Disclosure of Fertility-Related Negative Emotions: Supports Utilized and Relationships to Resilience, Psychiatric Symptoms, and Infertility-Specific Distress in Women Seeking Medical Interventions

Abstract

Context: For many chronic medical conditions, social support yields positive outcomes. However, in cases of infertility, interactions have the potential to be experienced as painful and increase the likelihood of interpersonal withdrawal.

Objective: To study the extent fertility-treatment seeking women disclose negative fertility-related emotions, particular relationships utilized, and the relationship between disclosure and well-being.

Design: Participants completed a questionnaire following enrollment in fertility clinics.

Setting: Fertility specialty clinics.

Patient(s): Women presenting for medical assessment and treatment of infertility (n=42).

Intervention(s): Female clinic attendees were asked to participate.

Main outcome measure(s): Depression, general stress, and fertility-related distress were evaluated with established measures. An evaluation of fertility-related social support utilization was developed for this research.

Result(s): Relationships between positive well-being, pathology, and disclosure of negative emotions were noted, yet varied markedly by the specific social supports utilized. Withholding of negative emotions was associated with adverse psychological health for some variables assessed. Disclosure to other individuals with fertility concerns (i.e., spouse/partner, infertile peer) was high, but only associated with lowered relationship concerns and greater spiritual resilience with spouses/partners. Utilization of certain supports did not evidence any associations with mental health and, very rarely, utilization of specific supports was associated with adverse functioning.

Conclusion(s): Similarities and salient differences were noted between this study and other research evaluating perceived social support or disclosure of infertility generically defined. Engagement with particular social resources and disclosure of the emotional context of infertility may be markedly beneficial for reducing stress and improving well-being and warrant further longitudinal study.

Keywords: Infertility; Social support; Disclosure; Stress; Distress; Resilience; Depression
Introduction

Ten percent of women of childbearing age experience difficulties achieving or sustaining pregnancy until childbirth [1]. Involuntary childlessness is associated with several existential, physical, emotional, and interpersonal stressors [2]. Of those with challenged fertility, as many as half use fertility medications or assisted reproductive technologies [1] that have the potential to be experienced as physically painful, expensive, or embarrassing and may be followed by increased distress when pregnancy or childbearing do not result.

The buffering hypothesis of social support [3, 4] posits that, in the context of marked challenges, interpersonal relationships may function to reduce adverse sequelae of stressful events and engagement in social coping has been demonstrated to augment physical and psychological wellbeing for a wide range of stressors. While the use of interpersonal supports to cope is often recommended in other circumstances, social relationships within the context of infertility appear uniquely complex [5]. Although some research demonstrates similar positive effects of perceived and obtained support [6, 7], other studies indicate couples often experience negative consequences when information is shared [8-15]. For instance, Slade, O’Neill, Simpson, and Lashen [16] reported, for women, disclosure of infertility was associated with higher general stress. Further, Agostini, Monti, De Pascalis et al. [17] found a decrease in perceived social support following in vitro fertilization (IVF) failure and reduced partner support in cases of repeat treatment cycles.

Related, infertile individuals are at higher risk for experiencing self- and other-imposed social isolation [12, 18-23]. These findings are in stark contrast to the vast majority of literature on people coping with chronic illnesses that typically benefit from social support robustly and throughout their course of illness [24-27]. Schmidt and colleagues [23, 28] have argued that, to explain why couples coping with infertility may not benefit from social support in the expected manner, we must better understand how support is solicited and provided within the larger context in which infertility occurs. For instance, many individuals may avoid disclosure for fear such information would violate social norms or elicit blaming. Some may disclose the physical occurrence of infertility while omitting the its’ personal impact, as the latter may be experienced as more painful or perceived as more difficult for others to understand. Others compose a “public narrative” in response to privacy needs, perceived stigma, to limit unsolicited advice, or to make interpersonal exchanges “more comfortable” [8, 29].

Few researchers have investigated what relationships are most likely to actually be utilized during fertility-related interventions. In a relevant study, one team of specialized social workers provided telephone-based emotional support to those utilizing IVF [30]. For instance, Martins and colleagues [7, 31] examined the unique associations between perceptions of support within specific relationships (i.e., friend, family, and significant other) and domains of infertility-related distress. They found perceived family support was associated with less distress in all domains assessed, perceived partner support reduced infertility-related relationship stress, and perceived friend support was associated with reduced infertility-related social distress.

The majority of other extant research in this area is further limited by measures attending to general psychological distress or symptoms of psychopathology whereas previous research suggests that fertility-specific distress may differ markedly from these symptom presentations [32] and even respond differentially to intervention [33].

The aims of the present study are threefold. First, we investigated the extent women undergoing medical care disclosed fertility related negative emotions (FRNE). Second, we explored the interpersonal targets women utilized for this purpose. Third, we researched the associations between revealing emotions and measures of wellbeing, psychiatric symptoms, and fertility-related stress. As previous research has noted some deleterious reactions subsequent to disclosure in this population, we hypothesized relationships between disclosure and mental health would be significant but did not predict the direction of association.

Materials and Method

Participants and procedures

The Eastern Michigan University Human Subjects Committee approved the research protocol and all study participants completed the informed consent process including verbal and written informed consent. Women were recruited as part of a larger study aimed at reducing stress and were recruited through fertility clinics in the Midwestern United States. Eligible women were seeking medical assessment and/or treatment for infertility, experiencing depressive symptoms below the severe range identified by the Beck Depression Inventory-Revised (BDI-II) [34], and 18-years or older, and able to read English. Males were excluded from participation based on empirical findings indicating women experience greater emotional challenges when adapting to infertility and that medical treatment are generally focused on women irrespective of the partner diagnosed with infertility.

Fertility clinic staff recruited participants through direct patient contact, flyers in waiting rooms, and information seminars. Research staff contacted interested individuals to initiate eligibility screening and informed consent process. Fifty-three women were mailed assessments of which 42 were returned with complete data.

Measures

Demographic characteristics and fertility history

Researchers developed a survey to assess demographic characteristics and fertility-specific domains including diagnosis, pregnancy history, and medical treatment information.

Disclosure

The Expression of Negative Emotions Scale (ENES) was created for this study and is included in the supplement. The ENES
asks participants to indicate the degree they disclose negative feelings about fertility-stress to specific individuals in their social networks using a seven-point Likert-type scale (1 indicating never expressing feelings to that source and 7 reflecting always disclosing to that source). However, it was not expected participants would have relationships with all potential sources provided, thus a “not-applicable” option was available (e.g., if a participant did not have siblings or coworkers). Thirteen potential sources of support were queried with an additional question to ascertain the degree to which respondents withhold negative emotions specific to infertility from others. Because we did not wish to presume all women would report strain, one true-or-false question was included to indicate not disclosing infertility-related stress because it is not experienced. An average extent of disclosure score was created by dividing the average degree of expression by the number of available supports identified by each woman.

Resilience
Participants completed the 25-item item Connor-Davidson Resilience Scale (CD-RISC), a measure assessing adaptation within the context of hardship [35]. This instrument has demonstrated adequate internal reliability (alpha=0.89). General population norms average 80.4 with a standard deviation of 12.8. Investigations of CD-RISC subscales are based on those derived from the use of the CD-RISC with women with infertility [36].

Depression
Depressive symptoms were measured by the Beck-Depression Inventory-Revised (BDI-II). The BDI-II has demonstrated good reliability and validity with patient and nonclinical samples [37].

General distress
General distress was investigated with the Symptom Checklist-90-Revised (SCL-90), a 90-item measure assessing a variety of psychiatric symptoms with good reliability and validity [38]. The average Global Severity Index (GSI) score for non-patient women is .36 (SD=0.35).

Fertility-specific distress
Infertility-related stress was determined using the Fertility Problem Inventory (FPI) [32]. The FPI is a 46-item scale assessing fertility-related strain in five domains: social, sexual, relationship, need for parenthood, rejection of childfree lifestyle, and a Global Stress Score (GSS). The mean GSS for women with fertility problems is 134.4 (SD=33.8).

Statistical analysis
Data was analyzed with SPSS20.0. Bivariate analyses included Pearson correlations and parametric tests to derive means and standard deviations for descriptive and fertility-specific data. Two-tailed tests of significance were utilized with p<0.05 interpreted as significant.

Results
The characteristics of the 42 women in this study closely mirror those described in other studies of women undergoing fertility treatment. The mean age was 33.1 years (SD=4.9). Eighty-six percent described their race as Caucasian. Ninety-five percent were married and nearly all (98%) attended college. Most (64%) stated their annual household income exceeded $100,000.

Specific to fertility, participants described attempting to become pregnant for 34 months (SD=30 months) and completed 6.9 infertility treatment cycles (SD=4.4 cycles). Seventy-six percent endorsed primary infertility. Regarding infertility etiology, female-factor was most common (41%) with nearly identical rates for mixed-factor (21%), male-factor (19%), and idiopathic (19%) causes.

Supports utilized
Participants indicated which sources of support were available and rated the extent to which they disclosed FRNE. Of the thirteen potential sources, all women reported sharing emotional experiences with three or more sources (M=9.7, SD=1.8, Range=3-13). The average extent of disclosure of negative emotions was 3.7 (SD=0.7), suggesting women engaged in moderate degrees of disclosure. See Table 1 for descriptions of participants’ access to supports and related degrees of disclosure.

Regarding specific relationships, women were most likely to report FRNE to spouses/partners and infertile others. Disclosure to best friends, counselors, and medical doctors was also commonly reported. Disclosures were more seldom made within the context of a support group, coworkers, fathers, and/or extended family. Notably, all participants reported some withholding of negative emotions, although overall, the extent of withholding was moderate. A minority reported receiving support from mental health professionals or support groups (20%...
and 22%, respectively) and, thus, these sources of support were not investigated further.

**Resilience, depression, and general and fertility-related distress**

Average scores were obtained for measures of resilience, depressive symptoms, general distress, and infertility-specific problems (Table 2). In order to evaluate the potential influence of social support on particular types of wellbeing and fertility strain, subscales of the CD-RISC and FPI were also investigated.

The CD-RISC average was 68, approximately a standard deviation below reported norms [35]. BDI-II depressive symptom scores were in the minimal severity range. Average scores on the SCL-90 were elevated compared to general samples; yet, did not exceed thresholds suggestive of a psychiatric disorder. Participants scored higher than average (Newton, personal communication, October 30, 2008) on the FPI and related subscales.

**Relationships between disclosure of FRNE and resilience**

Overall, the average extent of disclosure to various social supports and, specifically, acknowledging FRNE to best friends and other friends was positively and strongly correlated with higher degrees of resilience as measured by the CD-RISC. Disclosure to other sources of support was not significantly associated with global resilience. See Table 3 for the associations between degree of withholding FRNE and facets of resilience.

Regarding CD-RISC subscales, emotional and interpersonal stability was associated with disclosure of FRNE to best friends, other friends, and higher average overall disclosure, while only disclosure to a best friend was related to self-efficacy. Greater adaptability was related to engagement with best friends, other friends, coworkers and higher average disclosure. Spirituality and meaning making were associated with disclosure to spouses, best friends, mothers, and average overall disclosure. Spirituality and meaning making were negatively correlated with the tendency to keep negative feelings to one. The sole adverse finding regarding disclosure of FRNE was between disclosure to extended family members and decreased confidence in decision-making. The strengths of significant correlations identified were moderate-to-strong.

Divulging FRNE to those with fertility problems (other than partner), medical doctors, siblings, and fathers and the number of identified sources of supports available were not significantly associated with either improved or lowered resilience.

**Associations between disclosure of FRNE and depressive symptoms, general distress, and fertility-related strain**

Regarding depressive symptoms, only the overall extent of withholding FRNE demonstrated a significant association. The SCL-90 had a more complex relationship with divulgence of FRNE.

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**Table 2** Means and Standard Deviations of the CD-RISC, BDI-II, SCL-90, and FPI.

| Scale                                          | Mean (SD)   |
|------------------------------------------------|-------------|
| CD-RISC Totalt                                 | 67.67 (14.3) |
| Interpersonal and Emotional Stability subscale | 23.65 (6.0) |
| Self-Efficacy subscale                         | 20.78 (4.5) |
| Adaptability subscale                         | 10.14 (3.2) |
| Spirituality subscale                         | 8.12 (3.0)  |
| Confidence in Decision-Making subscale        | 4.49 (1.6)  |
| BDI-II                                        | 11.13 (6.2) |
| SCL-90                                         | 0.61 (0.5)  |
| FPI Global Stress Score                       | 157.76 (30.8) |
| Social Concern subscale                       | 32.07 (10.3) |
| Sexual Concern subscale                       | 23.55 (9.2) |
| Relationship Concern subscale                  | 26.39 (7.6) |
| Rejection of Childfree Lifestyle subscale     | 32.35 (8.7) |
| Need for Parenthood subscale                  | 42.47 (10.7) |

**Note:** CD-RISC=Connor-Davidson Resilience Scale; BDI-II=Beck Depression Inventory-II; SCL-90=Symptom Checklist-90-revised; FPI=Fertility Problem Inventory.

**Table 3** Associations between Disclosure of Infertility-Related Negative Feelings to Specific Supports and Resilience.

| Support                          | CD-RISC Mean (SD) |
|----------------------------------|--------------------|
| Spouse/partner                   | .184 (.279)        |
| Others with fertility problems   | .047 (-.017)       |
| Best friend                      | .532** (.435**)    |
| Medical doctor                   | -.088 (-.087)      |
| Other friends                    | .464** (.426**)    |
| Mother/Stepmother                | .291 (.315)        |
| Sibling(s)                       | -.043 (.043)       |
| Keep feelings to self            | -.263 (-.258)      |
| Coworker(s)                      | .271 (.064)        |
| Father/Step-father               | .182 (.291)        |
| Another relative                 | -.012 (-.177)      |
| Number of sources available      | -.253 (-.247)      |
| Mean disclosure to supports      | .467** (.419**)    |

**Note:** Support sources listed in descending order based on frequency of disclosing fertility-specific distress. Total=CD-RISC total score; 1=Emotional and Interpersonal Stability subscale; 2=Self-Efficacy subscale; 3=Adaptability subscale; 4= Spirituality subscale; 5=Confidence in Decision-Making subscale; *p<.05, **p<.01.
A greater number of identified social supports were associated with significantly higher SCL-90 scores. In contrast, the higher overall disclosure was correlated with reduced general distress, as was discussing FRNE with other friends and mothers. See Table 4 for correlations between disclosure and depressive symptoms and general stress.

With respect to global fertility-related distress, only increased overall expression and disclosure to friends other than best friends were significantly associated. The utilization of other friends and mothers, as well as the overall extent of sharing, was all negatively associated with fertility-related social concerns. Fertility-related sexual concerns were associated with keeping feelings to oneself and greater number of identified sources of support. Disclosure of FRNE to spouses/partners was associated with reduced fertility-related relationship concerns. No significant relationships between social variables and rejection of a childfree lifestyle were observed. Regarding women’s reported need for parenthood, only disclosure to friends other than best friends was correlated with reduced strain (Table 4).

**Discussion**

A primary intent of this study was to investigate how and to whom women undergoing medical treatment for infertility disclose their emotional experiences. Our second aim was to evaluate whether well-being, general distress, depression, and fertility-related stress were associated with disclosure to certain social targets or overall level of withholding negative emotions.

The use of social support has been associated with positive mental health outcomes in many populations, including those dealing with fertility problems. However, in contrast to other medical conditions, infertile individuals have also reported a unique social stigma attached to their experience [39]. Thus, it was not surprising many individuals in this study discussed their infertility-related distress with those most likely to be experiencing similar challenges (e.g., spouse and other infertile individuals) or with those most familiar with this issue (e.g., medical staff). They only “sometimes” shared with friends, relatives, or coworkers.

Regarding the relationship between disclosure of FRNE and resilience, the utilization of “best” and “other” friends was associated with greater resilience.

Specific to depressive symptoms, we did not identify any relationships associated with targets of social support, number of supports available, or the average disclosure to supports. Our single significant outcome in this domain was that individuals who keep FRNE to themselves reported more symptoms of depression. This is in contrast to other studies examining perceived support and satisfaction with support systems and depression. It may be that social support is more important in relation to depression during particular events in fertility-related care. For instance, Verhaak and colleagues found lack of perceived social support was linked to worsened depressive symptoms following medical treatment failure [40]. Lechner et al. note when individuals reported social supports did not meet their needs, this dissatisfaction was associated with elevated depressive symptoms [41]. Further research is warranted to better understand discrepant mental health trajectories when social support is measured either as actual interpersonal behavior, a perception of availability, or satisfaction with support provided. Additionally, more investigation is needed to better understand women who do not pursue medical interventions and whether those who engage in care identify certain social support variables as more salient during particular phases of medical treatment (i.e., during evaluation/diagnosis vs. undergoing treatment cycle).

Our research also found several relationships between aspects of fertility concerns and the disclosure of FRNE. Similar to our findings with the CD-RISC, having an extended circle of friends to which concerns were disclosed was correlated with several positive findings, specifically lower global fertility stress, reduced social concerns, and reduced concerns about the need for parenthood. In contrast to our findings on wellbeing, disclosure to a best friend did not evidence significant differences on any FPI score. We also found disclosure to a mother or stepmother was correlated with fewer social and sexual concerns. Disclosure to spouses or partners was only associated with less relationship

| Support                      | BDI-II | SCL-90 | Global FPI | FPI 1 | FPI 2 | FPI 3 | FPI 4 | FPI 5 |
|------------------------------|--------|--------|-----------|-------|-------|-------|-------|-------|
| Spouse/Partner               | -.119  | -.098  | .251      | -.043 | .315  | .406**| .092  | .166  |
| Others with fertility problems| .157   | -.204  | .058      | -.079 | -.066 | .225  | .034  | .027  |
| Best friend                  | -.152  | -.207  | -.174     | -.197 | -.108 | -.080 | -.049 | -.154 |
| Medical doctor               | -.060  | .239   | -.095     | -.138 | -.043 | .126  | .005  | -.152 |
| Other friends                | -.091  | -.442**| -.397*    | -.439**| -.033 | -.140 | -.215 | -.471**|
| Mother/Step-mother           | -.272  | -.411**| -.220     | -.357* | -.327*| -.222 | -.006 | .061  |
| Sibling(s)                   | -.095  | .043   | -.034     | -.159 | -.190 | -.109 | -.014 | .121  |
| Keep feelings to self        | .384*  | .307   | .147      | .103  | .473**| .285  | -.147 | .077  |
| Coworker(s)                  | -.096  | -.148  | .016      | -.078 | .114  | -.121 | .120  | .056  |
| Father/Step-father           | -.182  | -.134  | -.262     | -.239 | -.301 | -.114 | -.252 | -.064 |
| Another relative             | -.091  | -.003  | .135      | -.157 | .007  | .140  | .110  | .245  |
| Number of sources available  | .265   | -.422**| -.182     | .269  | .317* | .167  | -.169 | .047  |
| Mean disclosure to supports  | -.266  | -.411**| -.345*    | -.511**| -.356**| -.089 | -.037 | -.191 |

**Note:** Support sources listed in descending order based on frequency of disclosing fertility-specific negative emotions. BDI-II=Beck Depression Inventory-II total; SCL-90=Symptom Checklist-90 total score; FPI=Fertility Problem Inventory; 1=Social Concern subscale; 2=Sexual Concern subscale; 3=Relationship Concern subscale; 4=Rejection of a Childfree Lifestyle subscale; 5=Need for Parenthood subscale; *p<.05, **p<.01.
Concern. Individuals with higher overall average disclosure described less global fertility-problem stress, social concerns, and sexual concerns. Our findings highlight that relationships between disclosure and distress are quite complex and vary by the particular relationships utilized and the specific domains assessed. This may have significant clinical implications for detecting relationships most relevant to particular aspects of distress identified by women undergoing medical care, though additional research is needed to solidify this finding given the correlational nature of this study.

The present findings offer interesting overlap and divergences from Martins et al.’s research [31]. Similarly, we detected an association between partner support and less relationship concern; however, we did not find partner support was related to decreases in sexual concern. When examining particular coping styles, Martins et al. reported utilization of friends was not related to FPI results, but did have a relationship to active-confrontive coping, which subsequently mediated social concern. In contrast, we identified several relationships between utilization of friendships and wellbeing, general distress, and infertility-related strain. Reasons for this may be our focus on reported actual disclosure of FRNE or the parsing of best friend and additional friends. In our study, having a larger group of friends that were utilized for such support was important to wellbeing, general distress, and fertility-related distress. Disclosure to a best friend was only related to our total and subscale scores on the resilience measure. Specific to family support, Martins’ team found perceived family support directly related to fertility-related social concerns and indirectly related to other FPI subscales via active-avoidance coping. Our findings are consistent with Martins’ findings regarding lowered social and sexual concerns, although we only found relationships with disclosure to mothers and not fathers, siblings, or extended relatives, suggesting that family support is not elicited uniformly. We also did not replicate Martin et al.’s finding that family relationships were associated with differences in global infertility-related stress, relationship concerns, rejection of childfree lifestyle, and need for parenthood subscales. Further research investigating differences between disclosure behaviors and perceived support may provide additional insights.

Although some researchers report disclosure of infertility is correlated with poorer psychological functioning [16], we did not find this beyond disclosure to extended family. In fact, specific disclosures were associated with lower infertility-related and general stress as well as enhanced resilience, providing support for the buffering hypothesis of social support within the context of infertility. Our results provide support for the buffering hypothesis of social support within the context of infertility. Previous research suggests as many as half of women seeking IVF considered challenged fertility as, “the most upsetting experience of their lives” [42]. Interestingly, participants reported disclosing FRNE to other infertile persons to a greater degree than all others, even those with whom individuals likely have close and longstanding bonds. However, exclusive disclosure to others with fertility problems outside of the spousal/partner relationship was not associated with the positive outcomes reported elsewhere in this study. The clinical implications of this may be that individuals who discuss fertility-problems only with “similar others” may find this withdrawal from previously available supports comes at a cost and is consistent with other research expressing concern about the potential overutilization of “niche” supports, particularly when accompanied by withdrawal from established relationships [19].

There are several limitations of the current study. Our participants were recruited from fertility clinics. Thus, our findings may not extend to those not pursuing medical interventions, those from more diverse cultural contexts that are less likely to receive medical treatment for infertility (i.e., economic status, ethnicity, marital status), and/or men experiencing challenged fertility. Further, it may be that those who are more willing to disclose NRSE are more likely to enroll in research investigating their experiences, raising sampling bias risk. Limited sample size may have obscured significant results with lower effect sizes and prohibited us from being able to ascertain any associations with targets of social support groups and counselors. Additional, the correlational methodology employed prohibits the determination of potential cause-and-effect relationships between the variables under investigation. Future longitudinal investigations with larger and more diverse samples are recommended to confirm our preliminary findings and their generalizability to others groups experiencing challenged fertility.

Despite these weaknesses, this study elucidated several important findings. Evaluation of associations between mental health functioning and actual disclosure of FRNE has not been previously studied. Further, this study is relatively unique in that we studied positive functioning in addition to psychopathology and stress, variables that characterize much of the psychological literature on infertility at present. This research investigated relationships between the disclosure of FRNE to particular targets and its’ relationships to several areas of stress and wellbeing. Although this population may be vulnerable to negative interpersonal interactions, engagement with particular resources appears markedly beneficial.

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Informed Consent

All procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1975, as revised in 2000. Informed consent was obtained from all patients for being included in the study.
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