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Spiritual aspects of living with infertility: a synthesis of qualitative studies

ABSTRACT

Aim: To identify the spiritual aspects of patients experiencing infertility and seek a deeper and broader meaning of the involuntary childlessness experience.

Background: Infertility can be the cause for a spiritual crisis among some couples. Those who endure this involuntary childlessness condition frequently experience contradictory feelings and needs. In this context, core aspects of spirituality such as meaning and purpose in life are often questioned.

Design: A review and synthesis of qualitative empirical research was undertaken in order to seek a deeper understanding of the spiritual aspects of patients' experiences of infertility.

Methods: An aggregative synthesis was conducted according to Saini & Shlonsky (2012), using thematic analysis.

Results: A total of 26 studies included female, male and couples. Settings revealed interviewees in different infertility phases such as diagnosis, Assisted Reproductive Technologies (ARTs) and following fertility treatments. Two main themes emerged: spiritual needs and spirituality as a coping resource for infertility.

Conclusion: Infertility affects the holistic existence of the couples. This adversity awakens spiritual needs along with unmet needs of parenthood. Coping strategies incorporating spirituality can enhance the ability of couples to overcome childlessness and suffering.

Relevance to clinical practice: Infertile couples' experiences of infertility may offer an opportunity for spiritual care particularly related to the assessment of spiritual needs and the promotion of spiritual coping strategies. Effective holistic care should support couples in overcoming and finding meaning in this life and health condition.

Keywords: Holistic care, fertility, midwifery, nursing, spirituality.

What does this paper contribute to the wider global clinical community?

- Spirituality is a mean to adapt to infertility.
- Infertility awakens spiritual needs along with unmet needs of parenthood.
- Nurses and midwives are in a privileged position to provide support and spiritual care in fertility health care contexts.

INTRODUCTION

Infertility is globally regarded as a disabling issue affecting public health (Centers for Disease Control and Prevention 2014). The defining concepts have evolved over time with inconsistent understandings arising among a variety of disciplines (Gurunath, Pandian, Anderson & Bhattacharya 2011). Nevertheless emergent definitions agree that infertility is a health reproductive disability that limits in a longer or shorter period of time the ability to conceive, to carry a pregnancy and to successfully give birth to a biological child (Gurunath et al. 2011). After the International Committee for Monitoring Assisted Reproductive Technology (ICMART) and the World Health Organization (WHO) have revised the terminology (Zegers-Hochschild et al. 2009), infertility is defined as the inability to conceive and have a successful pregnancy after 12 months without contraception and having regular sexual intercourse. Two types of infertility are recognised. Primary infertility is described as the inability to conceive, carry a pregnancy or have a live birth without ever before having had a living child. In contrast, secondary infertility occurs when the inability to conceive carry a pregnancy or have a live birth happens when there has already been a living child (WHO 2016).

A broad study conducted by the WHO across 190 countries revealed the real magnitude of this health issue after 1.9% of the 277 surveyed women, with ages between 20 and 44 years old being diagnosed with primary infertility (Mascarenhas, Flaxman, Boerma, Vanderpoel & Stevens 2012). At the same time, women who had already one living child have experienced an inability to conceive in 10.5% of the reported cases. Additionally, 48.5 million couples were reported as having difficulties in getting pregnant in 2010 (Mascarenhas et al. 2012). The decreasing numbers of births per women in the subsequent years to this systematic analysis (from 2.5 children in 2010-2015 to 2.0 children in 2095-2100), and the increasing rates of childlessness, have both evoked concerns towards the future of the next generation (United Nations 2015).

The origins of infertility are not only biological or physical (gynaecological or reproductive and sexual transmitted diseases) but also related to exposure to environmental, chemical or occupational conditions (Centers for Disease Control and Prevention 2014). In 40% of cases, both female and male factors are implicated in the couple's infertility (NICE 2013). Unknown causes are also acknowledged in 30% of the situations (Centers for Disease Control and Prevention 2014).

Global advances in Assisted Reproductive Technology (ART) have translated into the development of fertility services, enabling couples to seek help in conceiving through resourceful techniques and medical treatments such as in vitro fertilization (IVF), egg donation, sperm donation, intracytoplasmic sperm injection (ICSI), and embryo donation (Allot, Payne & Dann 2013).

The fulfilment of the couple's wish of having a bloodline family is associated with actively seeking complex and invasive medical treatments (Allot et al. 2013). In this context men and women endure long and lasting psychological and emotional strain not only with the diagnosis process but also with treatment cycles and its adverse effects (Oddens, Tonkelaar & Nieuwenhuyse 1999). This situation impacts on both partners (Pasch & Dunkel-Schetter 1997). Overall, women experiencing infertility manifest greater emotional distress (Oddens et al. 1999) and a lower quality of life and well-being compared with women who conceive naturally (McQuillan Stone & Greil 2007, Oddens et al. 1999). Findings related to involuntary childlessness have revealed it to be an adverse life event with severe emotional and physical consequences (Oddens et al. 1999) capable of triggering spiritual needs and questioning the purpose and meaning of life. Although spirituality is becoming a growing theme of study in nursing literature, the assessment when caring for infertile patients is still poorly developed (Roudsari, Allan & Smith 2007).

Spirituality is acknowledged as a complex and dynamic concept capable of changing over time and cultures and therefore difficult to measure and define (Weathers, McCarthy & Coffey 2016). It is considered as "a way of being in the world in which a person feels a sense of connectedness to self, others, and/or a higher power or nature; a sense of meaning in life; and transcendence beyond self, everyday living, and suffering" (Weathers et al. 2016, p.93). Connectedness (with self, with others, with the environment), transcendence and meaning in life have been described as essential attributes to the concept (Weathers et al. 2016). Although some authors have defined its characteristics and attributes (Caldeira, Carvalho & Vieira 2013, Weathers et al. 2016) misconception has led to the interchangeable use of concepts such as spirituality and religiosity. The relationship between both is recognised, however religious beliefs and practices are identified as manifestations of one's spiritual existence and a dimension of spirituality (Weathers et al. 2016). Spirituality is part of a holistic

experience, particularly in times of crisis and illness (Caldeira et al. 2013, Hatamipour, Rassouli, Yaghmaie, Zendedel & Alavi Majd 2015, Weathers et al. 2016).

In relation to infertility, couples often resort to the use of coping strategies to deal with the effects of treatment and imposed childlessness in order to find new meaning and purpose in life. Therefore, it is essential to assess and support the spiritual coping of both individuals and couples (Pasch & Dunkel-Schetter 1997). For example, cultural and religious practice have been identified as a resource to support transcendence through suffering (Weathers et al. 2016).

The need to design protocols to address psychosocial needs has been recognised in midwifery and in nursing practice with additional steps also being taken towards the recognition of spiritual beliefs, and with the potential for psychological interventions (Andrews 2013). Early findings have already established a connection between infertility and religious beliefs (McQuillan et al. 2007, Roudsari et al. 2007). For instance, religious practice was associated with increased life satisfaction (McQuillan et al. 2007), and prayer was identified as a way to overcome suffering in infertile women (Roudsari et al. 2007). However, the literature lacks confirmatory evidence that spirituality and/or religiosity offer potentially positive coping strategies for couples. Calls for nursing research have been made to address this gap to identify the known attributes of spirituality and to review the empirical research, with the focus on qualitative studies in different samples and settings to ascertain potential positive benefits or associations (Weathers et al. 2016). This idea is reinforced by the need for funding to be made available for nursing research in ART (Allan 2013) and concerning spiritual care in particular (Roudsari et al. 2007).

AIMS

This review aims to identify the spiritual needs of individuals experiencing infertility and seek a deeper and broader meaning of the involuntary childlessness experience. Findings from qualitative evidence will help nurses and midwives as well as other health care professionals to acknowledge the relevance of effective holistic care. This study will provide the foundations for contextualized intervention and the development of an approach capable of enhancing the ability of individuals and couples to cope efficiently with adversity.

METHODS

An aggregative synthesis (Saini & Shlonsky 2012) was conducted, after a search in July 2015. This method enabled a synthesis of the qualitative evidence with the use of thematic analysis. Common themes emerged from the findings and promoted an in-depth understanding of the spiritual aspects and needs of couples living with infertility. The literature search was conducted across five scientific databases including PsycINFO, ATLA, Cumulative Index of Nursing and Allied Health Literature (CINAHL), PubMed and Maternity and Infant Care. The databases were specifically related to the aim of this review. The PsycINFO findings enabled the researchers to include studies addressing psychological aspects but also to consider the spiritual connotations. ATLA Religion Database is a theological database that was accessed in order to capture research related to spirituality, spiritual needs and religiosity in this specific population. Maternity and Infant Care was searched in order to identify studies related to infertility. CINHAL and PubMed search was directed to find specific evidence in nursing, midwifery and medical disciplines.

Search terms (with truncation) were used according to each database and were selected according to participants, exposure, outcomes and study type (Table 1). The term spirituality was not included in the search strategy, as this was found to narrow the search in previous exploratory searches, and could increase the probability of missing valuable citations.

Table 1 - Search terms.

The search was run with no date or geographical limits. Studies considered eligible for inclusion were published in peer-reviewed journals in English, Spanish or Portuguese. Papers focusing experiences of involuntary childlessness of men, women, both genders, or couple were included. For the same purpose, studies were considered eligible when the biomedical definition of infertility was recognised, whether in its primary or secondary form (Zegers-Hochschild et al. 2009). Spirituality aspects were based on the concept of Weathers et al. (2016), namely the following attributes of connectedness (self, others, God or superior being and the world) transcendence and the meaning of life. Spiritual needs were assessed based on Narayanasamy (Narayanasamy 2010) and McSherry and Smith (McSherry & Smith 2012) research, which lists the need for meaning and purpose, need for love and harmonious

relationships, need for forgiveness, need for a source of hope and strength, need for trust, need for expression of personal beliefs and values, need for spiritual practices, expression of concept of God or Deity or Divinity. These needs were used to identify, to extract data and to support the analysis of the included studies.

The following were excluded: quantitative or mixed method studies, dissertations and papers that exclusively addressed health professionals' experiences.

Initial search resulted in a total of 5404 articles of which 282 were removed as duplicates. Two independent reviewers examined the results in the next phases according to the inclusion criteria. At this stage, the remaining 5126 titles were analysed and 4570 were excluded. All 556 abstracts were read and 433 were excluded. The full texts (123) were read and 26 papers were included in the synthesis (Figure 1).

Figure 1 – Search, selection, appraisal and inclusion of the results.

The selected studies were analysed according to the Critical Appraisal Skills Programme (CASP 2013) and simultaneously to the Consolidated Criteria for Reporting Qualitative Research (COREQ) (Tong Sainsbury & Jonathan 2007). The first tool (Table 2) assessed the articles in terms of: clear statement of the aims, appropriateness of the qualitative methodology and the research design, recruitment strategy, data collection, relationship between researchers and participants, ethical issues, rigour of data analysis, clear statement of the findings and value of the research in a 10-points score (CASP 2013). The COREQ is an instrument for reporting qualitative research comprised of 32 items and has been considered in this study to facilitate a more in-depth appraisal regarding three domains: research team and reflexivity, study design and analysis and findings (Tong et al. 2007) (Table 3).

Two authors conducted the quality appraisal independently. When necessary, both researchers discussed the evaluation attributed to the qualitative evidence that could impact on its rating.

According to CASP, all articles described the aim and the value of the research. However the majority did not demonstrate adequate consideration of the relationship between researchers and participants (Table 2).

Table 2- CASP (2002)

According to COREQ, the studies also lack the participants' knowledge of the interviewer (n=21), the experience and training of the researchers (n=20) and the description of the interviewers' characteristics (n=20). When using COREQ, the majority of the studies lacked a description of the coding tree which was not identified in the CASP appraisal (Table 3).

Table 3 - COREQ quality appraisal results.

Nevertheless, no articles were excluded for low quality due to the importance of every finding and its contribution to the aim of this study.

Data for each study was extracted and organised in a table to describe the main characteristics and to identify the major and minor themes. Themes were illustrated in association with quotations exclusively from the participants of the 26 included papers. This analysis required constant reading and re-reading in order to truthfully reflect the evidence and also produce a broader synthesis across all papers. Similarities and differences between studies were extracted. Two researchers conducted this stage independently and conflicts were resolved through consensual discussion.

RESULTS

All included studies (Table 4) were published from 1991 to 2015, more frequently published in 2002 (n=3), 2009 (n=3), 2011 (n=3) and 2013 (n=3). Nursing and Midwifery peer-reviewed journals were the main target (n=8) as well as medicine (n=7), social sciences (n=5), psychology (n=3), therapy (n=1) and social work (n=1). One publication was not related to any specific discipline but to a multidisciplinary journal (Mogobe 2005).

Table 4 - Characteristics of the included studies.

Most participants of the 26 articles were infertile women (n=403), couples (n=36), and infertile men (n=34). Samples ranged from one (Apfel & Keylor 2002, Seybold 2002) to 38 participants (Guntupalli & Chenchelgudem 2004). Studies were conducted in the UK (n=5), USA (n=4), Africa (n=4), Iran (n=3), Australia (n=2), Pakistan (n=2), Portugal (n=1), Israel (n=1), China (n=1), Italy (n=1), India (n=1) and Taiwan (n=1). A multinational approach was addressed in two on-line studies (Cunningham & Cunningham 2013, Toscano & Montgomery 2009). Two articles simultaneously presented English and Pakistani participants (Batool & Visser 2015) and English and Iranian individuals (Roudsari & Allan 2011).

Phenomenology (n=9) and grounded theory (n=5) were the qualitative methods most used. Interviews were the main data collection method (n=23). These were conducted face-to-face (Apfel & Keylor 2002, Batool & Visser 2015, Behboodi-Moghadam Salsali Eftekhar-Ardabily Vaismoradi & Ramezanzadeh F. 2013, Bell 2009, Benasutti 2003, Bhatti Fikree & Khan 1999, Chen & Landau 2015, Cipolletta & Faccio 2013, Davis & Dearman 1991, Dyer Abrahams Hoffman & van der Spuy 2002, Dyer Abrahams Mokoena & van der Spuy 2004, Guntupalli & Chenchelgudem 2004, Lee Choi Chan & Ng 2009, McCarthy 2008, Mogobe 2005, Mosalanejad Parandavar Gholami & Abdollahifard 2014, Peddie Teijlingen & Bhattacharya 2005, Peters 2003, Peters Jackson & Rudge 2011, Porter & Bhattacharya 2008, Roudsari & Allan 2011, Silva Ferreira Brito Dias & Henriques 2012) over the telephone (Su & Chen 2006) or on-line (Cunningham & Cunningham 2013). Some studies combined interviews with informal notes or diaries (Roudsari & Allan 2011, Seybold 2002), self-reflexive journal (Benasutti 2003) and observation (Guntupalli & Chenchelgudem 2004, Seybold 2002). A public electronic media source was used in one case as the exclusive means of obtaining data (Toscano & Montgomery 2009).

The prime locations selected to conduct face-to-face interviews were fertility centres or other health care facilities attended by couples (n=14). Participants' homes (n=5) were also considered a privileged context to collect data. Physical, emotional, psychosocial, spiritual, socio-economic and cultural aspects were explored in depth.

Descriptions of involuntary childlessness comprised two main periods in particular endured by couples: from the diagnosis of infertility to treatment (Apfel & Keylor 2002, Batool & Visser 2015, Behboodi-Moghadam et al. 2013, Bell 2009, Bhatti et al. 1999, Chen & Landau 2015, Cipolletta & Faccio 2013, Cunningham & Cunningham 2013, Davis & Dearman 1991, Dyer et al. 2002 2004, Guntupalli & Chenchelgudem 2004, Mogobe 2005, Mosalanejad et al. 2014, Porter & Bhattacharya 2008, Roudsari & Allan 2011, Seybold 2002, Silva et al. 2012, Toscano & Montgomery 2009), and living beyond the treatment (Bell 2009, Benasutti 2003, Chen & Landau 2015, Guntupalli & Chenchelgudem 2004, Lee et al. 2009, McCarthy 2008, Peddie et al. 2005, Peters 2003, Peters et al. 2011, Su & Chen 2006, Toscano & Montgomery 2009).

Two main themes were synthetized: expression of spiritual needs and spirituality as a coping resource for infertility, both based on the themes described in each study (Table 4). The themes are presented below with extracted quotations from the original study (Table 5).

Table 5 - Main themes and quotations from the original studies.

Infertility challenged many women and men to face not only a physical but also a spiritual journey in order to achieve the goal of having a child. Indeed, the majority of the participants faced hardship when dealing with this life event (Batool & Visser 2015, Bell 2009, Bhatti et al. 1999, Chen & Landau 2015, Cipolletta & Faccio 2013, Davis & Dearman 1991, Dyer et al. 2002, McCarthy 2008, Mogobe 2005, Mosalanejad et al. 2014, Peddie et al. 2005, Peters 2003, Peters et al. 2011, Toscano & Montgomery 2009). Coping strategies aiming to adapt and transcend suffering included the development of resilience (Lee et al. 2009, Peters et al. 2011) and maintaining or regaining hope (Bhatti et al. 1999, Cipolletta & Faccio 2013, Davis & Dearman 1991, Lee et al. 2009, Mosalanejad et al. 2014, Peddie et al. 2005, Porter & Bhattacharya 2008, Toscano & Montgomery 2009).

DISCUSSION

This review focused on synthesising the outcomes from qualitative research concerning spiritual aspects of couples living with infertility. In general, results of this review are in line with literature, which links infertility and spirituality. Nevertheless, specific data was still found to be limited. Overall infertility was perceived as a condition that affected the couple's existence on a holistic level. One of the core findings revealed that physical, emotional, psychological, social and spiritual dimensions of the individual underwent several changes due to this living experience. Previous qualitative and quantitative studies have focused on psychosocial aspects (Greil, Slauson-Blevins & McQuillan 2010, Oddens et al. 1999). In addition, a growing body of nursing and midwifery literature has acknowledged the significance of the spiritual dimension in reproductive care (Roudsari et al. 2007). Therefore this study exceeded the existing evidence giving a new insight into the spiritual assessment of infertile couples.

This research identified meaning of life, connectedness to self, to others and beyond as characteristics of the couple's experience of childlessness, in line with the recent analysis of the concept of spirituality (Weathers et al., 2016). Individuals who are not religious perceive themselves as spiritual beings (Weathers et al., 2016) and similarly this study found that, whether addressing religion or not, the couples frequently had a transcendent discourse when analysing the quotations (Benasutti, 2003; McCarthy, 2008; Roudsari and Allan, 2011; Toscano and Montgomery, 2009). Attributes of spirituality (Weathers et al., 2016) were clearly present, despite the stage each infertile individual reported to be in. Interestingly, spirituality is still considered a poorly explored field in this healthcare context (Roudsari et al. 2007). Nevertheless, meaning in life for couples appeared to be defied in this study by unsuccessful conception, pregnancy and birth of a biological child. Furthermore, an eager wish to become a parent and undergo the transitional process was an expected outcome of adulthood and marriage (Batool & Visser 2015, Cunningham & Cunningham 2013, Dyer et al. 2004, Mogobe 2005, Silva et al. 2012). This finding is consistent with other researchers statements of how motherhood is important as a transition in making existential meaning (Prinds, Hvidt, Mogensen & Buus 2013). Self-identity based on men and women´s assumptions of future parenthood faded away when individuals acknowledged themselves as being reproductively impaired (Seybold 2002).

Barriers in conceiving and reaching the goal of parenthood proved to influence the values, the identity and the beliefs of the couple, and so, meaning in life is reappraised by resisting the previous purpose of their existence (Peters 2003). Early research reported that females who did not perceive infertility as a disability had a higher life satisfaction score in comparison to fertile women (McQuillan et al. 2007). Satisfaction seems to be connected to meaning of life and to the significance that individuals attribute to their goals in life (Park 2016). The construction of a new meaning is not accepted from the beginning. These findings could explain why in this review couples are not willing to give up without a struggle engaging in an intense pursuit of all possible methods to achieve their desire to have a child (Cipolletta & Faccio 2013, Porter & Bhattacharya 2008). The awareness of infertility manifests itself in self-questioning (Peters 2003) and engaging in medical and traditional treatments. Individuals perceive this as the only purpose in life and they deeply transform their existence through changes in daily routines (Bell 2009, Cunningham & Cunningham 2013, Peters 2003, Porter & Bhattacharya 2008) to enhance reproduction probabilities (Bell 2009, Cunningham & Cunningham 2013, Peters 2003, Porter & Bhattacharya 2008).

In other words, infertility appeared to be a synonym of treatment and translated into active pursuit of a cure. This situation was culturally determined by the underlying beliefs and meanings that prevailed in the couple's social background. Social role fulfilment had a close relationship with motherhood and fatherhood, with recognised consequences to self and to community survival in developing countries (Batool & Visser 2015, Cunningham & Cunningham 2013, Dyer et al. 2002, Mogobe 2005, Silva et al. 2012). The search for the ultimate purpose in life with the additional social pressure evoked suffering. Therefore this review has provided insight to what other authors had stated towards spiritual distress and the unfulfilled spiritual needs (Caldeira et al. 2013). As far as it could be determined, these findings contribute to making a clear connection between the experience of living with infertility and the spiritual needs as defined before (McSherry & Smith 2012, Narayanasamy 2010). A spiritual crisis was proven to arouse in waves of hope and despair lived by men and women during fertility cycles (Bhatti et al. 1999, Cipolletta & Faccio 2013, Mosalanejad et al. 2014, Peddie et al. 2005). The waiting that precedes treatment results is a period of great anxiety and expectation followed in most cases by disappointment due to an unsuccessful pregnancy. This psychological

roller-coaster has been early described (Dyer 2010, McQuillan et al. 2007, Oddens et al. 1999), and was in line with the emotions and feelings reported in this review. For instance, pain (Behboodi-Moghadam et al. 2013, Benasutti 2003, Chen & Landau 2015, Davis & Dearman 1991, Lee et al. 2009, Mogobe 2005, Su & Chen 2006, Toscano & Montgomery 2009), stress (Benasutti 2003, Mosalanejad et al. 2014, Peddie et al. 2005, Su & Chen 2006, Toscano & Montgomery 2009) and anxiety (Batool & Visser 2015, Chen & Landau 2015, Cipolletta & Faccio 2013, Lee et al. 2009, Toscano & Montgomery 2009). Similar to cancer patients (Ferrel, Taylor, Sattler, Fowler & Cheyney 1993), pain in involuntarily childlessness is associated with the acknowledgement of a disease capable of triggering one´s sense of loss, loss of control and helplessness (Cunningham & Cunningham 2013, Davis & Dearman 1991, Toscano & Montgomery 2009). Immediate effects were not only manifested physically but also in self-identity (Batool & Visser 2015, Behboodi-Moghadam et al. 2013, Benasutti 2003, Cunningham & Cunningham 2013, Dyer et al. 2002, 2004, Lee et al. 2009, Mogobe 2005, Mosalanejad et al. 2014, Peddie et al. 2005, Silva et al. 2012, Su & Chen 2006, Toscano & Montgomery 2009). The intensive physical, emotional and spiritual endurance is such that awakens a sense of powerlessness. Early literature addresses the connection of pain with perceived illness and spiritual well-being helping to understand why in some cases individuals decided to cease fertility care to regain control over their life (Ferrel et al. 1993).

Spiritual distress and spiritual needs have been reported as a fading away with time, and remain until after the birth of a child or in times of making the decision to end the treatment (Bell 2009, Lee et al. 2009, McCarthy 2008, Peddie et al. 2005 2005, Su & Chen 2006, Toscano & Montgomery 2009). Physical timing did not seem to correspond with spiritual readiness. The biological and ideal age to conceive did not match the timeframes established by couples to reach their parental goal (Chen & Landau 2015, Cunningham & Cunningham 2013, Toscano & Montgomery 2009). This contradictory outcome was also mentioned by other scholars (Locke & Budds 2013). Although some women reported being ready to become a mother as soon as they got married reproductive conditioning was a barrier (Dyer et al. 2004). In addition, it is known that delayed motherhood and advanced age decrease fertility along with the ability to naturally conceive (Dunson, Baird & Colombo 2004). The loss of the ability to plan the future induced participants' resentment towards the self in addition to a

sense of failure (Batool & Visser 2015, Behboodi-Moghadam et al. 2013, Benasutti 2003, Cunningham & Cunningham 2013, Dyer et al. 2002 2004, Lee et al. 2009, Mogobe 2005, Mosalanejad et al. 2014, Peddie et al. 2005, Silva et al. 2012, Su & Chen 2006, Toscano & Montgomery 2009). Grief was perceived over the loss of the hope for child and all the related experiences of pregnancy, labour and parenting (Apfel & Keylor 2002, McCarthy 2008, Toscano & Montgomery 2009). This was described as a traumatic process (Peddie et al. 2005) and infertile women expressed the need to be spiritually supported.

Transformative spiritual learning is proven to be triggered by adversity but with different implications when compared to fertile couples (Klobucar 2016). These assumptions are also presented in this review as individuals' self-references were necessarily transformed, inducing them to reframe their self-existence. Coping strategies to overcome this vulnerable phase were described as the search for western medicine or traditional practices (Bhatti et al. 1999, Dyer et al. 2004, Lee et al. 2009, Mogobe 2005, Peters 2003, Porter & Bhattacharya 2008). Also alternative strategies of fulfilling parenthood, such as adoption, taking care of others or remaining childless were found (Batool & Visser 2015, Bell 2009, Benasutti 2003, Bhatti et al. 1999, Lee et al. 2009, Mogobe 2005, Peddie et al. 2005, Toscano & Montgomery 2009). The identified need for inner meaning was intrinsic to the couple´s relationship despite the outcomes of the infertility experience, as every human being needs to find meaning in life that may guide the sense of self existence (Park 2016).

Connectedness as a spiritual attribute (Weathers et al. 2016) was closely related to a sense of failure by carrying infertility or postponing motherhood (Chen & Landau 2015, Cunningham & Cunningham 2013, Toscano & Montgomery 2009). Partners often remain the main support to each other (Greil et al. 2010). The closeness felt between partners helped to deal with and adjust to the diagnosis and treatments (Batool & Visser 2015, Benasutti 2003, Bhatti et al. 1999, Davis & Dearman 1991, Dyer et al. 2002 2004, Lee et al. 2009, Peters et al. 2011, Toscano & Montgomery 2009), as adverse events have proven not to transform or redefine but to enhance the marital relationship that already existed (Greil et al. 2010). Furthermore, current results suggest that if a partnership was already vulnerable involuntarily childlessness mixed with cultural influences may quickly induce individual affairs, polygamy or divorce (Behboodi-Moghadam et al. 2013, Benasutti 2003, Bhatti et al. 1999, Chen &

Landau 2015, Dyer et al. 2002 2004, Guntupalli & Chenchelgudem 2004). These findings contribute to the existing evidence that associates intimate partner violence with infertility and subfertility in low and middle income countries (Stellar, Garcia-Moreno, Temmerman & Poel 2015). However, although domestic violence emerged from women in the included studies it was not always acknowledged (Behboodi-Moghadam et al. 2013, Bhatti et al. 1999, Dyer et al. 2002). Emotional and physical abuse from the partner and extended family (Batool & Visser 2015, Behboodi-Moghadam et al. 2013, Chen & Landau 2015, Dyer et al. 2002 2004, Guntupalli & Chenchelgudem 2004, Toscano & Montgomery 2009) made women spiritually vulnerable without the support, the love and the harmonious relationships they needed to achieve a state of spiritual well-being (Mahajan et al. 2009). Furthermore, the social displacement and self-disconnection from family, friends and other pregnant couples led to isolation (Batool & Visser 2015, Behboodi-Moghadam et al. 2013, Bhatti et al. 1999, Davis & Dearman 1991, Dyer et al. 2002, Peddie et al. 2005, Peters 2003, Peters et al. 2011, Toscano & Montgomery 2009).

A close relationship between dissatisfaction with the infertility care provided and the healthcare professionals' lack of assessment of spiritual needs was recognised and perpetuated in defective interventions (Lee et al. 2009, McCarthy 2008, Mogobe 2005, Mosalanejad et al. 2014, Roudsari & Allan 2011). This concurs with the previous described gap in patient-centred care in infertility services (van Empel et al. 2010). The need to be understood (Davis & Dearman 1991) and supported (Silva et al. 2012) was well documented, in this review, in all phases of involuntary childlessness, from the diagnosis, through treatment and beyond (Cunningham & Cunningham 2013). Even though, formal counselling based on emotional and psychological assessment was determined by healthcare professionals, spiritual and religious support was most valued by infertile couples (Roudsari & Allan 2011) and a core finding in this study.

The transcendence from suffering to a state of satisfaction and spiritual well-being reflected the effective use of coping strategies. Overcoming spiritual distress was often achieved by a positive approach, proactiveness, acceptance, emotional strategies and religious strategies, which are core strategies of coping. For example, prayer was considered a religious practice closely related to spirituality that exercised a positive influence on individuals' health and well-being (Simão, Caldeira

& Carvalho 2016). Moreover, in this study, prayer was reported in the narratives of the participants and is considered an important aid in the adjustment to being childless, to regaining hope and feeling empowered by connecting with a higher power (Batool & Visser 2015, Benasutti 2003, Mogobe 2005, Mosalanejad et al. 2014, Roudsari & Allan 2011, Toscano & Montgomery 2009).

CONCLUSION

Spirituality and spiritual needs are clearly manifested by many individuals experiencing involuntarily childlessness, although not always recognised. This synthesis highlights its contribution to the understanding of this phenomenon by identifying expressions of spiritual needs and spirituality as a coping strategy in the circumstance of living with infertility. The analysis provided a clear connection between infertility and spirituality, but specific data was still found to be limited.

Some innovative outcomes have been identified in this synthesis, but considering some limitations, caution is needed when making conclusions. Firstly, the small number of interviewees, the differences in age and marital status, and the inclusion of different qualitative study designs in this synthesis may compromise the transferability of the findings. In addition, using fertility clinics' assessments to select participants was also recognised in previous studies as a possible bias due to the fact that this population might only be composed of individuals with financial resources to access these facilities. Also, the large number of studies included women and few included couples or men. Those results are not surprising and reaffirm frequent concerns towards the feminine gender experience. Although in general terms women seemed to endure more when compared to men, it is suggested that both genders are equally affected, in psychological and social dimensions. Despite knowing that these individuals are living a long journey, only one study was based on a longitudinal approach, and these findings underline the remaining gap of how this experience evolves through time.

RELEVANCE TO CLINICAL PRACTICE

Despite the limitations, these findings constitute a valuable contribution in understanding the experience of those living with infertility in a broader and holistic sense. A longitudinal approach of this dimension would enable new insight towards the progression of the spiritual journey in couples facing this adverse event. Exploration of the way in which each gender evolves and transcends suffering could also be interesting for the development of the knowledge about this phenomenon.

It is acknowledged that there is a lack of empirical studies in literature that analyse infertility through a spiritual perspective and this gap could be transformed in an opportunity to improve research and to provide evidence-based practice and patient centred care in nursing and midwifery education and training aimed at the development of effective holistic approaches in a fertility care context, strictly related to the meaning of life.

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Table 1 - Search terms.

Participants	woman women mother* parent* couple
Exposure	infertil*
Outcomes	need* feeling* experience* view* perception*
Study type	qualitative research

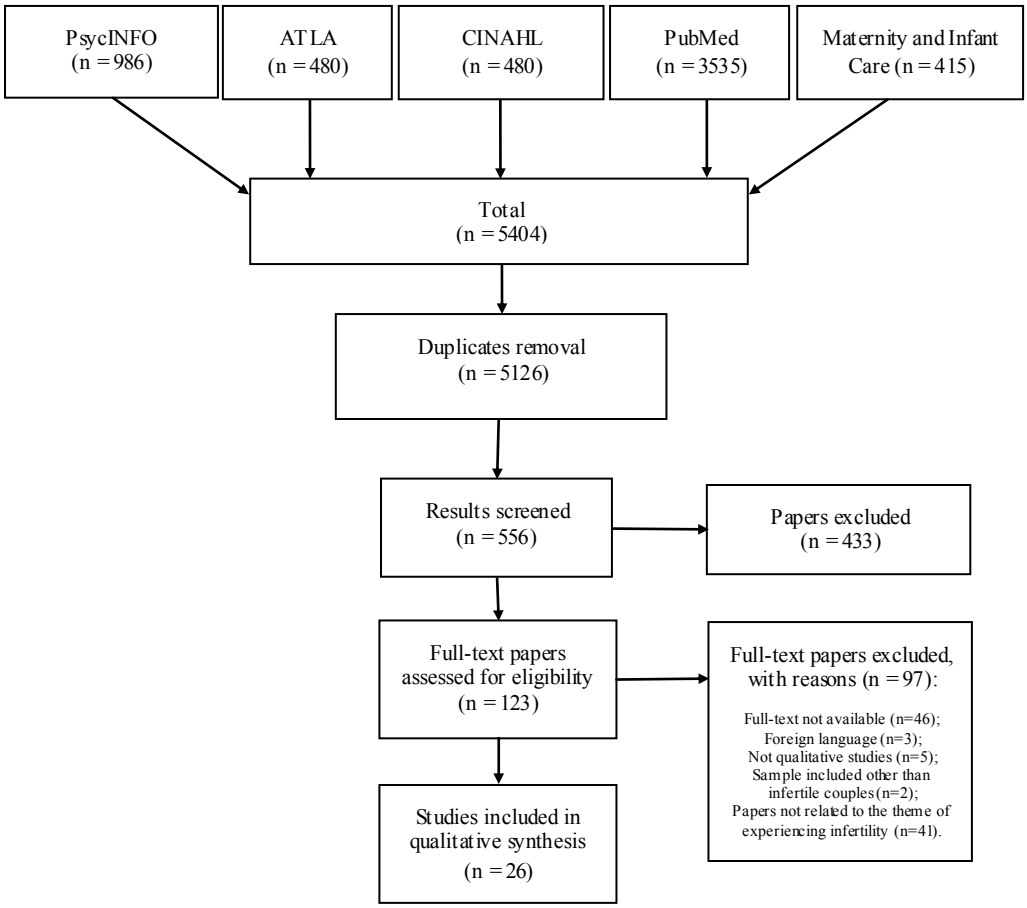

Figure 1 – Search, selection, appraisal and inclusion of the results.

Table 2- CASP (2002) quality appraisal results.

References	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Final score
Apfel & Keylor 2002	N	Y	CT	N	Y	Y	N	N	N	Y	4/10
Batool & Visser 2015	Y	Y	Y	Y	Y	CT	Y	Y	Y	Y	9/10
Behboodi-Moghadam et al. 2013	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	10/10
Bell 2009	Y	Y	Y	Y	Y	CT	N	Y	Y	Y	8/10
Benasutti 2003	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	10/10
Bhatti et al. 1999	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	10/10
Chen & Landau 2014	Y	Y	Y	Y	Y	CT	Y	Y	Y	Y	9/10
Cipolletta & Faccio 2013	Y	Y	Y	Y	Y	CT	Y	Y	Y	Y	9/10
Cunningham & Cunningham 2013	Y	Y	Y	Y	Y	CT	Y	Y	Y	Y	9/10
Davis & Dearman 1991	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	9/10
Dyer et al. 2002	Y	Y	Y	Y	Y	CT	Y	Y	Y	Y	9/10
Dyer et al. 2004	Y	Y	Y	Y	Y	CT	Y	Y	Y	Y	9/10
Guntupalli & Chenchelgudem 2004	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	9/10
Lee et al. 2009	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	10/10
McCarthy 2008	Y	Y	Y	Y	Y	CT	Y	Y	Y	Y	9/10
Mogobe 2005	Y	Y	Y	Y	CT	N	CT	Y	Y	Y	7/10
Mosalanejad et al. 2014	Y	Y	Y	Y	Y	CT	Y	Y	Y	Y	9/10
Peddie et al. 2005	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	10/10
Peters 2003	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	9/10
Peters et al. 2011	Y	Y	Y	Y	Y	CT	Y	Y	Y	Y	9/10
Porter & Bhattacharya 2008	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	10/10
Roudsari & Allan 2011	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	10/10
Seybold 2012	Y	Y	Y	Y	Y	Y	N	N	Y	Y	8/10
Silva et al. 2012	Y	Y	Y	U	Y	U	Y	Y	Y	Y	8/10
Su & Chen 2006	Y	Y	Y	Y	Y	CT	Y	Y	Y	Y	9/10
Toscano & Montgomery 2009	Y	Y	Y	Y	Y	CT	Y	Y	Y	Y	9/10

Notes: Y – Yes | N – No | CT – Can´t Tell

Q1	Was there a clear statement of the aims of the search?	Q6	Has the relationship between researchers and participants been adequately considered?
Q2	Is a qualitative methodology appropriate?	Q7	Have ethical issues been taken into consideration?
Q3	Was the research design appropriate to address the aims of the research?	Q8	Was the data analysis sufficiently rigorous?
Q4	Was the recruitment strategy appropriate to the aims of the research?	Q9	Is there a clear statement of findings?
Q5	Was the data collected in a way that addressed the research issue?	Q10	How valuable is the research?

Table 3 - COREQ quality appraisal results.

			Apfel & Keylor	Batool &	Behboodi-Moghadam	Bell 2009	Benasutti 2003	Bhatti et al. 1999	Chen & Landau	Cipolletta &	Cunningham &	Davis & Dearman	Dyer et al. 2002	Dyer et al. 2004	Guntupalli &	Lee et al. 2009	McCarthy 2008	Mogobe 2005	Mosalanejad et al.	Peddie et al.	Peters 2003	Peters et al. 2011	Porter &	Roudsari & Allan	Seybold 2002	Silva et al. 2012	Su & Chen 2006	Toscano &	TOTALY
DOMAIN 1: Research team and reflexivity	Personal Characteristics	1.Interviewer/facilitator	N	U	Y	Y	Y	Y	Y	N	Y	N	N	N	N	Y	Y	N	N	Y	Y	Y	Y	Y	Y	N	Y	N	15
		2.Credentials	N	U	U	Y	Y	Y	Y	N	Y	Y	N	N	N	N	Y	N	Y	U	Y	N	N	Y	Y	Y	Y	Y	14
		3.Occupation	N	U	Y	N	U	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	N	Y	U	N	Y	N	Y	N	N	Y	Y	15
		4.Gender	N	U	N	Y	Y	Y	N	N	N	Y	N	N	N	N	N	N	N	U	Y	N	N	Y	Y	Y	N	N	8
		5.Experience and training	N	U	Y	N	Y	Y	N	N	N	Y	N	N	N	N	Y	N	N	U	N	N	N	Y	N	N	N	N	6
	Relationship with participants	6.Relashionship established	Y	Y	Y	N	Y	Y	N	Y	Y	N	N	N	N	Y	N	N	N	Y	N	Y	Y	Y	Y	U	Y	N	14
		7.Participants knowledge of the interviewer	Y	Y	N	N	Y	U	N	Y	N	U	N	N	N	U	N	N	N	Y	N	N	U	U	U	N	N	N	5
		8.Interviewer characteristics	Y	Y	N	U	Y	Y	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	Y	U	U	N	N	N	6
DOMAIN 2: Study design	Theoretical framework	9.Methodological orientation and Theory	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	25
	Participant selection	10.Sampling	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	24
		11.Method of approach	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	25
		12.Sample size	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	26
		13.Non-participation	N	N	N	N	N	Y	Y	Y	Y	N	Y	Y	N	Y	N	N	N	Y	N	Y	Y	Y	N	N	N	N	11
	Setting	14.Setting of data collection	Y	U	Y	Y	Y	Y	Y	Y	Y	U	Y	Y	Y	Y	Y	Y	Y	Y	U	Y	Y	Y	Y	U	Y	Y	22
		15.Presence of non-participants	N	N	Y	N	N	Y	N	Y	N	N	Y	Y	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	6
		16.Description of sample	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	25
	Data collection	17.Interview guide	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	U	Y	Y	Y	Y	N	Y	Y	22
		18.Repeat interviews	Y	N	N	N	Y	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	Y	Y	N	N	N	N	21
		19.Audio/visual recording	N	N	Y	N	Y	Y	Y	Y	N	Y	Y	Y	N	Y	Y	N	Y	Y	Y	Y	Y	Y	N	Y	Y	N	18
		20.Field notes	N	N	N	N	Y	Y	N	N	N	N	N	Y	N	Y	N	N	Y	N	N	N	N	Y	Y	N	N	N	7
		21.Duration	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	U	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	21
		22.Data saturation	N	N	N	N	N	Y	Y	Y	Y	N	N	Y	N	Y	Y	N	N	N	N	N	Y	Y	N	N	N	Y	10
		23.Transcripts returned	N	N	N	N	N	Y	N	N	N	N	N	N	N	Y	N	N	U	N	N	N	Y	N	N	N	N	N	23
DOMAIN 3: Analysis and findings	Data analysis	24.Number of data coders	N	Y	Y	N	Y	Y	N	Y	Y	Y	N	Y	N	Y	Y	U	Y	Y	Y	N	Y	Y	Y	N	Y	N	17
		25.Description of the coding tree	N	N	N	N	N	Y	N	N	N	N	N	N	N	Y	N	N	U	N	N	N	N	N	N	N	Y	N	3
		26.Derivation of themes	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	23
		27.Software	N	N	N	Y	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	22
		28.Participant checking	N	N	Y	N	Y	Y	N	N	Y	N	N	N	N	Y	N	N	N	N	N	N	Y	Y	N	N	Y	N	8
	Reporting	29.Quotations presented	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	25
		30.Data and findings consistent	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	25
		31.Clarity of major themes	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	25
		32.Clarity of minor themes	N	Y	Y	N	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	N	Y	Y	21
RESULTS		**Y – Yes**	8	15	21	16	26	29	19	20	22	17	16	19	10	27	20	12	18	17	17	18	24	26	18	16	21	16	
		N – No	24	11	10	15	5	1	13	12	10	13	16	12	22	4	12	19	12	10	14	14	7	4	12	14	11	16	
		U – Unclear	0	6	1	1	1	2	0	0	0	2	0	1	0	1	0	1	2	5	1	0	1	2	2	2	0	0	

Notes: Y- Yes | N- No | U- Unclear

Table 4 - Characteristics of the included studies.

Author Year Country of publication	Aim	Qualitative method	Setting (country of study)	Participants	Data collection method	Analysis method	Key findings
Apfel & Keylor 2002 UK	An analytic case illustrates some of the ways analysis can be a treatment of choice for people using assisted reproduction.	Case study.	Face to face sessions and telephone sessions. (UK)	Mrs. P.	Psychoanalysis sessions.	Psychoanalysis.	No main theme was identified.
Batool & Vise 2015 UK	To explore the experiences of infertile women in two different cultures. To explore the psychosocial impact of infertility as reported by women living in the UK and Pakistan.	Phenomenology.	Convenient place to the UK and to the Pakistani participants. (UK Pakistan)	14 involuntarily childless women who had been in a relationship for more than 2 years and were pursuing infertility treatment (UK sample consisted of eight women, Pakistan sample consisted of six women).	Semi-structured in-depth interviews.	Phenomenological themes analyzed interpretatively.	Five major themes were identified: Desire for Motherhood, Response to Diagnosis, Impact of Infertility, Coping responses, Treatment and Future options.
Behboodi-Moghadam et al.	To explore and describe the experiences of	Qualitative.	Referral center in Tehran.	10 women who were seeking infertility	Semi-structured interviews.	Content analysis according to Graneheim and	Four main themes were identified: Abuse, Marital instability, Social isolation, Loss of self- esteem.

2013 Japan	Iranian infertile women regarding infertility.		(Iran)	treatment at an infertility treatment center for primary infertility (in each case a female factor had been recognized) in Tehran Iran.		Landman (2004).	
Bell 2009 USA	To understand how poor and working-class women actively resist and negotiate the dominant ideologies surrounding infertility.	Qualitative.	Southeastern Michigan (several locations: private study rooms of public libraries women's homes researchers' office fast food restaurant). (USA)	20 women of low SES (socioeconomic status) having experienced involuntary childlessness for at least one year having less than a college degree and being between the ages of 18 and 44.	In-depth interviews with women of low SES.	Analysis by themes and coding Hyper Research 2.8 (2008).	Two main themes were identified: Setting the Scene: The Context of Experience, Negotiating Infertility Experiences.
Benasutti 2003 USA	Explore the experiences of women who have lived through infertility and the meanings they associate with it.	Phenomenology.	Participants´ homes. (USA)	Four women from a group of women to which the researcher had spoken to previously because of the similar experience.	Interviewed in-depth and self-reflexive journal.	Analysis of the data according to Giorgi's (1985) phenomenological approach.	Six main categories were identified: Reactions during experience, Differences during experience, Support during experience, Learning during experience, Benefits after experience, Advice after experience.
Bhatti et	To explore the	Qualitative.	Several	17 infertile	In-depth	Content	Twelve main themes were identified:

al. 1999 Unknown country	contextual factors that influence the health-seeking behavior of infertile women in the lower socio-economic group in Pakistani women.		locations: a low-income densely populated urban community, outpatient department of a primary care hospital, and gynecology clinics of a secondary and a tertiary care hospital. (Pakistan)	women in the lower socio-economic group in Pakistani.	interviews.	analysis.	Socio-demographic information, Duration to seek care, Choices of health care providers, Allopathic doctors, Traditional birth attendants (dais), Hakims, Homeopathic doctors, Spiritual healers, Terms used for infertility, Causes of infertility, Effects of infertility on women's wellbeing, Coping with infertility.
Chen & Landau 2014 USA	Understanding long-term psychosocial implications of first childbirth at post natural fertile age following assisted reproductive treatment.	Qualitative – construtivist naturalistic paradigm.	Fertility clinic at the Chaim Sheba Medical Center. (Israel)	20 women whose average age at childbirth was 45 that attend a fertility clinic at the Chaim Sheba Medical Center.	Semi-structured interviews.	Findings were analyzed thematically and categories were identified and analyzed in four stages: open coding axial coding selective coping and theoretical analyses (Strauss 1987).	Four main themes were identified: Pre-motherhood period, Motherhood experience, Perception of effects of late motherhood on children, Coping strategies of both participants and children.
Cipolletta & Faccio 2013 UK	Explores the time experience of Italian couples	Phenomenology.	Fertility clinic of a public hospital in	Nine women and seven men undergoing a medically assisted	Semi-structured interviews.	Phenomenological analysis according to Smith and	Four main themes were identified: Present moment, Waiting, Hope, Death.

	undergoing medically assisted reproductive treatment (ART).		Northern Italy. (Italy)	reproductive programme at a fertility clinic in Italy.		Osborn (2003).	
Cunningham & Cunningham 2013 England	The experiences of women living with and through infertility will be illuminated alongside consideration of the expanding and developing role of the fertility nurse in supporting patients through complex infertility journeys.	Qualitative.	On-line. (World Wide Web)	Nine women living with and through infertility that participated in online life-story interviews.	Asynchronous online life-story interviews.	Data were analyzed using a layered strategy influenced by the voice-centered relational method emphasizing narrative content form and function (Coffey & Atkinson 1996).	Three main themes were identified: Approaching the clinic, Relatedness: within and around the clinic, Liminality and infertility.
Davis & Dearman 1991 USA	To explore how infertile women coped with their inability to bear children.	Qualitative.	Medical center. (USA)	30 infertile women of sample population attended by a physician who specialized in infertility at a large medical center.	Semi-structured interview.	Content analysis.	Six main themes were identified: Increasing the space or distancing one-self from reminders of infertility, Instituting measures for regaining control, Acting to increase self-esteem by being the best, Looking for hidden meaning in infertility, Giving in to feelings, Sharing the burden with others.

Dyer et al. 2002 UK	Explores the concerns and experiences related to involuntary childlessness of infertile women living in a diverse cultural urban community in South Africa.	Grounded Theory.	Infertility clinic in a tertiary referral centre - Groote Schuur Hospital in Cape Town South Africa. (Africa)	30 women seeking treatment to infertility (from the local community as the Groote Schuur Hospital in Cape Town South Africa) when doing their first visit to an infertility clinic in a tertiary referral center.	In-depth semi-structured interviews.	Analysis was based on grounded theory (categories subcategories and coding).	Five main themes were identified: Psychosocial suffering, Marital instability, Stigmatization and abuse, Social pressure, Support and secrecy.
Dyer et al. 2004 UK	Explores reproductive health knowledge health-seeking behaviour and experiences related to involuntary childlessness in men suffering from couple infertility.	Grounded theory.	Infertility clinic of Groote Schuur Hospital in Cape Town South Africa. (Africa)	27 men suffering from couple infertility were recruited at their first presentation to the infertility clinic at Groote Schuur Hospital.	Semi-structured in-depth interviews.	Data analysis was based on grounded theory according to Bryman and Burgess (1996), Creswell (1998).	Nine main themes were identified: Demographic information, Knowledge of human fertility, Knowledge of causes of infertility, Expectations and concepts of modern infertility management, Treatment-seeking behavior, Experiences of infertility, Effects on marital relationships, Experiences in the family setting, Experiences in the community.
Guntupalli & Chenchelgudem 2004 UK	To highlight important aspects of infertility such as perceptions causes and treatment-	Qualitative descriptive and exploratory.	Three villages Jangamreddy pally Mannanur and Padara. (India)	Unstructured interviews were carried out in 38 women who have had infertility at some point in time.	Qualitative techniques such as participant observation in-depth interviews and unstructured key informant	Patterns were interpreted from the in-depth interviews.	Three main themes were identified: Perceptions and knowledge, Treatment-seeking behavior, Consequences.

	seeking behavior in Chenchu tribe of the Nallamalai forest area India.			In depth-interviews were carried out in 16 women. Five elderly Chenchu women one mantrasani (midwife) two Shamans (spiritual healers) and two herbalists were selected as key informants.	interviews.		
Lee et al. 2009 UK	To provide an in-depth description of the gains perceived by Chinese men and women and how they re-constructed their lives after unsuccessful IVF treatment.	Grounded Theory.	An assisted reproduction clinic. (China)	Four couples and another six Chinese women who experienced unsuccessful IVF treatment were recruited from an assisted reproduction clinic.	In-depth interviews.	Data was analyzed according to Charmaz (2006).	Three main themes were identified: personal gain, interpersonal gain, transpersonal gain.
McCarthy 2008 USA	To explore the phenomenon of women's experience with infertility in the aftermath of unsuccessful	Phenomenol ogical.	Participants´ homes. (USA)	22 women after unsuccessful medical treatment.	Interviews.	Definition of themes meta-themes and the unity of meaning.	One main theme was identified: Living an existential paradox: Searching for hope in light of lost dreams.

	medical treatment.						
Mogobe 2005 Africa	To understand and theoretically explain the phenomenon of infertility from the perspective of those who were experiencing it.	Qualitative.	Gynecological clinic at Princess Marina Hospital. (Republic of Botswana – Africa).	40 women attending the Gynecological clinic at Princess Marina Hospital.	Interviews with open-ended questions.	Based on symbolic interactionism and principles of feminism.	Two main themes were identified: Denying self, Preserving self.
Mosalanejad et al. 2014 Iran	To explore the lived experience of infertile women from increasing and decreasing factors of hope in infertile women with failure in infertility treatment.	Phenomenology.	Rasekh Infertility center. (Iran)	23 Infertile women that attended to Rasekh Infertility Clinic in Jahrom in 2012.	Semi-structured interviews.	Analyzed phenomenology by Collaizi's seven-stage method.	Two main themes were identified: Increasing hope factors (spiritual resources family interaction and support and media), Decreasing hope factors (nature of treatments and negatively oriented mind).
Peddie et al. 2005 UK	To examine the circumstances surrounding the decision-making process (as perceived by the respondents) at the end of unsuccessful IVF treatment.	Qualitative.	Participants' home. Designated non-clinical room within the IVF Unit. (UK)	25 women who had decided to end treatment after unsuccessful IVF.	Semi-structured interviews.	Thematic analysis.	Ten main themes were identified: Difficulty with acceptance of infertility, Stress associated with IVF, Unrealistic expectations of treatment, Pressure from media and society, Insufficient information specific to the individual, Social and professional opportunity costs, Physical and emotional pressure exerted on the couples' relationship,

							Information provision and communication skills, Lack of continued support from the IVF unit, Whose decision.
Peters 2003 Australia	To explore the lived experience of women who accessed IVF programs and who were not successful in achieving a full-term pregnancy.	Phenomenol ogical.	(Australia)	6 women were voluntarily recruited from infertility support groups for the study.	Conversational interviews with open-ended questions.	Thematic analysis.	Five main themes were identified: Keeping Secrets, Why Me?, Trying Different Avenues, Getting it Wrong , Being Let Down.
Peters et al. 2011 Australia	To explore couples' stories of remaining childless despite treatment with ART.	Qualitative.	Participants´ homes. (Australia)	Ten people (five married couples) who had been diagnosed with infertility and despite undergoing ART that remained childless.	Interviews.	Analysis was undertaken according to Frank (1995) and Anderson and Jack (1991).	Three main themes were identified: The difficulties of living a different narrative, The strong dyadic bond, Setting achievable goals and redirecting creativity.
Porter & Bhattacha rya 2008 UK	Examine infertile couples' perceptions of the information available from various sources in the context of achieved pregnancy or continuing treatment.	Grounded theory.	Participants' homes. (UK)	Twenty-seven couples attending the fertility clinic at Aberdeen Maternity Hospital for the first time agreed to participate and 25 couples were followed up.	Semi-structured interviews.	Thematically accordind to Charmaz (2006).	Four main themes were identified: Respondents' background, Seeking information, Conceiving naturally, Helping themselves.

Roudsari & Allan 2011 Iran	Explore Muslim and Christian women's experiences and preferences with regard to infertility counselling. To explore the experiences of infertile women regarding counselling in a wider religious context and a larger ethnic mixture.	Grounded theory.	Fertility clinics (two referral hospitals in London and one Iranian Infertility Research Centre in Mashhad). (UK Iran)	30 infertile women affiliated to different denominations of Islam (Shiite and Sunni) and Christianity (Protestantism Catholicism Orthodoxies) were interviewed.	Semi-structured in-depth interviews observation of non-verbal behaviors during the interviews and the writing of post-interview notes and diaries.	Analyzed using the Straussian mode of grounded theory.	One main theme was identified: Relying on a higher being (Appraising the meaning of infertility religiously, Applying religious coping strategies, Gaining a faith-based strength).
Seybold 2002 USA	Examine a Senegalese woman's experience in selecting treatments for infertility.	Ethnography.	Participants' room. (Africa)	1 infertile Senegalese woman.	Observation and informal records.	A critical-interpretive approach.	Three main themes were identified: Therapies for infertility, Factors influencing baby's therapy selection process, Social economical and political influences on treatment choice.
Silva et al. 2012 Portugal	Understanding the experiences and impact of unsuccessful fertility treatments of infertile women who wanted	Phenomenology.	Fertility clinic. (Portugal)	Four women diagnosed with infertility that wished to have biological children and were under fertility treatments and	Semi-structured interview.	Phenomenological approach following Colaizzi and according to Carpenter *et al.* (2009).	Six min categories were identified: Meaning of being a mother, Wish to have children, Meaning of infertility, Infertility consequences, Difficulties experienced, Support.

	children.			that had already underwent at least one unsuccessful fertility treatment.			
Su & Chen 2006 Taiwan	To explore the lived experience of infertile women who terminated treatment after in vitro fertilization (IVF) failure.	Phenomenology.	A medical center. (Taiwan)	24 infertile women who had experienced IVF failure one year ago and given up their treatment.	Telephone interviews.	Analyzed according to Benner's (Benner 1985 1994, Leonard 1989) interpretive research strategies of phenomenology.	One main theme was identified: Transforming hope. (Accepting the reality of infertility, Acknowledging the limitations of treatment involving high technology, Re-identifying one's future).
Toscano & Montgomery 2009 USA	To explore and describe the experience of pregnancy via in vitro fertilization (IVF) and to identify common themes related to their psychological emotional and physical health as described within electronic communities.	Phenomenology.	Websites blogs and other public postings, On-line communities of women pregnant or attempting pregnancy via IVF. (World Wide Web)	26 women from seven different countries (the United States Australia England Ireland Canada Columbia and Borneo) living the experience of trying to achieve pregnancy (preconception) pregnant and mothers of children that were born through IVF.	Public electronic media sources (websites blogs and other public postings) with content related to experiences during a pregnancy resulting from IVF.	Analysis of the phenomenon according to Van Manen (1990).	Five main themes were identified: Preconception turmoil including stress, Conception experienced with cautious joy and existing within the balance between fear and uncertainty belief in a higher power and magical thinking, Sorrow, Birth synonymous with healing, Breaking the silence though connection and shared experience.

Table 5 - Main themes and quotations from the original studies.

Main Themes	Sub-themes	Citation/Example	References
Expression of spiritual needs	Need for purpose in life	"You do feel like a bit of a failure doing it (IVF) because you think everyone else can do it (have children) without having to resort to this. Why do we have to resort to this? Yet another why do I have to be different? Why can't I just be normal?" (Peters 2003, p.261)	Dyer et al. 2002; Peters 2003, Peddie et al. 2005, McCarthy 2008, Lee et al. 2009, Mosalanejad et al. 2014.
	Need for meaning in life	"Leaving a genetic mark is extremely important for me now. The longer down the road we've travelled the more compelling it has become. A child is a symbol of our love and also a record of us …No one remembers you because you kept a clean house!" (Cunningham & Cunningham 2013, p.3431)	Davis & Dearman 1991, Dyer et al. 2002, Mogobe 2005, McCarthy 2008, Bell 2009, Peters et al. 2011, Roudsari & Allan 2011, Silva et al. 2011, Lee et al. 2009, Cunningham & Cunningham 2013, Batool & Visser 2015.
	Need for love	"I have a partner I share this problem I feel very much supported and since I have his support I come to feel much better because like I was saying earlier when he is here I sleep comfortably." (Mogobe 2005, p.32)	Benasutti 2003, Dyer et al. 2004, Guntupalli & Chenchelgudem 2004, Mogobe 2005, Toscano & Montgomery 2009, Mosalanejad et al. 2014, Batool & Visser 2015.
	Need for harmonious relationships	"When I see any woman in a state of pregnancy it makes me upset. I wish to see myself in this condition. . . . When someone says "This is my child" at that time I think I am deprived of this possession. Whenever I listen to the news of newborns	Bhatti et al. 1999, Dyer et al. 2002, Benasutti 2003, Dyer

		around me I can't sleep that night. . . .My sister and sister-in-law avoid coming to my home, perhaps they think I will cast evil eyes at their children." (Batool & Visser 2015, p.8)	et al. 2004, Guntupalli & Chenchelgudem 2004, Toscano & Montgomery 2009, Behboodi- Moghadam et al. 2013, Batool & Visser, 2015, Chen & Landau 2015.
	Need for forgiveness	"Today I´m sixty and my daughter …says: "You´re so old why didn´t you have me earlier…why didn´t you have me sooner?" This does something to me it´s hard…I always do the calculations in my head…when I´m this age she´ll be that age…She says: "my friend´s mother is thirty" I think it´s hard for her…my husband looks old…" (Chen & Landau 2015, p.25)	Chen & Landau 2015.
	Need for a source of hope	"We leave in constant fear we live in hopes and fears that mean trembling of treatment failure" (Mosalanejad et al. 2014, p.121)	Davis & Dearman 1991, Bhatti et al. 1999, Peters 2003, Peddie et al. 2005, Porter & Bhattacharya 2008, Toscano & Montgomery 2009, Lee et al. 2009, Cipolletta & Faccio 2013, Mosalanejad et al. 2014.
	Need for a source of strength	"It doesn't really go away. This is like something died but nobody else knows it. Only you know it. And so nobody else is mourning." (McCarthy 2008, p.322)	Benasutti 2003, McCarthy 2008, Lee et al. 2009, Toscano & Montgomery 2009, Roudsari & Allan 2011, Peters et al. 2011, Batool & Visser 2015.
	Need for trust	"my marriage was deteriorating ...not because of this but certain characteristics seemed to develop during this [treatment period] and it didn't help...It will either make or break a marriage." (Benasutti 2003, p.59)	Benasutti 2003, Guntupalli & Chenchelgudem 2004,

			Peddie et al. 2005, McCarthy 2008, Behboodi- Moghadam et al. 2013, Toscano & Montgomery 2009, Roudsari & Allan 2011.
	Need for expression of personal beliefs and values	"I still feel like 'Where am I? Where am I going? Where am I supposed to be?' If God hasn't chosen me to be a mother what is my purpose? That is my biggest question. What am I doing? Why have I been put on earth? . . . And it makes me angry that I have to search for something. I want to be a mom. Why do I have to find something else to replace that?" (McCarthy 2008, p.321)	Dyer et al. 2002, Seybold 2002, Guntupalli & Chenchelgudem 2004, Mogobe 2005, McCarthy 2008, Lee et al. 2009, Toscano & Montgomery 2009, Roudsari & Allan 2011.
	Need for spiritual practices	"I do my prayer so I cope with things" (Roudsari & Allan 2011, p.162)	Davis & Dearman 1991, Benasutti, 2003, Mogobe 2005, Toscano & Montgomery 2009, Roudsari & Allan 2011, Mosalanejad et al. 2014, Batool & Visser 2015.
	Need for expression of concept of God or Deity or Divinity	"Due to this issue I feel myself closer to religion and Allah. . . . I offer my prayers regularly and pray for a child. I think if I didn't have this platform I would have died." (Batool & Visser 2015, p.10)	Davis & Dearman 1991, Bhatti et al. 1999, Dyer et al. 2002, Benasutti 2003, Peters 2003, Guntupalli & Chenchelgudem 2004, Mogobe 2005, McCarthy 2008, Bell

			2009, Toscano & Montgomery 2009, Roudsari & Allan 2011, Silva et al. 2011, Chen & Landau 2014, Mosalanejad et al. 2014, Batool & Visser 2015.
Spirituality as a coping resource for infertility	Positive approach	"I needed to jump health-first into taking control of my life and fulfilling my lifelong dream. . . . I put on a positive face took on a positive attitude and even began mediating so I could learn how to talk my embryos into sticking to me. I might add at this point my (partner) thought I had lost my mind. I would take scented baths and sit and meditate and actually visualize my embryos mak(ing) their way to my uterus and stick(ing) to the uterine wall. . . . I guess my positive attitude and meditation helped my second IVF fulfilled our dreams. . . . It was the most magical day of our lives." (Toscano & Montgomery 2009, p.1026)	Benasutti 2003, Su & Chen 2006, Bhattacharya 2008, Porter & Bhattacharya 2008, Lee et al. 2009, Toscano & Montgomery 2009, Peters et al. 2011, Roudsari & Allan 2011.
	Proactiveness	"I have already taken into account that if it does not succeed I will try everything surely until I am 40 years old." (Cipolletta & Faccio 2013, p.290)	Bhatti et al. 1999, Benasutti 2003, Peters 2003, Dyer et al. 2004, Mogobe 2005, Peddie et al. 2005, Porter & Bhattacharya 2008, Bell 2009, Lee et al. 2009, Toscano & Montgomery 2009, Cipolletta & Faccio 2013, Batool & Visser 2015.
	Acceptance	"I was ready to give up. I said "Bruce I think we should get a divorce. I don't think I can give you a child. It's hard for me to give you a child. It seems like I can't conceive so maybe it's best that we get a divorce and you marry another woman that can give you children. I'm not capable of doing it. I'm willing to go through life without children." (Benasutti 2003, p.64)	Davis & Dearman 1991, Bhatti et al. 1999, Benasutti 2003, Dyer et al. 2004, Guntupalli &

			Chenchelgudem 2004, Mogobe 2005, Porter & Bhattacharya 2008, Bell 2009, Lee et al. 2009, Toscano & Montgomery 2009, Roudsari & Allan 2011, Cunningham & Cunningham 2013, Batool & Visser 2015, Chen & Landau 2015.
	Emotional strategies	"(...) Crying and crying and crying days and days it's horrible (...) It's horrible! (...) It's like to die more a part of me is something that goes away it's a part of me that goes away it's my dream fading it's horrible." (Silva et al. 2012, p.186)	Davis & Dearman 1991, Bhatti et al. 1999, Apfel & Keylor 2002, Dyer et al. 2002, Benasutti, 2003, Dyer et al. 2004, Mogobe 2005, Peddie et al. 2005, McCarthy 2008, Porter & Bhattacharya 2008, Bell 2009, Lee et al. 2009, Toscano & Montgomery 2009, Peters et al. 2011, Roudsari & Allan 2011, Silva et al. 2012, Behboodi-Moghadam et al. 2013, Cipolletta & Faccio, 2013, Cunningham & Cunningham 2013, Batool & Visser 2015, Chen & Landau 2015.
	Religious strategies	“I had always been a Christian but this was the first time I had ever just turned everything over to God. I asked him to just close one door for me if he didn’t want	Davis & Dearman 1991, Bhatti et al.

		me to pursue IVF. If he closed just one door I would stop but he didn't. . . . It was the most glorious thing in the world. Everything we went through every tear I cried was all worth it because we were blessed with a miracle from God!! Our boy is truly a precious gift!! Don't give up your dreams they can come true!!!!" (Toscano & Montgomery 2009, p.1025)	1999, Seybold 2002, Benasutti, 2003, Guntupalli & Chenchelgudem 2004, Mogobe, 2005, McCarthy 2008, Toscano & Montgomery 2009, Roudsari & Allan 2011, Silva et al. 2012, Mosalanejad et al. 2014, Batool & Visser, 2015, Chen & Landau 2015.