Published in final edited form as:
J Loss Trauma. 2009 ; 14(3): 211–227. doi:10.1080/15325020802537468.

Trauma of Pregnancy Loss and Infertility for Mothers and Involuntarily Childless Women in the Contemporary United States

Kami L. Schwerdtfeger and **Karina M. Shreffler**
Oklahoma State University

Abstract

Recent studies have repeatedly associated posttraumatic symptoms with women's experience of pregnancy loss. Using a nationally representative sample of American women (N = 2,894) from the National Survey of Fertility Barriers, the current study examines long-term psychological outcomes and reactions to pregnancy loss and infertility among mothers and involuntary childless women. In general, childless women who have experienced pregnancy loss or failure to conceive report the lowest life satisfaction and highest levels of depression despite a considerable period of time (seven years) since the loss or first year without a conception. However, women with the dual experience of pregnancy loss and involuntary childlessness report the most fertility-related distress. Results of the current study suggest that the "non-event" of involuntary childlessness may serve as an additional stressor in the traumatic experience of pregnancy loss.

Recent studies have begun to show the full psychological impact of women's experiences of pregnancy loss. Although there is considerable variation in individual reactions to pregnancy loss, some studies have highlighted the possible traumatic nature of this specific life event. Among possible reactions, studies have documented posttraumatic symptoms of re-experiencing, avoidance, and hyperarousal (Engelhard, 2004; Engelhard, van den Hout, Kindt, Arntz & Schouten, 2003; Engelhard, van den Hout, & Arntz, 2001; Frost & Condon, 1996; Lee & Slade, 1996). Research suggests that one-month following pregnancy loss, approximately 25 percent of women meet criteria for Posttraumatic Stress Disorder (PTSD) (Engelhard et al., 2001).

Considering the possible traumatic elements of pregnancy loss, it is not surprising that posttraumatic symptoms have been identified as a specific psychological outcome. However, research that explores the traumatic nature of pregnancy loss is limited. While research on involuntary childlessness indicates a high amount of distress for some women, particularly when combined with the experience of infertility (McQuillan, Greil, White, & Jacob, 2003), it is unclear whether experiencing pregnancy loss contributes to further distress. The current study is unique as it examines the psychological outcomes of pregnancy loss among mothers and childless women within a large, national, nonclinical sample, and allows for comparisons with infertile childless women and mothers who have not experienced a pregnancy loss.

Pregnancy Loss

Reproductive problems affect a substantial number of American women. Recent data from the National Survey of Fertility Barriers (NSFB, 2007) indicate that almost 30 percent of

For more information, contact: Kami L. Schwerdtfeger, Ph.D., Human Development and Family Science, Oklahoma State University, 233 HES, Stillwater, Oklahoma 74078. kami.schwerdtfeger@okstate.edu.

women experience problems with fertility, a rate 50 percent higher than indicated just over a decade ago. Whereas infertility is typically defined as the inability to achieve conception after a year of regular, unprotected sexual intercourse (Cook, 1987; World Health Organization (WHO), 1992), reproductive problems include a variety of infertility issues, including the inability to conceive, as well as difficulties in carrying a pregnancy to term.

Pregnancy loss is a specific reproductive problem experienced by many women. Approximately 14% and 0.5% of all clinically-recognized pregnancies in the United States result in miscarriage and stillbirth, respectively (Saraiya, Berg, Shulman, Green, & Atrash, 1999). Since the 1980s, research has shown that women (and to a lesser extent, their partners) experience a variety of psychological distress outcomes following pregnancy loss, including grief, anxiety, depression, and guilt (Friedman & Gath, 1989; Greil, 1991; Leppert & Pahlka, 1984; Prettyman, Cordle, & Cook, 1993), and that these outcomes are often sustained over time (Lee, Slade, & Lygo, 1996; Neugebauer et al., 1997; Robinson, Stritzinger, Stewart, & Ralevski, 1994). These issues associated with pregnancy loss are far-reaching, and result in extensive stress and even marital conflict (Goodwin, 2002).

Many ambiguities surrounding miscarriage, such as the private and often hidden experience and lack of a public way to mourn the loss result in miscarriage being a “unique form of loss” that can be difficult to overcome (Frost, Bradley, Levitas, Smith, & Garcia, 2007, p. 1003). Previous studies have found variables affecting distress following early pregnancy loss (EPL) such as gestational age (Toedter, Lasker, & Alhadeff, 1988), planned versus unplanned pregnancy (Tharpar & Tharpar, 1992), other “loss” experiences (Garel et al., 1992), and pre-loss psychiatric symptoms (Janssen, Cuisinier, de Graauw, & Hoogduin, 1997; Prettyman et al., 1993). Childlessness has also been reported to be a specific risk factor associated with increased levels of grief among women following pregnancy loss (Janssen et al., 1997).

Involuntary Childlessness

While the majority of infertile women go on to give birth, a significant number do not. Roughly 4% of American couples remain involuntarily childless (Abma & Martinez, 2006). Even though there is no specific point of loss for those who remain involuntarily childless, they report deep feelings of loss and mourn for children that they never had (Daniluk, 2001). The experience of involuntary childlessness is associated with more health complaints, greater anxiety and depression, and complicated grief for women (Lechner, Bolman, & van Dalen, 2007). Outcomes can be long-lasting as well; a study of 14 involuntarily childless women in Sweden conducted 20 years after their failed infertility treatments revealed continued negative effects on women's relationships and sexual lives (Wirtberg, Möller, Hogström, Tronstad, & Lalos, 2007). These women also reported that they still think about their childlessness and experience low self-esteem and feelings of social isolation.

Women who experience reproductive problems often experience their lack of fecundity as the central theme in their lives, are unable to move forward with life transitions, and continuously grieve the mother-child relationship that never came to pass (Johansson & Berg, 2005). The particularly long-term impact of infertility–childlessness–is a chronic life stressor for many women (McQuillan et al, 2003). Stress occurs when an individual encounters circumstances that render his or her current coping strategies inadequate (Pearlin, Menaghan, Lieberman, & Mullan, 1981; Folkman, 1984). Stress can arise from not only specific events (as highlighted in the DSM), but can also stem from the failure to achieve desired goals or statuses, such as parenthood (Aneshensel, 1992). The long-term psychological effects of stress related to reproductive problems is comparable to the psychological impact of a long-term disease (Domar, Zuttermeister, & Friedman, 1993).

Pregnancy Loss and Infertility as Trauma

Recent research suggests that pregnancy loss may be suitably conceptualized as a traumatic stressor (Bowles et al., 2000; Engelhard, 2004; Kendall-Tacket, 2005; Speckhard, 1997; Walker & Davidson, 2001). When a woman is almost successful in giving birth (for instance, if an implanted embryo results in a miscarriage), the subsequent loss is often experienced as profoundly as the literal death of a child. The embryo is seen as the embodiment of the couples' hopes for parenthood; it is their biological child and is mourned as such (Bateman-Cass, 2000). Women who have undergone the loss of a viable embryo express the emotions of grief, loss, and trauma; the miscarriage is experienced as both a physical and emotional loss (Zucker, 1999). Recognized as a traumatic event, the experience of pregnancy loss has further-reaching implications.

While the term trauma has previously been used to refer to a broad range of life experiences, including violent personal assaults, such as rape or mugging, natural or human-caused disasters, accidents, military combat, serious injury, threat to personal integrity, or learning about an unexpected death (American Psychiatric Association (APA), 2000), it is the overwhelming and disabling psychological stress related to the experience of pregnancy loss that may in the same way distinguish it as a traumatic event. The fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR; APA, 2000) described PTSD as a common anxiety disorder that can develop in individuals who experience, witness or learn about a traumatic event. Originally developed to describe the distress war veterans were experiencing, ongoing research has expanded the definition of PTSD to include groups other than military combatants. Similar to various traumatized populations, significant symptoms of PTSD have been reported in women who have experienced various reproductive problems, including infertility treatment, high-risk pregnancies, and pregnancy loss (Bartlik, Greene, Graf, Sharma, & Melnick, 1999; Bowles et al., 2006; Turton, Hughes, Evans, & Fainman, 2001).

In one of the first studies examining the traumatic nature of pregnancy loss among women, Engelhard et al. (2001) highlighted that an important issue in the development of posttraumatic symptoms and the diagnosis of PTSD is the traumatic event criterion. The DSM-IV-TR defines a traumatic event as one that involves experiencing, witnessing, or learning about the “actual or threatened death or serious injury, or a threat to the physical integrity of self or others” (APA, 2000, p. 467), and the person's response at the time of the event must involve “intense fear, helplessness, or horror” (APA, 2000, p. 467). According to Speckhard (1997) the experience of pregnancy loss can be conceptualized as a trauma, especially if the loss is perceived as a death and parental attachment has developed. The experience of pregnancy loss often results in feelings of fear, sadness, anxiety, loss of self, loss of security, and loss of personal comfort; social interaction and other previously enjoyed activities are often avoided echoing common symptoms reported by those experiencing other traumas (Speckhard, 1997).

In one of the few studies to-date investigating pregnancy loss as a potential trauma, Engelhard et al. (2001) found that women experiencing pregnancy loss commonly reported significant symptoms of PTSD similar to those reported by other traumatized populations. Engelhard et al. reported that 25% of their sample met criteria for PTSD one month after the loss and estimated that 4–10 develop chronic PTSD. Bowles et al. (2000) found that only 1% of women met criteria for PTSD one month after pregnancy loss, but also reported that 10% met criteria for acute stress disorder. In a slightly longer longitudinal study following 40 women for three months after a pregnancy loss, Walker and Davidson (2001) found early pregnancy loss to increase post-traumatic stress symptoms and anxiety. While several aspects of psychological distress were found to decrease over time, anxiety remained high

during the three months of the study. The authors concluded that their study supports the conceptualization of early pregnancy loss as a trauma experience.

Although both infertility and pregnancy loss have long been recognized as significant stressors, research thus far has failed to address the full extent to which a woman's life is impacted when dealing with the short and long-term consequences of the “non-event” of involuntary childlessness. Reproductive problems tax a woman's inner resources to a great degree, thus identifying it as one of the most serious life stressors a woman can experience (Amir Horesh, & Lin-Stein, 1999). The prospect of reproductive problems often comes with some surprise as it prevents the successful advancement and accomplishment of a normal family life cycle phase. Echoing research findings in the area of trauma, studies have found that reproductive problems challenge normal coping mechanisms, stretching those impacted by the experience of infertility tremendously (Forrest & Gilbert, 1992; Greil, 1991).

The purpose of the current study was to explore the unique relationship between women's experiences of pregnancy loss and infertility in the context of childlessness and the subsequent development of negative psychological outcomes (depression, self-esteem, and life-satisfaction). The study represents a preliminary effort to empirically explore the theoretical possibility that a non-event, such as involuntary childlessness and the lack of the advancement to a particular family life cycle phase may be fittingly classified as a significant stressor, possibly traumatic in nature for women.

Method

Sample

The sample for this study comes from the National Survey of Fertility Barriers (NSFB), a random-digit-dial (RDD) nationally-representative dataset of 4,712 women of childbearing age (25–45) and a subset of their partners that includes oversamples of women with fertility problems and census tracts with minority (African American and Hispanic) populations greater than 40%. This current sample (N = 2,894) is restricted into four groups for the present study: mothers who did not experience fertility problems (n = 1,444), mothers who experienced pregnancy loss (n = 1,107), childless women who experienced pregnancy loss (n = 104), and involuntarily childless women who have not yet conceived and consider themselves infertile (n = 239). Restricting the data removes childless women who have not yet attempted to get pregnant from the analyses as well as those who have given birth but experienced infertility problems other than pregnancy loss. Data are weighted so that the sample is representative of the population in terms of education, household income, race, and fertility barriers.

Measures

Fertility/Childbearing—Respondents were coded as *Mothers, no fertility problems* if they answered “yes” to the question, “Have you ever given birth?” and did not indicate any type of biomedical barriers to becoming pregnant (barriers include not conceiving within one year of trying to get pregnant, medical history of infertility, and/or previous miscarriages). Respondents were coded as *Mothers, pregnancy loss* if they responded positively that they have given birth and reported a previous pregnancy loss (“Have you ever had a miscarriage?”). The *Childless, pregnancy loss* group responded yes to having had a miscarriage and no to having ever given birth. Finally, the *Childless, infertile* group is comprised of women who answered “no” to the question, “Have you ever been pregnant?” and indicated a biomedical barrier to becoming pregnant.

Psychological Outcomes—*Life satisfaction* was measured using four questions which we investigated both individually and as a scale ranging from 1 (low life satisfaction) to 4 (high life satisfaction). Respondents were asked how much they agree or disagree with the following statements: 1) “In most ways, my life is close to ideal;” 2) “I am satisfied with my life;” 3) “If I could live my life over, I would change almost nothing;” and 4) “So far, I have gotten the important things I want in life.” Cronbach's alpha for the life satisfaction scale is . 80, indicative of high internal consistency. *Depression* was assessed using a modified (10-item) version of the CES-D scale (see Radloff, 1977). Items were coded or reverse-coded so that high scores indicate high levels of depression. Individual items as well as the constructed scale are used for the current study. Respondents were asked how often they felt or behaved in certain ways during the past two weeks. A sample question from the scale is: “My sleep was restless.” The scale was coded from 1 to 4, with 4 indicating high levels of depressive symptoms. Cronbach's alpha for the CES-D scale is .82. *Self-esteem* was measured using three questions: 1) “I feel I do not have much to be proud of;” 2) “I am a person of worth at least equal to others;” and 3) “All in all, I am inclined to feel that I am a failure.” Items were coded and reverse-coded so that high scores indicate high self-esteem, and a scale was constructed ranging from 1 (low self-esteem) to 4 (high self-esteem). Cronbach's alpha for the scale is .78.

Fertility-Related Distress—Respondents who reported any type of fertility problem (such as pregnancy loss or infertility) were asked a series of questions regarding whether or not they experienced certain reactions to their fertility problem(s). These included: 1) “I felt cheated by life;” 2) “I felt that I was being punished;” 3) “I felt angry at God;” 4) “I felt inadequate;” 5) “I felt seriously depressed;” and 6) “I felt like a failure as a woman.” These items are dichotomous (1 = yes; 0 = no).

Results

Descriptive statistics for the sample are presented in Table 1 and show that the large majority of women in the sample are mothers, with only 12 percent involuntarily childless at the time of the interview. The largest group in our sample (46 percent) included mothers who did not experience any bio-medical reproductive problems, including a pregnancy loss. Additionally, there were many women who are mothers that experienced a pregnancy loss (42 percent). Also included in the sample are childless women who experienced pregnancy loss (4 percent) and childless women who are infertile and had not yet conceived at the time of the interview (8 percent). Among the women who had either experienced a loss or been unable to conceive, a substantial amount of time had elapsed; 9 years for mothers who have experienced a loss, and 7 years for both childless women who have experienced a loss and those who have not yet conceived. The length of time is not surprising given the age of the women in the sample (over 35), since women's average age at first birth is about 25 years (Mathews & Hamilton, 2002).

Group Differences in Mental Health

Mental health (life satisfaction, depression, and self-esteem) statistics by motherhood, pregnancy loss, and infertile status are presented in Table 2. Univariate analysis of variances (ANOVAs) were conducted to determine significant differences in the dependent variables between women who experienced a pregnancy loss or inability to conceive and mothers who did not experience any fertility barriers. Results indicated that mothers who did not experience a pregnancy loss or other fertility barriers had significantly higher life satisfaction and significantly lower levels of depression ($p<.001$) than women who had experienced a loss or had not conceived.

Women in the childless groups (both those who had experienced a loss, as well as those who had never conceived) reported lower life satisfaction on all measures than mothers who had experienced a loss. Childless women also reported the lowest levels of happiness and the highest levels of loneliness. Childless infertile women had particularly high scores on “could not get going,” and they had significantly low reports of self-esteem. Interestingly, mothers who had experienced a pregnancy loss reported the highest levels of depression of any group on several measures: feeling bothered by things, trouble keeping one's mind on things, and feeling like everything was an effort.

Responses to Infertility Problems

All women in the sample who reported any type of reproductive problem were asked a battery of questions about their reactions specifically to their fertility barriers. Results are presented in Table 3. The ANOVA results show that there are significant group differences for all of the responses (Table 3, Tukey Honest Significant Difference (HSD) results). Mothers who experienced a loss reported the least distress on all measures of reaction to reproductive problems, but that should not be taken to indicate a lack of distress; rather, among mothers who experienced a loss, 22 percent felt cheated by life, 16 percent felt they were being punished, 13 percent were angry at God, 24 percent felt inadequate, 34 percent felt seriously depressed, and 19 percent felt that because of their loss, they were a failure as a woman. Childless women who have experienced a loss reported the greatest distress on all measures: 42 percent felt cheated by life, 32 percent felt they were being punished, 32 percent were angry at God, 45 percent felt inadequate, 45 percent felt seriously depressed, and 36 percent felt that they were failures as women. Reactions from childless, infertile women fell between the loss groups.

Discussion

The current study is one of the first to focus on the impact of childlessness on the outcomes of women's experiences of pregnancy loss and infertility. Specifically, this study employed a large, nationally-representative sample of women with a focus on reproductive barriers and psychological outcomes. The study provides important information on the unique impact of pregnancy loss, infertility and childlessness on women by employing a broad sample including mothers who experienced pregnancy loss, involuntarily childless women who experienced pregnancy loss, involuntarily childless women who have not yet conceived and consider themselves infertile, as well as mothers who did not report experiencing fertility problems. The primary findings indicated that both pregnancy loss and infertility have negative consequences for mental health and that women who have the dual experience of pregnancy loss and childlessness have the most fertility-related distress.

The Impact of Reproductive Problems

Results from this study suggest that the experiences of pregnancy loss, infertility, and childlessness have unique impacts on women. When comparing women who reported a history of pregnancy loss and infertility with mothers who reported no fertility problems, significant differences were found in life satisfaction, depression and self-esteem. Women reporting previous pregnancy loss (regardless of motherhood status) or infertility problems reported significantly less satisfaction with life and more depressive symptoms than women with no fertility problems. The current study's results concur with previous literature identifying pregnancy loss and infertility as a particularly difficult, distressing, and even traumatic life experiences likely to have negative repercussions on women's mental health (Bowles et al., 2000; Engelhard, 2004; Frost & Condon, 1996), including symptoms of anxiety (Geller, Klier & Neugebauer, 2001) and depression (Klier, Geller, & Neugebauer, 2000). However, the nonclinical population sampled in this study allows us to make several

important contributions to the literature. First, unlike previous studies of fertility-related distress that rely on clinical samples, we are able to generalize results to the population-at-large. According to the National Survey of Family Growth (NSFG), less than half (44 percent) of women with fertility problems seek treatment (Chandra & Stephen, 1998). Therefore, the psychological outcomes of the majority of women who experience pregnancy loss or infertility were previously unknown. Our study indicates, for the first time, that American women with reproductive problems report significantly worse mental health than women who do not face barriers to motherhood. Second, our findings highlight the particularly long-term impact of pregnancy loss and infertility on women's psychological well-being. Whereas most clinical studies are conducted within a year of a pregnancy loss or during infertility treatments, the women in our sample experienced a pregnancy loss or began trying to get pregnant nearly a decade before the time of the interview. The significant psychological differences that exist between groups in spite of the considerable length of time that has passed suggest that pregnancy loss and infertility have deep, lasting effects on women's well-being.

The Impact of Involuntary Childlessness

Whereas previous studies have found negative psychological outcomes related to either childlessness (Lechner, Bolman, & van Dalen, 2007) or pregnancy loss (Lok & Neugebauer, 2007), our study is the first to examine numerous effects of loss within the context of childlessness. Results indicate that the dual experience of pregnancy loss and involuntary childlessness has particularly negative implications for women's psychological well-being. Women who had experienced both pregnancy loss and involuntary childlessness reported the highest levels of depression, sleep problems, and loneliness among the groups and the most fertility-related distress. These findings suggest that coping with pregnancy loss may be a qualitatively different experience when influenced by the ongoing stressor of involuntary childlessness.

Limitations and Implications for Further Research

While the current provides important information on the psychological consequences of traumatic loss, reproductive problems, and involuntary childlessness among a non-clinical, nationally representative sample of women, a number of limitations to the current study are worthy of discussion. Perhaps the most notable limitation to the current study is the lack of a validated measure of trauma specific symptomatology or PTSD. Although the current study was designed to test an initial, theoretical hypothesis regarding the possible traumatic nature of reproductive problems and the “non-event” of involuntary childlessness using basic trauma related psychological and relational outcomes, the lack of a trauma specific measure of psychological and relational symptoms limits the ability to draw firm conclusions from the current study. However, as the current findings suggest, infertility, pregnancy loss and involuntary childlessness seem to have unique long-term psychological and relational implications for women. Therefore, future research should involve additional self-report measures, interviews, and/or observations of trauma symptomatology.

Findings from the current study highlight the importance of involuntary childlessness on the psychological adjustment of women who have experienced pregnancy loss or infertility, as well as distinctions in long-term reactions to reproductive problems. The current study warrants further research on long-term effects of pregnancy loss and infertility in the context of involuntary childlessness. For example, future studies are needed to investigate factors that predict negative outcomes associated with pregnancy loss and infertility for childless women, as well as those that buffer negative consequences. Further research should also explore how other traumatic life experiences (i.e. sexual abuse, domestic violence, natural disasters) impact how women respond to pregnancy loss and other infertility experiences.

These studies have important clinical implications. Previous studies have highlighted that while a majority of women desired follow-up psychological care following the experience of pregnancy loss (Friedman, 1989), psychological distress following miscarriage is often unrecognized by medical professionals. Further research exploring the possible traumatic loss associated with pregnancy loss and involuntary childlessness are needed to better define the significant and enduring psychological consequences suggested within the current findings.

Exploring women's experiences of pregnancy loss, infertility, and childlessness is an important step in understanding the unique trauma-related psychological and relational consequences of reproductive problems. The current study provides an investigation of the impact of childlessness on pregnancy loss and infertility psychological outcomes. The results suggest that childlessness is an additional stressor for women who have experienced pregnancy loss and infertility. These findings support prior research offering that reproductive problems are often experienced as a significant and chronic stressor. As well, the current study challenges the theoretical conceptualization of a traumatic event, suggesting that the non-event of childlessness may serve as an additional traumatic stressor for women facing reproductive problems. Although further research in this area is needed to confirm and expand the current findings, this study has important implications for researchers and clinicians interested in better understanding the psychological and relational consequences of pregnancy loss, infertility and childlessness.

Acknowledgments

This research was supported in part by grant R01-HD044144 “Infertility: Pathways and Psychosocial Outcomes” funded by NICHD (Lynn White and David R. Johnson, Co-PIs).

References

Abma JC, Martinez GM. Childlessness among older women in the United States: trends and profiles. Journal of Marriage and Family. 2006; 68:1045–1056.

American Psychiatric Association (APA). Diagnostic and Statistical Manual of Mental Disorders. Fourth edition, text revision. American Psychiatric Association Publications; Washington, DC: 2000.

Amir M, Horesh N, Lin-Stein T. Infertility and adjustment in women: The effects of attachment style and social support. Journal of Clinical Psychology in Medical Settings. 1999; 6:463–479.

Aneshensel C. Social stress: Theory and research. Annual Review of Sociology. 1992; 18:15–38.

Bartlik B, Greene K, Graf M, Sharma G, Melnick H. Examining PTSD as a Complication of Infertility. Medscape Women's Health eJournal. 1997; 2 Available at: http://www.medscape.com/viewarticle/408851.

Bateman-Cass C. The loss within a loss: Understanding the psychological implications of assisted reproductive technologies for the treatment of infertility. Dissertation Abstracts International: Section B: The Sciences and Engineering. 2000; 61:1624.

Bowles SV, Bernanrd RS, Epperly T, Woodward S, Ginzburg K, Folen RA, Perez T, Koopman C. Traumatic stress disorders following first-trimester spontaneous abortions. Journal of Family Practice. 2006; 55:969–973. [PubMed: 17090356]

Bowles SV, James LC, Solursh DS, Yancey MK, Epperly TD, Folen RA, Masone M. Acute and post-traumatic stress disorder after spontaneous abortion. American Family Physician. 2000; 61:1689–1696. [PubMed: 10750876]

Chandra A, Stephen EH. Impaired fecundity in the United States: 1982–1995. Family Planning Perspectives. 1998; 30:34–42. [PubMed: 9494814]

Cook E. Characteristics of the biopsychosocial crisis of infertility. Journal of Counseling & Development. 1987; 65:465–470.

Daniluk JC. Reconstructing their lives: A longitudinal, qualitative analysis of the transition to biological childlessness for infertile couples. Journal of Counseling and Development. 2001; 79:439–450.

Domar AD, Zuttermeister PC, Friedman R. The psychological impact of infertility, a comparison with patients with other medical conditions. Journal of. Psychosomatic Obstetrics and Gynecology. 1993; 14:45–52. [PubMed: 8142988]

Engelhard IM. Miscarriage as a traumatic event. Clinical Obstetrics and Gynecolocy. 2004; 47:547–551.

Engelhard IM, van den Hout MA, Arntz A. Posttraumatic stress disorder after pregnancy loss. General Hospital Psychiatry. 2001; 23:62–66. [PubMed: 11313072]

Engelhard IM, van den Hout MA, Kindt M, Arntz A, Schouten E. Peritraumatic dissociation and posttraumatic stress after pregnancy loss:Aprospective study. Behaviour Research and Therapy. 2003; 41:67–78. [PubMed: 12488120]

Folkman S. Personal control and stress and coping processes: A theoretical analysis. Journal of Personality and Social Psychology. 1984; 46:839–852. [PubMed: 6737195]

Forrest L, Gilbert M. Infertility: An unanticipated and prolonged life crisis. Journal of Mental Health Counseling. 1992; 14:42–58.

Friedman T. Women's experience of general practitioner management of miscarriage. Journal of the Royal College of General Practice. 1989; 39:456–458.

Friedman T, Gath D. The psychiatric consequences of abortion. British Journal of Psychiatry. 1989; 155:810–13. [PubMed: 2620207]

Frost J, Bradley H, Levitas R, Smith L, Garcia J. The loss of possibility: Scientisation of death and the special case of early miscarriage. Sociology of Health and Illness. 2007; 29:1003–1022. [PubMed: 18092980]

Frost M, Condon JT. The psychological sequelae of miscarriage: a critical review of the literature. Australian and New Zealand Journal of Psychiatry. 1996; 30:54–62. [PubMed: 8724327]

Garel M, Blondel B, Lelong N, Papin C, Bonenfant S, Kaminiski M. Depressive reaction after miscarriage. Contraception, Fertility and Sexuality. 1992; 20:75–81.

Geller PA, Klier CM, Neugebauer R. Anxiety disorders following miscarriage. Journal of Clinical Psychiatry. 2001; 62:432–438. [PubMed: 11465520]

Goodwin, B. Dissertation Abstracts International: Section B: The Sciences and Engineering. Vol. 62. 2002. Infertility: Meaning, marital satisfaction and resolution; p. 4218

Greenfeld D, Diamond M, DeCherney A. Grief reactions following in-vitro fertilization treatment. Journal of Psychosomatic Obstetrics & Gynecology. 1988; 8:169–174.

Greil, AJ. Not yet pregnant: Infertile couples in contemporary America. Rutgers University Press; New Brunswick: 1991.

Janssen H, Cuisinier M, de Graauw K, Hoogduin K. A prospective study of risk factors predicting grief intensity following pregnancy loss. Archives of General Psychiatry. 1997; 54:56–61. [PubMed: 9006401]

Johansson M, Berg M. Women's experiences of childlessness 2 years after the end of in vitro fertilization treatment. Scandinavian Journal of Caring Sciences. 2005; 19:58–63. [PubMed: 15737167]

Kendall-Tacket, KA. Trauma associated with perinatal events: Birth experience, prematurity, and childbearing loss. In: Kendall-Tackett, KA., editor. Handbook of women, stress, and trauma. Brunner-Routledge; New York: 2005. p. 53-74.

Klier CM, Geller PA, Neugebauer R. Minor depressive disorder in the context of miscarriages. Journal of Affective Disorders. 2000; 59:13–21. [PubMed: 10814766]

Lechner L, Bolman C, van Dalen A. Definite involuntary childlessness: Associations between coping, social support, and psychological distress. Human Reproduction. 2007; 22:288–294. [PubMed: 16920722]

Lee C, Slade P. Miscarriage as a traumatic event: A review of the literature and new implications for intervention. Journal of Psychosomatic Research. 1996; 40:235–244. [PubMed: 8861119]

Lee C, Slade P, Lygo V. The influence of psychological debriefing on emotional adaptation in women following early miscarriage: A preliminary study. British Journal of Medical Psychology. 1996; 69:47–58. [PubMed: 8829399]

Leppert P, Pahlka B. Grieving characteristics after spontaneous abortion: A management approach. Obstestrics and Gynecology. 1984; 96:743–745.

Lok IH, Neugebauer R. Psychological morbidity following miscarriage. Best practice & research. Clinical obstetrics & gynecology. 2007; 21:229.

Mathews, TJ.; Hamilton, BE. National Vital Statistics Reports. Vol. 51. National Center for Health Statistics; Hyattsville, Maryland: 2002. Mean age of mother, 1970–2000.

McQuillan J, Greil AL, White L, Jacob MC. Frustrated Fertility: Infertility and Psychological Distress Among Women. Journal of Marriage and Family. 2003; 65:1007–1018.

Neugebauer R, Kline J, Shrout P, Skodol A, O'Connor P, Geller P, Stein Z, Susser M. Major depressive disorder in the 6 months after a miscarriage. Journal of the American Medical Association. 1997; 277:383–388. [PubMed: 9010170]

Pearlin L, Menaghan E, Lieberman M, Mullan J. The stress process. Journal of Health and Social Behavior. 1981; 22:337–356. [PubMed: 7320473]

Prettyman RJ, Cordle CJ, Cook GD. A three-month follow-up of psychological morbidity after early miscarriage. British Journal of Medical Psychology. 1993; 66:363–372. [PubMed: 8123604]

Radloff LS. The CES-D scale: A self-report depression scale for research in the general population. Applied Psychological Measurement. 1977; 1:385–401.

Robinson G, Stritzinger R, Stewart D, Ralevski E. Psychological reactions in women one year after miscarriage. Journal of Reproductive and Infant Psychology. 1994; 12:31–6.

Saraiya M, Berg CJ, Shulman H, Green CA, Atrash HK. Estimates of the annual number of clinically recognized pregnancies in the United States, 1981–1991. American Journal of Epidemiology. 1999; 149:1025–1029. [PubMed: 10355378]

Speckhard, A. Traumatic death in pregnancy: the significance of meaning and attachment. In: Figley, CR.; Bride, BE.; Mazza, N., editors. Death and trauma: The traumatology of grieving. Taylor & Francis; Washington, DC: 1997. p. 67-100.

Tharpar AK, Tharpar A. Psychological squeal of miscarriage: a controlled study using the general health questionnaire and the hospital anxiety and depression scale. British Journal of General Practice. 1992; 42:94–96. [PubMed: 1493042]

Toedter LJ, Lasker JN, Alhadeff JM. The Perinatal Grief Scale: Development and initial validation. American Journal of Orthopsychiatry. 1988; 58:435–449. [PubMed: 3407734]

Turton P, Hughes P, Evans CDH, Fainman D. Incidence, correlates and predictors of post-traumatic stress disorder in the pregnancy after stillbirth. The British Journal of Psychiatry. 2001; 178:556–560. [PubMed: 11388974]

Walker TM, Davidson KM. A preliminary investigation of psychological distress following surgical management of early pregnancy loss detected at initial ultrasound screening: A trauma perspective. Journal of Reproductive and Infant Psychology. 2001; 19:7–16.

Wirtberg I, Möller A, Hogström L, Tronstad S-E, Lalos A. Life 20 years after unsuccessful infertility treatment. Human Reproduction. 2007; 22:598–604. [PubMed: 17124258]

World Health Organization (WHO). WHO Technical Report Series 820. World Health Organization Publications; Geneva: 1992. Recent advances in medically assisted conception.

Zucker A. The psychological impact of reproductive difficulties on women's lives. Sex Roles. 1999; 40:767–786. [PubMed: 12296065]

Table 1

Weighted Respondents' Characteristics: Descriptive Statistics (N = 2,818)

	M	SD	Range	N
Mothers, no fertility problems	0.46	0.50	0–1	1293
Mothers, pregnany loss	0.42	0.49	0–1	1182
Median time since loss[a]	9.00	6.68	0–29	
Childless, pregnancy loss	0.04	0.19	0–1	104
Median time since loss	7.00	6.91	0–29	
Childless, infertile	0.08	0.28	0–1	239
Median time no conception[b]	7.00	6.64	0–28	
Age	35.63	5.83	25–45	
Education	13.62	2.99	2–22	
Household income	8.24	2.97	1–12	
Union status[c]	0.79	0.41	0–1	
Race				
White	0.63	0.48	0–1	
Black	0.12	0.32	0–1	
Hispanic	0.19	0.39	0–1	
Other	0.06	0.24	0–1	

Note:

[a] Median time since loss:time in years since most recent miscarriage or stillbirth.

[b] Median time no conception: time in years since first year of regular, unprotected sexual intercourse for at least 12 months

[c] Union status: 1 = married or living with a partner, 0 = single.

Table 2

Mental Health by Motherhood, Pregnancy Loss, and Infertile Status (N = 2,818)

	Mother, no fertility problem		Mother, pregnancy loss		Childless, pregnancy loss		Childless, infertile		Range
Variable	**M**	**SD**	**M**	**SD**	**M**	**SD**	**M**	**SD**	
Life satisfaction	3.18	0.54	3.08 ***	0.62	2.95 ***	0.52	2.89 ***	0.60	1--4
Life close to ideal	3.18	0.61	3.06 **	0.72	2.91 **	0.64	2.84 ***	0.74	
Satisfied with life	3.36	0.60	3.23 ***	0.70	3.14 *	0.63	3.05 ***	0.68	
Would not change anything	3.00	0.78	2.84 ***	0.86	2.73 *	0.81	2.79 *	0.77	
Have gotten important things in life	3.22	0.60	3.17	0.70	2.95 ***	0.68	2.87 ***	0.71	
Depression	1.61	0.45	1.77 ***	0.56	1.74	0.52	1.73 ***	0.56	1--4
Bothered by things	1.51	0.69	1.64	0.82	1.62	0.69	1.54	0.77	
Trouble keeping mind on things	1.57	0.73	1.80 ***	0.93	1.65	0.85	1.68	0.88	
I felt depressed	1.41	0.65	1.59 ***	0.84	1.61	0.82	1.51	0.76	
I felt everything was effort	1.72	0.86	1.93 ***	1.01	1.73	0.95	1.72	0.95	
I felt hopeful about the future[1]	1.99	0.88	2.04	0.95	1.98	0.82	2.02	0.94	
I felt fearful	1.39	0.62	1.45	0.74	1.47	0.74	1.40	0.69	
Sleep was restless	1.73	0.87	2.02 ***	1.04	2.03 *	1.06	1.89	0.98	
I was happy[1]	1.99	0.74	2.08 *	0.80	2.16	0.80	2.18 *	0.80	
I felt lonely	1.32	0.60	1.46 ***	0.72	1.61 **	0.79	1.58 ***	0.80	
Could not get going	1.47	0.72	1.58 *	0.77	1.50	0.72	1.66 *	0.81	
Self esteem	3.52	0.50	3.49	0.52	3.49	0.55	3.41 *	0.59	1--4
Not much to be proud of	3.51	0.61	3.45	0.66	3.50	0.67	3.35 *	0.70	
Of worth at least equal to others[1]	3.51	0.55	3.51	0.57	3.48	0.57	3.47	0.67	
Feel I am a failure	3.54	0.54	3.49	0.60	3.58	0.54	3.42	0.67	
Number	1293		1182		104		239		

Note:

[1] reverse-coded. ANOVAs present significant differences between those with a fertility barrier (pregnancy loss or infertility) and mothers without fertility problems.

*** p<.001;

** p<.01;

* p<.05.

Table 3

Fertility-Related Distress by Motherhood, Pregnancy Loss, and Infertile Status (N = 1,525)

	Mother, pregnancy loss		Childless, pregnancy loss		Childless, infertile		Range	
Variable	**M**	**SD**	**M**	**SD**	**M**	**SD**		
Reaction to fertility problem(s)								
Cheated by life	0.22	0.42 [a]	0.42	0.50 [b]	0.26	0.44 [c]	0--1	**
Was being punished	0.16	0.36 [a]	0.32	0.47 [b]	0.21	0.41 [a]	0--1	**
Angry at God	0.13	0.34 [a]	0.32	0.47 [b]	0.15	0.36 [c]	0--1	***
Feel inadequate	0.24	0.43 [a]	0.45	0.50 [b]	0.33	0.47 [a]	0--1	***
Seriously depressed	0.34	0.47 [a]	0.45	0.50 [a]	0.27	0.44 [b]	0--1	*
Failure as a woman	0.19	0.39 [a]	0.36	0.48 [b]	0.23	0.42 [a]	0--1	**

Note: Categories with the same letter (a, b, c) are NOT significantly different from each other at the p<.05 level using Tukey Honest Significant Difference (HSD).

*** p<.001;

** p<.01;

* p<.05.