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Understanding the patterns of adjustment to infertility of IVF users using narrative and autobiographical timeline

Geok Ling Lee[1*], Eric Douglas Blyth[2], Cecilia Lai-Wan Chan[3]

[1]*Department of Social Work, National University of Singapore, Singapore*
[2]*School of Human and Health Sciences, University of Huddersfield, Huddersfield, United Kingdom*
[3]*Department of Social Work & Social Administration, The University of Hong Kong, Hong Kong*

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ABSTRACT

Objective: To examine how Hong Kong Chinese women and men coped with and adjusted to the infertility problem over time. **Methods:** Using purposive sampling and theoretical sampling, nine heterosexual couples and ten women who had completed IVF were recruited. Data were collected using a narrative interviewing technique and autobiographical timeline, based on a grounded theory approach. **Results:** Regardless of the outcome of IVF, coping with infertility and treatment was emotionally taxing. Four themes relating to the coping experiences were identified and captured innovatively in pictorial and narrative forms. They were: ' one of the many ' , resilience, recovery and prolonged grief. The findings concurred with the existing literature – coping with infertility is emotionally taxing, and variability exists in the degree of adjustment to infertility, which in turn influences well-being. The study also demonstrated the advantages of creative use of clinical-interview methods in research on couples subjective and lived experience of infertility. **Conclusion:** The findings suggest that the participants varied in their coping and adjustment to the experience of infertility, with most of them demonstrated positive meanings and resiliency over time. The combined use of both clinical-interview methods helped to facilitate exploration and articulation of the lived experiences of infertility among participants, allowing both in-depth understanding of the phenomenon and adherence to methodological rigor. The clinical-interview research methods can also promote evidence-based reflective practice for researchers and an empowering experience for participants.

1. Introduction

Fertility is highly prized among Chinese people and married couples are subjected to demands to reproduce the next generation, because of cultural norms, familial obligations, social status, old age security, or a sense of personal achievement[1]. In the Chinese community, infertility is not widely recognized, understood or shared with others; it is often linked to moral retribution[2], and infertility is equated with deficient "male strength and energy in life" in Chinese society[3]. Neither is medical treatment for infertility commonly understood. Thus, both infertility and its treatment often places tremendous physical, financial and emotional strain on individuals, couples and families.

The psychosocial consequences commonly associated with infertility resolution have been well documented[4-6]. Adverse emotions, including "guilt, shame, inadequacy, stigmatization, anxiety, stress, fear of spousal rejection, feeling cheated, fatigue, moodiness, tension, disappointment and loneliness"[7] are most frequently mentioned psychological reactions to infertility. Infertility and treatment-related stress have been linked to depression, psychological distress and premature dropout[8]. Although infertility is not a life-threatening disease, it is "a personal and social handicap"[9] ; a challenge to the affected person's "bodily integrity, self-concept, emotional stability, future plans, and the fulfillment of social roles"[10].

In the literature, the psychosocial consequences of

*Corresponding author: Geok Ling LEE, Department of Social Work, Faculty of Arts and Social Sciences, National University of Singapore, Block AS3 Level 4, 3 Arts Link, Singapore 117570.
Tel: (65) 65163436
Fax: (65) 7781213
E-mail: swklgl@nus.edu.sg

treatment success and treatment failure have been addressed separately. For example, the stresses and common concerns of involuntarily childless couples following successful treatment into pregnancy[11, 12] and parenthood[13]; the poor adjustment of couples following unsuccessful treatment if they had limited options, social support, poor physical and emotional health and relied on emotion-focused coping[13]; the better adjustment of infertile couples if they chose adoption[14, 15]. Thus, it makes identification of the similarities and differences in their experiences difficult.

In most clinical settings, counseling for infertile couples terminates when medical treatment ends, irrespective of treatment outcome. Consequently information regarding subsequent outcomes for the couple is limited; both as regards the implications of being considered unfilial in the Chinese context and for those who succeeded in their efforts to birth a child following IVF.

Meaning making provides a useful concept for understanding the patterns of adjustment both for those who succeed and those who do not succeed in conceiving following IVF. According to Dwyer, Nordenfelt and Ternestedt[16], meaning has both a cognitive (the search for a sense of coherence) and a motivational (the search for purpose in life) aspect and has four important dimensions: the sense of purpose; sense of efficacy or control; value and justification; and self-worth[17]. Neimeyer and colleagues' concept of "meaning reconstruction" of a loss formed a useful theoretical framework for the study reported here, which involved external, internal, and reflective narrative processes used to account for loss and the mechanisms (i.e. sense-making, benefit finding and identity change) used in the grieving process[18, 19].

The overall aim of this qualitative study was to investigate the subjective experience of infertility among men and women, and examining the patterns of adjustment in relation to treatment outcome and the meaning made was one aspect. The research design and data analysis followed the grounded theory approach[20]. The data reported in this article focused on the patterns of adjustment through narrative data collected by the autobiographical timeline during the joint interviews for couple or individual interview when the women turned up alone. An approval from the institutional review board of the Hong Kong West Hospital Authority was obtained.

2. Materials and methods

2.1. Participants

This study was a follow-up to an earlier large-scale randomized controlled study, which aimed to evaluate the effectiveness of the Eastern Body-Mind-Spirit group intervention approach in reducing the anxiety level of women awaiting IVF[21]. Letters of invitation were written to 377 women and their spouses to participate in the follow-up study, which included a questionnaire and a face-on-face interview. The selection criteria were: having no biological children prior to receiving IVF; having received at least one IVF cycle; and having their last treatment between six months and three years prior to the commencement of the study. This time frame was chosen both to allow participants to view their emotional experiences of infertility and its treatment (particularly if they were unsuccessful) at some distance and to minimize recollection inaccuracy.

Of the 377 letters sent, 165 (43.8%) were undelivered due to change of address (this reflects the comparatively high level of geographical mobility among the Hong Kong population), 35 (9.3%) responded but were excluded because they did not undergo IVF eventually, 49 (13.0%) declined to participate, 47 (12.5%) responded but were excluded as their last IVF was more than three years previously. Of the remaining 81 (21.5%) respondents who were included for further contact, 37 (9.8%) initially consented to participate in face-to-face interview, although this subsequently reduced to 25 (6.6%): eight had changed their mind when contacted later, three could not be reached despite many attempts to make contact by phone and one migrated.

In addition to purposive sampling, maximum variation sampling was also used employing two measures to determine the sampling frame for the 25 women sampled: the treatment outcome and the women's baseline score on the Trait Subscale of the Chinese State-Trait Anxiety Index (C-STAI(T)) completed during the previous study. A medium-split technique was used to separate the high from the low C-STAI(T) scores. Interviews were conducted with women (and their spouse), starting with those who had low baseline C-STAI(T) score and those who had high baseline C-STAI(T) score, and gradually moved towards potential participants near the medium score.

Using the principles of grounded theory, further recruitment and interviewing ceased once it was apparent that no new information was generated and that theoretical saturation had been reached. In total five couples and four women without their husband from the successful group, and four couples and six women without their husband from the unsuccessful group were interviewed (i.e. 19 women and 9 men). At the time of the study, the mean age of the men and women were 41.0 years (range, 35-48) and 37.5 years (range, 29-44) respectively. The couples were married for a mean length of 10.5 years (range, 5.6-11) and they had been actively pursuing infertility treatment for a mean of 5.6 years (range, 2-11). The diagnostic statuses of the participants were as follows: 7 (36.8%) female factor, 5 (26.3%) male factor, 4 (21.1%) combined male and female factor, and 3 (15.8%) unexplained infertility. Among the participants in the unsuccessful group, one couple and one female participant adopted a child each respectively, and two female participants conceived a child naturally after they ended the treatment. Of the other three couples and three female participants who remained childless, one female participant was undergoing separation at the time of interview.

2.2. Procedure

The main technique of data collection comprised qualitative interview using open-ended questions. As recommended by Neimeyer and Anderson[18], interviews were used to elicit data in the form of an objective account of an event, the emotions and experiential responses of the individual, and the interpretation and meaning-making of the event. Participants were invited to respond to an initial broad question: "When you look back over the last few years, what you have gone through in dealing with infertility, how would you describe those few years?" (The interview guide can be made available from the first author.) The aim was to ensure a relaxed atmosphere and to enable them to begin telling their story from a comfortable starting point.

Application of the autobiographical timeline technique

was adapted from Leung to depict participants' experiences in a pictorial form[22]. Participants then elaborated in the interview on the meaning they attributed to the identified emotional peaks and troughs, the underlying values and beliefs that influenced their perception, and the impact of the event on their current coping experience. Thus, they were asked to chart their emotions (y-axis), with reference to significant events (x-axis) occurring since their marriage, upon diagnosis of infertility, during medical intervention, after medical intervention, and up to the time of interview.

The first author conducted all the interviews in the participants' native language (i.e. primarily Cantonese, with some Mandarin or English). Thirty five interviews were completed: nine joint interviews, seven individual interviews with male participants (two male participants declined individual interview after they had completed the joint interview), and 19 individual interviews with female participants. When a couple appeared for the interview, the focus of the joint interview was to understand their lived experience of infertility as a couple, while the focus of the individual interview was to understand their individual experience and their personal meaning of childbearing. Interviews with sole female participants and with sole male participants lasted on average 74.6 minutes (range, 14-140) and 33.3 minutes (range, 19-47) respectively. Couple interviews lasted on average 106.1 minutes (range, 69-145).

2.3. Data analysis

The individual autobiographical timelines and the description-rich narrative accounts were the two types of data collected and used for data triangulation, thus helping to ensure the trustworthiness of the study[23].

Analysis of the interviews began with transcription of the video- or audio-taped interviews into English. The transcripts were verbatim accounts with silences, changes in intonation, along with commentary detailing the observation made during an interview. The translated version was verified using peer review. During the interview, member checks were conducted with the participants, providing direct testing of findings and interpretation. The first author would typically rephrase what she heard and asked the participants if they agreed with her interpretation. Each transcript was analyzed through an iterative process to ensure dependability of the themes identified. The narrative data were analyzed using initial coding, focused coding and axial coding[20].

Initial analysis of the timelines aimed at identifying general patterns, and grouping similar patterns together as a theme. Each timeline was examined first by considering whether infertility was represented as a critical life event that affected the participants' subjective emotional well-being; second, by examining whether participants' ability to maintain their overall level of functioning was impacted by the infertility experience, and finally by looking for a rebound to positive emotions at the time of the interview. The second level of analysis was directed at examining the course of individual timelines, with reference to the informants' narratives, which yielded rich information explaining the timelines.

3. Results

3.1. Patterns of adjustment

Examination of the narratives and timelines revealed four themes: 'one of the many', resilience, recovery and prolonged grief. 'One of the many' means that fertility loss was only one of several other life challenges and characterized one successful couple, one unsuccessful couple and one unsuccessful woman. Resilience denotes that infertility was perceived as a significant life event but the overall level of functioning was not adversely affected. Similarly, one successful couple, one unsuccessful couple and one unsuccessful woman were grouped under the 'resilience' theme. Recovery refers to infertility as a significant life event that adversely impacted the overall level of functioning. However, a rebound to positive emotion was evidenced by the time of interview. Two successful couples, four successful women, two unsuccessful couples and three unsuccessful women were clustered into this category. Prolonged grief signifies that infertility was perceived as a significant life event, the overall level of functioning was adversely affected, the emotions remained negative at the time of interview and characterized one successful couple and one unsuccessful woman. Case examples illustrating each category are presented in the following sections, using pseudonyms and autobiographical timeline. The participants' words appear in quotation marks and italics. Quotations represent the nearest English translation of the original responses in order to retain authenticity; thus they might include grammatical imperfections.

3.2. 'One of the many' -Eliza's and Edmund's story

Eliza (31 years old) and Edmund (35 years old) had been married for 10 years at the time of interview. Eliza is a mainland Chinese resident working as a nurse and only joined Edmund, self-employed, in Hong Kong five years after their marriage. When Eliza first arrived in Hong Kong, her top concern was her career opportunities and she worked hard to earn her professional certificate to practice nursing in Hong Kong. The need to adjust to a new environment was Eliza's second concern and having to live with her parents-in-law strained the marital relationship. Eliza was said by her mother-in-law to be *"a burden"* to Edmund, not making financial contribution to the family, even though Eliza was already helping out in Edmund's company. Having a baby was not Eliza's *"primary concern"*, but to help Edmund *"fulfill[ing] his wish"* and meeting his parents' expectations.

In that same year after Eliza arrived in Hong Kong, Edmund was diagnosed with azoosperma. The diagnosis came as *"a big blow"* to both of them, when Eliza, and others, had

suspected that she was the cause of the couple's infertility. Fortunately, they were able to face the condition *"positively"* (Figure 1). With Eliza's support, Edmund sought treatment, but only to realize the need for IVF three years later, after his problem was rectified. They were unsuccessful with the first embryo transfer, but their moods were *"not so bad"*. Eliza successfully conceived following the second embryo transfer, and they were overjoyed. Eliza attributed the success to her being able to relax after she passed and obtained her nursing certificate. However, there was a stage of fear and anxiety when Eliza's pregnancy was unstable, which affected her mood.

While they were seeking treatment, Eliza discovered that Edmund's business was facing a financial crisis (due to SARS and economic depression). To Eliza, this was a bigger blow than childlessness, and their marital relationship was adversely affected. Eliza used her savings to help Edmund tide over the crisis, unknown to his parents. Thinking that the problem was solved, Eliza was *"very active and concentrated on receiving IVF treatment"*. However, unbeknown to Eliza, the financial crisis was not fully resolved and it escalated, although she discovered this only when she was told by her father-in-law after the birth of her son. Despite having just delivered, the marriage was on the verge of breaking up. Eliza was unhappy that Edmund had kept her in the dark, even though she could sense Edmund's frustration and listlessness at times during her pregnancy. Although Edmund's intention was to solve the financial problem on his own and not to bother her during

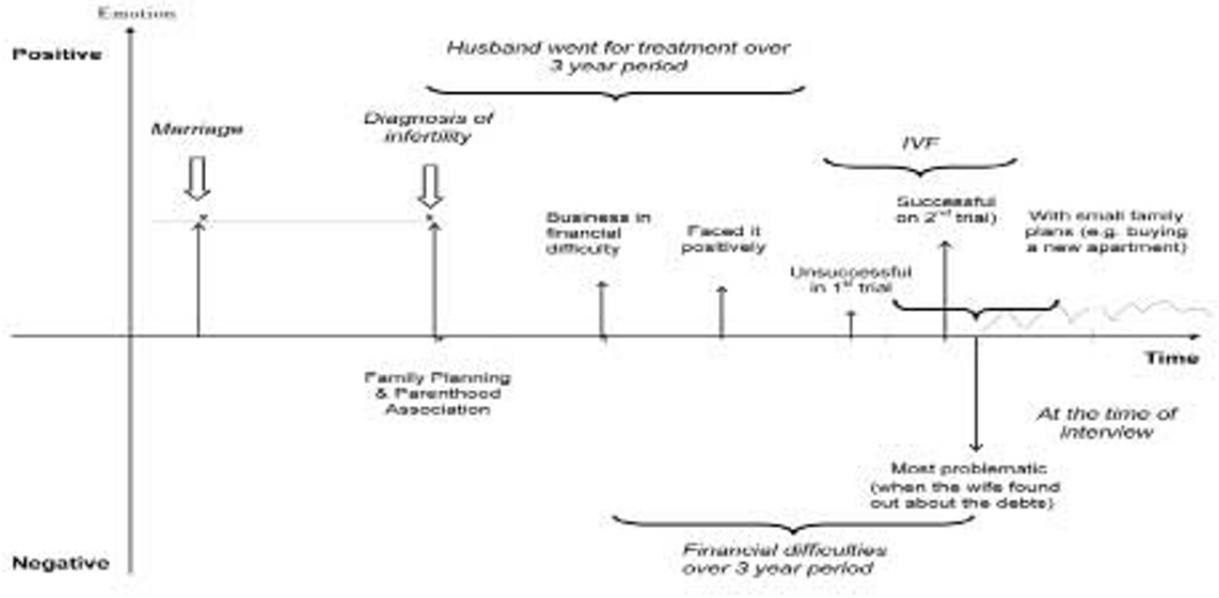

Figure 1. Eliza and Edmund's autobiographical timeline

the pregnancy, Eliza perceived it as a lack of trust. However, she decided to give the marriage a second chance after being counseled by her aunt whom she respects and looks to for advice when necessary.

Eliza's mother-in-law had encouraged her to find a job quickly so as to settle the debts. However, Eliza insisted of nursing her baby for six months before she looked for a job. At the time of interview, they have already paid half of the debts. With more stable incomes and the presence of a child, the *"directions for the family"* became clearer. The couple was more open and honest in their communication, and spent more time in childrearing, although Edmund complained of losing personal space. They also began to have small plans like going for a family holiday, and moving to a new house when they have sufficient savings.

3.3. Resilience-Peggy's and Peter's Story

Peggy and Peter had been married for 11 years and were each 40 years old at the time of the interview. They had been actively trying to conceive for six years, and combined male and female infertility factor had been diagnosed. They had undergone two cycles of unsuccessful ICSI. As presented in Figure 2, emotional dips occurred at two time points: firstly in the early years of their marriage, due to the transition to married life, and secondly when Peggy had surgery for a fibroid condition. Although neither of these troughs was directly related to infertility, Peggy's and Peter's narratives nevertheless reflected the emotional swings they experienced during ICSI.

Peggy began IVF with high hopes, and she worked very hard to prepare herself to be at the optimal condition for embryo implantation to take place. Thus, she was *"rather disappointed"* when the first embryo transfer was unsuccessful. However, she remained hopeful for the next three embryo transfers, only to experience disappointment when the first cycle was completed without a successful conception. These experience of drastic emotional changes left Peggy feeling apprehensive about starting a second IVF cycle:

"[T]he emotional changes were actually rather big [hand gestures to draw big waves]…. That is from feeling so hopeful during embryo transfer, thinking that [I] should have a baby after nine months, to great disappointment when [I] discovered [menstruation] in the toilet early in the morning after 10 days or so."

Eventually, the numerous unsuccessful embryo transfers brought a change in Peggy's attitude towards treatment -

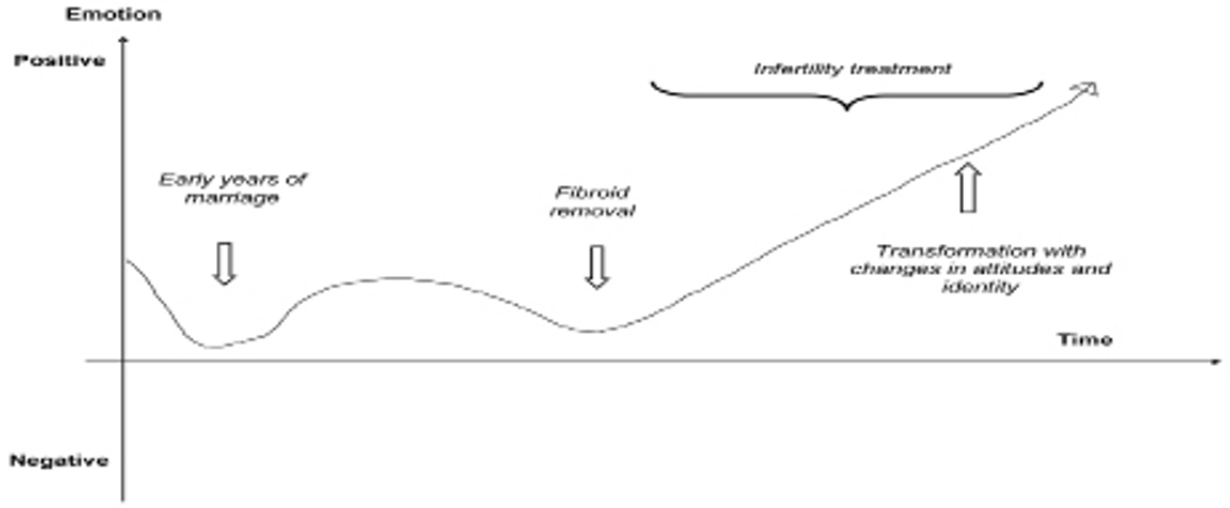

Figure 2. Peggy's and Peter's autobiographical timeline

from working hard to giving it a try. However, she was *"not ready to reconcile"*, and still hoped to give birth to a child. Her initial plan was to stop all attempts to conceive at age 40, but she decided to persevere for another two years. On the other hand, Peter's attitude was deeply influenced by the Buddhist teachings, and he began to adopt a *"let-it-be"* attitude towards childbearing. At the time of the interview, Peggy was receiving Traditional Chinese Medicine (TCM), hoping to improve her body condition so that she could give ICSI another chance, but Peter was more concerned about Peggy's health.

Peter's and Peggy's resilience was reflected in several aspects of their life. First, their marital relationship was not adversely affected by childlessness because they viewed marriage and childbearing as independent of each other. Peggy said: *"It is because of our good relationship, then you will [think] 'why not have a kid?' "* Second, their relationship remained strong and they attributed it to their open attitude and communication between each other. For example, they had discussed about bringing forward their retirement plans and bequeathing their assets to their nieces and nephews after their death. Support from their extended family members was also important, as indicated by Peter:

"My mother will not say, "Why is there no child yet? No, it cannot be so. This is not my daughter-in-law." ··· All my younger sisters are aware of this process. All of us are able to accept the fact that it [ICSI] did not work, thus they would not reprimand us or do anything else."

Third, they were able to accept that they might remain childless for the rest of their lives despite their best efforts. Fourth, they were able to resist pressure from their community; this was particularly salient for Peter who came from a traditional community where fertility is highly prized.

Furthermore, Peggy and Peter reported that through surviving the experience of infertility, particularly the tedious IVF procedures, they experienced a change in their interpersonal relations, worldviews, beliefs, and subsequently an identity change. For instance, they became active helpers for friends in need, *"happy to share it [their experience] with others"*. Peggy initially kept her treatment a secret from her colleagues, but after she completed the cycles, she was able to be open and share her experience, with the hope of helping them *"to be mentally prepared"*.

3.4. Recovery-Rose's and Ryan's Story

Rose (36 years old) and Ryan (37 years old) had been married for five years at the time of the interview. Female factor infertility had been diagnosed, and the couple had sought medical help a year after their marriage. Rose rejected IVF initially, but eventually she *"persuaded"* herself to accept it because her desire for a child was greater than her fear of the treatment. As their timeline shows (Figure 3), their experience of infertility treatment epitomized the emotional roller coaster portrayal of infertility and infertility treatment. This was further verbalized:

Ryan: At that time [during treatment], she gave many responses and indications as if she was pregnant; then I was restless and fidgety. When I knew it [the test result] was negative, I suffered a big blow. Ha, I still had to console her. I had to shoulder all the pressure, very big pressure there. I was also down for a long time myself.··· We had a hard time... the process was actually···very tiring and··· it made [me]··· [I] do not know how to say.

Rose: Very anxious.

Ryan: Yes, [I] do not know why? Up, down··· the mood fluctuation was so big.

The negative impact of unsuccessful treatment was explicitly described by Rose.

"At the end, it was a horrible night when it was proven unsuccessful; my period suddenly came. I cried as if I were going to 'tear down the building'. It did not help even when my husband hugged me to sleep. I cried the whole night and went to sleep only after I cried for a very long time. I feel that in this whole event, this is the most frightening because that was my first IVF attempt and it never crossed my mind that I could still fail in IVF···. My emotion dropped all the way down to the bottom pit, 'died immediately' ··· my mood was really bad for the whole week; I cried till 'the heaven and earth turned upside down'."

Following her first unsuccessful IVF attempt, Rose wanted to pursue a second attempt while they applied for adoption simultaneously. Their grief over the second unsuccessful IVF attempt was short-lived when they knew that they were matched with a child for adoption. Rose felt she had been *"upgraded"* as a mother, and Ryan was happy with the addition of a new family member. Nevertheless, they

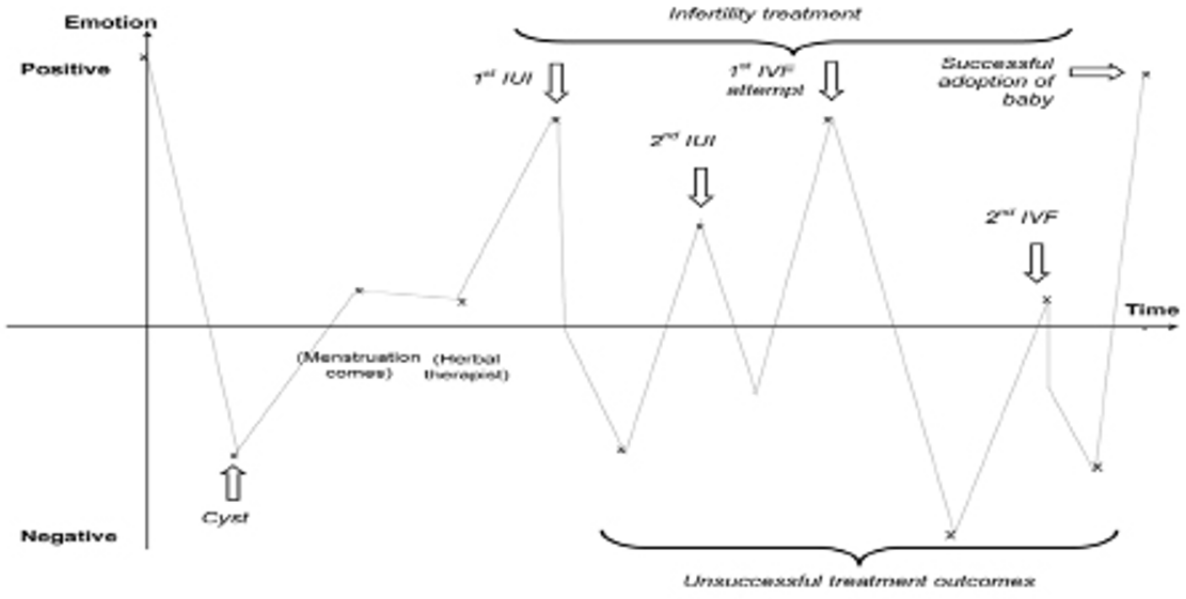

Figure 3. Rose's and Ryan's autobiographical timeline

reported that their experience of IVF would remain as *"part of [their] life"*, which they *"cannot let go"*. At the time of interview, Rose also wondered if she would ever regret her decision not to *"gamble for one more round"* when she reached the age of 40.

3.5. Prolonged Grief -Nina ' s Story

Nina was interviewed alone. At the time of the interview, she was 39 years old, had been married for 10 years and was diagnosed with tubo-peritoneal factor. Nina had been actively seeking treatment for nine years, and had tried different treatments before IVF. When everything (including IVF) failed her, Nina even went to *a feng-shui* master for guidance.

Nina had been the principal actor in seeking assistance for infertility, while her husband provided her with implicit support only, which she perceived as inadequate. There was also a lack of care and concern from her social networks, such as her husband's siblings, colleagues and friends.

As revealed in her narrative and in her autobiographical timeline (Figure 4), Nina engaged with IVF with high hopes and was not anxious when the first IVF cycle was unsuccessful. However, her emotions and level of hope changed as she continued the treatment. She began to doubt her own biological ability and wondered *"why it could not work at the uterus?"* Her worldview was challenged:

"I have put in so much effort, used so much money, so many days of my annual leave but the outcome remains the same... people say you reap what you work hard for… what you gain will be equivalent to the amount of effort you put in. It should be in proportion even if 'it is half the result with twice the effort' . … [Action] had been taken but no [result]."

Her religious belief was also shaken, and she was *"unable to face God again."* Finally, she became depressed and suicidal after the failure of her third IVF cycle.

"[I] begin to drop to the bottom; [I experienced] very negative emotion. If I had another failure, it was straight down, after which, it could not go any further down; it was at the point of suicide. When this moment arrived, I fell apart."

As the timeline reveals, Nina seemed less adversely affected by the failure of her final embryo transfer. The reason was that she had changed her life goal. Instead of concentrating on achieving a pregnancy, she pursued a postgraduate degree and worked on her career. However, at the time of interview Nina's negative emotional level was projected to continue into the future:

"It cannot be helped because actually I can tell you this: [I] can get back to normal, close to normal, but I cannot avoid these events [e.g., pregnancy news, relatives and colleagues talking about children], and once you give me these types of events, there will be a drop in my emotions."

Although Nina was able to make sense of the whole infertility experience, the meanings she ascribed to it were mainly negative. She appraised the treatment process as a 'win-lose' battle, in which she always saw herself as a loser. She was upset that, as an only child, her failure to reproduce the next generation would bring about the extinction of her family lineage.

"I think it will be my saddest life event. I have the confidence to improve on other aspects of my life or could have reached the final point. This is the only event that I began with much confidence, I thought. However, when the final moment came, I was defeated. This is the only issue that I will admit defeat … I lost to nature. I am clueless. It is useless no matter how smart I am."

4. Discussion

Generally, the findings concur with existing literature- the course of coping with and adjusting to infertility can be emotionally taxing[24]; variability exists in the degree of adjustment to infertility, which in turn influences well-being[25]; the ability to find positive meaning in the experience of infertility is a significant predictor of reduced subsequent personal, marital and social problems[26]; incoherence and embitterment are associated with negative

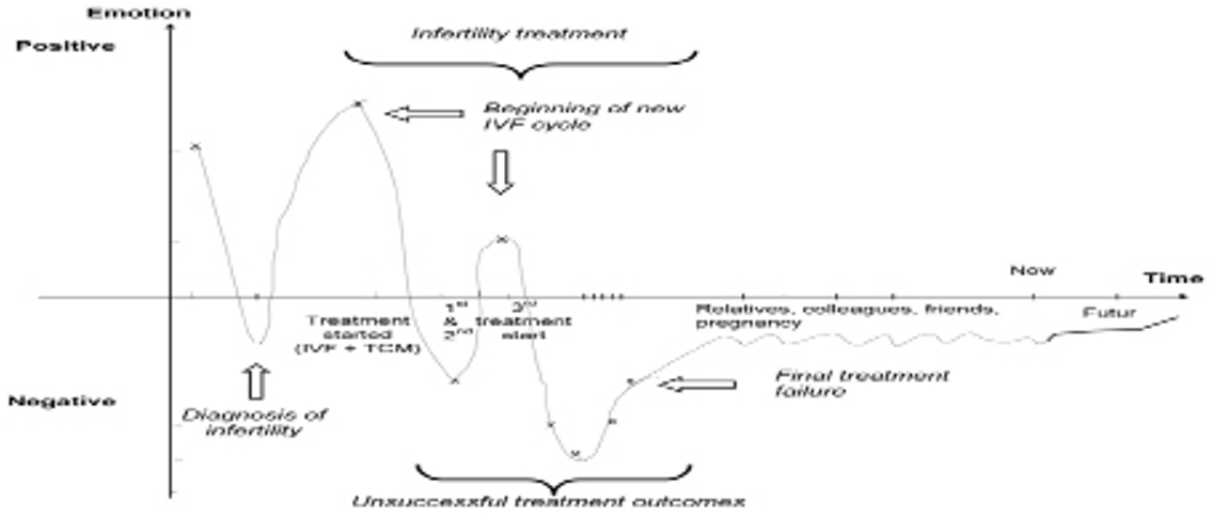

Figure 4. Nina's autobiographical timeline

sense-making of a significant life event[27]. However, it was striking to note the similarities in participants' lived experience and adjustment to infertility over time, irrespective of the treatment outcome. The stories strongly reinforce the importance of ongoing support at all stages of the treatment process and post-treatment process, for both successful and unsuccessful clients.

The findings are discussed in this section, with particular attention paid to the role counselors can play in assisting women and men who perceive and adjust to infertility and infertility treatment differently, as well as during post treatment. The creative use of autobiographical timeline in counseling session is also discussed.

4.1. Implications for pre-treatment counseling

Despite advance briefing on the treatment procedures, its risks and chance of success, study participants were still *"caught by surprise"* that IVF or ICSI could fail them. In addition, they also found the daily injections and mood swings from the medical intervention challenging. These findings suggest the importance of counselors in providing a reality check with couples before treatment, assessing the emotional support needed during treatment, and providing ongoing professional support during this process.

4.2. Implications for counseling people with different patterns of adjustment during treatment process

'One of the many'. The findings suggest that infertility may not be a major life event that would create changes in other aspects of an individual's life compared to other life events such as financial crisis and marital conflicts, as presented by the Eliza and Edmund. This is similar to the concept of *nonevent development transition*[28]. However, counselors working with this group of individuals should remain attuned to other areas of needs, such as poor marital communication, and be able to provide opportunities for them to communicate constructively during treatment.

Resilience. Resilience seems to result from the interaction of various factors such as personal traits, interpersonal relationships and the nature of stressors[29-31]. Although the onset of infertility and medical intervention may significantly affect the participants' lives, resilient participants such as Peggy and Peter were able to adapt to the changing demands of stressful experiences flexibly[32], re-establish emotional equilibrium, and use the loss as a springboard for emotional growth[33, 34]. When working with this group of individuals, counselors may focus on helping them to reappraise and reconstruct meanings and cognitive schema accompanying their life transition[19, 35]. Thus these individuals may be enabled to enjoy a more positive emotional state over time.

Recovery. For this group of participants, infertility was perceived as a significant developmental event that triggered stress and anxiety, and affected their personal well-being. Despite experiencing an "emotional roller coaster" they were able to emerge in a strong position. The presence of sub-threshold symptom levels and the trajectory of functioning level distinguished recovery and resilience[36, 37]. Although the experience of unsuccessful IVF attempts may serve to strengthen a marital relationship, the findings of this study showed that one participant ended with a marital breakdown. Counselors working with this group of clients may need to work toward helping them handle the anxiety, realize and appreciate the gains of having survived infertility, reconstruct positive self-concept, expand and strengthen the support they may receive from spouse, family members, close friends, medical personnel, and explore the availability of acceptable options (e.g. adoption, childfree lifestyle).

Prolonged grief. Individuals experiencing prolonged grief may exhibit incoherence and embitterment, which are associated with negative sense-making of a significant life event[27]. Thus, there is a need for counselors to assess the necessary support to enable them to handle and work through the grief, address the embitterment so that they could put a closure on this "chapter" of their lives, and move on to reconstruct their lives following medical

intervention. Helping clients to construct personally meaningful rituals to mark the end of this period in their lives could be powerful to healing as shown in previous studies[38, 39]. This is particularly pertinent for couples who lament the insensitivity of others to their plight[5, 40], and who later choose not to pursue social parenthood. They then need to deal with both losses (i.e. fertility loss and loss of a child), and may thus further tax their coping resources.

4.3. Implications for counseling successful individuals and unsuccessful individuals post-treatment

Successful individuals. Findings from studies on the meaning of infertility and successful conception using medical intervention include the challenges faced by the infertile couples during pregnancy stage, such as resolving the ambiguity of conception and reconciling with the idea that pregnancy has taken place[12], and suffering from depressive symptoms[11]; struggling with the psychological aspects of infertility and the ongoing care of a high-risk child[41]. Other studies reported no mental health problems among the couples during the transition to parenthood[13]. The findings of this study seem to suggest that the new challenges of parenting replace the earlier sorrows with new challenges (such as adjustment to a new family member, loss of freedom, personal space and time, changes in marital cohesiveness, and changes in life focus). As noted by Hammarberg, Fisher, & Wynter: "It is possible that in pregnancy after ART, parenthood might be idealized and this might then hinder adjustment and the development of a confident parental identity"[42]. The importance of assessing and attending to clients' perceived emotional and physical health during this transition is thus implicated in the findings of this study.

Unsuccessful individuals. The findings suggest that couples who failed in their efforts to birth a child might choose different paths after ending medical interventions. Some chose to accept childlessness (usually tinged with regrets), some chose to redefine family and have a different focus in life, while others chose social parenting. Irrespective of the subsequent paths, the findings seem to suggest the need for grief work, as well as the potential value of working through and separating the desire to reproduce and marital satisfaction. Simultaneously, couples can also be assisted in identifying issues (e.g. redefining self, family and future), life goals and options (e.g. going for further study, nurturing their hobbies and passion) that are within their control and that are more likely to give them life satisfaction and a sense of accomplishment[15].

Existing research has shown that those who choose adoption tend to experience greater life satisfaction[15] and demonstrate better adjustment[15]. However, it is still premature and potentially inaccurate to conclude that those who choose to stay childless following unsuccessful medical intervention tend to have problems in adjustment[43] -a finding replicated in this study suggesting that one potentially important implication for counselors is to help couples in negotiating the challenging life transition, whether into biological parenthood, social parenthood or childless life successfully.

4.4. Implications for counseling using autobiographical timeline

The combined use of qualitative interview and autobiographical timeline shows its advantages in facilitating exploration on how participants made sense of their experiences, and revealing personal and complex experience of coping with, and making sense of, the infertility experience. First, the reflective nature of the drawing exercise and conversational way of interviewing provided a favorable platform for participants' exploration, conceptualization and articulation of their most intimate experiences. In this way, individuals can be engaged in an interactive, reflective exploration, with a visual aid. Enabling participants to tell their story provides them with an opportunity to engage in a conscious re-examination and reappraisal of their experience, and its meaning for them and facilitate a change in how they view their problem, life perspectives and self-identity.

Second, the drawing permits the visual capture of the individual's socio-historical-cultural environment and facilitates the counselor's understanding of that environment. In this way, the counselor is able to trace the triggering points, changes in values and perspective, the trajectory over the course of infertility and infertility-treatment behaviors. As such, understanding the dynamic process of meaning-making and significance of a life event to an individual becomes easier.

Third, it can be an empowering experience for the participants, when they have the freedom to decide, express and shape the construction and reconstruction of their experiences. As one participant said in reflecting on her experience of participating with her husband in this study, the autobiographical timeline was a powerful tool that enabled her to visualize, make sense of and summarize their life experience vividly:

"It is just like this [pointing to her autobiographical timeline]; it is a surprise. After plotting it out and remembering the past, it is really like this... from a happy marriage at the beginning, the subsequent journey did not go that smoothly in many aspects, we subsequently emerged from the dip to the peak."

Fourth, the autobiographical timeline can also be useful when working with couples. The partner is able to hear and "see" the impact and meaning of the experience, through

which marital communication can be facilitated.

4.5. Limitations of the study

There are several limitations to this study. First, the participants were recruited from a single clinic. Thus, any generalization of the findings to other groups should be made with caution, though generalizability of findings was not the objective of the study. Second, the effects of the interventions in the earlier study may have an influence over the participants' coping abilities. Third, the autobiographical timelines were constructed retrospectively, thus the emotions actually experienced at the time might not be truly reflected due to recall bias. This problem could be overcome in future research by conducting a prospective study with couples who are in the early stage of infertility treatment to provide more information on their lived experience of infertility, and to document their trajectories over time. Fourth, where couples participated in the study, the timeline was a joint timeline rather than individual timeline, thus individual perspectives and differences between members of the couple were not captured. Future research involving couples utilizing individual timelines may examine their effectiveness in facilitating marital communication.

This paper focuses on identifying shared structures of meaning and providing a framework for understanding the patterns of adjustment of Chinese women and men in Hong Kong. The case examples presented aim to illuminate and provide insights into the peaks and troughs and changes experienced by participants. To our knowledge this is the first time a combined qualitative interviewing and an autobiographical timeline has been utilized in research with patients with infertility problem and has demonstrated initial success in capturing an in-depth understanding of living with infertility and coping with infertility treatment. While the exploratory nature of the study and the relatively small number of research participants mean that generalizations as to the wider applicability of the method must be made with caution, we are optimistic that it has potential for future research use that can both promote evidence-based reflective practice for researchers and provide an empowering experience for participants.

Conflict of interest statement

We declare that we have no conflict of interest.

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