the time of answer were (1) "strongly agree", (2) "agree", (3) "neither disagree or agree" (4)"disagree" (5) "strongly disagree", The three subscales consisted of the sum of the scores of 11 items each, with possible range of 11 to 55. The scores were analyzed by reverse coding except for two items where a higher score represented greater significance or meaning of grief (Toedter et al., 1988). PGS has previously been translated and used in Sweden (Adolfsson and Larsson, 2006)

Montgomery Åsberg Depression Rating (MADRS-S) is a validated questionnaire, originally developed in Sweden and UK (Montgomery and Asberg, 1979), including nine questions, each with six scale responses. The purpose of this form was to give a detailed picture of the current state of mood. The score of each question are between 0–6, higher scores indicating more depressive symptoms. Depending on the total score, the answers are divided in four different emotional states; 0–12 points indicates untroubled, 13–19 points indicates mild depression, 20–34 points indicates moderate depression, >34 points severe depression (Montgomery and Asberg, 1979).

Ethics approval

The Regional Ethics Committee approved the study. All participating couples gave oral and written informed consent before entering the study.

Table 1
Demographic on included study subjects. Data given as median and range for age and body mass index (BMI), all other as *n* (%). For comparisons of age and BMI, Mann Whitney *U*-test was used, for categorical data, Chi^2 test was applied, $P < 0.05$ was considered significant difference.

	Women (miscarriage)	Men (miscarriage)	*p*-value	Control women	*p*-value
Age,	34 (23–45) $n = 103$	33.5 (25–51) $n = 78$	0.206	32 (23–48) $n = 89$	0.251
BMI,	23.9 (17.7–41.2) $n = 103$	25 (19.5–40.0) $n = 78$	0.025*	22.8 (18.5–44.0) $n = 89$	0.253
Born in Sweden	85 of 103 (82.5)	64 of 78 (82.0)	1.000	87 of 92 (94.6)	0.0132*
Married/living together	99 of 103 (96.1)	75 of 78 (96.1)	1.000	68 of 92 (73.9)	<0.0001***
University degree	93 of 101 (92.0)	69 of 78 (88.4)	0.449	91 of 92 (98.9)	0.037*
Work/study	90 of 102 (88.2)	77 of 78 (98.7)	0.007*	82 of 92 (89.1)	1.000
Previous children	62 of 103 (62.1)	45 of 78 (57.7)	0.762	47 of 92 (51.1)	0.2478
Previous miscarriage	22 of 96 (22.9)	NA	NA	13 of 92 (14.1)	0.137
Infertility	16 of 102 (15.6)	6 of 78 (7.7)	0.115	6 of 80 (7.5)	0.111
Good subjective health	88 of 103 (85.4)	65 of 77 (84.4)	0.836	85 of 91 (92.4)	0.134
Self-reported mental illness	25 of 102 (24.5)	9 of 78 (11.5)	0.034*	14 of 92 (15.2)	0.151

Statistical analysis

Statistical analysis was performed using IBM SPSS Statistic version 20, 0 software (SPSS Inc., Chicago, Illinois, USA) and Sigma plot (Systat Software Inc., San Jose, CA, USA). For comparisons involving categorical variables χ^2-test was applied. Mann–Whitney's *U*-test was applied to test the significance in means for factor groups in RIMS, PGS and for the score in MADRS-S. Wilcoxon's signed ranks test was used for test the significance in means over time. The level of significance was set to $p < 0.05$.

Results

Socio-demographic data and lifestyle factors

The median miscarriage week was 10.2 (6 + 0 to 21 + 6). Demographic data of the 103 women and 78 men is shown in Table 1. Of these, 64 matched couples answered the questionnaire at both occasions, one week and four months after the miscarriage. There was no self-perceived difference between men and women after miscarriage in physical health including high blood pressure, heart failure, diabetes, rheumatic disease, arthritis, gastrointestinal disease or tumor disease, data not shown. However, thyroid disease was stated more common in the women, 9 of 102 than in the men 0 of 78, $p = 0.006$. Likewise, allergy was also more common in the women, 15 of 102, than in the men 3 of 78, $p = 0.022$.

The control women were more often born in Sweden, $p = 0.013$, had more often a university degree, $p = 0.037$, but were less often married or living together with a partner, $p = 0.037$, than the women with miscarriage experiences, (Table 1). There was no difference in health between control women and women after miscarriage.

Fertility history

There was no significant difference between cases and controls regarding number of children, 61% and 52%, respectively, (Table 1) or infertility diagnosis 15.6% for the miscarriage group compared to 7.5% in the control group (Table 1).

RIMS

The emotional experiences of miscarriage, measured by use of RIMS, was more pronounced in women, as the score was significantly higher regarding "Isolation/guilt", $p < 0.001$, "Loss of baby", $p = 0.005$ and "Devastating event", $P < 0.003$ (Table 2). This was also seen in the 64 matched couples for Isolation/guilt and Devastating event both after one week and four months (Table 3). The tendency was similar for "Loss of baby, but this did not reach statistical significance (Table 3).

Table 2
Experience of miscarriage after one week. The table shows the response of the revised impact scale (RIMS), the perinatal grief scale (PGS) and the Montgomery–Asberg depression scale (MADRS-S) from women and men one week after miscarriage. Statistics was performed according to Mann–Whitney *U*-test and data is given as median and range, $P < 0.05$ was considered significant difference.

	Women n = 103	Men n = 78	*p*-value
RIMS isolation/guilt	12 (5–20)	7 (6 – 23)	<0.001***
RIMS loss of baby	7 (4–16)	6 (4–16)	0.005**
RIMS devastating event	14 (5–20)	11 (5–20)	0.003**
PGS active grief	8 (0–45)	4 (0–41)	<0.001***
PGS difficult coping	31 (11–54)	20 (11–57)	<0.001***
PGS despair	21 (11–54)	15.5 (11–50)	<0.001***
MADRS-S	16 (10–44)	11.5 (10–50)	<0.001***

The relative emotional experience of miscarriage did not change significantly from one week to four months in women and men (Table 3). There was no difference between women and men in relative reduction from one week to four months, the values were (0.0 and 0.0, $p = 0.815$) in "Isolation/guilt", (0.0 and 0.0, $p = 0.548$) in "Loss of baby" and (0.0 and 0.1, $p = 0.565$) in "Devastating event".

Women without children had higher score than women with children on "Isolation/guilt", $p = 0.035$ (Table 4) and women who had experienced a previous miscarriage had higher scores I all three factors, $P = 0.002$, $P = 0.009$ and $P = 0.003$, respectively (Table 5). Women in a couple with infertility scored significantly higher in "Isolation/guilt" and "Loss of baby", $p = 0.008$ and $p = 0.040$, respectively (Table 6).

PGS

Measurements of grief by use of PGS showed a significant difference between men and women after miscarriage, $p \leq 0.001$ for all three factors "Active Grief", "Difficult coping" and "Despair" (Table 2). This was also seen for the 64 matched couples, both after one week and four months.

For the women, active grief and difficulties of coping was reduced after four months, but the feeling of despair remained the same (Table 3). For the men, all three factors, "Active grief", " Difficult coping" and "Despair" was reduced after four months compared to one week (Table 3). The relative reduction in grief from one week to four months did not differ between women and men, (0.14 and 0.15 $p = 0.982$) for "Active grief", (0.07 and 0.08, $p = 0.812$) for "Difficult comping" and (0.0 and 0.2, $p = 0.147$) for "Despair".

Women without children showed significantly more "Active grief" than women with previous children, $p = 0.029$. For women who had experienced a previous miscarriage, the scores were higher on "Grief" and "Despair", $P = 0.031$ and $p = 0.016$ respectively (Table 5). Women with infertility problems scored significantly higher in all three

Table 3
Experiences of miscarriage after one week and four months. Three questionnaires, the revised impact of miscarriage scale (RIMS), the perinatal grief scale (PGS) and the Montgomery–Asberg scale (MADRS-S) was used for measurements after one week and four months for women ($n = 64$) with miscarriage and their male partner ($n = 64$). For comparisons between different time points, Wilcoxon's Signed Ranks Test was applied. For comparisons between men and women, Mann U-Whitney's test was applied, $P < 0.005$ was considered significant difference.

	Women			Men			Difference between women and men	
	1 week	4 months	*p*-value	1 week	4 months	*p*-value	1 week, *p*-value	4 months, *p*-value
RIMS isolation/guilt	10.5 (6–23)	10 (6–22)	0.366	7 (6–20)	6.5 (6–24)	0.119	<0.001***	<0.001***
RIMS loss of baby	7 (4–14)	6.5 (4–16)	0.143	6 (4–15)	6 (4–15)	0.714	0.087	0.142
RIMS devastating event	13 (5–20)	12 (5–20)	0.258	10.5 (5–20)	10 (5–20)	0.356	0.006***	0.002**
PGS active grief	29.5 (11–53)	22 (11–54)	< 0.001*	18.5 (11–57)	13 (11–50)	< 0.001*	<0.001***	<0.001***
PGS difficult coping	19 (11–54)	17 (11–54)	0.005*	15 (11–50)	13.5 (11–47)	< 0.001*	0.002**	0.003***
PGS despair	15.5 (10–42)	15 (11–46)	0.929	11 (10–36)	11 (11–41)	0.011*	<0.001***	<0.001***
MADRS-S	7.0 (0–45)	4 (0–40)	0.002*	4 (0–41)	1 (0–30)	< 0.001*	0.008**	<0.001***

Table 4
The table show experience of miscarriage in women with children prior and women without children prior to the miscarriage. Three questionnaires, the revised impact of miscarriage scale (RIMS), the perinatal grief scale (PGS) and the Montgomery–Asberg scale (MADRS-S) was used. For comparisons between groups, Mann *U*-Whitney's test was applied, $P < 0.005$ was considered significant difference.

	Women without children (n = 62)	Women with children (n = 41)	*p*-value
RIMS isolation/guilt	14 (6–22)	9 (6–23)	$p = 0.035$*
RIMS loss of baby	8 (4–16)	7 (4–16)	$p = 0.739$
RIMS devastating event	16 (5–20)	5 (13.5–20)	$p = 0.051$
PGS active grief	35 (11–54)	29 (11–54)	$p = 0.029$*
PGS difficult coping	22 (11–48)	19 (11–54)	$p = 0.056$
PGS despair	19 (10–41)	10 (14–44)	$p = 0.050$
MADRS	11 (0–45)	6.5 (0–36)	$p = 0.070$

Table 5
The table show experiences of miscarriage in women with previous miscarriage and women without previous experience of miscarriage. Three questionnaires, the revised impact of miscarriage scale (RIMS), the perinatal grief scale (PGS) and the Montgomery–Asberg scale (MADRS-S) was used for comparisons between groups, Mann–Whitney *U*-test was applied, $P < 0.005$ was considered significant difference.

	Women without experience of previous miscarriage n = 76	Women with experience of previous miscarriage n = 22	*p*-value
RIMS isolation/guilt	11 (6–22)	15 (7–23)	$p = 0.002$**
RIMS loss of baby	9 (5–20)	12 (5–20)	$p = 0.009$**
RIMS devastating event	13 (5–20)	16 (7–20)	$p = 0.003$**
PGS active grief	30 (11–50)	37 (16–54)	$p = 0.031$*
PGS difficult coping	23 (11–48)	19 (11–54)	$p = 0.271$
PGS despair	18 (10–41)	24 (10–44)	$p = 0.016$*
MADRS-S	10 (0–45)	9 (0–45)	$p = 0.442$

Table 6
The table show experience of miscarriage in women in a couple with infertility diagnosis and women who became pregnant by natural conception. Three questionnaires, the revised impact of miscarriage scale (RIMS), the perinatal grief scale (PGS) and the Montgomery–Asberg scale (MADRS-S) was used. For comparisons between groups, Mann *U*-Whitney's test was applied, $P < 0.005$ was considered significant difference.

	Women with infertility diagnosis (n = 16)	Women without infertility diagnosis (n = 86)	*p*-value
RIMS isolation/guilt	16 (7–23)	10.5 (6–22)	$p = 0.008$**
RIMS loss of baby	10 (4–14)	7 (4–16)	$p = 0.040$*
RIMS devastating event	16 (6–20)	14 (5–20)	$p = 0.252$
PGS active grief	37.5 (16 - 52)	29 (11–54)	$p = 0.022$*
PGS difficult coping	23 (11–48)	19 (11–54)	$p = 0.005$*
PGS despair	16 (0–44)	23.5 (10–42)	$p = 0.024$*
MADRS-S	11.5 (0–45)	8 (0–44)	$p = 0.321$

factors, "Active grief" $p = 0.022$, "Difficult coping" $p = 0.005$, and "Despair" $p = 0.024$ (Table 6).

MADRS-S

The self-reported impaired mental health was more pronounced in women than in men after miscarriage, $p = 0.034$, while there was no difference between the control women and women after miscarriage, $p = 0.151$ (Table 1).

The MADRS-S score was significantly higher in women with miscarriage than in men after one week $p < 0.001$, (Table 2). The same was noted for the 64 matched couples, the women scored higher than the men both after one week and after four months, $p = 0.008$ and $p < 0.001$, respectively.

There was a significant relative reduction in the score from one week to four months, both for the women and the men, $p = 0.002$ and $p = 0.003$, respectively. The relative reduction was similar for both the women and the men, (0.21 and 0.45, $p = 0.117$).

The self-reported symptoms of depression did not differ between women after miscarriage and control women, $p = 0.151$ (Table 1). The MADRS-S, score was 18 (0–45) for women one week after miscarriage compared with 5 (0–32) for the control women, $P < 0.001$. This difference was not seen after 4 months, $p = 0.947$.

There was no difference in MADRS-S score between women with children and women without children, $p = 0.070$ (Table 4) or between women who had experienced a previous miscarriage and those who had not, $P = 0.442$, (Table 5). Women with infertility problems had MADRS-S scored similar to women without infertility problems, $p = 0.321$ (Table 6).

Discussion

This longitudinal study in a clinical setting describes women's and men's psychological wellbeing one week and four months after miscarriage. The emotional experiences of miscarriage, grief and depressive symptoms were more pronounced in women than in their male partner. Grief and depressive symptoms were reduced over time, which was not the case for the emotional experiences of miscarriage.

It was noted that the women had significantly higher scores showing that women suffer more negative emotional consequences after a miscarriage than men, which has also been noted in previous studies (Kong et al., 2010; Huffman et al., 2015). This can affect the interrelationship between the couples (Swanson et al., 2003) and therefore, the men should not be neglected during treatment of miscarriage.

Women's emotional experiences after miscarriage is reduced, which have been shown in both qualitative (Simmons et al., 2006) and quantitative studies (Swanson 1999; Huffman et al., 2014). Women had a feeling of guilt after the miscarriage, which also has been noticed earlier (Adolfsson et al., 2004; Huffman et al., 2015). We speculate that the reason why women feel more guilt might be that the woman is pregnant and the fetus is therefore more directly influenced by the habits of the mother. The experience of guilt remained four months after the miscarriage, and it has been noticed that the feeling of guilt could last as long time as one year after the miscarriage (Swanson et al., 2007).

A recent literature review show that a frequent theme was "Me, my baby and others" as a frequent theme in women's experience of miscarriage (Radford and Hughes, 2015). Unexpectedly, this was not the main issue and the scores for loss of baby were similar between men and women. The difference in Sweden compared to the previous studies from other countries is that a miscarriage might be regarded as a loss of pregnancy rather than a loss of baby. This might also be explained by that most women in the study had an early miscarriage, median week 10.

Miscarriage could be considered as a devastating event for both men and women, and was, in the present study, more pronounced in the women, which has also been noticed in a previous study (Huffman et al., 2015). This experience was not reduced after four months, and it is possible than one year is needed to see any effect of time (Swanson, 1999)

PGS has previously shown elevated levels of grief in male partners of women who miscarried (Johnson and Puddifoot, 1996), which was also seen in the present study although the level of grief after miscarriage was higher in women than in men. In a recent study, it was shown that the prevalence of grief was higher 6–10 weeks after miscarriage than in a pregnant control group (Kulathilaka et al., 2016). The cause of miscarriage is not known, but according to earlier studies, the amount of grief is not dependent on the cause of early pregnancy loss (Purandare et al., 2012). The level of grief was reduced with time in the current study, in contrast to the experience of miscarriage, which was also noticed in a previous German study (Deckardt et al., 1994).

Previous children made the miscarriage easier to endure while a previous miscarriage had the opposite effect. Women with a previous miscarriage are more vulnerable and are trying to gain control during the next pregnancy (Ockhuijsen et al., 2014). In a previous review by Lamb, previous perinatal loss had a negative impact on wellbeing after a second miscarriage and she concluded that these patients might be in need of extra care after a second miscarriage (Lamb, 2002).

Despite the low number of women with infertility diagnosis in the present study, it was evident that the women with infertility diagnosis have several burdensome emotions including grief, which have been described earlier (Harris and Daniluk, 2010; Volgsten et al., 2010; Bhat and Byatt, 2016). These women also scored higher in the RIMS factors "Isolation/guilt" and "Loss of Baby", showing that the experiences of miscarriage are more of a burden for women with fertility problems.

In the present study, depressive symptoms measured by use of MADRS-S decreased in women four months after the miscarriage. In a previous study where Center for Epidemiologic Studies Depression (CES-D) Scale was used, depressive symptoms were still present 6–8 weeks after the miscarriage (Neugebauer et al., 1992). The control women were used for comparison of depressive symptoms in women with miscarriage. The control women were more often born in Sweden and also more often had a university degree which might be explained by that they live in a university city and it was previously noted that women with high education tend to agree to be included in research studies when asked (Murto et al., 2014). The women with miscarriage were as healthy as the control women. However, although the self-reported psychological wellbeing did not differ between control women and women with miscarriage while the MADRS-S score differed, showing that miscarriage increased the depressive symptoms one week after miscarriage, but this difference did not persist and there was no difference after 4 months.

A strength of the current study was the longitudinal design and the inclusion of control women for the comparison of depressive symptoms. On the other hand, a limitation of the study was the low response rate, with no information for those declining to participate in the study, making it difficult to generalize the result. Further studies are needed to establish if no previous children and infertility diagnosis may increase negative emotional experiences after miscarriage.

In conclusion, depressive symptoms and grief are reduced up to four months, after miscarriage in contrast to the emotional experiences of miscarriage, evaluated by the RIMS scale. However, women without children, women who had experienced a previous miscarriage or infertility treatment showed significantly more grief than women with previous children.

Conflict of interest

None declared.

Ethical approval

The regional ethics committee, Uppsala approved the study, number 2012/306.

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Supplementary materials

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