

2018

## Psychosocial Interventions for Individuals With Infertility

Margaret Bach  
*Minnesota State University, Mankato*

Follow this and additional works at: <https://cornerstone.lib.mnsu.edu/etds>



Part of the [Social Psychology and Interaction Commons](#)

### Recommended Citation

Bach, M. (2018). Psychosocial Interventions for Individuals With Infertility [Master's alternative plan paper, Minnesota State University, Mankato]. Cornerstone: A Collection of Scholarly and Creative Works for Minnesota State University, Mankato. <https://cornerstone.lib.mnsu.edu/etds/760/>

This APP is brought to you for free and open access by the Graduate Theses, Dissertations, and Other Capstone Projects at Cornerstone: A Collection of Scholarly and Creative Works for Minnesota State University, Mankato. It has been accepted for inclusion in All Graduate Theses, Dissertations, and Other Capstone Projects by an authorized administrator of Cornerstone: A Collection of Scholarly and Creative Works for Minnesota State University, Mankato.

Psychosocial Interventions for Individuals With Infertility

Margaret Bach

Minnesota State University, Mankato

### Abstract

Over one-fifth of individuals diagnosed with infertility or undergoing infertility treatment show symptoms of depression, anxiety, distress, and relationship discord. Psychosocial interventions are often offered to these individuals. This literature review was conducted to determine if psychosocial interventions have an impact on anxiety, depression, and relationships in individuals with infertility. An electronic search was performed using keywords in relevant search engines. Studies were identified based on their titles and abstracts and then further reviewed for inclusion. Studies were included if they had a sample population of infertile individuals or couples, men and/or women, and where outcomes of psychosocial interventions or non-treatment were examined. Psychosocial interventions included were cognitive behavioral therapy, acceptance and commitment therapy, education interventions, and mind-and-body interventions. Studies were excluded when a description of the intervention was not provided, focus was the etiology of infertility or the sample population was not infertile individuals. The literature review resulted in four systematic reviews, one clinical guideline, one expert opinion, and one best practice recommendations. This body of evidence indicates that cognitive behavioral therapy, acceptance and commitment therapy, education interventions, and mind-and-body interventions are the most frequently used psychosocial interventions for infertile individuals. At this time, the strength of evidence is insufficient to identify whether the use of psychosocial interventions has an impact on depression, anxiety, and relationships during infertility. Further research is needed in the form of randomized controlled trials with appropriate methodological techniques.

*Keywords:* infertility, psychosocial intervention, anxiety, depression, stress, and psychotherapy

### Psychosocial Interventions for Individuals With Infertility

Infertility is a phenomenon that affects men and women; it affects an estimated 48.5 million individuals worldwide (Verkuijlen, Verhaak, Nelen, Wilkinson, & Farquhar, 2016). The diagnosis of infertility is often experienced as a life crisis for individuals and can lead to feelings of anxiety, depression, and even relational strain (Verkuijlen et al., 2016). Due to the significant psychological stress individuals suffer as a result of infertility, researchers have examined the effectiveness of psychosocial interventions for this population. Psychosocial interventions provide psychological, social, and educational support to this group of individuals (Chow, Cheung, & Cheung, 2016; Cousineau & Domar, 2007; Verkuijlen et al., 2016). The interventions can be delivered in an individual or group format. Different types of psychosocial interventions have been investigated in several studies, but the evidence of their impact is inconclusive (Chow et al., 2016; Verkuijlen et al., 2016). This literature review will seek to examine the current evidence pertaining to the impact of psychosocial interventions on anxiety, depression and relationships individuals with infertility or undergoing infertility treatment in order to inform best practices in clinical care.

### Background

The World Health Organization (WHO) defines infertility as the inability to achieve a pregnancy after 12 months or more of regular sexual intercourse without contraception (2016). This definition applies to infertility in men and women in the International Classification of Diseases (ICD-10) (WHO, 2016). Within the recent literature the terms infertility and subfertility are used interchangeably. Infertility can be divided into two types: primary and secondary. The WHO (2013) defines primary infertility as inability to become pregnant, while secondary infertility is the inability to conceive a child following a previous pregnancy (as cited in

Verkuijlen et al., 2016). Several treatment options for infertility exist including but not limited to fertility enhancing medications, surgical procedures, intrauterine insemination (IUI), in vitro fertilization (IVF), donor eggs and embryos, intracytoplasmic sperm injection (ICSI), gamete intrafallopian transfer (GIFT), and zygote intrafallopian transfer (ZIFT). (Verkuijlen et al., 2016; WHO, 2016)

The diagnosis of infertility and seeking treatment can have a considerable negative impact on an individual and/or couple. Individuals often experience symptoms of stress, anxiety, isolation, loss of control, and distress (Cousineau & Domar, 2007). Unfortunately, the diagnosis is too common; it is estimated that one in four couples will go through infertility (Cousineau & Domar, 2007). Providing support to individuals who experience psychological distress from infertility and treatment could potentially lead to effective coping and functioning in daily life (Gameiro et al., 2012). This leads to the clinical question, **in individuals with infertility, how do psychosocial interventions compared to the standard of care (no interventions) impact mental health (including depression, anxiety, and relationships)?** This literature review will look at psychosocial interventions compared to the standard of care (no interventions) and the impact they have on mental health in individuals with infertility

The diagnosis of infertility along with seeking medical treatment can cause considerable mental and emotional distress on an individual. This distress can also translate negatively into relationships, work, and social life. Advanced practice registered nurses (APRNs) are in a position to provide continued care for individuals throughout the diagnosis and treatment of process. It is imperative that APRNs are familiar with the evidence related to psychosocial interventions and which of these are most impactful on promoting mental health.

### **Psychosocial Interventions**

The term psychosocial intervention is an umbrella that includes psychological, social, and educational interventions. Definitions and descriptions of different psychosocial interventions that have been used in the research literature are included below.

### **Cognitive Behavioral Therapy**

Cognitive behavioral therapy (CBT) is considered a psychological intervention. The purpose of CBT is to change negative cognitions and beliefs (Verkuijlen et al., 2016). CBT typically includes (a) helping individuals identify a challenging situation in their life, (b) acknowledging their thoughts and emotions about this situation, (c) identify negative or inaccurate behavioral responses to this situation, and (d) lastly reshape negative or inaccurate thinking and beliefs (Mayo Clinic, 2017). Learning to acknowledge and change negative cognitions is an effective way to reduce emotional stress (Verkuijlen et al., 2016). Several trained professionals can perform CBT; examples include psychiatrists, psychologists, licensed professional counselors, or other professionals with mental health training (Mayo Clinic, 2017). CBT takes place over ten to twenty sessions, either in groups or individually.

### **Acceptance and Commitment Therapy**

Acceptance and commitment therapy (ACT) is considered a psychological intervention and stems from CBT. In the literature ACT is also referred to as positive reappraisal therapy. The purpose of ACT is to “increase psychological flexibility” (American Psychological Association [APA] website, 2018). ACT includes six processes including: acceptance, cognitive defusion, being present, self as context, values, and committed action (APA website, 2018). Psychological flexibility is achieved through these processes. ACT assists individuals to stop avoiding their inner emotions regarding a difficult situation and learn to accept that negative feelings are appropriate responses to difficult situations (APA website, 2018). Individuals are

then able to accept their issues and commit to making changes in their behavior (APA website, 2018). “ACT is a way to mentally alter the way difficult experiences function rather than eliminating or suppressing them from occurring” (APA website, 2018). A variety of professionals can perform ACT including psychiatrists, psychologists, licensed professional counselors, or other professionals with mental health training (APA website, 2018). ACT may require up to eight individual or group sessions (APA website, 2018).

### **Mind-and-Body Interventions**

Mind-body-interventions (MBI) are considered psychological interventions and include relaxation techniques such as acupuncture, meditation, yoga, and hypnotherapy (Chow et al., 2016). The National Center for Complementary and Integrative Health (NCCIH) website defines mind-body interventions as a “variety of techniques designed to facilitate the mind’s capacity to affect bodily function and symptoms” (2017). The focus of the intervention is to interactively use the mind, body, behavior, and brain to alter physical functioning and promote overall wellbeing. Trained mental health professionals and nurses are among those who teach these interventions (NCCIH website, 2017). The intervention can be lead individually, in-group sessions, and/or in dyad groups. Mind-body-interventions take place in a range of five-to-ten individual or group sessions.

### **Educational Interventions**

Educational interventions are any interventions that provide information related to the topic of infertility. Education interventions may include information about the disease process of infertility, causes, treatment instructions, coping mechanisms, stress reduction and healthy relationships. The aim of educational interventions is to increase the health literacy of individuals with infertility (Verkuijlen et al., 2016).

## Methods

The search method of this literature review included a computer-assisted search of electronic databases and a bibliographic review of the included articles. The databases used in the electronic searches were Academic Search Premier with EBSCO host, Cumulative Index for Nursing and Allied Health Literature (CINAHL) Plus, Cochrane Plus Collection, and MEDLINE (see Table 1 of Appendix for the rationale for database selection). A search was done using keywords and using different combinations of the keywords (see Table 2 of Appendix for keywords and keyword combinations). Restrictions added to these searches included full text, references available, only English language, only peer-reviewed publications, and publication date between, 2007 to 2017. Studies were identified based on their titles and abstracts and then further reviewed for inclusion. Studies were included when they had a sample population of infertile individuals or couples, men and/or women, and where outcomes of psychosocial interventions or the impact of non-treatment were examined. Interventions included were any psychosocial interventions such as counseling, CBT, ACT, MBI, and education interventions. Studies were excluded when the intervention was not psychosocial intervention, an intervention description was not provided, the etiology of infertility was the study focus, or when the sample population was not infertile individuals (see Table 3 of the Appendix for the list of studies with inclusion and exclusion rationale).

Academic Search Premier with EBSCO host resulted in 28 hits. When duplicate articles were eliminated the search resulted in four hits. Of these four articles, all articles were excluded due to wrong outcome. The Cochrane Plus Collection resulted in seven hits. Of these seven articles, one article met inclusion criteria and six were excluded due to lack of relevance to the clinical question. The MEDLINE (PubMed) search resulted in 35 hits. When duplicate articles



were eliminated the search resulted in three articles that met inclusion criteria. The CINAHL Plus with full text resulted in 19 hits. When repeated articles were eliminated the search resulted in ten articles. Of the ten articles, two met inclusion criteria and eight were excluded due to being duplicate articles (5) and wrong outcome (3). The bibliographic search resulted in three additional articles. Of the three articles, one article met inclusion criteria while two were excluded due to wrong outcome (1) and unable to access (1). At the end of the search there were a total of seven articles that met inclusion criteria; these articles underwent a full review.

Based on the Hierarchy of Evidence the studies included in this body of research- included four level I systematic reviews and one level I clinical guideline; one level VII expert opinion; and one level VII best practice recommendations (Melnyk & Fineout-Overhold, 2015). The publication dates of the research ranged from 2007 to 2016. The sample populations included infertile men, infertile women, and infertile dyads or couples. There were no studies that focused only on infertile men. The age of the population ranged from 18 to 55 years old. Most study participants were in there 30s. The psychosocial interventions included, but were not limited to, CBT, ACT, MBI, educational interventions, and other interventions. Other interventions included expressive writing, harp therapy, and internet-based interventions. Different timing intervals, formats, frequency of interventions, and follow-up processes were used. The outcome measures in this review were depression, anxiety, distress and marital discord (see Table 4 of the Appendix for description of each study).

### **Literature Review**

The findings from the review of the guideline for routine psychosocial care in individuals with infertility, best practice recommendations, and expert opinion on psychosocial interventions are reviewed below. Findings from the systematic reviews comparing the impact of psychosocial

interventions on mental health in individuals with infertility compared to the standard of care (no interventions) are also identified below. The impact of CBT, ACT, MBI, and educational interventions on depression, anxiety, and relationships will be addressed.

### **Guideline**

The guideline by the European Society of Human Reproduction and Embryology (ESHRE) provides evidence-based best practice recommendations for medical staff working with individuals undergoing medically assisted reproduction (IVF, ICSI) and how to incorporate psychosocial care into practice (Gameiro et al., 2015). The guideline stated that offering psychosocial care is not likely to impact the individuals' depression, anxiety, or relational wellbeing (Gameiro et al., 2015). However, providing educational interventions such as preparatory information about procedures and diagnostics has been shown to decrease anxiety (Gameiro et al., 2015). This guideline highlighted that there is limited evidence supporting the use of these psychosocial interventions in individuals with infertility and the impact that these interventions have on mental health (Gameiro et al., 2015). The guideline acknowledges that individuals with infertility are at increased risk for anxiety, depression, and relational strains (Gameiro et al., 2015). Based on those factors the guideline recommends all individuals should be screened for psychosocial needs using an infertility-specific validated tool such as SCREENIVF (Gameiro et al., 2015). The guideline suggests that the most impactful form of psychosocial care is providing educational interventions (Gameiro et al., 2015).

### **Best Practice Recommendations and Expert Opinion**

The best practice recommendations and expert opinion provided recommendations for providers working with individuals with infertility (Cosineau & Domar, 2007; Boivin & Gameiro, 2015). The impact of infertility on mental health is often overlooked although patients

expect their medical providers to provide psychosocial support (Biovin et al., 2007; Cosineau & Domar, 2007). Cosineau and colleague (2007) found that infertility typically impacts women greater than men, specifically symptoms of depression. However, infertility treatment can be very trying on a marriage and the supporting spouses often suffer silently (Biovin et al., 2015; Cosineau & Domar, 2007). Referrals for psychosocial intervention services are rarely offered or are delayed until the end phases of infertility treatment (Biovin et al., 2015; Cosineau & Domar, 2007). It is recommended to assess levels of depression and anxiety in all individuals prior to starting treatment (Biovin et al., 2015; Cosineau & Domar, 2007). Depression and anxiety should be screened either through a valid questionnaire or an interview (Biovin et al., 2015; Cosineau & Domar, 2007). Educational interventions done in groups were recommended as the most impactful psychosocial intervention to infertile individuals and couples (Cosineau et al., 2007).

### **CBT**

All of the systematic reviews included CBT as one of the psychosocial interventions used in individuals with infertility. The impact of CBT on depression, anxiety, and relationship discord was examined.

**Depression.** The systematic review by Ying and colleagues (2016) found three randomized controlled trials (RCTs) that looked at the impact of CBT on depression (Gorayeb et al., 2012; Mosalanejad et al., 2012; Tarabusi et al., 2004). Of the three RCTs, only one showed an impact on depression (Ying et al., 2016). The study by Mosalanejad and colleagues (2012) included women ( $n = 31$ ) who received 15 weekly one and a half hour sessions of CBT for four months prior to IVF. The study demonstrated a decrease in depression level ( $d= 1.64$ ) in the intervention group, however, there was not a statistical significance between the intervention and control group (as cited in Ying et al., 2016, p. 697). The systematic review by Chow and

colleagues (2016) had one non-blinded RCT (Abedinia et al., 2009) and one study that was a pre/posttest design (Psaros et al., 2015) that looked at the impact of CBT on depression. The non-blinded RCT included infertile couples ( $N = 140$ ) that received CBT before the start of infertility treatment lasting six months (as cited in Chow et al., 2016). The study demonstrated a significant reduction in depression in the intervention group (47.1%) compared to the control group (7.1%) (as cited in Chow et al., 2016). The study population included infertile women ( $n = 51$ ) that received CBT, 10 weekly two-hour sessions, plus one weekend four-hour session, prior to the start of IVF (as cited in Chow et al., 2016). The study demonstrated a statistically significant decrease in depressive symptoms from the pre- to post- intervention ( $p < 0.001$ ). These systematic reviews suggest that CBT has a positive impact on depression during infertility (Chow et al., 2016; Ying et al., 2016).

Conversely, the most recent Cochrane systematic review completed by Verkuijen and colleagues (2016) contradicted what the previous systematic reviews found. The Cochrane systematic review had eight non-blinded RCTs (Choobforoushzade et al., 2011; Czamanski-Cohen et al., 2012; Domar, 2000; Faramarzi et al., 2008; Gorayeb et al., 2012; Sexton, 2010; Shu-Hsin et al., 2003; Soltani et al., 2014) that looked at the impact of CBT on depression. Verkuijen and colleagues (2016) found the overall bias of these studies to be substantial. The evidence was graded very low due to attrition rate, inadequate control, and inconsistency between the studies in clinical characteristics as well in study findings (Verkuijen et al., 2016). Most studies included small sample sizes and the impact estimated was very low or the intervention had no impact (Verkuijen et al., 2016, p. 8). The Cochrane systematic review suggests that further research with high quality methodology is needed investigating the impact CBT has on depression during infertility.

**Anxiety.** The systematic reviews by Ying and colleagues (2016) and Chow and colleagues (2016) both included one RCT (Mosalanejad et al., 2012) that looked at the impact of CBT on anxiety. The RCT included only females ( $N = 31$ ), CBT was performed prior to the start of IVF, over four months, in 15 one and one-half-hour sessions (Mosalanejad et al., 2012). The study demonstrated a significant ( $d = 0.95$ ,  $p = 0.001$ ) decrease in anxiety (as cited in Ying et al., 2016; Chow et al., 2016). However, the Cochrane systematic review included four RCTs (Domar et al., 2000; Faramarzi, 2008; Mosalanejad et al., 2012; Shu-Hsin, 2003) that looked at the impact of CBT on anxiety in infertile women ( $N = 520$ ). The quality of the evidence of these studies was considered very low due to high attrition biases and detection biases (Verkuijlen et al., 2016). Due to this conflicting evidence, further research with case-control methodology is needed regarding the impact of CBT on anxiety during infertility.

**Relationships.** The systematic review by Ying and colleagues (2016) did not look at the impact of CBT on relationships. The systematic review by Luk and colleagues (2016) did include some RCTs that looked at the impact of CBT on marital relationship, however these studies were included in a more recent systematic review. Therefore, only those results will be discussed in this section. The systematic review by Chow and colleagues (2016) found two studies that looked at the impact of CBT on marital relationship. The studies consisted of one non-blinded RCT (Gardia, 2014) and one pretest posttest design (Psaros et al., 2015). The RCT by Gardia (2014) reported the intervention group ( $N = 140$  infertile couples) had “better marital satisfaction after the completion of the intervention” (as cited in Luk et al., 2016, p. 523). The study by Psaros and colleagues (2015) showed a statistically significant increase in social support ( $p < 0.001$ ) in the intervention group ( $N = 51$  infertile women) (as cited in Luk et al., 2016). The most recent Cochrane systematic review performed by Verkuijlen and colleagues

(2016) found four RCTs that assessed the impact of CBT on marital satisfaction. The evidence was found to be very low quality (Verkuijlen et al., 2016). The inconsistency in this evidence suggests that further research is needed in evaluating the impact of CBT on marital relationship during infertility.

## ACT

Two of the systematic reviews included ACT as one of the psychosocial interventions used in individuals with infertility. The impact of ACT on depression, anxiety, and relationship discord was examined.

**Depression.** The systematic review by Luk and colleagues (2016) found two quasi-experimental studies that looked at the impact of ACT on depression (Galhardo et al., 2013; Sherratt & Lunn, 2013). Both studies provided ACT in-group sessions, for two-hours, for eight-to-ten sessions to infertile women ( $N = 101$ ) (Luk et al., 2016). Both studies showed a significant decrease in depression symptoms (Luk et al., 2016). These studies suggest that ACT has a positive impact on depression during infertility. The systematic review by Ying and colleagues (2016) found one non-blinded RCT that looked at the impact of ACT on depression (Ockhuijsen et al., 2014). The non-blinded RCT included only infertile women ( $N = 377$ ) receiving individual, self-administered, ACT sessions, over a two-week-period, for a total of 28 sessions (Ying et al., 2016). The intervention group included ( $N = 127$ ) and the control group included ( $N = 126, 124$ ). The outcomes were measured in a pre/post-test format (Ying et al., 2016). The RCT found that ACT showed no significant impact on depressive symptoms in the intervention group compared to the control group (Ying et al., 2016). The contradiction between studies suggests that ACT has little or no impact on depression during infertility and further research is needed.

**Anxiety.** The systematic review by Ying and colleagues (2016) was the only systematic review that looked at the impact of ACT on anxiety. Ying and colleagues (2016) identified one non-blinded RCT (Ockuijsen et al., 2014) where the impact of ACT on anxiety was investigated in infertile women ( $N = 377$ ). This RCT showed no impact on the anxiety levels of infertile women ( $P > 0.05$ ) (Ockuijsen et al., 2014). This study suggests that further research is needed on the impact of ACT on anxiety during infertility.

**Relationships.** The systematic review by Luk and colleagues (2016) was the only review that looked at the impact of ACT on marital relationship. Luk and colleagues (2016) identified one single case study (Peterson & Eifert, 2011) that looked at the impact of ACT on marital relationships. The case study included one couple that received 20 face-to-face sessions of ACT with a marriage and family therapist (Peterson et al., 2011). The case study found that “the female and male participants maintained a strong marital relationship; their levels of adjustment stayed high throughout therapy” (Luk et al., 2016, p. 525). The limited evidence suggests further research is needed on the impact of ACT on marital relationship during infertility.

## **MBI**

All of the systematic reviews included MBI as one of the psychosocial interventions used in individuals with infertility. The impact of MBI on depression, anxiety, and relationship discord was examined.

**Depression.** The systematic review by Chow and colleagues (2016) was the only review that looked at the impact of MBI on depression. Chow and colleagues (2016) identified one study that was a pretest/post-test format including infertile women ( $N = 51$ ) (Psaros et al., 2015). The MBI intervention was done in ten weekly group sessions for two hours and one four hour session during the weekend (Chow et al., 2016). The study showed a decrease in depressive

symptoms ( $p < 0.001$ ) (Chow et al., 2016). This study suggests that MBI has a positive impact on depression during infertility.

**Anxiety.** The Cochrane systematic review by Verkuijen and colleagues (2016) identified three non-blinded RCTs that looked at the impact of MBI on anxiety (Chan et al., 2006; Chan et al., 2012; & Shahrestani et al., 2012). The Cochrane systematic review showed that MBI had no significant impact on anxiety in infertile women ( $N = 590$ , 3 studies). This review suggests that MBI had no impact on anxiety during infertility and further research is needed (Verkuijen et al., 2016).

**Relationships.** The Cochrane systematic review by Verkuijen and colleagues (2016) identified two non-blinded RCTs that looked at the impact of MBI on relationships (Chan et al., 2006; Chan et al., 2012). The non-blinded RCTs included infertile women ( $N = 566$ ). The outcome data for both non-blinded RCTs was incomplete due to high attrition rate (Verkuijen et al., 2016). This Cochrane systematic review suggests that further research is needed.

### **Educational Interventions**

One systematic review included educational interventions as one of the psychosocial interventions used in individuals with infertility. The impact of educational interventions on depression, anxiety, and relationship discord was examined.

**Depression and anxiety.** The Cochrane systematic review by Verkuijen and colleagues (2016) identified three, non-blinded, RCTs that looked at the impact of educational interventions on depression and anxiety (Hammerli et al., 2010; Mori et al., 2008; & Terzioglu et al., 2001). Two of the RCTs included all women ( $N = 264$ ) (Hammerli et al., 2010 & Mori et al., 2008). Both RCTs had high attrition bias due to incomplete outcome data (Verkuijen et al., 2016). An older RCT by Terzioglu and colleagues (2001) included infertile couples ( $N = 90$  couples) (as



cited in Verkuijden et al., 2016). This RCT had high attrition bias due to 15 couples being removed from both the control and experimental groups (Verkuijden et al., 2016). Due to the high attrition bias in the non-blinded RCTs the educational interventions likely had no significant impact on depression and anxiety during infertility (Verkijlen et al., 2016). This suggests that further research is needed.

**Relationships.** There were no studies that compared the impact of educational interventions versus usual care on martial relationship during infertility. Therefore, quantitative and qualitative research in this area is needed to inform clinical practice.

### **Discussion**

Based on this body of research, CBT, ACT, MBI, and educational interventions are the most frequently used psychosocial interventions for infertile individuals. Although some of the systematic reviews reported that psychosocial interventions had a significant impact on depression, anxiety, and relationships, the overall finding is that further research is needed. At this time it is uncertain if these psychosocial interventions have a statistically significant impact on depression, anxiety, and martial relationship during infertility.

### **Limitations**

There are several limitations in the literature regarding the use of psychosocial interventions during infertility. This is a very broad research topic and there is considerable heterogeneity among the interventions, timing of the interventions, outcomes, and populations. As a consequence of this is it is difficult to determine a reliable conclusion to serve as a basis for clinical recommendations. The heterogeneity and methodological weaknesses of the RCTs included in the systematic reviews could have contributed to inconsistent or contradictory conclusions.

### **Gaps in Research**

This literature review identified several gaps in the research. First, it was noted that most studies only included infertile women. Men were rarely included in the studies surrounding the impact of psychosocial interventions on infertility. This poses the question as to whether these interventions would have any impact on men. Second, several studies used different tools to measure outcomes of the intervention. The majority of studies looking at anxiety used Spielberger State-Trait Anxiety Inventory. Other studies used Beck Anxiety Inventory, Cattell Anxiety Inventory, Depression Anxiety Stress Scale, and Hamilton Anxiety and Depression Scale. The use of different scales makes it very difficult to compare outcomes. This raises the question as to which tool should be used to measure the impact of psychosocial interventions in infertile persons. Third, all of the psychosocial interventions were given during different times of the infertility process, in different dosages, different intervals, and with different follow-up. This raises additional questions as to timing, frequency, duration and follow-up of psychosocial interventions. Further research in the form of blinded RCTs that include appropriate methodological techniques are needed to answer these questions.

### **Future Implications**

The diagnosis of infertility is often accompanied by considerable psychological distress; this distress can follow throughout the treatment process (Chow et al., 2016). There have been several systematic reviews conducted to determine the impact psychosocial interventions have on depression, anxiety and marital relationship in persons with infertility (Chow et al., 2016; Ying et al., 2016; Luk et al., 2016; & Verkuijlen et al., 2016). Due to the very low quality of evidence psychosocial interventions has no statistically significant impact on anxiety, depression, or relationships during infertility (Ying et al., 2016; Verkuijlen et al., 2016). Therefore, at this

time the APRN should not recommend the use of these interventions for patients' seeking supportive psychosocial care. "To confirm the efficacy of psychosocial interventions, blinded RCTs are needed to compare the interventions and usual care involved in clinical practice" (Chow et al., 2016, p. 2101).

In order to appropriately manage psychological distress in individuals with a diagnosis of infertility, the APRN has the responsibility to assess for symptoms of anxiety and depression. To do this the APRN should use validated instruments like the Patient Health Questionnaire-9 (PHQ-9) and the Generalized Anxiety Disorder 7-item scale (GAD-7) to measure the severity of symptoms. If the scores are greater than or equal to ten for either the PHQ-9 or GAD-7 this is significant and further assessment, treatment, and/or referral is needed. The APRN can play a key role throughout the infertility process by collaborating with different specialties to provide continued interpretation of the plan of care and test results (Chow et al., 2016; Gameraio et al., 2015). The APRN should provide continued support and also advocate for the infertile individuals. Patient education should be provided to individuals in verbal and written formats (Chow et al., 2016; Gameiro et al., 2015).

Education recommendations should be directed at APRNs and primary care providers (PCPs) whom follow individuals with infertility throughout the diagnosis and treatment process. Education should include the need to assess for psychological distress and current evidence showing the uncertainty of the impact of psychosocial interventions. It should highlight that emotional needs of an individual may change before, during, and after diagnosis and treatment. Therefore, APRNs and PCPs should tailor their psychosocial care to the specific needs of each individual. Further assessment, treatment, and/or referral may be warranted for some individuals. Education recommendations can be performed through in-services, written clinical guidelines,

staff emails or by developing a clinical policy. A clinical policy could be developed that include a step-by-step approach in assessing, diagnosing, and a treatment plan for psychological distress during infertility. It would include treatment options, resources, and services that could be recommended to the individual.

### **Conclusion**

This review indicated that the impact of psychosocial interventions for individuals with infertility is inconclusive due to the insufficient evidence. The current studies' limitations, risk of bias, and internal inconsistencies lead to questionable findings. The research does show that during the journey of infertility individuals suffer from psychological distress in the forms of anxiety and depression. This distress can also affect relationships. In conclusion, further research is needed prior to recommending particular courses of action in clinical practice. Blinded RCTs with adequate sample sizes and appropriate methodological techniques are needed to examine the impact of psychosocial interventions during infertility.

## References

- American Psychological Association website. (2018). Acceptance and commitment therapy. Retrieved from <http://www.apa.org/pubs/videos/4310860.aspx?tab=2>
- Arslan-Ozakan, I., Okumus, H., & Buldukoglu, K. (2013). A randomized controlled trial of the effects of nursing care based on Watson's theory of human caring on distress, self-efficacy and adjustment in infertile women. *Journal of Advanced Nursing*, 1801-1812.
- Boivin, J., & Gameiro, S. (2015). Evolution of psychology and counseling in infertility. *American Society for Reproductive Medicine*, 104(2), 251-259. <https://doi.org/10.1016/j.fertnstert.2015.05.035>
- Chachamovich, J. R., Chachamovich, E., Ezer, H., Fleck, M. P., Knauth, D., & Passos, E. P. (2010). Investigating quality of life and health-related quality of life in infertility: A systematic Review. *Journal of Psychosomatic Obstetrics & Gynecology*, 31(2), 101-110. <https://doi.org/10.3109/0167482X.2010.481337>
- Chow, K. M., Cheung, M. C., & Cheung, I. K. M. (2016). Psychosocial interventions for infertile couples: A critical review. *Journal of Clinical Nursing*, 25, 2101-2113. <https://doi.org/10.1111/jocn.13361>
- Cousineau, T. M., & Domar, A. D. (2007). Psychological impact of infertility. *Best Practice & Research Clinical Obstetrics and Gynaecology*, 21(2), 293-308. <https://doi.org/10.1016/j.bpobgyn.2006.12.003>
- Faramarzi, M., Alipor, A., Esmaelzadeh, S., Kheirkhah, F., Poladi, K., & Pash, H. (2008). Treatment of depression and anxiety in infertile women: Cognitive behavioral therapy versus fluoxetine. *Journal of Affective Disorders*, 108(2008), 159-164. <https://doi.org/10.1016/j.jad.2007.09.002>

- Frederiksen, Y., Farver-Vestergaard, I., Skovgard, N. G., Ingerslev, H. J., & Zachariae, R. (2015). Efficacy of psychosocial interventions for psychological and pregnancy outcomes in infertile women and men: A systematic review and meta-analysis. *BMJ Open*, 5(e006592), 1-18. <https://doi.org/10.1136/bmjopen-2014-006592>
- Galaal, K., Bryant, A., Deane, K. H. O., & Al-Khaduri, M. (2011). Interventions for reducing anxiety in women undergoing colposcopy. *Cochrane Database of Systematic Reviews*, 12(CD006013), 1-31. <https://doi.org/10.1002/14651858.CD006013.pub3>
- Gameiro, S., Boivin, J., Dancet, E., de Klerk, C., Emery, M., Lewis-Jones, C., . . . Vermeulen, N. (2015). ESHRE guideline: Routine psychosocial care in infertility and medically assisted reproduction- a guide for fertility staff. *Human Reproduction*, 30(11), 2476-2485. <https://doi.org/10.1093/humrep/dev177>
- George, K., Kamath, M. S., Nair, R., & Tharyan, P. (2014). Ovulation triggers in anovulatory women undergoing ovulation induction. *Cochrane Database of Systematic Reviews*, 1(CD006900), 1-33. <https://doi.org/10.1002/14651858.CD006900.pub3>
- Gourounti, K., Lykeridou, K., Vaslamatzis, G. (2012). Increased anxiety and depression in Greek infertile women results from feelings of marital stress and poor marital communication. *Health Science Journal*, 6(1), 1-13.
- Haemmerli, K., Znoj, H., Berger, T. (2010). Internet-based support for infertile patients: A randomized controlled study. *Journal of Behavioral Medicine*, 33, 135-146. <https://doi.org/10.1007/s10865-009-9243-2>
- Kharde, S. N., Pattad, S., Bhogale, G. S. (2012). Effectiveness of a therapeutic counseling intervention for depression, anxiety, self-esteem and marital adjustment among infertile women. *International Journal of Nursing Education*, 4(2), 1-4.

- Kitchen, H., Aldhouse, N., Trigg, A., Palencia, R., & Mitchell, S. (2017). A review of patient-reported outcome measures to assess female infertility-related quality of life. *Health and Quality of Life Outcomes, 15*(86), 1-12. <https://doi.org/10.1186/s12955-017-0666-0>
- Luk, B. H. K., Loke, & A. Y. (2015). The impact of infertility on the psychological well-being, marital relationships, sexual relationships, and quality of life of couples: A systematic review. *Journal of Sex & Marital Therapy, 41*(6), 610-625.  
<https://doi.org/10.1080/0092623X.2014.958789>
- Luk, B. H. K., & Loke, A. Y. (2016). A review of supportive interventions targeting individuals or couples undergoing infertility treatment: Directions for the development of interventions. *Journal of Sex & Marital Therapy, 42*(6), 515-533.  
<https://doi.org/10.1080/0092623X.2015.1074133>
- Lykeridou, K., Gourounti, K., Deltsidou, A., Loutradis, D., & Vaslamatzis, G. (2009). The impact of infertility diagnosis on psychological status of women undergoing fertility treatment. *Journal of Reproductive & Infant Psychology, 27*(3), 223-237.  
<https://doi.org/10.1080/02646830802350864>
- Malik, S. H., & Coulson, N. S. (2010). Coping with infertility online: An examination of self-help mechanisms in an online infertility support group. *Patient education and counseling, 81*(2010), 315-318. <https://doi.org/10.1016/j.pec.2010.01.007>
- Manders, M., McLindon, L., Schulze, B., Beckmann, M. M., Kremer, J. A. M., & Farquhar, C. (2015). Timed intercourse for couples trying to conceive. *Cochrane Database of Systematic Reviews, 3*, (CD011345), 1-50.  
<https://doi.org/10.1002/14651858.CD011345.pub2>
- Mayo Clinic Website. (2017). Retrieved from <https://www.mayoclinic.org>

- Melnyk, B. M. & Fineout-Overholt, E. (2015). *Evidence-based practice in nursing and healthcare: A guide to best practice*. Philadelphia: Lippincott, Williams & Wilkins.
- Mori, A. (2009). Supporting stress management for women undergoing the early stages of fertility treatment: A cluster-randomized controlled trial. *Japan Journal of Nursing Science*, 6, 37-49. <https://doi.org/10.1111/j.1742-7924.2009.00119.x>
- Namdar, A., Naghizadeh, M. M., Zamani, M., Yaghmaei, F., & Sameni, M. H. (2017). Quality of life and general health of infertile women. *Health and Quality of Life Outcomes*, 15(139), 1-7. <https://doi.org/10.1186/s12955-017-0712-y>
- National Center for Complementary and Integrative Health. (2017). Mind and body practice. Retrieved from <https://nccih.nih.gov/health/mindbody>
- Nisenblat, V., Bossuyt, P. M. M., Shaikh, R., Farquhar, C., Jordan, V., Scheffers, C., S. . . . Hull, M. L. (2016). Blood biomarkers for the non-invasive diagnosis of endometriosis. *Cochrane Database of Systematic Reviews*, 5(CD012179), 1-655. <https://doi.org/10.1002/14651858.CD012179>
- Noorbala, A., Ramezanzadeh, F., Abedinia, N., & Naghizadeh, M. (2009). Psychiatric disorders among infertile and fertile women. *Social Psychiatry & Psychiatric Epidemiology*, 44(7), 587-591. <https://doi.org/10.1007/s00127-008-0467-1>
- Porat-Katz, A., Paltiel, O., Kahane, A., Eldar-Geva, T. (2016). The effect of using complementary medicine on the infertility-specific quality of life of women undergoing in vitro fertilization. *International Journal of Gynecology & Obstetrics*, 135(2), 163-167. <https://doi.org/10.1016/j.ijgo.2016.05.011>



- Showell, M. G., Mackenzie-Proctor, R., Brown, J., Yazdani, A., Stankiewicz, M. T., & Hart, R. J. (2014). Antioxidants for male subfertility. *Cochrane Database of Systematic Reviews*, *12*(CD007411), 1-188. <https://doi.org/10.1002/14651858.CD007411.pub3>
- Thompson, E., Woodward, J., & Stanton, A. (2011). Moving forward during major goal blockage: Situational goal adjustment in women facing infertility. *Journal of Behavioral Medicine*, *34*(4), 275-287. <https://doi.org/10.1007/s10865-010-9309-1>
- Verkuijlen, J., Verhaak, C., Nelen, W. L. D. M., Wilkinson, J., & Farquhar, C. (2016). Psychological and educational interventions for subfertile men and women (review). *Cochrane Database of Systematic Reviews*, *3*(CD011034), 1-96. <https://doi.org/10.1002/14651858.CD011034.pub2>
- Vizheh, M., Pakgozar, M., Babaei, G., & Ramezanzadeh, F. (2013). Effect of counseling on quality of marital relationship of infertile couples: A randomized, controlled trial (RCT) study. *Archives of Gynecology and Obstetrics Journal*, *287*, 583-589. <https://doi.org/10.1007/s00404-012-2595-9>
- World Health Organization website. (2016). Multiple definitions of infertility. Retrieved from <http://www.who.int/reproductivehealth/topics/infertility/multiple-definitions/en/>
- Ying, L., Wu, L. H., Loke, & A. Y. (2016). The effects of psychosocial interventions on the mental health, pregnancy rates, and marital function of infertile couples undergoing in vitro fertilization: A systematic review. *Journal of Assisted Reproduction and Genetics*, *33*, 689- 701. <https://doi.org/10.1007/s10815-016-0690-8>

## Appendix

Table 1

*Database Search Description*

Database (or Search Engine)	Restrictions Added to Search	Dates Included in Database	General Subjects Covered by Database
1. CINAHL Plus with Full Text	Full Text; References Available; English Language; Peer Reviewed; Research Article; Abstract Available; exclude MEDLINE records	2007 through 2017	Scholarly database that provides full text access to 29 core-nursing journals. Also provides citations and abstracts to all aspects of nursing and allied health
2. MEDLINE (PubMed)	Full Text; References Available; English Language; Peer Reviewed; Research Article; Abstract Available	2007 through 2017	Scholarly database that provides citations and abstracts to articles covering all medical topics.
3. Cochrane Plus Collection	Full Text	2007 through 2017	Comprehensive collection of databases from the Cochrane Library. Scholarly database that provides high quality health care data for the medical profession.
4. Academic Search Premier with EBSCO host (ASP)	Full Text; References Available; English Language; Peer Reviewed	2007 through 2017	Scholarly database that provides citations, abstracts, and full text articles from 4,600 publications.

Table 2

*Data Abstraction Process*

Date of Search	Key Words	Hits in CINAHL	Hits in MEDLINE	Hits in Cochrane	Hits in ASP
10.16.17	"Infertility"	105	9,724	45	300
	"Psychosocial intervention"	2200	5,570	132	694
	"Infertility" OR "Psychosocial intervention"	2296	15,912	187	991
	"Infertility" AND "Psychosocial intervention"	*4	*6	NA	*3
	"Infertility" AND "Anxiety"	*5	301	*2	*10
	"Infertility" AND "Depression"	*4	350	NA	*11
	"Infertility" AND "Stress"	*6	1063	*5	NA

Date of Search	Key Words	Hits in CINAHL	Hits in MEDLINE	Hits in Cochrane	Hits in ASP
	“Infertility” AND “Psychotherapy”	N/A	<b>*3</b>	N/A	<b>*4</b>
11.12.17	Bibliographic Search	<b>*3</b>			

\***BOLD** = articles reviewed for match with systematic review inclusion criteria

Table 3

*Characteristics of Literature Included and Excluded*

Reference (Include the full reference here)	Included or Excluded and Document	Rationale
Arslan-Ozakan, I., Okumus, H., & Buldukoglu, K. (2013). A randomized controlled trial of the effects of nursing care based on Watson’s theory of human caring on distress, self-efficacy and adjustment in infertile women. <i>Journal of Advanced Nursing</i> , 1801-1812.	Excluded	Duplicate. Included in other systematic review.
Boivin, J., & Gameiro, S. (2015). Evolution of psychology and counseling in infertility. <i>American Society for Reproductive Medicine</i> , 104(2), 251-259. <a href="https://doi.org/10.1016/j.fertnstert.2015.05.035">https://doi.org/10.1016/j.fertnstert.2015.05.035</a>	Included	Provides background information of different interventions used in infertility.
Chachamovich, J. R., Chachamovich, E., Ezer, H., Fleck, M. P., Knauth, D., & Passos, E. P. (2010). Investigating quality of life and health-related quality of life in infertility: A systematic Review. <i>Journal of Psychosomatic Obstetrics &amp; Gynaecology</i> , 31(2), 101-110. <a href="https://doi.org/10.3109/0167482X.2010.481337">https://doi.org/10.3109/0167482X.2010.481337</a>	Excluded	Duplicate. Included in other systematic review.
Chow, K. M., Cheung, M. C., & Cheung, I. K. M. (2016). Psychosocial interventions for infertile couples: A critical review. <i>Journal of Clinical Nursing</i> , 25, 2101-2113. <a href="https://doi.org/10.1111/jocn.13361">https://doi.org/10.1111/jocn.13361</a>	Included	Systematic review focusing on psychosocial interventions for infertile couples.
Cousineau, T. M., & Domar, A. D. (2007). Psychological impact of infertility. <i>Best Practice &amp; Research Clinical Obstetrics and Gynaecology</i> , 21(2), 293-308. <a href="https://doi.org/10.1016/j.bpobgyn.2006.12.003">https://doi.org/10.1016/j.bpobgyn.2006.12.003</a>	Included	Provides background information on psychological impact of infertility and best practice recommendations for interventions.
Faramarzi, M., Alipor, A., Esmaelzadeh, S., Kheirkhah, F., Poladi, K., & Pash, H. (2008). Treatment of depression and anxiety in infertile women: Cognitive behavioral therapy versus fluoxetine. <i>Journal of Affective Disorders</i> , 108(2008), 159-164. <a href="https://doi.org/10.1016/j.jad.2007.09.002">https://doi.org/10.1016/j.jad.2007.09.002</a>	Excluded	Duplicate. Included in other systematic review.
Frederiksen, Y., Farver-Vestergaard, I., Skovgard, N. G., Ingerslev, H. J., &	Excluded	Duplicate. Included in other systematic review.

Reference (Include the full reference here)	Included or Excluded and Document	Rationale
Zachariae, R. (2015). Efficacy of psychosocial interventions for psychological and pregnancy outcomes in infertile women and men: A systematic review and meta-analysis. <i>BMJ Open</i> , 5(e006592), 1-18. <a href="https://doi.org/10.1136/bmjopen-2014-006592">https://doi.org/10.1136/bmjopen-2014-006592</a>		
Galaal, K., Bryant, A., Deane, K. H. O., & Al-Khaduri, M. (2011). Interventions for reducing anxiety in women undergoing colposcopy. <i>Cochrane Database of Systematic Reviews</i> , 12(CD006013), 1-31. <a href="https://doi.org/10.1002/14651858.CD006013.pub3">https://doi.org/10.1002/14651858.CD006013.pub3</a>	Excluded	Wrong outcome.
Gameiro, S., Boivin, J., Dancet, E., de Klerk, C., Emery, M., Lewis-Jones, C., . . . Vermeulen, N. (2015). ESHRE guideline: Routine psychosocial care in infertility and medically assisted reproduction- a guide for fertility staff. <i>Human Reproduction</i> , 30(11), 2476-2485. <a href="https://doi.org/10.1093/humrep/dev177">https://doi.org/10.1093/humrep/dev177</a>	Included	European Guideline for routine psychosocial care in infertility.
George, K., Kamath, M. S., Nair, R., & Tharyan, P. (2014). Ovulation triggers in anovulatory women undergoing ovulation induction. <i>Cochrane Database of Systematic Reviews</i> , 1(CD006900), 1-33. <a href="https://doi.org/10.1002/14651858.CD006900.pub3">https://doi.org/10.1002/14651858.CD006900.pub3</a>	Excluded	Wrong outcome.
Gourounti, K., Lykeridou, K., Vaslamatzis, G. (2012). Increased anxiety and depression in Greek infertile women results from feelings of marital stress and poor marital communication. <i>Health Science Journal</i> , 6(1), 1-13.	Excluded	Wrong outcome. Cross-sectional study, focused on marital satisfaction and satisfying communication not on quality of life.
Haemmerli, K., Znoj, H., Berger, T. (2010). Internet-based support for infertile patients: A randomized controlled study. <i>Journal of Behavioral Medicine</i> , 33, 135-146. <a href="https://doi.org/10.1007/s10865-009-9243-2">https://doi.org/10.1007/s10865-009-9243-2</a>	Excluded	Duplicate. Included in other systematic review.
Kharde, S. N., Pattad, S., Bhogale, G. S. (2012). Effectiveness of a therapeutic counseling intervention for depression, anxiety, self-esteem and marital adjustment among infertile women. <i>International Journal of Nursing Education</i> , 4(2), 1-4.	Excluded	Duplicate. Included in other systematic review.
Kitchen, H., Aldhouse, N., Trigg, A., Palencia, R., & Mitchell, S. (2017). A review of patient-reported outcome measures to assess female infertility-related quality of life. <i>Health and Quality of Life Outcomes</i> , 15(86), 1-12. <a href="https://doi.org/10.1186/s12955-017-0666-0">https://doi.org/10.1186/s12955-017-0666-0</a>	Excluded	Wrong outcome. Focus of the study was to identify PRO measures to assess changes in quality of life.
Luk, B. H. K., Loke, & A. Y. (2015). The impact of infertility on the psychological well-being, marital relationships, sexual relationships, and quality of life of couples: A systematic review. <i>Journal of Sex &amp; Marital Therapy</i> , 41(6), 610-625.	Excluded	Duplicate. Included in other systematic review.

Reference (Include the full reference here)	Included or Excluded and Document	Rationale
<a href="https://doi.org/10.1080/0092623X.2014.958789">https://doi.org/10.1080/0092623X.2014.958789</a>		
Luk, B. H. K., & Loke, A. Y. (2016). A review of supportive interventions targeting individuals or couples undergoing infertility treatment: Directions for the development of interventions. <i>Journal of Sex &amp; Marital Therapy</i> , 42(6), 515-533. <a href="https://doi.org/10.1080/0092623X.2015.1074133">https://doi.org/10.1080/0092623X.2015.1074133</a>	Included	Systematic review focusing on supportive interventions targeting individuals or couples undergoing infertility treatment.
Lykeridou, K., Gourounti, K., Deltsidou, A., Loutradis, D., & Vaslamatzis, G. (2009). The impact of infertility diagnosis on psychological status of women undergoing fertility treatment. <i>Journal of Reproductive &amp; Infant Psychology</i> , 27(3), 223-237. <a href="https://doi.org/10.1080/02646830802350864">https://doi.org/10.1080/02646830802350864</a>	Excluded	Wrong outcome.
Malik, S. H., & Coulson, N. S. (2010). Coping with infertility online: An examination of self-help mechanisms in an online infertility support group. <i>Patient education and counseling</i> , 81(2010), 315-318. <a href="https://doi.org/10.1016/j.pec.2010.01.007">https://doi.org/10.1016/j.pec.2010.01.007</a>	Excluded	Wrong outcome of the study. Study focused on online based support group for infertility, but did not measure effect on aspects of quality of life.
Manders, M., McLindon, L., Schulze, B., Beckmann, M. M., Kremer, J. A. M., & Farquhar, C. (2015). Timed intercourse for couples trying to conceive. <i>Cochrane Database of Systematic Reviews</i> , 3, (CD011345), 1-50. <a href="https://doi.org/10.1002/14651858.CD011345.pub2">https://doi.org/10.1002/14651858.CD011345.pub2</a>	Excluded	Wrong outcome.
Mori, A. (2009). Supporting stress management for women undergoing the early stages of fertility treatment: A cluster-randomized controlled trial. <i>Japan Journal of Nursing Science</i> , 6, 37-49. <a href="https://doi.org/10.1111/j.1742-7924.2009.00119.x">https://doi.org/10.1111/j.1742-7924.2009.00119.x</a>	Excluded	Duplicate. Included in other systematic review.
Namdar, A., Naghizadeh, M. M., Zamani, M., Yaghmaei, F., & Sameni, M. H. (2017). Quality of life and general health of infertile women. <i>Health and Quality of Life Outcomes</i> , 15,(139), 1-7. <a href="https://doi.org/10.1186/s12955-017-0712-y">https://doi.org/10.1186/s12955-017-0712-y</a>	Excluded	Wrong outcome. This was a cross-sectional study, measuring quality of life of infertile women and certain affecting conditions. It did not measure an intervention.
Nisenblat, V., Bossuyt, P. M. M., Shaikh, R., Farquhar, C., Jordan, V., Scheffers, C., S. . . Hull, M. L. (2016). Blood biomarkers for the non-invasive diagnosis of endometriosis. <i>Cochrane Database of Systematic Reviews</i> , 5(CD012179), 1-655. <a href="https://doi.org/10.1002/14651858.CD012179">https://doi.org/10.1002/14651858.CD012179</a>	Excluded	Wrong population and outcome.
Noorbala, A., Ramezanzadeh, F., Abedinia, N., & Naghizadeh, M. (2009). Psychiatric disorders among infertile and fertile women. <i>Social Psychiatry &amp; Psychiatric Epidemiology</i> , 44(7), 587-591. <a href="https://doi.org/10.1007/s00127-008-0467-1">https://doi.org/10.1007/s00127-008-0467-1</a>	Excluded	Wrong outcome.

Reference (Include the full reference here)	Included or Excluded and Document	Rationale
Porat-Katz, A., Paltiel, O., Kahane, A., Eldar-Geva, T. (2016). The effect of using complementary medicine on the infertility-specific quality of life of women undergoing in vitro fertilization. <i>International Journal of Gynecology &amp; Obstetrics</i> , 135(2), 163-167. <a href="https://doi.org/10.1016/j.ijgo.2016.05.011">https://doi.org/10.1016/j.ijgo.2016.05.011</a>	Excluded	Unable to access.
Showell, M. G., Mackenzie-Proctor, R., Brown, J., Yazdani, A., Stankiewicz, M. T., & Hart, R. J. (2014). Antioxidants for male subfertility. <i>Cochrane Database of Systematic Reviews</i> , 12(CD007411), 1-188. <a href="https://doi.org/10.1002/14651858.CD007411.pub3">https://doi.org/10.1002/14651858.CD007411.pub3</a>	Excluded	Wrong outcome.
Thompson, E., Woodward, J., & Stanton, A. (2011). Moving forward during major goal blockage: Situational goal adjustment in women facing infertility. <i>Journal of Behavioral Medicine</i> , 34(4), 275-287. <a href="https://doi.org/10.1007/s10865-010-9309-1">https://doi.org/10.1007/s10865-010-9309-1</a>	Excluded	Wrong outcome.
Verkuijlen, J., Verhaak, C., Nelen, W. L. D. M., Wilkinson, J., & Farquhar, C. (2016). Psychological and educational interventions for subfertile men and women (review). <i>Cochrane Database of Systematic Reviews</i> , 3(CD011034), 1-96. <a href="https://doi.org/10.1002/14651858.CD011034.pub2">https://doi.org/10.1002/14651858.CD011034.pub2</a>	Included	Cochrane review of psychological and educational interventions for infertile couples.
Vizheh, M., Pakgozar, M., Babaei, G., & Ramezanzadeh, F. (2013). Effect of counseling on quality of marital relationship of infertile couples: A randomized, controlled trial (RCT) study. <i>Archives of Gynecology and Obstetrics Journal</i> , 287, 583-589. <a href="https://doi.org/10.1007/s00404-012-2595-9">https://doi.org/10.1007/s00404-012-2595-9</a>	Excluded	Duplicate. Included in other systematic review.
Ying, L., Wu, L. H., Loke, & A. Y. (2016). The effects of psychosocial interventions on the mental health, pregnancy rates, and marital function of infertile couples undergoing in vitro fertilization: A systematic review. <i>Journal of Assisted Reproduction and Genetics</i> , 33, 689- 701. <a href="https://doi.org/10.1007/s10815-016-0690-8">https://doi.org/10.1007/s10815-016-0690-8</a>	Included	Systematic review of the effect of different psychosocial interventions on couples undergoing in vitro fertilization.

Table 4

*Literature Review Table of All Studies Included*

Citation (Include the citation of all studies that met inclusion criteria from Table 3 above)	Study Purpose	Pop (N)/ Sample Size (n) /Setting(s)	Design/ Level of Evidence (Melnyk & Fineout- Overholt, 2015)	Variables/ Instruments/Meth ods	Intervention	Findings	Implications
Boivin, J., & Gameiro, S. (2015). Evolution of psychology and counseling in infertility. <i>American Society for Reproductive Medicine</i> , 104(2), 251-259. <a href="https://doi.org/10.1016/j.fertnstert.2015.05.035">https://doi.org/10.1016/j.fertnstert.2015.05.035</a>	NA	NA	Expert opinion Level VII	NA	NA	NA	Integrated approach to fertility care proposes three sources of treatment burden be targeted to influence psychological and treatment-related outcomes such as patient quality of life. 1. All staff that interacts with patients need to be involved in psychosocial care. Develop appropriate types of care and training- emphatic skills and provision of preparatory information. Develop treatment protocols that can reduce the burden of treatment yet maximize quality of life. 2. Patient centered care. Examine the patient's preferences. Help patient's make parenthood plans in advance even prior to fertility issues. Provide fertility knowledge to patients. 3. Provide support after treatment to ensure long-term adjustment to unsuccessful treatment. A challenge of this is to find ways to intervene to prevent after treatment maladjustment.
Chow, K. M., Cheung, M. C., & Cheung, I. K. M. (2016). Psychosocial interventions for infertile couples: A critical review. <i>Journal of Clinical Nursing</i> , 25, 2101-2113. <a href="https://doi.org/10.1111/j.occn.13361">https://doi.org/10.1111/j.occn.13361</a>	Systematic review to identify, summarize and appraise the current literature evaluating the effectiveness of psychosocial interventions to improve infertile couples' well-being.	NA	Systematic review Level I	Methods: Systematic search of MEDLINE, CINAHL, PsycINFO, British Nursing Index, and GoogleScholar. Keywords 'psychosocial intervention' and 'infertility'. Two authors assessed the studies independently. Inclusion and exclusion criteria was used.	Cognitive-behavioural therapy (CBT) Supportive psychotherapy Psychosocial interventions with coping skills training Mind-body interventions incorporating relaxation techniques, cognitive coping skills and health-enhancing behavior	Twelve studies were included in the review: Interventional studies (7) and review studies (5). Infertile couples experience considerable psychological distress after diagnosis and throughout infertility treatment. Psychosocial interventions demonstrate promising effects in improving psychological outcomes, marital relationships and pregnancy rates among couples. Previous studies have recommended no consistent intervention design. There is a need to develop a standardized effective design of	Psychosocial interventions should be started early in the diagnostic process.  Psychosocial interventions should be provided in a group format. Both partners should be involved to enhance a sense of partnership among infertile couples and help them cope. Multi-couple format may not be acceptable in certain cultures. In that instance it would be better to provide single-couple counseling sessions.  Six to twelve sessions should be provided to cover all content before infertility treatment starts and should continue until treatment completes. Each session should last no longer

Citation (Include the citation of all studies that met inclusion criteria from Table 3 above)	Study Purpose	Pop (N)/ Sample Size (n) /Setting(s)	Design/ Level of Evidence (Melnyk & Fineout- Overholt, 2015)	Variables/ Instruments/Methods	Intervention	Findings	Implications
					Psychosocial intervention programs consisting of information provision, relaxation training and cognitive-behavioural counselling	psychosocial interventions for clinical use. There is also a need to develop culturally specific psychosocial interventions.	<p>than three hours in length.</p> <p>Education should be provided in both verbal and written formats. Education content should include: treatment procedures and psychosocial information.</p> <p>Relaxation skills training should emphasize behavioural modification as a coping technique, including daily physical activity and muscle relaxation exercises.</p> <p>Multidisciplinary team approach including: providers, nurses, clinical psychologists, and social workers.</p> <p>Future Research: To confirm efficacy further RCTs are needed to compare psychosocial interventions and usual care involved in clinical practice. Longitudinal studies are also needed to examine long-term effects of psychosocial interventions in patient outcomes.</p>
Cousineau, T. M., & Domar, A. D. (2007). Psychological impact of infertility. <i>Best Practice &amp; Research Clinical Obstetrics and Gynaecology</i> , 21(2), 293-308. <a href="https://doi.org/10.1016/j.bpobgyn.2006.12.003">https://doi.org/10.1016/j.bpobgyn.2006.12.003</a>	NA	NA	Best practice recommendations Level VII	NA	NA	NA	<p>Psychological status of infertility patients should be assessed early on. Ideally through structured interviews, at a minimum through valid questionnaires (GAD7 and PHQ9). Levels of distress tend to increase as treatment intensifies and as duration of treatment continues. Depressive symptoms can occur as far out as 18 months after fertility treatment.</p> <p>Internet-based fertility patient education and stress management online program reduced fertility distress and improved self-efficacy. Sessions are 60-90 minutes.</p>



Citation (Include the citation of all studies that met inclusion criteria from Table 3 above)	Study Purpose	Pop (N)/ Sample Size (n) /Setting(s)	Design/ Level of Evidence (Melnyk & Fineout- Overholt, 2015)	Variables/ Instruments/Meth ods	Intervention	Findings	Implications
							<p>Most patients expect psychological support from their medical providers, but psychosocial support services are rarely offered until late in treatment.</p> <p>Group interventions that emphasize education and skills training appear to be the most effective. Skills training should include relaxation techniques, stress management, coping-skills training and group support. Minimum of five to ten sessions.</p> <p>Future Research: Impact of psychological interventions on biological markers for male and female fertility. The value of psychological intervention in patient persistence with fertility treatment and pregnancy rates.</p>
<p>Gameiro, S., Boivin, J., Dancet, E., de Klerk, C., Emery, M., Lewis-Jones, C., . . . Vermeulen, N. (2015). ESHRE guideline: Routine psychosocial care in infertility and medically assisted reproduction- a guide for fertility staff. <i>Human Reproduction</i>, 30(11), 2476-2485. <a href="https://doi.org/10.1093/humrep/dev177">https://doi.org/10.1093/humrep/dev177</a></p>	NA	NA	European Society of Update of the 2002 Human Reproduction and Embryology (ESHRE) Guideline Level I	NA	NA	NA	<p>Guideline provides information regarding the preferences of patients regarding psychosocial care they would like to receive at clinics and how this care is associated with their wellbeing. It also cover the psychosocial needs that patients experience during treatment and how medical providers can detect and address these needs.</p> <p>Psychosocial care: Patients' preferences</p> <ol style="list-style-type: none"> <li>1. Staff should be aware that patients value: showing understanding and being attentive to emotional impact of infertility.</li> <li>2. Both partners are involved in the treatment process.</li> <li>3. Patients are involved in decision-making.</li> </ol>

Citation (Include the citation of all studies that met inclusion criteria from Table 3 above)	Study Purpose	Pop (N)/ Sample Size (n) /Setting(s)	Design/ Level of Evidence (Melnyk & Fineout- Overholt, 2015)	Variables/ Instruments/Meth ods	Intervention	Findings	Implications
							<p>4. Receiving personalized care related to their medical history.                      5. Opportunities for contact with other patients going through similar treatments.                      6. Being offered specialized psychosocial care before, during and after IVF treatment. Being provided information about this care such as contact details for support groups, online support options, access to counseling.                      7. Written treatment plans.</p> <p>Psychosocial care: Before treatment                      1. Offer patients the opportunity to have their needs assessed and inform them about the emotional adjustment.                      2. Provide education on meaning-based coping (e.g. thinking positive, finding other goals in life).                      3. Provide education on avoidance coping strategies (e.g. avoiding being among pregnant women).                      4. Provide education about active coping (e.g. goal-oriented problem-solving, thinking rationally about the problem).                      5. Before starting IVF patients should be screened for emotional problems using the tool SCREENIVF.                      6. Provide education about emotional expressive coping (e.g. expressing feeling to significant others).                      7. Continue to actively involve both partners of the couple in the treatment process.</p> <p>Psychosocial care: After unsuccessful treatment                      1. The 'after treatment' refers to one year after patients undergo their last</p>

Citation (Include the citation of all studies that met inclusion criteria from Table 3 above)	Study Purpose	Pop (N)/ Sample Size (n) /Setting(s)	Design/ Level of Evidence (Melnyk & Fineout- Overholt, 2015)	Variables/ Instruments/Meth ods	Intervention	Findings	Implications
							treatment cycle. 2. The evidence about the needs of patients after unsuccessful IVF treatment is too limited for supporting recommendations.  Psychosocial care: After successful treatment 1. Women may experience more pregnancy-specific anxiety. 2. Women who conceive with IVF have higher maternal expectations.
Luk, B. H. K, & Loke, A. Y. (2016). A review of supportive interventions targeting individuals or couples undergoing infertility treatment: Directions for the development of interventions. <i>Journal of Sex &amp; Marital Therapy</i> , 42(6), 515-533. <a href="https://doi.org/10.1080/092623X.2015.1074133">https://doi.org/10.1080/092623X.2015.1074133</a>	The aim of this systematic review was to explore the types, content, and outcomes of different psychosocial approaches used in existing interventions for infertile individuals and couples.	NA	Systematic review Level I	Methods: Systematic search of electronic databases of MEDLINE, PsycINFO, and CINHALL using keywords 'infertile' 'infertile women' 'infertile men' 'infertile couple' 'psychosocial intervention' 'program' 'therapy' 'intervention' 'support'. Two reviewers independently reviewed the articles. Inclusion and exclusion criteria was used. Instruments: The methodological quality of the studies was assessed using the Quality Assessment Tool for Studies	CBT (9 studies) Acceptance and commitment therapy (ACT) (3 studies) Body-mind-spirit (BMS) approach (2 studies) Psychological counseling (4 studies) Other psychosocial interventions (5 studies): meeting with a midwife, expressive writing, communication and stress management training program, relaxation techniques, and online psychoeducational program. Most interventions were delivered face-to-face (18),	23 studies were included in the review: randomized control trials (15), quasi-experimental studies (7), and single-case study (1). Psychological stress: In 13 studies psychological interventions were found to reduce psychological stress in individuals or couples. Interventions used were CBT, ACT, and BMS. Pregnancy: Seven studies assessed the effect of psychological intervention on conception. This was not supported by the research. Marital relationships: Six studies evaluated the impact of the intervention on marital relationships. Most of the approaches including CBT, ACT, BMS, and counseling had a positive effect on marital relationships of infertile women or couples. Sexual relationships: three studies evaluated the impact of psychosocial interventions on this. This was measured by using two instruments, Fertility Problem	Infertility interventions should target couples as dyads in a partnership to enhance mutual benefits. CBT, ACT and counseling are effective psychosocial approaches to reducing infertility-induced psychological stress in infertile women, and all of the psychosocial interventions helped to improve self-perception. Most psychosocial interventions have positive effects on marital and sexual relationships of infertile individuals and couples.  Future Research: Further research should be done on supporting infertile couples undergoing infertility treatments. Further studies are needed on psychological interventions effect for men.

Citation (Include the citation of all studies that met inclusion criteria from Table 3 above)	Study Purpose	Pop (N)/ Sample Size (n) /Setting(s)	Design/ Level of Evidence (Melnyk & Fineout- Overholt, 2015)	Variables/ Instruments/Meth ods	Intervention	Findings	Implications
				with Diverse Designs. Consists of 16 items, with scores between 0 and 3. Two of the items in QATSDD are specifically for qualitative studies only 14 items were used to assess the quality of the selected studies, giving a possible range of scores from 0 to 42.	delivered via internet (3), delivered via telephone and videos (1), and expressive writing (1). Interventions delivered face-to-face (18), delivered in groups for couples (4), in groups for women (7), to couple dyads as units (6), and in groups for infertile women and men (not in couples) (1). Majority of interventions were conducted during infertility treatment. Most interventions covered more than one type of content. Nearly half of the studies (11 out of 23) focused on stress management and relaxation training, 8 involved emotional expression and group sharing, 7 related to cognitive restructuring to rid of negative	Inventory (FPI) and Sexual Satisfaction Questionnaire (SSQ). ACT, counseling and online program improved sexual relationships. Self-perception: seven studies evaluated this. Multiple instruments were used. Six of the seven studies reported improvements in various aspects of self-perception. Dosage of intervention: on average 7 sessions of face-to-face group interventions (range: 1-20 sessions), last on average 100 minutes (range: 15-180 minutes). Internet-based interventions on average involved 8 sessions (range: 2-13 sessions). Follow-up periods: 12 months (4 studies), 3-6 months (4 studies), and 2-10 weeks (6 studies_.	

Citation (Include the citation of all studies that met inclusion criteria from Table 3 above)	Study Purpose	Pop (N)/ Sample Size (n) /Setting(s)	Design/ Level of Evidence (Melnik & Fineout- Overholt, 2015)	Variables/ Instruments/Meth ods	Intervention	Findings	Implications
					thoughts, and 7 focused on parenthood and the meaning of life.		
<p>Verkuijlen, J., Verhaak, C., Nelen, W. L. D. M., Wilkinson, J., &amp; Farquhar, C. (2016). Psychological and educational interventions for subfertile men and women (review). <i>Cochrane Database of Systematic Reviews</i>, 3(CD011034), 1-96. <a href="https://doi.org/10.1002/14651858.CD011034.pub2">https://doi.org/10.1002/14651858.CD011034.pub2</a></p>	<p>The aim of this systematic review was to assess the effectiveness of psychological and educational interventions for subfertile couples on psychological and fertility treatment outcomes.</p>	<p>NA</p>	<p>Systematic review Level I</p>	<p>Methods: The search included Cochrane Gynaecology and Fertility Group Specialised Register of Controlled Trials, the Cochrane Central Register of Controlled Trials (CENTRAL; Issue 2, 2015), MEDLINE, EMBASE, PsycINFO, EBSCO CINAHL, DARE, Web of Science, OpenGrey, LILACS, PubMed, and ongoing trials registers. A hand search was done on reference lists and Experts in the field were also contacted. Two reviewers independently assessed the articles. The quality of the evidence was assessed using the GRADE criteria. Inclusion, exclusion criteria was used.</p>	<p>Interventions were classified into the following two categories. Psychological interventions include: Interventions aimed to change behaviour or cognition, or both, regarding sub-fertility and its treatment, as well as changing the emotional impact of it. Mind-and-body interventions are behavioural treatment interventions including, for example, meditation, hypnotherapy, and yoga. Educational interventions: Interventions that may include information on subfertility, its causes, treatment instructions (medical or procedural information), and</p>	<p>39 studies were included in the review. There were substantial methodological weaknesses in the studies, all of which were judged to be at high risk of bias for one or more quality assessment domains. Therefore study-specific estimates of intervention effects to be unreliable.</p>	<p>The effects of psychological and educational interventions on mental health including distress, and live birth or ongoing pregnancy rates is uncertain due to the very low quality of the evidence.</p> <p>Future research: Further research is needed that apply appropriate methodological techniques to investigate the benefits of these treatments for this population</p>

Citation (Include the citation of all studies that met inclusion criteria from Table 3 above)	Study Purpose	Pop (N)/ Sample Size (n) /Setting(s)	Design/ Level of Evidence (Melnyk & Fineout- Overholt, 2015)	Variables/ Instruments/Meth ods	Intervention	Findings	Implications
					information to improve self-management and self efficacy (such as skills training, psycho-education). These interventions are aimed to alleviate distress. Self help interventions and decision aids are also considered to be educational interventions.		
Ying, L., Wu, L. H., Loke, & A. Y. (2016). The effects of psychosocial interventions on the mental health, pregnancy rates, and marital function of infertile couples undergoing in vitro fertilization: A systematic review. <i>Journal of Assisted Reproduction and Genetics</i> , 33, 689- 701. <a href="https://doi.org/10.1007/s10815-016-0690-8">https://doi.org/10.1007/s10815-016-0690-8</a>	The aim of this systematic review was to examine the effects of psychosocial interventions on the mental health, pregnancy rates, and marital function of infertile couples undergoing in vitro fertilization (IVF)	NA	Systematic review Level I	Methods: Systematic search of electronic databases PubMed, EMBase, Cochrane Library, CINAHL, PsycInfo, and CAJ. Key terms used were “infertility,” “fertilization in vitro,” “psychotherapy,” “intervention,” “anxiety,” “depression,” and “marital satisfaction” were used to identify all potential studies Instruments: The quality of the studies that were included was assessed using the risk of bias assessment tool developed by the	CBT Mind-body-spirit intervention Group psychotherapy	Total of 20 randomized controlled trials were included. None of the interventions were found to be efficacious in relieving the depression or stress of individuals or couples undergoing IVF treatment.	This review indicated that the effects of various interventions on the anxiety level, pregnancy rates, or marital function of infertile individuals/couples could not be confirmed due to methodological issues.  Future research: Future research is needed to develop an intervention targeting females and males of infertile couples as dyads, and to integrate the enhancement of partnership in couples.

Citation (Include the citation of all studies that met inclusion criteria from Table 3 above)	Study Purpose	Pop (N)/ Sample Size (n) /Setting(s)	Design/ Level of Evidence (Melnik & Fineout- Overholt, 2015)	Variables/ Instruments/Meth ods	Intervention	Findings	Implications
				Cochrane Back Review Group. Descriptive analysis was adopted to synthesize the results.			

Melnik, B. M., & Fineout-Overholt, E. (2015). *Evidence-Based Practice in Nursing & Healthcare: A Guide to Best Practice* (3<sup>rd</sup> ed.). Philadelphia, PA: Wolters Kluwer.