ORIGINAL RESEARCH ARTICLE

Managing Psychological Trauma of Infertility

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Abstract

The psychological burdens that patients experience while undergoing treatment for infertility in both men and women are well known and documented, especially within African populations. There are not many tested practical solutions to the problem, and clinical personnel have little time for personal counselling. This article described the development and delivery of an intervention designed to manage the psychological trauma that patients experience while dealing with infertility in resource poor settings. The Fertility Life Counselling Aid (FELICIA) has been developed to manage the psychological morbidity associated with infertility using cognitive behavioural therapy (CBT) based strategies. FELICIA provides a structured step by step guide to infertility counselling and is designed to be used by general community or hospital health workers rather than specialist psychologists or psychiatrists. This should make it a cost-effective option to deliver holistic care to patients treated for infertility, especially in resource poor settings. *(Afr J Reprod Health 2019; 23[2]: 76-91).*

Keywords: Cognitive Behavioural Therapy, Community Behavioural Therapy, Community Health, Infertility, Infertility Counselling, Mental Health in Reproduction, Reproductive Health

Résumé

Le fardeau psychologique que subissent les patients subissant un traitement contre l'infertilité chez les hommes et les femmes est bien connu et documenté, en particulier au sein des populations africaines. Il n'y a pas beaucoup de solutions pratiques testées au problème et le personnel clinique dispose de peu de temps pour des conseils personnels. Cet article décrit le développement et la mise en place d'une intervention conçue pour gérer le traumatisme psychologique subi par les patients victimes d'infertilité dans des environnements à ressources limitées. Le FELICIA (Fertility Life Counselling Aid) a été mis au point pour gérer la morbidité psychologique associée à l'infertilité à l'aide de stratégies basées sur la thérapie cognitivo-comportementale (TCC). FELICIA fournit un guide structuré étape par étape pour le conseil en matière d'infertilité et est conçu pour être utilisé par les agents de santé de la communauté ou des hôpitaux en général plutôt que par des psychologues spécialisés ou des psychiatres. Cela devrait en faire une option rentable pour dispenser des soins holistiques aux patients traités pour l'infertilité, en particulier dans les pays à ressources limitées. *(Afr J Reprod Health 2019; 23[2]: 76-91).*

Mots-clés: Thérapie comportementale cognitive, thérapie comportementale communautaire, santé communautaire, infertilité, orientation sur l'infertilité, santé mentale en reproduction, santé de la reproduction

Introduction

Infertility is defined as failure to conceive after regular unprotected sexual intercourse for 1 year[1]. The World health Organisation (WHO) in 1992 estimated that 8 to 12% of couples worldwide have trouble conceiving a child; a recent study indicates the overall burden of infertility worldwide has remained the same from 1990 to 2010[2-3].

The motivation to become a parent and the value placed on the ability to procreate is important globally but varies between cultures. This is evidenced by the length and cost to which patients and their doctors are willing to go to conceive and deliver a healthy baby. While in some societies it is socially tolerated to remain voluntarily childless, in many African cultures, having a child is crucial for a couple's personal identity both socially and culturally. Furthermore,

the belief that having a child guarantees continuation of the family's heritage, fulfilment of religious and societal expectations, and an asylum in old age is an important sentiment shared by many African societies irrespective of the country of origin[4].

The problem of infertility spans beyond the clinical; it has psychological, socio-cultural and even religious implications in some communities with resulting consequences on the help seeking behaviour of infertile couples, including the choice and attitudes to treatment[4-9]. Although male factors contribute to about half of all cases of infertility, women are often held responsible for couples' inability to conceive, and they bear majority of the burden of treatments with accompanying distress and discomforts[9-10]. Women are also more likely to carry the psychological and sociocultural burdens of infertility[11].

Infertility is a recognized cause of anxiety, depression, marital discord, and violence amongst couples[11-13]. It accounts for more than half of patients seen in gynaecological clinics in African countries[3, 15-16]. Infertility leads to stress, thus the complexity of infertility-related stress and anxiety for couples is relevant and cannot be isolated from infertility management. Counselling in infertility offers the opportunity to explore, discover, and clarify ways of living more satisfyingly and resourcefully when fertility impairments have been diagnosed, offering an opportunity to combat infertility associated stress, even when the cause of infertility is unknown[17-18].

Dyer *et al* described a study in South Africa regarding women's expectations of infertility service[19]; results showed that women were lacking in information regarding infertility treatments and management, which often contributed to the stresses and anxieties that these women faced. Nevertheless, many infertility patients attended health facilities for treatment without infertility counselling due to lack of resources in human personnel and time in busy clinical settings. Counselling provides an opportunity to get information which is fundamental for treatment and prevention.

We therefore developed a Cognitive Behavioural Therapy (CBT) based counselling intervention to improve the psychological health and wellbeing of men and women having infertility problems in African societies, especially within resource poor settings. This paper describes the theoretical model for developing the intervention; the time, patient, and manpower costs have not assessed or developed here.

Development of Felicia

The study used the MRC framework for development and evaluation of complex interventions[20]. Four key elements for the development of complex interventions within health settings are described. These are the development, feasibility/pilot testing, evaluation and implementation.

This paper describes the development of the Fertility Life Counselling Aid (FELICIA) intervention[21]. A pilot randomised controlled trial, testing intervention for feasibility is currently underway in Nigeria and findings will be reported upon completion. The development phase included a literature review of the psychosocial consequences of infertility; identification of a theory-based approach to address these consequences; adaptation of the approach for infertility-related psychosocial distress; and strategies for integrating it within existing fertility-care services in Nigeria.

A review of the psychosocial consequences of infertility

A narrative review of scholarly articles was carried out from 2000 to 2016 through a literature search of major scientific data bases. The key findings are summarised in Table 1. Although infertility affects both men and women, research shows infertility in a woman increases the possibility that her human rights will be violated and her negotiating power within the family and society will be greatly reduced because of her failure to conceive[12-13]. In majority of African communities, women's treatment in the community, their self-respect and understanding of womanhood depend on motherhood[22]. Thus, women experience social stigma, relationship problems, and diminished emotional wellbeing due to infertility[23]. Even in matriarchal societies in Ghana, women have

Table 1: Key findings from scientific literature on psychosocial consequences of infertility

	Author (year)	Methodology	Key findings
1.	Domar *et al* (2000)[29]	Randomised control trial	The cognitive-behavioural and support participants experienced significant psychological improvement at 6 and 12 months compared with the control participants.
2.	Mabassa (2000)[30]	Qualitative research	The stigmatising effect of infertility was worse for women as men were protected from exposure as the cause of infertility. Younger respondents were more open to the idea of formal adoption than the older ones.
3.	Lee *et al* (2001)[31]	Cross-sectional survey	The research shows gender differences in responses to infertility and this should be considered when counselling infertile couples.
4.	Upton (2001)[32]	Review article	Infertility identified an invisible demographic variable making a case for social and ethnographic understanding of the importance of fertility for a better understanding of why some population policies have not been effective.
5.	Van Balen & Inhorn. (2002)[33]	Review article	Infertility definitions have been generalised based on western ideologies which have little or no relevance for the people living with infertility in various communities around the world.
6.	Chen *et al* (2004)[34]	Prevalence study	High prevalence (40.2%) of depressive and anxiety disorders were identified among women who visited an assisted reproduction clinic for a new course of the treatment.
7.	Dutton & Nicholls (2005)[35]	Critical analysis:	Underreporting of domestic violence and victimisation towards males when compared reports made by females as men tended not to view female violence against them as a crime.
8.	Dutney (2006)[8]	Book Chapter	Infertility is experienced as a religious crisis therefore impacting perceptions and acceptance of Assisted Reproductive Techniques (ART).
9.	Ameh *et al* (2007)[36]	Cross-sectional study	Results showed 41.6% (n=97) of the women had experienced domestic violence as a direct result of infertility.
10.	Donkor & Sandall (2007) [24]	Survey	The results showed 64% of women felt stigmatised and improving social status of the women minimised the impact of stigmatisation.
11.	Antai & Antai (2008)[12]	Survey	Findings suggest socioeconomic, religious, and cultural influences in the women's attitudes towards IPV.
12.	Castro *et al* (2008)[13]	Survey	Access to resources that empower women did not automatically decrease risk of violence thus specific interventions are needed to stop the cycle of violence.
13.	Hollos *et a*l (2009)[22]	Mixed methods research:	Childless women face cultural, and socio-economic hardships. The degree of hardship is influenced by patrilineal and matrilineal family systems.
14.	Ofovwe & Agbontaen-Eghafona (2009)[27]	Review Article	Infertility spans beyond a being a clinical condition; it has varying cultural definitions which does not always refer to an inability to give birth to a child.
15.	Oladokun *et al* (2009)[37]	Qualitative research	Key barriers to adoption identified in this community were cultural practices, stigmatization, financial implications, and bottle-necks in the adoption procedures.
16.	Weinger (2009)[38]	Qualitative research	The women reported that even though they raise children, they are still considered childless because of not producing biological offspring of their own.
17.	Nieuwenhuis et *al* (2009)[39]	Qualitative research	Results suggest difference in priorities according to gender; men prioritised the economic impact of infertility while the women were more concerned with the psychological consequences of infertility.
18.	Cui (2010)[6]	Case study	Infertility prevention and care remain neglected and ranked low on the public health priority list.
19.	Van der Broek (2010)[18]	Report Article	Highlights the benefits of infertility counselling by mental health professionals for clients with fertility disorders.
20.	Ardabily *et al* (2011)[11]	Cross-sectional survey	61.8% reported having experienced domestic violence because of their infertility with injuries were reported in only 6% of participants.
21.	Dhont *et al* (2011)[40]	Mixed methods	Domestic violence, union dissolutions, sexual dysfunction and other psychosocial consequences reported were more frequently among

			infertile couples, which can be severe.
22.	Galhardo *et al* (2011)[41]	Cross sectional study	Subjects with an infertility diagnosis showed significant higher scores in psychopathological measures.
23.	Ogawa *et al* (2011)[42]	Survey	No difference in anxiety or depression scores for infertility patients who had previous deliveries when compared to those who had not. Female patients with male factor had significantly lower anxiety scores.
24.	Omosun & Kofoworola (2011)[43]	Cross sectional study	Factors that favoured willingness to adopt- Age >40 years, infertility duration >15 years, and understanding the implication and process of adoption. A poor attitude towards adoption even amongst infertile couples was also seen.
25.	Roudsari & Allan (2011)[25]	Qualitative research	Findings suggest the benefits of considering religious and spiritual issues in addition clients' psychosocial needs, by infertility counsellors.
26.	Adesiyun *et al* (2012)[44]	Case report	Case study highlighting desperate action of an infertility patient in response to physical and verbal abuse du to delayed pregnancy.
27.	Fledderjohan (2012)[23]	Qualitative research.	Women experienced severe social stigma, marital conflict and of mental health complications.
28.	Mascarenhas *et al* (2012)[3]	Prevalence study	Infertility prevalence was highest in South Asia, Sub-Saharan Africa, North Africa/Middle East, and Central/Eastern Europe and Central Asia.
29.	Yusuf *et al* (2012)[45]	Cross-sectional study	Psychological distressed was identified in 28.4% of men with infertility (17.3% depression; 11.1% generalised anxiety disorder). Psychological distress was significantly associated with a history of marital divorce.
30.	El-Kissi *et al* (2013)[46]	Cross sectional study	Women suffered more infertility-related general psychopathology, anxiety, depression and self-esteem than men.
31.	Hammarberg & Kirkman. (2013)[10]	Review Article	The need for infertility care and support in low income countries have been trivialised by high-income countries and stakeholders; more focus is placed upon family planning activities and population control policies.
32.	Abarikwu (2013)[47]	Review Article	Identifies association between increase in impaired semen quality and endocrine factors, with increased exposure to heavy metals and mycotoxins.
33.	Wu *et al* (2013)[7]	Prospective cohort study	Couples that spent the most time on care were significantly more likely to experience fertility-related stress.
34.	Rouchou (2013)[5]	Review Article	The severe social, psychological and economic consequences for infertility patients in developing countries can be managed using culturally appropriate education programmes.
35.	Momoh *et al* (2015)[48]	Retrospective cohort study	Amongst the infertility couples, 52.4% of men had normal SFA using the World Health Organization 2010 criteria as a guideline.
36.	Bokaie *et al* (2016)[26]	Qualitative study	Lack of awareness about infertility in societies encourages superstitious beliefs.

described how the blame for infertility is disproportionately attributed to them, even by their fellow women[23-24].

Critical analysis of literature identified four main themes as sources of psychological burden to infertility patients within the African context. They include:

1. Coping with infertility diagnosis in relation to self, spouses and amongst family and friends[12,22-23,25].
2. Dealing with demands of infertility treatments which have physical, social, and financial implications[5-7].
3. Understanding why treatments fail and coming to terms with it socially and in relation to personal faiths[18,23,26].
4. Knowledge and attitudes toward alternatives to childlessness including adoption[27-28]

Identification of a theory-based approach

The cognitive behaviour therapy (CBT) was chosen as the theoretical basis of the proposed intervention. CBT is a structured exchange of mind-sets and viewpoints between therapist and client that aims to modify unhelpful and unhealthy thinking (cognitions) and behaviour displayed by

client's feelings and actions (behaviour). It has been applied to psychological conditions such as anxiety and depression[43,49]. It has also been incorporated into public health programmes to deal with lifestyle problems such as smoking, obesity and promoting breastfeeding[50-53].

Cognitive behavioural therapy (CBT) challenges thoughts. It helps individuals to recognise, address and correct inaccurate and often unhealthy beliefs and thoughts, replacing them with positive, helpful, healthy thoughts, beliefs, and behaviour. It is a structured, problem-oriented intervention that is focused on solving a present problem and has become a treatment of choice for various mental health conditions[54-58]. Counselling in infertility using CBT techniques, offers the opportunity to explore, discover, and clarify ways of living more satisfyingly and resourcefully when fertility impairments have been diagnosed, offering a pathway to reducing the stress levels of the inflicted even when the cause of infertility is unknown[17-18].

The Fertility Life Counselling Aid (FELICIA) was developed as an adaptation of the Thinking Healthy Programme (THP). THP is a CBT-based intervention for perinatal depression, available as a supplement to the World Health Organization's mhGAP Intervention Guide (mhGAP-IG), to be used in non-specialized health-care settings[59]. One of the priorities identified in the mhGAP guideline is depression in the perinatal period[60-63]. The Thinking Healthy Programme (THP) was developed as a solution by providing detailed step by step instructions on how to implement the guidelines contained in the mhGAP-IG, for the management of perinatal depression.

FELICIA is largely modelled on THP, using its core principles of intervention. Thinking Healthy seeks to change unhelpful thinking styles and consequent undesirable behaviour by using 3 key steps. These steps are represented by culturally appropriate illustrations that help patients easily identify and relate to the concepts (Figure 1). The 3 steps are:

a) Learning to identify unhealthy ways of thinking.
b) Learning to replace unhealthy thinking with healthy thinking.
c) Practising healthy thinking and behaviour.

This method promotes easy explanation of the treatment options and exchange of information by gaining an insight to patient's perspectives to the infertility journey; this is central to the therapeutic principle of talking therapies[64-65].

The narrative approach: Incorporating stories and analogies in CBT

Stories and analogies are an effective way to pass on information and are encouraged by cognitive behavioural therapists, as a means of challenging unhelpful thinking behaviour, enhancing rapport and promoting the personal impact during therapeutic talking sessions[55]. The stories in FELICIA use ideas from true life events derived from day to day relations with patients, colleagues and friends with fictional characters. It utilises culturally appropriate stories and analogies to describe and buttress healthy and unhealthy thinking styles. Blenkiron explains the significance of inventing and developing stories as a skill for CBT through ideas from clinical supervisions, educational workshops or information volunteered by the client[55].

The stories in FELICIA relate the same situation in 2 different perspectives – an unhealthy unhelpful thinking style and a healthy helpful one (Figure 2). Thus, FELICIA uses stories and analogies to:

a) Identify the unhealthy ways of thinking in the story A.
b) Replace unhealthy thinking with helpful and healthy thinking in story B.
c) Practise and healthy thinking and behaviour by relating to and making good choices highlighted in the stories and analogies.

The use of stories is central to many African cultures as a culturally acceptable means of passing information for generations [66-68]. It discourages feelings of stigmatisation by the patient as discussions are initially held in third person before being related to the patient's personal experiences. This makes it easier for patients to face their reality; at the same knowing that they are not alone in this struggle[55,69].

Figure 1: Picture extracted from the Fertility Life Counselling Aid (FELICIA) showing the 3 steps of Thinking Healthy Programme (WHO, 2015)

Modelling the intervention

Based on critical literature review, we identified the four main sources of psychological burden for infertility patients especially within African settings in Table 2. How we think of ourselves or how we believe we should, behave and act, which is our self-concept, determines the magnitude of our perceptions towards a problem. Self-concept is defined as the totality of or beliefs, preferences, opinions and attitudes towards our personal existence[70]. Thus, dealing with the psychological morbidities associated with infertility should be viewed personally and in relation to others around the patient, which could directly or indirectly contribute to the patients' despair. In addition, we also met with the developers of THP to discuss ideas of adapting the programme to meet the needs of infertility patients.

Based on this understanding in conjunction with the developed themes, the FELICIA counselling modules were produced in Table 2:

1. A compulsory (introductory) module, which explains FELICIA as an intervention.
2. Four optional counselling modules designed and tailored to patient's individual needs.

From the identified FELICIA modules, 10 pragmatic counselling sessions were derived, out of which patients should attend six counselling sessions to be delivered at the frequency of one session per week. The counselling sessions consist of 2 compulsory sessions from the compulsory module at week 1 and week 6. It also consists of 4 sessions to be picked from the optional modules, according to patients' individualised needs (Figure 3).Each counselling session has learning objectives and counselling procedure explained in a step by step task-based approach of delivery (Table 2). This method standardises FELICIA counselling for health-workers, ensuring everyone carries out the intervention in the same way.

Tailoring the intervention to individual client needs

After discussing the patient's infertility journey and expected outcomes, the health-worker assists

Task 4

Read the stories
Ask your patient to read John and Rita's stories in Box 5.1 and 5.2. This should take about 10mins to read.

Box 5.1: John & Rita's story

Rita and I have been trying for a child of our own for 18 months. At first, we thought it would happen naturally and we did not want to stress about it. But after some time we decided to seek medical help.

Rita and I had gone through a series of tests to find the cause of our infertility. The doctor advised that we both take some vitamins to help prepare us for pregnancy. But in addition to Rita's vitamins, she needed to take some other drugs. We are told they contain hormones. Poor Rita, the drugs make her feel awful. She is moody all the time. I feel for her really; after all, I had to do was give a sample. She has endured so many blood tests, ultrasounds and some very painful procedures! All this happens in private too; we have to carry on like nothing is happening. Enduring month after month of constant disappointments is enough to make any one moody.

Well, what can we do? We just need to keep trying. I try to say nothing when she is upset. To be honest, I really don't know what to say and fear I might just say the wrong thing. I hope the medication works. I believe that is the only thing that can make her happy again.

Box 5.2: John & Rita's story

Rita and I have been trying for a child of our own for 18 months. At first, we thought it would happen naturally and we did not want to stress about it. But after some time we decided to seek medical help.

Rita and I had gone through a series of tests to find the cause of our infertility. The doctor advised that we both take some vitamins to help prepare us for pregnancy. But in addition to Rita's vitamins, she needed to take some other drugs. We are told they contain hormones. Unfortunately, the drugs make Rita feel awful. She is moody all the time. I feel for her really. I had to give a sample at the clinic and I know how awkward that felt for me. So, I understand how hard it must be for her after having endured all the different tests, some very painful. I think the way we carry on like nothing has happened makes it harder to cope with the disappointment.

I agree we need to seek some treatment but it is not fair for Rita to carry the burden alone. I will go with her for the next consultation and discuss this with the doctor. Meanwhile, I think we should go to that restaurant I took her when we were courting. She loved it there. That should make her happy.

Box 5.3: John & Rita's unhelpful thinking and actions.

	Situation (Activating Event)	Thoughts and Feelings (Beliefs)	Action (Consequences)
Unhelpful 	John is unhappy about Rita's side effects from infertility treatment	John **feels sorry** for Rita but is **afraid** to discuss it. *To be honest, I really don't know what to say and fear I might just say the wrong thing"* *I believe that is the only thing that can make her happy again* (**Thinking in Extremes**)	*I try to say nothing when she is upset.* John is **avoiding the situation** by saying nothing. This will make Rita feel more alone **(Isolation).**

Box 5.4: John and Rita's helpful thinking and actions

	Situation (Activating Event)	Thoughts and Feelings (Beliefs)	Action (Consequences)
Helpful 	John is unhappy about Rita's side effects from infertility treatment	John **shares** the emotional burden with Rita *I agree we need to seek some treatment but it is not fair for Rita to carry the burden alone* This helps John **understand** how Rita might be feeling.	John is **dedicated** to helping Rita get better by **getting the help** they need. *I will go with her for the next consultation and discuss this with the doctor.* John finds **other ways to make Rita happy** while they seek help. *...I think we should go to that restaurant ... She loved it there. That should make her happy.*

Figure 2: Picture extracted from the Fertility Life Counselling Aid (FELICIA) showing using stories to discuss healthy and unhealthy thinking styles

Table 2: FELICIA counselling modules

No	Module Title	Content
1	Introductory module The FELICIA package	1. Introduction and Objectives of the FELICIA package 2. Discussing your infertility journey and your expectations from: a. Yourself b. Your health professional 3. Discussing the expected outcomes of the counseling sessions by a. Yourself b. Your health professional *Compulsory for all patients
2	Coping with Infertility & Childlessness	1. Infertility, causes & prevalence 2. Coping with childlessness & infertility 3. Relationship with spouses 4. Relationship with family 5. Interactions with friends
3	Receiving Treatment for Infertility	1. Coping with physical demands of infertility treatment 2. Relationship with spouse 3. Addressing the financial cost of infertility treatment 4. Interactions with family & friends
4	Unsuccessful Treatment(s)	1. Understanding why treatments may fail 2. Coping with unsuccessful treatment (loss) 3. Relationship with spouse after failed/ unsuccessful treatments. 4. Interactions with family & friends in event of treatment failure
5	Alternatives to childlessness	1. Understanding alternatives to childlessness – adoption, surrogacy, sperm donation 2. Making the right decision in context 3. Access to alternatives to childlessness 4. Communication of decision with spouse 5. Coping with family & friend's judgments & opinions

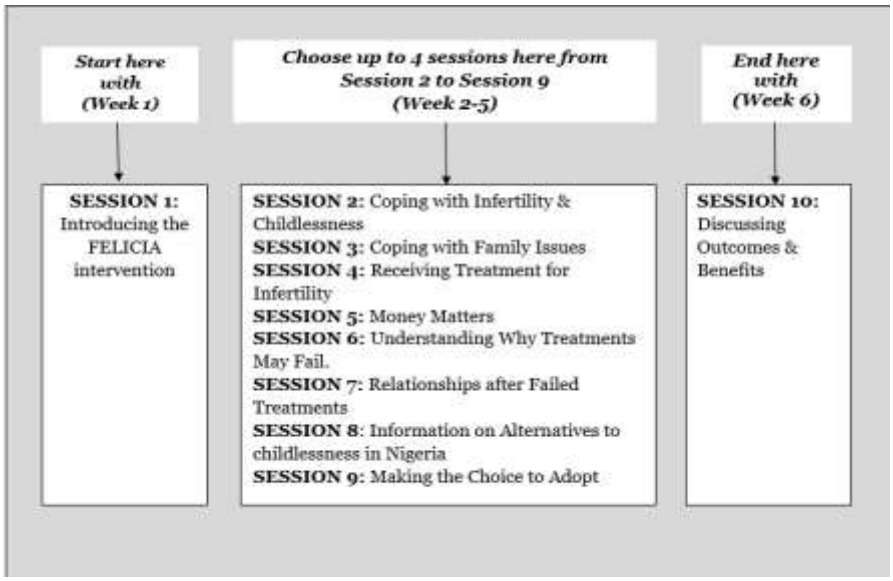
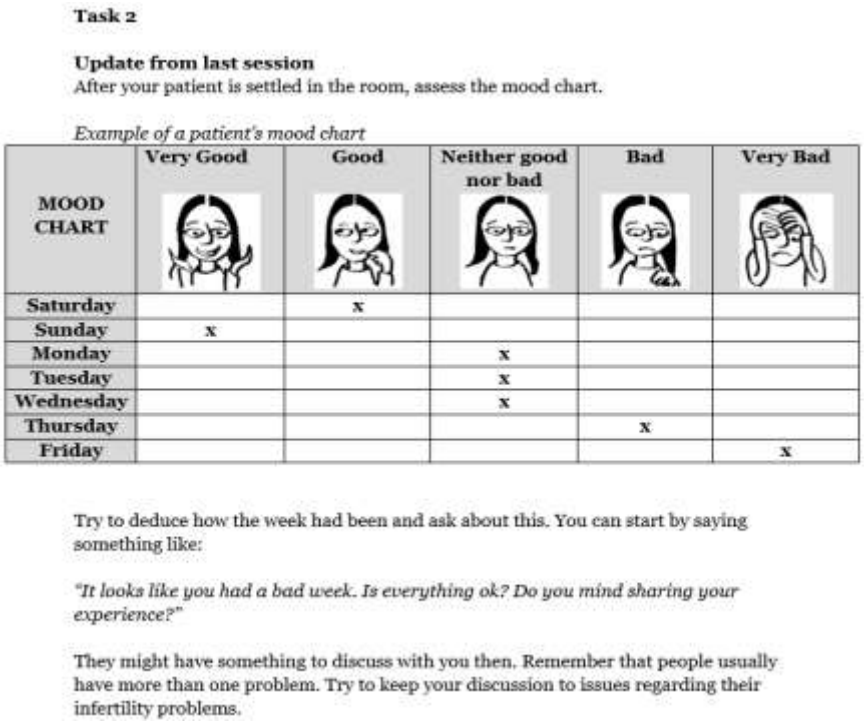


Figure 3: Picture extracted from the Fertility Life Counselling Aid (FELICIA) showing a guide to choosing counselling sessions

the patient in identifying training sessions tailored to patient's need. This is done with the full collaboration of the patient; the health-worker explains how often the sessions will take place. Sessions 1 and 10 are compulsory for all participants. With the patient's collaboration and full engagement, the health worker picks 4 sessions from sessions 2 – 9 tailored to patient's individual needs (Figure 3).



Task 2

Update from last session
After your patient is settled in the room, assess the mood chart.

Example of a patient's mood chart

MOOD CHART	Very Good	Good	Neither good nor bad	Bad	Very Bad
Saturday		x			
Sunday	x				
Monday			x		
Tuesday			x		
Wednesday			x		
Thursday				x	
Friday					x

Try to deduce how the week had been and ask about this. You can start by saying something like:

"It looks like you had a bad week. Is everything ok? Do you mind sharing your experience?"

They might have something to discuss with you then. Remember that people usually have more than one problem. Try to keep your discussion to issues regarding their infertility problems.

Figure 4: Picture extracted from the Fertility Life Counselling Aid (FELICIA) showing a mood-chart

Delivery of Felicia

Task shifting approach

Task shifting is a process of delegation whereby tasks are moved, where appropriate, to less specialized health workers to maximize the efficient use of health workforce resources[71-73]. Task shifting provides a solution to the scarcity of trained mental health professionals within resource poor settings in Africa. It also provides a low-cost solution to tackling gaps in health care services, especially in developing and resource limited societies.

FELICIA as an intervention uses the approach of task shifting by shifting role from often expensive and short-staffed specialised psychiatrist and CBT therapist clinics in African health settings to trained nurses and community health workers to deliver counselling using CBT techniques. In infertility clinics, patients are in regular contact with nurses and community health workers who will be trained to deliver the intervention. This promotes skill retention by health workers, sustainability of the programmes and increased access to mental health care for the patients. It also provides an integrated continuum of holistic care for infertility patients.

Guiding principles

The guiding principles behind delivery of FELICIA are as follows:

Holistic care: Infertility is a condition that affects not only the reproductive potential of those who suffer it; it also has social, psychological, and economic implications on those affected[4, 8-9]. As such in the care of infertility, a holistic approach is essential for total care of patients. This requires a multidisciplinary approach that helps men and women who suffer infertility live more satisfyingly while undergoing treatments; and after failed treatments[74-75].

Patient-centred: The objective of a patient-centred approach of healthcare is to provide the best care to the patient, which includes the utilisation of all available resources, equity based, accessible and affordable care for all, but it requires retraining healthcare personnel to acquire tolerance, cooperation and better awareness and utilisation of verified resources in health care[76-77]. Counselling care is tailored to the individual patient's needs

and should not be one size fits all. Infertility patients already have a lot to deal with daily outside of their diagnosis; discussions of irrelevant issues are not only time wasting but distressing. Thus, counselling is focused on patients' needs by providing 10 different counselling sessions that patients can choose from, in relation to their individual needs.

Community-oriented: People who are more socially connected live longer and experience better mental and physical health with a 50% greater likelihood of survival than their isolated counterparts[78]. Implementing stress-reducing care in co-operation with family members, the community, combined with a multidisciplinary approach to care, could improve the psychological and psychiatric symptoms, as well as improve help-seeking behaviour of those affected[79-80]. This counselling programme has been designed such that it can be adapted to be used within the community by all health care professionals at all levels. This is essential because stress and stigma related to infertility originate from community relationships because of an unmet expectation. The pictures, stories and analogies are based on day to day interactions within communities, both urban and rural; thus, relatable while providing counsel, health education and information as well as psychotherapy for infertility patients.

Culturally-sensitive: The perception of the inability to conceive in many African societies stem from the cultural expectations and values placed upon having a biological child. In many studies, it had been shown repeatedly that cultural expectations are a major source of stress and stigma for both infertile men and women[6, 12-13]. Cultural sensitivity during counselling is essential on both sides of the infertility coin. On one hand, it acknowledges the importance patients place upon the cultural meaning of having one's own child. On the other hand, it introduces patients to a different way of thinking about their status; thereby bridging the gap between the familiar and unfamiliar solutions to infertility.

Empowerment: Empowerment involves a process of giving power to an otherwise marginalised person or group or to gain control over one's own life from a tradition, culture or belief that causes a surrender of power or marginalisation[81-84]. It focuses on strengths, viewing individuals as having competencies and independence, yet requiring opportunities and resources in the external environment to optimise those potential opportunities[84]. The FELICIA programme aims to encourage the participant to engage in the discussions during counselling sessions by challenging current negative beliefs and perceptions. This will help develop new positive ways of thinking about a problem. The changes in thinking and perception are directed towards positive outcomes which are empowering. The empowerment comes from the participant actively taking ownership of their thoughts towards healthy living, hence a healthy reproductive life.

The FELICIA intervention pack

This consists of a counselling manual for health-workers, a patient workbook for patients and the recording book for the health-worker/ counsellor.

Counselling manual for health-workers: The counselling manual is divided into 3 sections- an introduction section that explains in detail about the intervention objectives and methodology, the intervention section which consists of 10 counselling sessions, and a third section that highlights difficult situations that may arise and how to deal with them.

In section 2, each session highlights its learning objectives (Table 2) and describes a step by step guide to completing the counselling tasks. These counselling tasks start with the health-worker welcoming the patients and collecting the mood chart which would have been previously given and filled out by the patient in the preceding week (Figure 4). The mood chart serves as an indicator and update for how the patient's mood has been recently. It is also an ideal conversation starter. Next, the objectives of the session are addressed, and patients are given two stories to read. Each story describes a healthy and an unhealthy thinking style to a situation (Figure 2). Patients are then encouraged to use the 3 steps of thinking healthy in Fig 1, to identify, replace and practice healthy, helpful thinking styles, discussing and relating these stories and analogies to their own current situation. After discussion, the patients and the health worker agree to a specific homework that helps the patient practise the

learning objectives of that session. A summary of the discussion is agreed with the patient before ending the session. This ensures an agreement between the health-worker and patient regarding the expectations and outcomes of that session as well as the subsequent sessions.

The patient workbook for patients: The structure of the patient workbook is designed to follow through with the activities and homework for each session. Patients are encouraged to write in their interpretations and thoughts in line with the learning objectives for each session. The workbook contains the mood chart and homework can be completed in it. The patient workbook is ideal for literate patients who can read the instructions and write their responses, during and after each weekly session. For illiterate patients, the use of the workbook is optional; the health-worker discusses the instructions and writes the patients' responses in the book. Health-workers are trained to record responses in patients own words and avoid abbreviations or interpreting patient's response in other words. If the health worker is unsure of what the participant means, he/she should ask the patient to elaborate or clarify responses and record accordingly.

The recording book: The recording book for the health-worker is a diary of events for each session where they can record their own observations, summarise the activities during the counselling sessions and make notes of important tasks or homework for individual patients. The purpose of the recording book is to update the health-worker about previous discussions in past sessions, as well as to indicate the upcoming tasks and activities in line with the learning objectives for each session.

Training and supervision

This intervention is self-explanatory and requires minimal training. However, there is the need to maintain the structure of how each session is expected to be delivered. This ensures that all FELICIA counsellors are delivering the intervention in the same way, makes the outcomes more measurable, and helpful in evaluating effectiveness of the intervention. In addition to this, each patient, irrespective of who they meet for counselling, are sure of receiving the same intervention.

A two-day course will be provided to study the manual and explain the process. The FELICIA counsellors are familiarised with the mhGAP guidelines of identifying mental health conditions, especially anxiety and depression[61-63]. The 'counsellors' will also be involved in role plays to demonstrate how they would deliver the intervention practically, in real life situations. They are expected to be supportive and non-judgmental. During this training, all those who participate will be observed and those who possess appropriate interaction skills and qualities of empathy and objectivity will be identified and selected to deliver the FELICIA intervention.

More importantly, clear guidelines are made available to identify and refer severe cases appropriately. Patients who are severely depressed or suicidal will be referred immediately for specialist psychiatric assessment and treatment as required.

Discussion

FELICIA[21] is an intervention which has the potential to be practically suitable within the African context, utilising cognitive behaviour strategies and narrative approaches, to be delivered by non-specialists. It is designed to bridge the gap between clinical and psychological management of infertility using an integrated holistic care approach, promoting a multi-disciplinary approach to infertility management.

Cognitive behavioural therapy (CBT) has the potential to benefit in the psychosocial management of infertility. Although research in this area is scarce, especially in low- and middle-income settings, a randomised controlled trial in Iran showed that CBT proved to be more effective than pharmacological treatment of infertility related depression, improving the patient outcomes in 79.3% of participants[85]. The study compared the effectiveness of CBT with fluoxetine for treatment of anxiety and depression amongst 89 patients with infertility- the resolution of depression was 50% in the Fluoxetine group, 79.3% in the CBT group and 10% in the control group[86].

The reduction in infertility-associated stress has also been demonstrated in women undergoing IVF treatment, even after failed IVF episodes[17,86]. The relief of psychological stress may also have physiological benefits. Previous research also showed recovery of ovarian activity in 7 out of 8 women with functional hypothalamic amenorrhea, after attending CBT over a 20-week period[87].

The intervention is designed to be delivered by non-specialists especially in the African settings where there is a severe lack of specialist mental health professionals. While detailed feasibility testing will take place in these settings, we anticipate potential challenges that could be encountered in delivering FELICIA. The section 3 of the FELICIA manual covers in more detail approaches to dealing with such difficult situations. The FELICIA intervention recognises that counselling is a highly subjective experience and no two experiences are the same. However, for the sake of standardising care, the health workers are advised about the chosen approach by this programme to assist in dealing with such difficult experiences.

An important challenge is when health workers come across patients with signs of severe depression and anxiety. This can be identified using the mhGAP intervention guide[61-62]. Health workers delivering the intervention are made familiar with the mhGAP guidelines during the FELICIA training programme. Patients with severe symptoms and/or signs, including suicidal intents are to be taken very seriously and urgently referred to the local psychiatric facilities.

Another potential challenge is when an illegal or criminal act has been disclosed during discussions. Patients are advised by the health worker before detailed discussions begin that they are obliged under the law to report any disclosed criminal activities to appropriate authorities in order to protect patients or others from danger. It is understandable that the stigma of infertility in African societies can drive patients to desperate measures, but this cannot be allowed to justify crime. However, the health worker's role is not to be judgmental but to find a healthy balance between what is ethically and morally right while providing holistic care to the patient.

It is also common for infertility patients in African societies to try multiple solutions to their infertility problem at the same time. Patients may employ traditional healers, herbal treatments as well as religious means while attending the hospital for clinical management of infertility[39]. The goal is conception and childbirth; for the patient, any means necessary is justified. In the FELICIA manual, this is referred to as *"Multi-agency treatments"*. The FELICIA intervention aims to help patients to think in helpful ways, enabling them to make the right decisions about their health and treatments. One of the ways it does this is to correct unfounded fears or ideas patients might have regarding the causes of infertility and about infertility treatments by offering facts without disregarding patients' beliefs or ideologies.

Alternatively, some patients may find it difficult accepting new ideas such as the FELICIA intervention. Patients are advised that this intervention is a self-help style to counselling, using task based and homework to deliver therapy. Hence, patients must be willing to make the changes and engage for the intervention to work. If they are unwilling, then they are not suitable for the technique used in FELICIA as an intervention for managing psychological problems associated with infertility.

Future Directions

FELICIA[21] is an intervention with the potential to bridge the identified gaps between the clinical and psychosocial management of infertility, thus providing holistic care for infertility patients. The future objective is to implement FELICIA as an intervention to be integrated with infertility care in resource poor settings. The next stages of the MRC framework for the development and evaluation of complex interventions will be applied to test, evaluate and implement FELICIA[20,65-66]. A pilot RCT of the FELICIA taking place in Nigeria, will determine the feasibility of this intervention. If FELICIA is shown to be feasible, a full trial will be carried out and evaluated. Also, a cost effectiveness study will be developed to demonstrate the benefits of the intervention over the costs incurred. However, FELICIA has been designed to be delivered by non-specialists, thus it is projected that the cost

will be low and amendable to large scale implementation. In addition, an internet self-help version of the intervention will be considered in future for FELICIA, enabling a broader access to those who require it.

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The Fertility Life Counselling Aid (FELICIA) is available via open access at: https://doi.org/10.6084/m9.figshare.6729110.v1

Ethical Approval

This article does not contain any studies with human participants or animals performed by any of the authors.

Contribution of Authors

Aiyenigba A.O Aiyenigba A.O designed and developed FELICIA based on the WHO Thinking Healthy programme. Weeks A.D., and Rahman A, supervised the project. Aiyenigba A.O., Weeks A.D., and Rahman A., contributed to the preparation of the manuscript. All authors mentioned in the article approved the manuscript.

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