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**Quality of Life in Sudanese Infertile Couples Who Attend to Dr.Elsir**

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هُنَاكَ دَعَا زَكَرِيَّا رَبَّهُ قَالَ  
رَبِّ هَبْ لِي مِنْ لَدُنْكَ ذُرِّيَّةً طَيِّبَةً  
إِنَّكَ سَمِيعُ الدُّعَاءِ (38) آل عمران

## *Dedication*

*This thesis is dedicated to my parents, who raised me to be the person I am today. Thank you for all the unconditional love, guidance and support.*

*Also, this thesis is dedicated to my husband and my children.*

*To my sisters and my brothers.*

*Thank you for your love, patience and support.*

## **Acknowledgment**

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## Abstract in English

**Background:** Reproduction is one of the main basic requirements of humans. When something interferes with their ability to reproduce, crisis may occur, infertility is a difficult emotional experience since it has an impact on various aspects of marital or individual life.

**Aim:** This study aimed to measure the quality of life among Sudanese infertile couples who attending to Dr.Elsir Abu Elhassan Fertility Centre. And to determine the relation between quality of life and different demographic factors.

**Method:** A cross-sectional study was conducted in Dr.Elsir Abu Elhassan fertility centre, overall 293 participants attending to centre were ready to fill out our questionnaire set. The specific quality of life (FertiQoL) was used to measure the quality of life for couples and relation with demographic factor was assess.

**Result:** 293 participants were ready to participate in this study. The majority of participants were females (64%), about 40% of participants were housewives, Half of participants age were in range of (25-35 years old), more than half of them with university education, half of them with marital and infertility duration were with range (1year-less than 3 years and 3years-less than 6 years) and most of them were primary infertile (68%). only 235 of participants have optionally answered the treatment part. The mean Total FertiQoL score in the study population was 72.84 (SD 15.97) and this overall FertiQol is only significant by education level, while core and social subscales were significant on education and infertility duration only. On subscales the lower impact was seen on relational subscale (79.49(SD=17.34)) which was not significant by all demographic factors. The higher impact was seen on emotional subscale (66.10(SD=21)) which was significant by gender (better scores among male), education and occupation, while mind/body subscale was significant by gender, education, occupation and infertility duration. On treatment part only significant was seen on tolerability with marital duration.

**Conclusion:** The results provide a baseline information about quality of life in Sudanese infertile couples. The main finding was that the mean total FertiQoL score in the study population was 72.84 (SD 15.97). On subscale the infertility had the greatest impact on the emotional domain and lower effect on relational subscale. No significant difference on age and infertility type in all scales. Marital duration is only significant with treatment domains on tolerability subscale. Gender and occupation status were significant on Emotional and Mind/body subscales. Infertility duration was significant with Social, Core and Mind/body. Educational level was significant with overall FertiQoL, Core, Social, Emotional and Mind/body.

**Key words:** infertility, couples, FertiQol.

## المستخلص

**مقدمة :** التكاثر هو أحد الاحتياجات الأساسية للإنسان ، وعندما يتدخل شيء ما في قدرتهم علي الانجاب ، قد تحدث أزمة، تأخر الانجاب هو تجربة عاطفية صعبة لانه يؤثر على جوانب مختلفة من الحياة الزوجية أو الفردية.

**أهداف الدراسة :** هدفت هذه الدراسة الي قياس نوعية الحياة بين الأزواج السودانيين الذين يعانون من تأخر الانجاب والذين يحضرون الي مركز د. السر أبو الحسن للخصوبة . ثم تحديد العلاقة بين نوعية الحياة ومختلف العوامل السكانية الأساسية.

**طريقة البحث :** تم إجراء دراسة مقطعية في مركز د. السر أبو الحسن للخصوبة ، وكان أجمالي المشاركين البالغ عددهم 293 مشاركاً من الموجودين بالمركز علي أستعداد لملى الاستبيان الخاص بنا.

تم استخدام نوعية الحياة (FertiQoL) لقياس نوعية الحياة للأزواج وتم تقييم العلاقة بينها وبين العوامل السكانية الأساسية.

**النتائج :** 293 مشتركاً كانوا علي أستعداد للمشاركة في هذه الدراسة. أغلبية المشاركين من النساء (64%) وحوالي (40%) من المشاركين هن ربات منازل، نصف عدد المشاركين في الفئة العمرية (25 سنة -35 سنة)، أكثر من نصفهم حاصلون علي التعليم الجامعي، نصفهم لديهم فترة زواج و فترة تأخر انجاب في المدى (1 سنة – أقل من 3 سنة، 3 سنة –أقل من 6 سنة) ومعظمهم لم يسبق لهم الانجاب. 235 فقط قد قاموا بملئ الجزء الخاص بالعلاج طوعاً.

كان متوسط مجموع نقاط FertiQoL في مجتمع الدراسة (72.84 (SD 15.97) إجمالي FertiQoL له علاقة فقط مع مستوى التعليم ، في حين أن الفروع الجوهرية والاجتماعية لها علاقة مع مستوى التعليم ومدة تأخر الانجاب فقط. علي الفروع الفرعية لوحظ أن العلاقة بين الزوجين (79.49 (SD=17.34) لم يكن لها اي علاقة مع أى من العوامل السكانية. كما لوحظ أعلى تأثير علي النطاق العاطفي ((66.10(SD=21) والذي كان له علاقة مع نوع الجنس (درجات الذكور أعلى من الاناث) و مستوى التعليم و المهنة. بينما كان النطاق العقلي الجسدي له علاقة مع الجنس، مستوى التعليم، المهنة ومدة تأخر الانجاب.

في جزء العلاج لوحظ ان فقط tolerability لها علاقة مع فترة الزواج.

**الخلاصة :** توفر هذه الدراسة المعلومات الأساسية حول نوعية الحياة في الأزواج السودانيين الذين يعانون من تأخر الانجاب. كان الناتج الرئيسي لهذه الدراسة هو أن متوسط مجموع نقاط FertiQoL في مجتمع الدراسة هو (72.84 (SD 15.97) علي المستوي الفرعي، كان لتأخر الانجاب الاثر الاكبر علي النطاق العاطفي، بينما كان التأثير الاقل علي نطاق العلاقة بين الزوجين. لا توجد علاقة بين العمر ونوع تأخر الانجاب علي جميع الانطقة. مدة الزواج كان لها علاقة فقط مع نطاق العلاج. بينما نوع الجنس والمهنة لها علاقة بالنطاق العاطفي والعقلي الجسدي. مدة تأخر الانجاب كان لها علاقة مع النطاق المجتمعي والجوهري والعقلي الجسدي. كان مستوي التعليم ذا علاقة مع النطاق الاجتماعي والجوهري والعاطفي و العقلي الجسدي و FertiQoL.

**الكلمات المفتاحية :** تأخر الانجاب، الأزواج، FertiQoL.

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## List of Abbreviations

<b>AHR</b>	Assisted Human Reproduction.
<b>ART</b>	Assisted Reproductive Technology.
<b>ASRM</b>	The American Society of Reproductive Medicine.
<b>COS</b>	Controlled Ovarian Stimulation.
<b>ESHRE</b>	The European Society of Human Reproduction and Embryology.
<b>FertiQoL</b>	Fertility Quality of Life.
<b>IA</b>	Artificial insemination.
<b>ICD10</b>	International Classification of Diseases.
<b>ICMART</b>	The International Committee for Monitoring Assisted Reproductive Technologies.
<b>ICSI</b>	Intracytoplasmic sperm injection techniques.
<b>IUI</b>	Intrauterine Insemination.
<b>IVF</b>	In Vitro Fertilization.
<b>MERCK-SERONO</b>	An affiliate of Merck, Darmstadt, Germany a global pharmaceutical and chemical company.
<b>OI</b>	Ovulation Induction.
<b>OoPP</b>	Out of Pocket Payment.
<b>QOL</b>	Quality Of Life.
<b>STDs</b>	Sexually Transmitted Diseases.
<b>TDS</b>	Testicular Dysgenesis Syndrome.
<b>WHO</b>	World Health Organization.
<b>WHOQOL</b>	World Health Organization Quality Of Life.

# **Chapter One**

## **Introduction**

# Chapter One

## Introduction

### 1.1 Background Information:

World Health Organization (WHO) defines Reproductive health as “a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity, in all matters relating to the reproductive system and to its functions and processes”, Reproductive health implies that people are able to have a satisfying and safe sex life and that they have the capability to reproduce and the freedom to decide if, when and how often to do so<sup>(1)</sup>.

The clinical definition for infertility is “a disease of the reproductive system defined by the failure to achieve a clinical pregnancy after 12 months or more of regular unprotected sexual intercourse”. This is keeping with WHO definition of male and female infertility in the International Classification of Diseases (ICD 10)<sup>(2)</sup>.

Meanwhile the WHO’s epidemiologic definition of infertility as “women of reproductive age at risk of becoming pregnant who report unsuccessfully trying for a pregnancy for more than two years”<sup>(3)</sup>.

There are 2 types of infertility:

Primary infertility refers to couples who have not become pregnant after at least 1 year having sex without using birth control methods.

Secondary infertility refers to couples who have been able to get pregnant at least once, but now are unable<sup>(4)</sup>.

The demographic definition of infertility is the inability to produce a live birth, the term usually refers to women, but men or couples can be the focus of attention.

Primary infertility is defined as the absence of a live birth for women who desire a child and have been in a union for at least 5 years, during which they have not used any contraceptives.

Secondary infertility is defined as the absence of a live birth for women who desire a child and have been in a union for at least 5 years since their last live birth, during which they did not use any contraceptive<sup>(5)</sup>. In this research the researcher was decided in clinical definition.

Reproduction is considered one of the main basic requirements of humans, and a psychological crisis may occur when something interferes with their ability to reproduce, crisis of infertility is a difficult emotional experience since it has an impact on various aspects of marital or individual life such as social relationships, life objectives, self-image and sexual relations, among others<sup>(6)</sup>.

Every culture holds different reasons and beliefs as to why infertility is stigmatized, however universal trends keep on<sup>(7)</sup>.

Because infertility and fertility care have an impact on quality of life (QoL) of individuals experiencing fertility problems, it is important to measure it<sup>(8)</sup>.

The World Health Organization defined quality of life as "... individuals' perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns"<sup>(8)</sup>. It is a broad ranging concept affected in a complex way by the person's physical health, psychological state, level of independence, social relationships, personal beliefs and their relationship to salient features in the environment<sup>(9)</sup>. Increasing evidence suggests that infertility represents a negative impact on the quality of life (QoL), psychological and social well-being among infertile couples, at the same time as infertility treatments are successful in a large proportion of cases they often have a negative impact on the patients' QoL<sup>(9),(10)</sup>.

The Fertility Quality of Life (FertiQoL) tool is an international instrument to measure quality of life in individuals experiencing fertility problems<sup>(8)</sup>. FertiQoL is a reliable tool that measure the impact of fertility problems and its treatment on quality of life, it consists of 36 items that assess core (24 items) and treatment-related (10 items) quality of life as well as overall life and physical health (2 items). The statistics reliability for the Core and Treatment FertiQoL (and subscales) was satisfactory in the range of 0.72 and 0.92. Sensitivity analyses showed that FertiQoL detected expected relations between quality of life and gender, equality and support seeking<sup>(28)</sup>.

WHO has identified infertility as a major problem in reproductive health<sup>(11)</sup>. Infertility is a public health issue, with more than 10% of the world's population having difficulty conceiving through natural methods<sup>(7)</sup>. Infertility is one of the most prevalent health disorders in young adults<sup>(12)</sup>. About 15% of couples do not achieve pregnancy within 1 year of attempting to conceive and thus are labelled as infertile<sup>(13)</sup>.

## **1.2 Problem statement:**

Infertility rates vary among different countries, with the lowest having less than 5%, to over 30% amongst the highest. In the UK, one out of every seven individuals are said to be infertile. Infertility is significantly higher in Sub-Saharan Africa when compared to other parts of the world<sup>(11)</sup>.

Recent global evidence shows infertility as a major public health problem, It is a problem of global proportion affecting between 8 and 12 percent of couples worldwide, In developing countries, about 25% of couples are infertile due to primary or secondary infertility<sup>(12)</sup>.

The majority of people with infertility issues are residents of Third World countries. There are very limited data on the prevalence of infertility in the developing world, but few dated studies show that infertility affects more than 20% of people in Gambia, Ethiopia and Nigeria<sup>(7)</sup>.

Sudan is the third largest country in Africa with a population of 36,787,000. There is a lack of proper infertility statistic in Sudan. However, infertility rate of 11.5% has been reported in 10 out of 18 Sudanese states, while there is no governmental centre for assisted re-productive technology in Sudan, there are 10 private assisted reproductive technology centres in the capital Khartoum<sup>(3)</sup>.

Although not classified as a life-threatening disease, infertility is a social problem affecting the individual, family and society<sup>(13)</sup>.

Infertility is associated with a wide range of social, psychological, physical and financial problems for couples. The problem of infertility in today's world has become a social concern that leads to a psychological imbalance between couples and sometimes interrupts their relationship<sup>(14)</sup>.

For many couples, infertility causes a serious strain on their interpersonal relationship, as well as causing personal distress, reduced self-esteem and loss of the meaning of life. as well as being a medical problem, infertility has psychological and social dimensions, one of the important challenges faced by infertile couple is learning how to manage infertility and its treatment in a personal sense, in relation with one's partner and in different social arenas<sup>(15)</sup>.

For both partners, infertility is a complex and crisis situation that is usually psychologically threatening, emotionally stressful, financially challenging and physically painful most of the times due to diagnostic-curative operations undergone<sup>(13)</sup>.

Until now, health planners have mainly focused on overpopulation in developing countries, with emphasis on birth control, At the same time, they have neglected the problem of infertility, which has severe psychological and social consequences<sup>(16)</sup>.

Fertility is a vital function of adult development, if this need is unmet, as seen among infertile couples, there is a negative impact on their future plans, self-image, self-respect, marriage life and sexual life. It is also feasible to see loss of physical and sexual privacy among such couples<sup>(13)</sup>.

Although its importance, the prevention and management of infertility often remains a public health problem of low priority, especially for low-income countries<sup>(5)</sup>.

### **1.3 Justification:**

The inability to conceive children is stressful situation for couples around the world, the global reports of infertility showed that the developing countries have higher infertility rate rather than developed one. African countries are number one in all developing countries<sup>(7)</sup>. Sudan is African country with high infertility rate<sup>(3)</sup>. Infertility besides being a medical condition is a social situation too. Infertility is a low-control, chronic stressor with long-lasting negative social, psychological and economical consequences which needs to be cared for. The way that infertile couples deal with infertility partially they are affected by existing culture, on the one hand, and the community they live in it on the other hand. Through there is a rapid implementation of Assisted



Reproductive Technology (ART) in low-income countries, yet the accessibility and the cost for most couples are unaffordable, most of these services need over or under counter payment. Insurance for private infertility care rarely exist and cost of services are mostly covered by out of pocket payment (OoPP).

Many studies have shown that infertility was effect on the quality of life in both men and women regardless to their cause. To the researcher's knowledge there are no such publications in this topic in Sudan. This research will help in adding new data about quality of life among infertile couples in Sudan. The research was done in Dr.Elsir Abu Elhassan Fertility Centre, the private centre was published in1999 as the first centre specialist in fertility and laparoscopic in Sudan.

## **1.4 Objective:**

### **1.4.1 General objective:**

- To measure the quality of life in Sudanese infertile couples who attend to Dr.Elsir Abu Elhassan Fertility Centre.

### **1.4.2 Specific objectives:**

- To assess the quality of life among various infertile couples on emotional domain.
- To assess the quality of life among various infertile couples on mind/body (physical) domain.
- To assess the quality of life among various infertile couples on social domain.
- To assess the quality of life among various infertile couples on relation domain.
- To assess the quality of life among various infertile couples on treatment domain.
- To determine the relation between quality of life and different demographic factors (age, gender, infertility duration, marital duration, education, employment and pregnancy) among various infertile couples.

# **Chapter Two**

## **Literature Review**

## **Chapter Two**

### **Literature Review**

#### **2.1 Introduction:**

Human instinctively desire to have offspring. Reproduction is one of basic things that human need to survive.

Approximately 15% of couples are infertile<sup>(17)</sup>. The incidence of infertility and etiology differ in different societies, about 25% of couples in developing countries are infertile due to primary or secondary infertility, Sub-Saharan Africa is higher when compared with other parts of the world, the studies show that the infertility prevalence in Nigeria is about 22%<sup>(12)</sup>. The 11.5% of infertility rate has been reported in 10 out of 18 Sudanese states<sup>(3)</sup>.

#### **2.2 Infertility:**

##### **2.2.1 History of infertility definition:**

In 2006, The International Committee for Monitoring Assisted Reproductive Technologies (ICMART) was published the first international standardized definitions for reporting ART (Assisted Reproductive Technology) procedures as the first glossary that documented the result of meeting report entitled Medical, Ethical and Social Aspects of Assisted Reproduction and published by the World Health Organization (WHO), in 2002.

In 2008, the WHO together with ICMART and other experts revised the glossary.

In 2009, after review and approval through WHO processes, the glossary was published in English at the same time in the Human Reproduction and Fertility or and Sterility journals, and was sub translated into Spanish and Portuguese.

In 2014 the ICMART, together with WHO and the other experts, agreed that the 2009 glossary be revised and expanded.

In 2017, This International Glossary on Infertility and Fertility Care, was revised to harmonize clinical practice and research and to inform patients and policy<sup>(18)</sup>.

##### **2.2.2 Infertility definitions and Types:**

This Glossary clinically define infertility as “A disease characterized by the failure to establish a clinical pregnancy after 12 months of regular, unprotected sexual intercourse<sup>(18),(2)</sup> or due to an impairment of a person’s capacity to reproduce either as an individual or with his/her partner. Fertility interventions may be initiated in less than 1 year based on medical, sexual and reproductive history, age, physical findings and diagnostic testing. Infertility is a disease, which generates disability as an impairment of function”<sup>(18),(19)</sup>.

Meanwhile the WHO's epidemiologic definition of infertility as "women of reproductive age at risk of becoming pregnant who report unsuccessfully trying for a pregnancy for more than two years"<sup>(3)</sup>.

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Secondary infertility is defined as the absence of a live birth for women who desire a child and have been in a union for at least 5 years since their last live birth, during which they did not use any contraceptives<sup>(5)</sup>.

Clinical and epidemiological definitions are appropriate for clinical settings where the aim is to determine causes and provide treatment, on the other hand, the objective of the demographic definition is the measurement the patterns and trends of infertility on a population level<sup>(5)</sup>.

## **2.3 Infertility causes:**

Due to difficulty in defining the infertility, a comprehensive overview is not available. The World Health Organization (WHO) includes infertility as a chronic disease, still, it's an unclear pathological status and one's access to treatment is not always a strict medical or health promotion need. Procreation is not a purely biological phenomenon, it involves complex individual, social and cultural processes that are closely related to biology. Still, infertility is often considered as a medical condition rather than a complex problem that involves socioeconomic, demographic, cultural and psychological aspects requiring analysis<sup>(5)</sup>.

### **2.3.1 Male factors:**

Male factor infertility is the underlying cause in 30% to 50% of cases<sup>(17)</sup>. Feasible links between male infertility and health include genetic, developmental and lifestyle factors<sup>(20)</sup>.

#### **2.3.1.1 Genetic factors:**

Approximately 10% of the human genome is involved in reproduction, it is reasonable to assume that a genetic mutation affecting reproduction, 33 genes have been identified as responsible for nonsyndromic male infertility<sup>(20)</sup>.

### **2.3.1.2 Developmental factors:**

Some evidence supporting a new concept that poor semen quality, testis cancer, undescended testis and hypospadias are symptoms of one basic entity, the testicular dysgenesis syndrome (TDS), which may be increasingly common due to adverse environmental influences. Experimental and epidemiological studies suggest that TDS is a result of disturbance of embryonal programming and gonadal development during fetal life<sup>(21)</sup>.

### **2.3.1.3 Life style factors:**

Lifestyle factors are associated with the development of chronic disease, the studies suggest a relationship between lifestyle factors and male infertility. Current data suggest that obesity has negatively impacts on male fertility, it was associated with lower semen volume, lower sperm motility and erectile dysfunction in infertile couples. On the other hand men with hypertension, cardiac disease and peripheral vascular disease were found to have increased rates of seminal parameter abnormalities. Infectious diseases may also affect somatic and reproductive health, for example: schistosomiasis which is endemic in some developing countries the infertility is due to hormonal imbalance and testicular tissue damage<sup>(20)</sup>.

### **2.3.2. Female factors:**

One of the most important determinants of fertility is the age of the woman, which reaches its highest level around 25 and starts declining until 35, the moment when the quality of ovulation begins to decrease the likelihood of miscarriages was increase. Statistics on female fertility indicate that a healthy woman between ages 20 and 24 years needs an average of 3 or 4 months to conceive, whereas between ages 35 and 40 years it can take up to 12 months or more<sup>(5)</sup>.

The most common causes of female infertility are anovulation, tubal disease, pelvic adhesions, endometriosis and unexplained infertility<sup>(22)</sup>.

#### **2.3.2.1 Abnormalities in Oocyte Production:**

Disorders of oocyte production are a common cause of female infertility. The most common disorders of oocyte production are anovulation, oligoovulation, depletion of the follicle pool and aging of the ovarian follicle which are resulting in poor oocyte quality<sup>(22)</sup>.

#### **2.3.2.2 Hyperprolactinemia:**

Infertile women with hyperprolactinemia and anovulation often achieve pregnancy after treatment with a dopamine agonist<sup>(22)</sup>.

#### **2.3.2.3 Anatomical Factors in the Female:**

##### **1) Fallopian Tube Causes of Female Infertility:**

Fallopian tube disease is a major cause of female infertility. Prevention of Chlamydia infection will reduce the prevalence of distal occlusion of the fallopian tube<sup>(22)</sup>.

## 2) Pelvic Adhesions:

Following pelvic surgery, adhesions develop in approximately 75% of women.

The mechanism of postoperative adhesion formation is not fully understood, but it involves attack of fibroblasts into the postsurgical fibrinous bridges<sup>(22)</sup>.

## 3) Uterine Factor Infertility:

Congenital uterine anomalies impact reproductive and obstetric outcomes. Only the septate uterus was associated with a reduced rate of spontaneous pregnancy. The probability of pregnancy following IVF was not affected by the common congenital uterine anomalies<sup>(22)</sup>.

## 4) Cervical Factor Infertility:

The cervix is an active participant in carry sperm from the vagina to the upper reproductive tract. In the normal cervix, the secreted cervical mucus has physicochemical properties that facilitate the transport of sperm. Congenital malformation and trauma to the cervix may impair the ability of the cervix to produce normal mucus<sup>(22)</sup>.

### **2.3.2.4 Genetic Causes of Infertility:**

For many decades, it has been known that major chromosomal abnormalities are often associated with infertility. Women with 45X (Turner syndrome) have premature depletion of the oocyte pool and are naturally sterile. Translocations and interstitial deletions of the X chromosome are associated with premature ovarian failure, although the identity of the genes in these deletions remains to be established. In infertile men, Yq11 microdeletions are observed in about 5% of cases<sup>(22)</sup>.

### **2.3.2.5 Unexplained Infertility:**

The term referred to conditions when couples do not have an identifiable cause of infertility. Step-wise treatment of unexplained infertility with clomiphene, IUI and IVF will result in pregnancy for most couples where the female partner is less than 40 years of age<sup>(22)</sup>.

In general the prevalence of infertility is higher in developing countries, where infertility is basically found in women and is usually the result of untreated sexually transmitted diseases (STDs) or illegal abortions, on other hand the decline in birth rates in developed societies has been justified by important social and economic factors, which include the change in the role of women in the labor market, the postponement of maternity, birth control and the availability of safe and legal abortions, these factors, which affect the reproductive decisions taken by couples, are also the factors responsible for the main incidence of primary infertility in these societies<sup>(5)</sup>.

## **2.4 Infertility treatment:**

Getting pregnant is not easy, because fertilization (a meeting that takes place at the right time and in the right place between the male and female gametes after a long journey to reach the outer third of the fallopian tube) is only possible a few days a month, once fertilization is achieved, the fertilized egg must nest in the mucous membrane lining the uterus, then pregnancy will begin. The complexity of fertilization an egg by a sperm makes pregnancy a miracle of nature. Unlike other health events, infertile couples spend many years for waiting a resilient solution that in many cases not occur. In addition infertility does not produce symptoms or associated pain, does not affect functionality, it is not a real life threat and treatment can be freely chosen treatment, because its progress does not threaten a couple's survival<sup>(5)</sup>.

### **2.4.1 Initial Infertility Evaluation:**

Three tests should be done in early infertility evaluation which are semen analysis, documentation of ovulation and a test of tubal patency<sup>(22)</sup>.

### **2.4.2 Assisted Reproductive Techniques:**

ART include all those techniques or biomedical procedures aimed to facilitating the process of natural fertilization when this is impossible, repeatedly fails or when there is an implied risk for the expected mother or fetus<sup>(5)</sup>.

Most famous Assisted Reproductive Technology is:

1. Controlled ovarian stimulation (COS)/ovulation induction (OI).
2. Transvaginal ultrasound aspiration (egg retrieval).
3. Artificial insemination (partner sperm or donor sperm) (IA):  
    Intrauterine insemination (IUI).
4. In vitro fertilization (IVF):  
    Intracytoplasmic sperm injection (ICSI) techniques.

Most people receive IVF treatment or intracytoplasmic sperm injection (ICSI).

The use of different assisted human reproduction (AHR) procedures depends on multiple factors related to the particular situation of each person or couple, usually it progress from simpler treatments such as programmed intercourse or artificial insemination to more complex procedures such as in vitro fertilization (IVF)<sup>(5)</sup>.

### **2.4.3 Treatment of Unexplained Infertility:**

Lifestyle changes (Many obese an ovulatory infertile women can achieve pregnancy by lifestyle changes including calorie limitation and moderate exercise, many very lean an ovulatory infertile women can achieve pregnancy by gaining weight especially by increasing body fat), timing of the

intercourse, IUI, clomiphene and clomiphene plus IUI are atypical starts of unexplained infertility treatments, then moves in sequence to treatments<sup>(22)</sup>.

IVF is a well-established procedure for the treatment of infertility caused by female or male factors or certain types of unexplained infertility. It involves several related procedures, including testing and medical appointments, hormone therapy or ovarian stimulation, oocyte retrieval, semen preparation, insemination, assessment of fertilization, assessment of embryo cleavage, embryo transfer, cryopreservation of excess embryos, and establishment of pregnancy<sup>(5)</sup>.

## **2.5 Infertility consequences:**

In the 20th century infertility treatment interventions are described as a double-edged sword that may create psychological, social, ethical, financial and legal problems<sup>(14)</sup>.

In developing countries, the infertility consequences range from economic hardship to social isolation, violence and denial of proper death rites. Many families depend on children for economic survival, especially in old age<sup>(23)</sup>.

A psychological crisis may occur when reproduction appears impossible. Most researchers conclude that infertility is a more stressful experience for women than men. Previous studies reported more negative feelings and more psychiatric distress about infertility among men with male factor infertility compared to men in couples receiving other diagnoses<sup>(23)</sup>.

An infertility crisis is a difficult emotional experience because it has an impact on various aspects of marital or individual life such as social relationships, life objectives, self-image and sexual relations, among others<sup>(6),(13)</sup>.

For both partners, infertility is a complex and situational crisis that is usually psychologically threatening, emotionally stressful, financially challenging and physically painful most of the times due to diagnostic-curative operations undergone, On the other hand, the treatment protocol is physical and emotional burden, huge stress and disappointment<sup>(13)</sup>.

### **2.5.1 Economic consequences:**

Health systems have the responsibility to provide health services and to meet consumer satisfaction, besides it responsibility to protect house-holds against excessive or catastrophic health costs. The Key mechanisms of financial risk protection against illness include risk pooling and prepayment. Health care costs were covered through out-of-pocket payments [OoPP] by consumers due to partial or complete absence of financial risk protection. In many developing countries infertility management in the public health sector was relatively poor quality or completely lacking. Use of existing services may be free or require payment of user fees, either over or under the counter. The cost of infertility treatment in general and ART specially is often cited as a major barrier, but not only in developing countries, but also for high-income countries<sup>(24)</sup>.



### **2.5.2 Psychological consequences:**

The problem of infertility in today's world has become a social concern that leads to a psychological imbalance between couples and sometimes interrupts their relationship<sup>(14)</sup>.

One of the most difficult emotional consequences of infertility is the loss of control over one's life, when conception does not occur easily, couples can become confused and angry. In fact, most infertility patients especially women consider the evaluation and treatment of infertility to be the most upsetting experience of their lives<sup>(25)</sup>.

High levels of stress and anxiety was shown among infertile women with sequential failures in childbearing, it is believed that infertility influences women rather than men<sup>(14)</sup>.

Recently, negative psychological effects has been reasoned due to fertility treatment, The primary negative emotional response to both infertility and assisted reproductive treatment (ART) is usually anxiety (a sense of threat, tension and worry) or depression (a sense of loss, sadness, lack of control), high depression and anxiety levels were shown in infertile women relative to fertile females. the psychological response is mediated by both protective and risk factors models of these relationships which are typically circular, they consider as complex interactions between biological, psychological and social processes<sup>(26)</sup>.

Due to emotional consequences of infertility patients require psychological support as part of the medical treatment process, it is the responsibility of all members of the team of a human reproduction centre to provide this support<sup>(6)</sup>.

### **2.5.3 Social consequences:**

Infertility and its treatment are chronic stressors, low-control with severe long-lasting negative social and psychological consequences, infertile people have to learn how to manage infertility. They find it hard to manage infertility for themselves as individuals, in relation to their partner and to their different social relations (family, family-in-law, friend, co-workers)<sup>(15)</sup>.

In some societies, infertility is apparent as gender-related suffering, mainly as a women-related problem<sup>(14)</sup>.

Men with problem of infertility often get themselves involved in anti-social behaviours like alcoholism, sexual promiscuity, prostitution and smoking<sup>(11)</sup>.

Most traditional cultures place high social values on fertility Since African marriages are based on children, infertility could lead to separation and finally divorce. Also infertile couples excluded them- selves from social activities because people did not invite them, even functions organized and hosted by their close relatives<sup>(11)</sup>.

Decreased distress in infertile women can be related to Support from the social environment, especially from the partner<sup>(26)</sup>.

## **2.6 Infertility in Sudan:**

Sub-Saharan Africa shows high rate (85%) of secondary infertility compared to lower rate (33%) in infertile women worldwide, the female factors were predominate, tubal factor was the main cause of the female infertility. The tubal factor could be due to infectious diseases such as *Neisseria gonorrhoeae* and *Chlamydia trachomatis*. Sudan shows high rate of primary infertility (68.9%) and there were significantly a higher number of female factors among couples with secondary infertility compared with primary infertility, anovulation factor was predominated<sup>(3)</sup>.

Infertility rate of 11.5% has been reported in 10 out of 18 Sudanese states while there is no governmental centre for assisted reproductive technology in Sudan, there are 10 private assisted reproductive technology centres in the capital Khartoum<sup>(3)</sup>.

## **2.7 Quality of life:**

Increasing evidence suggests that infertility represents a negative impact on the quality of life (QoL), psychological and social well-being among infertile couples, at the same time as infertility treatments are successful in a large proportion of cases they often have a negative impact on the patients' QoL<sup>(9),(10)</sup>.

The World Health Organization defines QoL as "Individuals' perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns"<sup>(9),(27)</sup>.

It is a broad ranging concept affected in a complex way by the person's physical health, psychological state, level of independence, social relationships, personal beliefs and their relationship to salient features in the environment<sup>(9)</sup>.

The WHOQoL (World Health Organization Quality Of Life) measure the quality of life according to 29 facets (e.g. self-esteem, mobility, safety). QoL measurement is important to classify the fertility problems associated with poor QoL and advance research in (health service evaluation, patient satisfaction and policy making) through the use of a standard measurement tool<sup>(27)</sup>.

The need to measure and take QoL among infertile is vital, and tackling this measurement barrier could lead to improved patient outcomes. The European Society of Human Reproduction and Embryology (ESHRE) and the American Society of Reproductive Medicine (ASRM) joined forces with Merck-Serono, Geneva, Switzerland (an affiliate of Merck, Darmstadt, Germany) to create FertiQoL (Fertility Quality Of Life 2002–2009). The overall aim of the FertiQoL project was to develop an international instrument to measure quality of life in men and women experiencing fertility problems. Secondary aims were to evaluate the psychometric properties of the tool and to translate FertiQoL in 20 languages. The development phase was carried out according to the protocol used for the development of the WHOQoL measure<sup>(27)</sup>. The first translation carried out by

Cardiff University professional translators and two local fertility experts reviewed it to ensure that it was appropriate to local customs and fertility word usage<sup>(28)</sup>.

## **2.8 Fertility quality of life tool:**

FertiQoL added to existing fertility distress tools by measuring the broader concept of quality of life, involving fertility patients in its development and validating it with a large international sample, FertiQoL has now been translated into 48 languages and used widely<sup>(8)</sup>.

FertiQoL is a reliable measure the impact of fertility problems and its treatment on quality of life, it consists of 36 items that assess core (24 items) and treatment-related (10 items) quality of life as well as overall life and physical health (2 items). The statistics reliability for the Core and Treatment FertiQoL (and subscales) was satisfactory in the range of 0.72 and 0.92. Sensitivity analyses showed that FertiQoL detected expected relations between quality of life and gender, equality and support seeking<sup>(27)</sup>.

The 24 items from the Core FertiQoL are categorized into four domains, including the emotional, cognitive and physical (marked as mind/body), relational and social domains. The emotional domain evaluates the impact of infertility on emotions such as (jealousy & resentment, sadness, depression). The mind/body domain refers to the influence of infertility on physical health (fatigue, pain), cognition (concentration) and behaviour (disrupted daily activities, delayed life plans). The relational domain is used to measure the impact of infertility on partnership (sexuality, communication, commitment) and The Social subscale score shows the extent to which social interactions have been affected by fertility problems (e.g., social inclusion, expectations, stigma, and support).

The optional treatment module consists of two domains that are used to assess the environment (shows the extent to which the accessibility and quality of treatment impacts quality of life) and tolerability (shows the extent to which fertility medical services impact on daily life). Items from these domains are presented in the questionnaire randomly and rated on a scale of 0 to 4. The subscale and total FertiQoL scores are computed and transformed to achieve a range of 0 to 100, where higher scores indicate better QoL.

Two additional items (marked A and B on the FertiQoL questionnaire) capture an overall evaluation of physical health and satisfaction with quality of life. These are used for background information but are not used in the FertiQoL total or subscale scores. The Total FertiQoL score is the quality of life for the Core and Treatment FertiQoL combined<sup>(29)</sup>.

## **2.9 Previous studies:**

### **2.9.1 Psychometric Properties of FertiQoL tool:**

#### **2.9.1.1 The study about Fertility quality of life tool: update on research and practice considerations, 2017.**

In study conducted by Emily Koert et al, about fertility quality of life tool: update on research and practice consideration. The study was aimed to provide an overview of research base which using FertiQoL. It was a literature review of published practical research using FertiQoL. Databases were included researches on Ovid Medline, EMBASE, Psych INFO, CINAHL and Cochrane between 2002 (the year FertiQoL was released) and November 2017 as Review papers, study protocols, studies not using FertiQoL and conference abstracts, all non- English articles and duplicates were excluded. Each study's purpose and results were reviewed and grouped according to commonalities across studies. 41 published articles from 35 independent samples in 23 countries involving 16,315 participants, mainly in clinical settings, were reviewed. The main result of review showed that FertiQoL was a reliable and valid measurement tool for quality of life among people with fertility problems in multiple ranges of research and practical goals. Methodological and conceptual challenges remain, but these were being addressed. The review also showed that FertiQoL was used for three main purposes: (i) To assess quality of life and FertiQoL measurement properties (especially Core FertiQoL) using cross-sectional designs. (ii) To identify correlates, predictors and consequences of fertility quality of life (some of which included international comparisons). (iii) To assess the effect of psychological interventions on fertility quality of life. The range of median FertiQoL Core, Treatment and subscale (scaled) scores in 31 samples was between 60 and 75. Poorer fertility quality of life was always associated with being a woman, longer duration of infertility, poorer psychological functioning and lower patient-centred care. Some FertiQoL subscale scores improved after psychological interventions<sup>(8)</sup>.

#### **2.9.1.2 The study about Psychometrics properties of the Iranian version of fertility quality of life tool: A cross-sectional study, Hormozgan, Iran, from April 2015 to September 2016.**

In study conducted by Seyedeh-Fatemeh Hekmatzadeh1 et al, about the Psychometrics properties of fertility quality of life tool Iranian version. Across-sectional study was conducted on 300 women who referred to the Omeleila infertility clinic (only referral infertility clinic in Hormozgan), in Hormozgan, Iran between April 2015 to September 2016, via a semi-structured interview. The study was aimed to testing the psychometric properties of the Iranian version of fertility quality of life (FertiQoL). The Convergent validity was evaluated by assessing the correlation between similar

content on the 12-Item Short Form Health Survey (SF12), Hospital Anxiety and Depression Scale and FertiQoL. While the characterize validity was assessed via using the known groups comparison. In addition, reliability analysis was carried out with internal consistency. The results were 1) the reliability of the Iranian version of the FertiQoL was satisfactory in all dimensions (0.77-0.83). 2) Characterize validity showed that FertiQoL can differentiate between female patients with different duration of infertility and number of children. 3) Convergent validity showed a correlation between the related dimensions of SF12 (0.43-0.68), Hospital Anxiety and Depression Scale (0.47-0.52) and FertiQoL. Then the Iranian version of FertiQoL is valid and reliable for assessing infertility problems and the effects of treatment on QoL of infertile patients referred for diagnosis and treatment at infertility clinic<sup>(30)</sup>.

### **2.9.1.3 The study about The Fertility Quality of Life Questionnaire (FertiQoL) Relational subscale: psychometric properties and discriminant validity across gender, Italy from February 2013 to January 2015.**

In study conducted by Z. Donarelli et al, about the fertility quality of life Questionnaire relational subscale, psychometric properties and discriminant validity across gender. The study was aimed to examine the psychometric properties of FertiQoL-REL and to test the discriminant validity of the FertiQoL-REL scale with regard to the patient's gender. A longitudinal study cross-sectional study was done. Data were collected from infertile couples undergoing intrauterine insemination (IUI) or in vitro fertilization (IVF) treatment at ANDROS Day Surgery Clinic, Reproductive Medicine Unit (Italy), between February 2013 and January 2015, The final sample contain 589 subjects (301 females and 288 males), the FertiQoL questionnaire, the Dyadic Adjustment Scale (DAS), the Commitment Inventory, the Fertility Problem Inventory-Sexual Concern Subscale (FPI-Sex) and the ENRICH Marital Satisfaction Scale (EMS) were filled by patients. The results were the FertiQoL four-factor solution provided a good fit for the observed data. Reliability of the FertiQoL-REL was higher for women than men. Significant correlations between the FertiQoL-REL scores and all the other measures of marital relationship were found for both women and men. FertiQoL-REL scores did not differ significantly in women and men. The FertiQoL-REL was able to differentiate subjects as regards the Dyadic Adjustment Scale and ENRICH Marital Satisfaction Scale threshold, To sum up, the FertiQoL is a gold standard for measuring QoL in infertile patients<sup>(31)</sup>.

#### **2.9.1.4 The study about Psychometric Properties of the Fertility Quality of Life Instrument in Infertile Iranian Women. Tehran, Iran, from January 2014 to March 2014.**

In study conducted by Saman Maroufizadeh et al, about psychometric properties of the fertility Quality of life instrument in infertile Iranian women. The study was aimed to examine the reliability and validity of the FertiQoL in infertile Iranian women. A cross-sectional study included 155 women with fertility problems in a referral fertility clinic in Tehran, Iran from January to March 2014 was done. A different instrument was used: FertiQoL, Satisfaction with Life Scale (SWLS), Hospital Anxiety and Depression Scale (HADS) and a demographic questionnaire. Construct validity of the scale was evaluated using Confirmatory Factor Analysis (CFA). Internal consistency was assessed with Cronbach's alpha and convergent validity was examined by correlating the FertiQoL with SWLS and HADS. The results were the CFA generally supported the four-factor model of Core FertiQoL and two-factor model of Treatment FertiQoL. Both FertiQoL modules and their subscales revealed acceptable internal consistency that ranged from 0.643 to 0.911. On the another hand the FertiQoL might be improved if Q15 and T2 items were removed from the scale. These items had low loadings on the Relational and Environment factors which decreased their internal consistency. The FertiQoL and their subscales significantly correlated with both SWLS and HADS, which confirmed convergent validity. The Persian version of the FertiQoL is a valid, reliable instrument to measure QoL in infertile women and seems to perform as well as the original English Version<sup>(32)</sup>.

#### **2.9.1.5 The study about Effect of infertility on quality of life of women: a validation study of the Turkish FertiQoL. In Istanbul, Turkey, from May 2011 to May 2014.**

In study conducted by Ozlem Dural et al, about effect of infertility on quality of life of women: a validation study of the Turkish FertiQoL. The study was aimed to examine the relationship between FertiQoL and the hospital anxiety and depression scale (HADS) in the Turkish population. A cross-sectional study carried out in the infertility clinic of Istanbul University School of Medicine in all female patients who underwent fertility treatments in the infertility clinic from May 2011 to May 2014 were approached to participate in the study and 389 completed the questionnaires. The results were in the four core scales of the FertiQoL measure had a Cronbach's a value that was between 0.70 and 0.89. Two scales (anxiety and depression) of HADS both had a Cronbach's a value of 0.80. These values present a reliable usage of FertiQoL and HADS measures ( $\alpha > 0.60$ ). Significant negative correlations were found between the FertiQoL scales and HADS scales, ranging from -

0.27 (between relational scale of FertiQoL and anxiety scale of HADS) to -0.65 (between mind–body scale of FertiQoL and depression scale of HADS). The results of this study provide supportive data to confirm that the Turkish version of FertiQoL can accurately evaluate QoL in women who seek fertility treatment in Turkey<sup>(33)</sup>.

#### **2.9.1.6 The study about Psychometric characteristics of the FertiQoL questionnaire in a German sample of infertile individuals and couples, German, from December 2011 to November 2013.**

In study conducted by R.E.Sexty et al, about psychometric characteristics of the FertiQoL questionnaire in a German sample of infertile individuals and couples from December 2011 to November 2013. The study was aimed to tested Psychometric properties of FertiQoL in German infertile couples and individuals. Over a period of two years, 596 infertile women and men took part in the study conducted at three German fertility clinics, consecutive sampling, potential participants were recruited by the administrative staff and asked to fill out the questionnaire package while waiting for medical consultation or examination. The results were the German version of FertiQoL in both genders proved to a large extent of validity and reliability on four-factor structure involving different socio-demographic and medically relevant aspects in men and women (with the exception of an especially strong intercorrelation in Emotional and Mind/Body subscales). Family and friends' support items loaded weakly on the Social subscale of FertiQoL ( 0.27 and 0.34 in women, 0.32 and 0.19 in men).The Emotional and Mind/Body subscales revealed a strong intercorrelation ( $r = 0.77$ ,  $p < .001$  in women,  $r = 0.74$ ,  $p < .001$  in men). Women scored lower than men on the Emotional and Mind/Body subscales only and they reported better fertility-specific relational QoL. In women, the perceived cause of infertility and already mothering a child related significantly to individual FertiQoL scores, while in men, age, educational level, and the duration of their wish for a child had an impact on the FertiQoL subscales (all  $p < .05$ ). The men's educational level, the women's educational level, and the subjective perceived medical cause of fertility problems exerted cross-partner effects on QoL (all  $p < .05$ ). The use of the FertiQoL in fertility care is recommended because it can provide important information for the medical staff and the patients themselves on the challenges they face in connection with emotional, physical, relational and social quality of life. In practice, the questionnaire is a feasible instrument for appraising the way couples with fertility problems function psychosocially<sup>(34)</sup>.

### **2.9.1.7 The study about the fertility quality of life (FertiQoL) tool: development and general psychometric properties, Australia, Canada, New Zealand, UK and USA in 2011.**

In study conducted by Jacky Boivin et al, about the development and general psychometric properties of FertiQoL. The study was aimed to psychometric evaluation Of FertiQoL tool, sample were taken from one fertility clinic in Australia, Canada, New Zealand, UK and two clinics from the USA. Patient advocacy web-sites in these countries (i.e. ACCESS, American Fertility Association, Resolve, Infertility Awareness Association of Canada, International Consumer Support for Infertility, Infertility Network UK) hosted the online survey. The clinic sample consisted of 291 women and 75 men, and the online sample consisted of 1014 women and 34 men were use answer the standard FertiQoL questionnaire. The main results were that FertiQoL consists of 36 items that assess core (24 items) and treatment-related quality of life (QoL) (10 items) and overall life and physical health (2 items). Cronbach reliability statistics for the Core and Treatment FertiQoL (and subscales) were satisfactory and in the range of 0.72 and 0.92. Sensitivity analyses showed that FertiQoL detected expected relations between QoL and gender, parity and support-seeking. FertiQoL was translated into 20 languages by the same translation team with each translation verified by local bilingual fertility experts, in conclusion FertiQoL is a reliable measure of the impact of fertility problems and its treatment on QoL<sup>(28)</sup>.

### **2.9.2 Quality of life in infertile using FertiQol tool among countries:**

#### **2.9.2.1 The study about Quality of life in Indian women with fertility problems as assessed by the FertiQoL questionnaire: a single centre cross sectional study. Hyderabad, India, 2017.**

In study conducted by Hema Jagdish Desai and Sirisha Rao Gundabattula, about Quality of life in Indian women with fertility problems as assessed by the FertiQoL questionnaire. The study was aimed to measure the quality of life in women with infertility at single tertiary centre in a teaching hospital in Hyderabad, India. A cross-sectional study was done and about 244 women were administered the questionnaire. Quality of life was measured using the FertiQoL International questionnaire (English/Hindi). The results were, the women age ranged from 20 to 38 years and polycystic ovary syndrome was the most common cause of infertility. Core FertiQoL scores were analysed in 215 women and Treatment FertiQoL in 156. The mean Total FertiQoL score in the study population was 66.1 (SD 13.0) and this overall score was not influenced by socio-demographic or infertility-specific factors. On subscale analysis the emotional subscale showed the lowest scored and the least impact of fertility problems were shown on the relational domain. The



mental and physical symptoms as a result of fertility treatment (treatment tolerability) were associated with a poorer QoL than accessibility and quality of treatment (treatment environment). On the other hand women who had living children and were university-educated had significantly better emotional scores while obese ( $\geq 35$  kg/m<sup>2</sup>) women and those on ovulation induction treatment had poorer mind body and relational scores, respectively. Women with associated co-morbidities had worse quality of life on the Treatment Environment scale than those without<sup>(35)</sup>.

### **2.9.2.2 The study about Quality of life of immigrant and non-immigrant infertile patients in a publicly funded in vitro fertilisation program: a cross-sectional study, Montreal, Quebec, Canada, from 1 March 2015 to 31 July 2015.**

In study conducted by J Hasson et al, about quality of life of immigrant and non-immigrant infertile patients in a publicly funded in vitro fertilisation program : across-sectional study. The study was aimed to investigate whether there were differences in fertility quality of life (FertiQoL) and socio-demographic characteristics between immigrants and non-immigrant patients who attending to a government-funded fertility program. Across-sectional study design was done over a period of 5 months (from 1 March 2015 to 31 July 2015), where all patients attending the reproductive unit of the McGill University Health Centre (MUHC) in Montreal, Quebec were invited to complete a survey consisting of a self-report socio-demographic questionnaire and the FertiQoL questionnaire. The sample size was calculated based on previous studies calculations which compared FertiQoL scores between different groups of infertile patients and according to calculation that about 204 patients were needed in the immigrant patients group and that 612 patients were needed in the non-immigrant group (based on a 1:3 ratio of subjects to controls). The results were in all 1020 patients completed the questionnaires 752 (77.7%) non-immigrant Canadian citizens and 215 (22.3%) resident immigrants were included in the analysis. Median duration in Canada for immigrants was 4 years. Immigrants were more likely to have university/graduate degrees (75% versus 64%), to be unemployed (37% versus 13.1%) and to have lower annual household incomes (72.8% versus 39.5%, all  $P < 0.05$ ). They also reported poorer QoL and achieved significantly lower scores in the emotional, mind/body, social, treatment and total FertiQoL domains. Multivariate analysis showed male gender, lower education level and Caucasian/ European ethnicity to be significantly associated with higher QoL<sup>(36)</sup>.

### **2.9.2.3 The study about Quality of Life and Its Influencing Factors of Couples Referred to An Infertility Centre in Shiraz, Iran, from February 2014 to March 2015.**

In study conducted by Bahia Namavar Jahrom et al, about quality of life and its influencing factors of couples referred to an infertility centre in Shiraz, Iran from February 2014 to march 2015. The study was aimed to evaluated QoL and its associated factors among Iranian infertile couples. A cross-sectional study was done and subjects were selected by simple random sampling from infertile couples who attended to Infertility Clinic of the Mother and Child Hospital, Shiraz, Iran from February 2014 to March 2015. The 501 infertile couples were eligible and only 499 couples were properly completed the questionnaires which consisted of (FertiQoL) instrument that was used to measure QOL and an additional questionnaire was used to assess participants' demographic and clinical characteristics. The results were showed that Couples with lower income levels had lower relational, mind/body, emotional and total core scores. Female participants with lower academic degrees had lower scores in the emotional subscale, while the male participants with lower academic degrees showed lower scores in emotional, mind/body, relational, social and total QoL domains. The study also showed that Participants with lower infertility duration obtained significantly greater QoL scores. Subjects who had undergone any type of treatment, including pharmacological treatment, intrauterine insemination (IUI), intra-cytoplasmic sperm injection (ICSI) and in vitro fertilization (IVF) showed significantly lower scores in the environmental domain.

Finally tolerability, emotional and environmental domains were significantly more popular when the infertility problem was related to a male factor<sup>(37)</sup>.

### **2.9.2.4 The study about Quality of life in Turkish infertile couples and related factors, Turkey, from January 2013 to December 2014.**

In study conducted by Asli Goker et al, about Quality of life in Turkish infertile couples and its related factors. The study was aimed to assess the quality of life in Turkish infertile couples. A cross-sectional study was done on 127 infertile couples who were admitted to Gynaecology clinic at Celal Bayar University, School of Medicine Hafsa Sultan Hospital for diagnosis and treatment, between January 2013 and December 2014. Data was collected by questionnaire (demographic and FertiQol Turkish version) while the medical information was obtained from medical record. The results were showed that women had lower overall quality of life than men. Couples who were married for fewer than 10 years had a much lower emotional score. Women who had a history of infertility treatment, men who have lived in the town or village, men with primary infertility and men who have had primary or lower education all had lower scores for mind/body subscale. Social

scores were found lower in women under the age of 30, women with middle or low income, men who were married for fewer than 10 years, men who did not have children for 5 years or more and men with primary infertility. The tolerability and environment scores were significantly higher in women who had been married more than once. In conclusion, infertility had an adverse effect on the QoL of Turkish couples. The women's emotional, mind/body, core, tolerability and total FertiQoL scores were lower than were those of the men. The mean total FertiQoL scores decreased in younger couples, couples married for fewer than 10 years, men with primary infertility, men with lower education and men with longer duration of infertility<sup>(38)</sup>.

#### **2.9.2.5 The study about Cross-cultural comparison of fertility specific quality of life in German, Hungarian and Jordanian couples attending fertility centre. Hungary, Germany, and Jordan, from February 2012 to June 2014.**

In study conducted by Réka E. Sexty et al, about cross-cultural comparison of fertility specific quality of life in German, Hungarian and Jordanian couples attending to fertility centre. The study was aimed to measure cross-cultural differences in fertility specific quality of life in infertile couples in Germany, Hungary and Jordan who attend a fertility centre. A cross-sectional study was conducted in one fertility clinic in Germany, in five fertility clinics in Hungary and in one fertility clinic in Jordan. Overall 750 couples (252 couples in Jordan, 246 couples in Germany and 252 couples in Hungary) who were attending to the medical infertility centres for consultation, they were asked to fill out the questionnaire set (The questionnaire consisted of the FertiQoL, sociodemographic (were filled by couples) and medical questions (were answered by the first two authors based on the medical files of the couples)). Data were collected between February 2012 and June 2014. The results were showed that Jordanian couples had the shortest relationship ( $5.8 \pm 4.3$  yrs.), while they reported the longest duration of child desired ( $4.2 \pm 3.6$  yrs.) and fertility treatments ( $3.0 \pm 3.3$  yrs.). The proportion of high education was considerably higher in Jordanian women and men (60 % and 66 %, respectively) compared to the other two samples. Across-country study first marked that differences were obtained on Emotional, Mind/Body and Relational subscales of the FertiQoL, indicating that Jordanian couples reported poorer fertility-related quality of life than Germans and Hungarians (its scored was highest one) ( $p < 0.001$ ). After controlling for the sociodemographic and medical variables, a significant difference only was saw in the Emotional domain was observed ( $p < 0.001$ ) where Hungarian reported better QoL than Germans and Jordanians<sup>(39)</sup>.

### **2.9.2.6 The study about Quality of life in women with infertility via the FertiQoL and the Hospital Anxiety and Depression Scales, Istanbul, Turkey, from January 2013 to May 2013.**

In study conducted by Hatice Kahyaoglu Sut and Petek Balkanli Kaplan, about quality of life in women with infertility via the FertiQoL and HAD scales. The study was aimed to examine the relationships between quality of life, anxiety and depression in female patients with infertility. A cross-sectional design was done between January 2013 and May 2013 at the Gynaecology and Obstetrics Department of Trakya University Faculty of Medicine. 89 women were complete a questionnaire that included demographic data, the FertiQoL scale and the Hospital Anxiety and Depression Scale. The results were the average total FertiQoL score was  $66.0 \pm 14.5$ . There were negative correlations between the treatment and core FertiQoL scores and the Hospital Anxiety-Depression subscale scores. The attempted conception duration was negatively correlated with the total and core (emotional, mind-body, and social subscales) scores of the FertiQoL. The number of in vitro fertilizations was negatively correlated with the total, core (mind-body subscale) and treatment (tolerability subscale) scores of the FertiQoL. In conclusion, infertility significantly reduces quality of life in women by increasing their anxiety and depression levels<sup>(40)</sup>.

### **2.9.2.7 The study about the fertility quality of life (FertiQoL) questionnaire in Taiwanese infertile couples, Taiwan, from June 2010 to August 2010.**

The study was conducted by Pei-Yang Hsu et al, about the fertility quality of life (FertiQoL) questionnaire in Taiwanese infertile couples. The study was aimed to characterize the fertility quality of life (QoL) in Taiwanese infertile couples using an objective measurement tool the FertiQoL questionnaire and establish a reference level of QoL for clinical applications and future studies. A cross-sectional study design was done in seven fertility institutes where a self-report questionnaire was distributed to infertile couples who were undergoing the treatment of in vitro fertilization (830 copies). Also the online version of the FertiQoL questionnaire was issued on the website of Taiwan Society for Reproductive Medicine and was opened to the public from June 2010 to August 2010. The results were a total of 534 copies of eligible FertiQoL questionnaires were collected. The total scores for the Core FertiQoL and Treatment FertiQoL are  $55.12 \pm 3.72$  and  $56.40 \pm 10.96$ , respectively. Both the Core and Treatment FertiQoL were significantly higher in the males of infertile couples than the females ( $60.63 \pm 14.07$  vs.  $54.39 \pm 13.52$ ,  $p \leq 0.001$ , and  $59.13 \pm 12.44$  vs.  $56.03 \pm 10.71$ ,  $p \leq 0.035$ , respectively). Significantly better QoL was found in infertile patients in the Southern Taiwan, with a Core FertiQoL of  $58.21 \pm 12.70$  and a Treatment FertiQoL of  $58.79 \pm 10.15$ <sup>(29)</sup>.

### **2.9.2.8 The study about Social Meaning and Consequences of Infertility in Ogbomoso, Nigeria, 2017.**

In study conducted by Fehintola A. O et al, about Social Meaning and Consequences of Infertility in Ogbomoso, Nigeria. The study was aimed to investigate the perceived causes and impacts of infertility in the context of patient seeking care at Bowen University Teaching Hospital Ogbomoso in Oyo State. A cross-sectional study was done among women of reproductive age (15-49 years) a purposive sampling methodology was used take a total of 200 women, data collected by quantitative( semi-structured interviewer administered questionnaire) and qualitative (4 Focus discussions groups) were research techniques. The results were approximately 40% and 60% of the respondents seeking care for infertility were suffering from primary and secondary infertility respectively. Perceived meaning and etiologies of childlessness were multidimensional, but 33% of the respondents not sure of the fundamental factor. 79% were under pressure to become pregnant. The high quality of fertility within marriage has placed a larger proportion of them under pressure from their husbands (25%), their mother-in-law's (40%), and the community (14%). This study concluded that women regard infertility to be caused by multiplicity of factors. Most of these etiologies were unscientific and unverifiable. Fruitful beliefs also put enormous burden on those women suffering from infertility including adverse psychosexual effects. The continuous pressure due to infertility in this group of patients requests for urgent intervention as most of these women become susceptible to high risk sexual behaviour, depression and other severe consequences <sup>(12)</sup>.

# **Chapter Three**

## **Research Methodology**

## **Chapter Three**

### **Research methodology**

#### **3.1 Study design:**

This study was conducted through an observational descriptive cross-sectional facility based study.

#### **3.2 Study area:**

Khartoum state is capital city of Sudan, the largest city of population, the city located in the heart at the confluence of the White Nile and Blue Nile, with population of 5,989,000 (2020)<sup>(41)</sup>, there was 10 private infertility centres in Khartoum state, the study was conducted in Dr.Elsir Abu Elhassan Fertility Centre.

##### **3.2.1 Study setting:**

Dr.Elsir Abu Elhassan Fertility Centre, the private centre was published in1999 as the first centre specialist in fertility and laparoscopic in Sudan. The centre is located in Khartoum 2 in 31<sup>st</sup> Ave E, closed to Yastashfon clinic. The main services that provide by centre were In Vitro Fertilisation (IVF), Intra Uterine Insemination (IUI) and pregnancy follow-up. The centre was used the most recent techniques to provide these services like Embryo freezing, choosing the best genetically sperm and knowing the genetic maturity of the sperm.

#### **3.3 Study duration:**

This research was completed within 7 months from 1<sup>st</sup> August 2020 to15th February 2021.

#### **3.4 Study population:**

Infertile couples who attend to Dr.Elsir Abu Elhassan Fertility Centre.

##### **3.4.1 Inclusion criteria:**

- Sudanese couples.
- Willing to participate.
- Couples in treatment process.

##### **3.4.2 Exclusion criteria:**

- Both or one couple suffering from mental illness.

#### **3.5 Variables:**

##### **3.5.1 Dependent variable:**

Quality of life in Sudanese infertile couples who attend to Dr.Elsir Abu Elhassan Fertility Centre.

### **3.5.2 Independent variable:**

Infertile couples who attend to Dr.Elsir Abu Elhassan Fertility Centre.  
Marital duration, Infertility duration, Education level and Pregnancy.

### **3.5.3 Background variable:**

Sex, Age, Occupation.

### **3.6 Sampling type and technique:**

The non-probability sample was taken by convenience sampling technique.

### **3.7 Sampling size:**

The simplest formula for known population  $n=N/(1+N*(d)^2)$  was used to calculate our sample size where:

$n$ = Sample size,  $N$ = Total population size,  $d$ = the degree of accuracy (0.05).

Total population=

1) Number of patients per day (50, 24, 36, 20, 45, 35), the average was  $210/6 = 35$  patients.

2) Number of patients per week= $35 \times 6 = 210$  patients.

3) Number of patients per month= $210 \times 4 \text{ weeks} = 840$  patients.

4) Number of patients per year= $840 \times 12 \text{ months} = 10080$  patients. (Total population).

5) Sample size= $10080 / (1 + 10080(0.05)^2) = 384.7 = 385$  patients = 192 couples.

293 patients were willing to participate in study among this month. Also the patients become repeated during this period so I couldn't get all number.

### **3.8 Data collection tool and technique:**

Data was conducted through using self-administered written questionnaire which contain closed-ended questions, a questionnaire had 2 parts (data regarding to demographic information were obtained via modified part and Arabic version of standardized questionnaire of FertiQol was used to measure quality of life). FertiQol tool (consist of 36 items: 2 items were background information about overall physical health and quality of health satisfactions, 10 items were retreatment items (environmental (accessibility and quality of treatment) and tolerability (the impact of the medical services on daily life) ), 24 items were core items which consist of 4 domains: emotional ( jealousy , resentment, sadness and depression), mind/body (physical health, cognition and behaviour), social (stigma, support, expectation and inclusion) and relational (sexuality, communication and commitment) ) was filled by infertile couples (one for husbands and other for wives) from 27/10/2020 to 26/11/2020.

The pre-test was done in 20 women and 18 men who they attending to Hawwa centre for fertility( the centre is located at Khartoum, Juba Street, from period of 17/10/2020 to 20/10/2020, the modification were done in some worlds in standard questionnaire to be suitable for Sudanese



culture before it distributed to patients in Dr.Elsir Abu Elhassan Fertility Centre, where questionnaires were distributed by researcher to patients every day from Saturday to Thursday from 9 a.m. to 12 noon in period of month.

### **3.9 Data analysis:**

Data was analysed and the statistical package of social science (SPSS) version 26 was used to ensure effective information was extracted. Data were presented by figures, tables and chart. Results were discussed and compared with correlated studies.

### **3.10 Ethical consideration:**

Permission was obtained from the International University of Africa and from the Dr.Elsir Abu Elhassan fertility centre (Annex v), the purpose of the study was explained in details before administrating questionnaire and only participants voluntarily willing to take part was included (verbal approval was taken), the participants were assured of the confidentiality and secrecy of the information they provided and no financial benefit was offered to participants, participants had right to withdraw at any time without any deprivation.

# **Chapter Four**

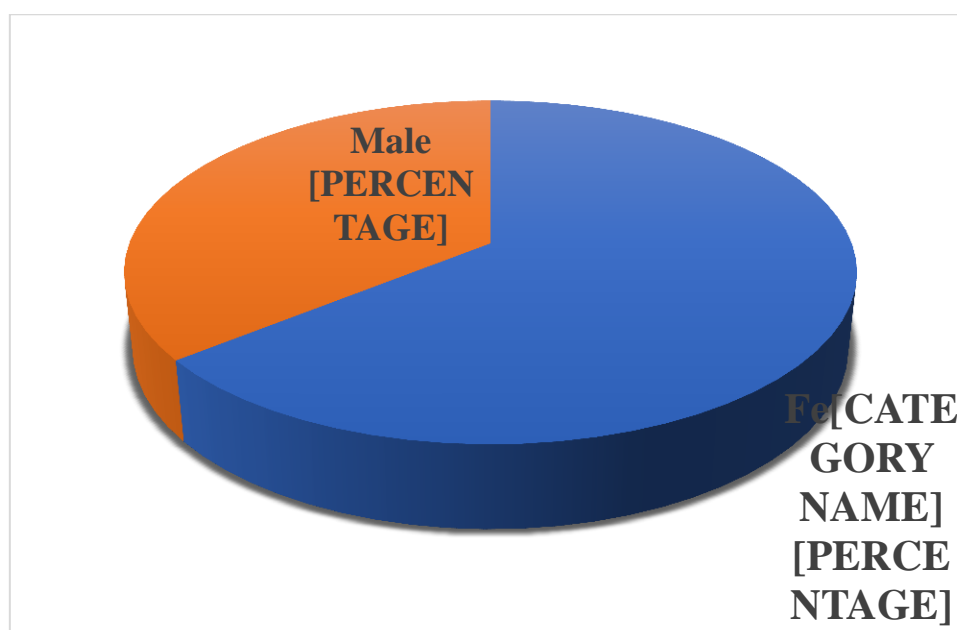
## **Results**

## Chapter Four

### Result

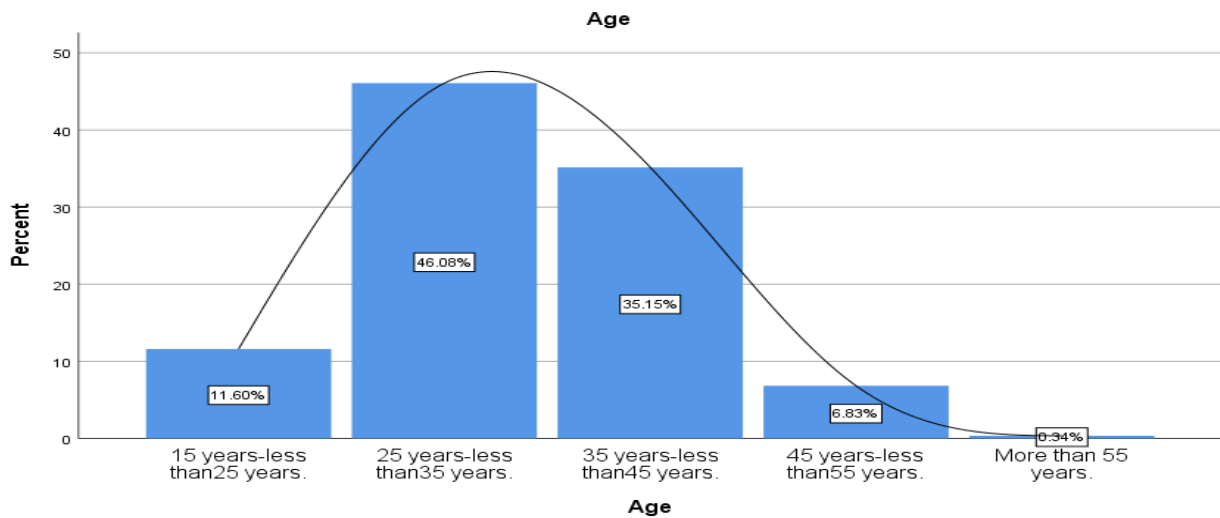
293 participants were willing to participate in study. All of them answered the demographic part, the 2 questions about overall physical health and quality of health satisfactions and 24 core items. Only 235 of them were optionally answered the treatment part. The analysis results were as the following.

#### Demographic Information:



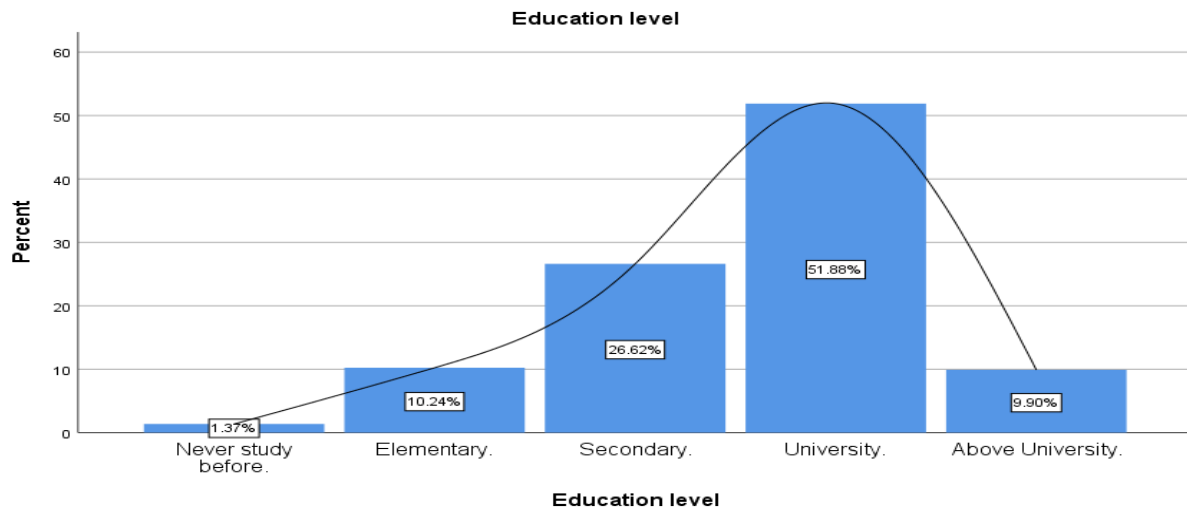
**Figure 4.1: The Gender distribution of respondents who attend to Dr.Elsir Abu Elhassan fertility centre, Khartoum, 2020 (n=293).**

The figure Shows that the majority of the participants were Females by 64.2% (n=188) and 35.8% (n=105) were males.



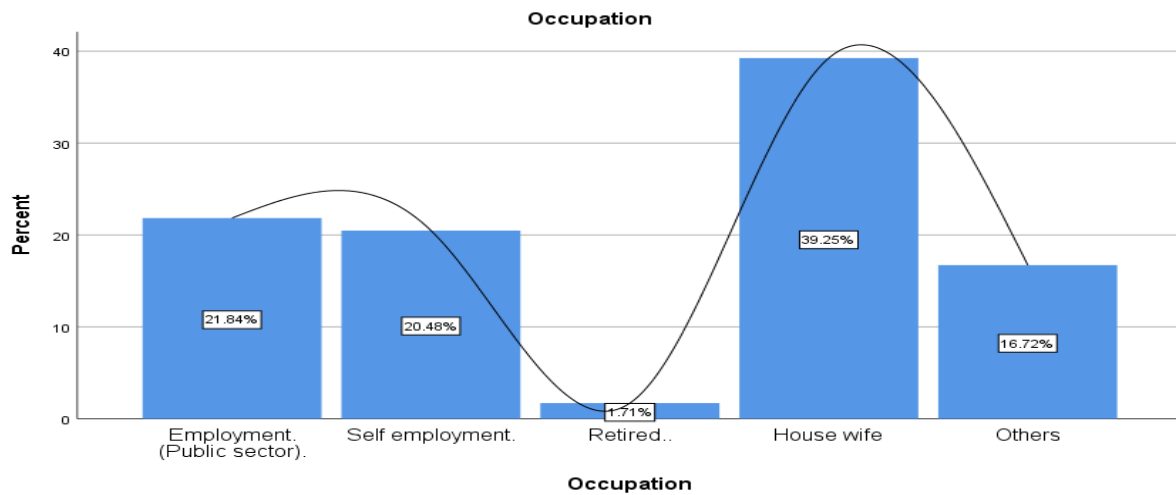
**Figure 4.2: The age categories of respondents who attend to Dr.Elsir Abu Elhassan fertility centre, Khartoum, 2020 (n=293).**

The figure shows that about 46% of the participants' age group was 25 years-less than 35 years (n=135), followed by 35.2% of those whose age group was 35 years-less than 45 years (n=103). Then 11.6% (n=34) of the participants' age group was (15 to 25) and only 6.8% (n=20) of them were too old that their age group was (45 to 55). Very interestingly was noticed that only one person (one participant) was above 55 years old.



**Figure 4.3: The education level of respondents who attend to Dr.Elsir Abu Elhassan fertility centre, Khartoum, 2020 (n=293).**

The figure shows that more than half of the participants studied university level (n=152), 26.62% (n=78) Secondary, 10.24% (n=30) Elementary and 9.90% (n=29) above university, while 1.37% (n=4) were never study before.



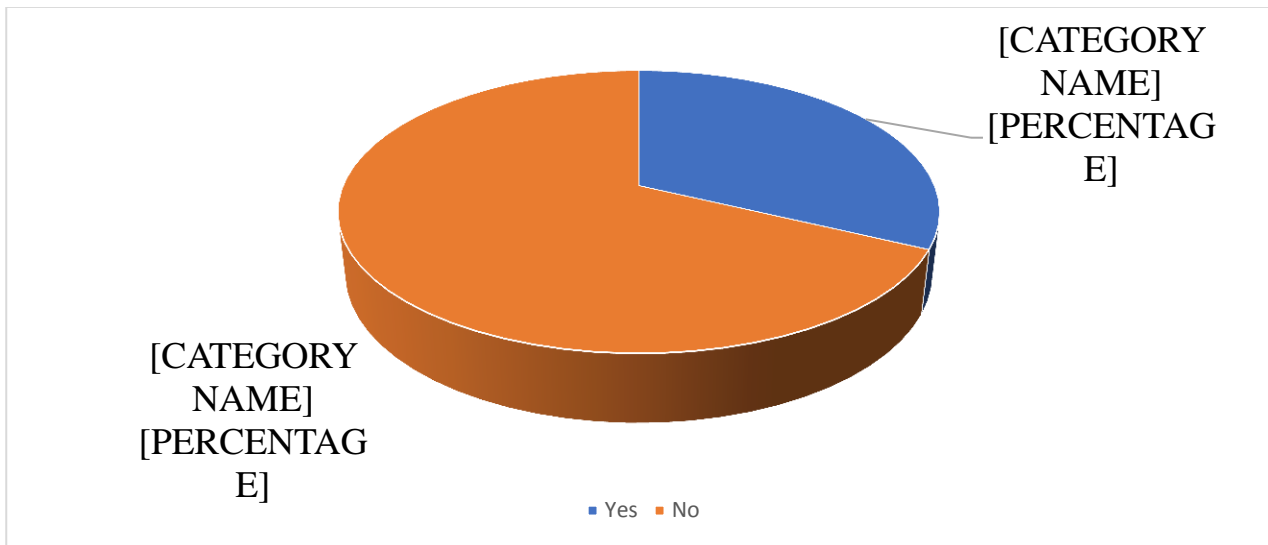
**Figure 4.4: The occupation status of respondents who attend to Dr.Elsir Abu Elhassan fertility centre, Khartoum, 2020 (n=293).**

The figure Shows that about 39% (n=115) of the participants were housewives, about 22% (n=64) were employees in public sector, 20.48% (n=60) self-employees, about 17% (n=49) of were other types of occupation and only about 2% (n=5) were retired.

**Table 4.1: The marital duration of respondents who attend to Dr.Elsir Abu Elhassan fertility centre, Khartoum, 2020 (n=293).**

<b>Marital duration</b>	<b>Frequency</b>	<b>Percent</b>
1year-less than3years.	80	27.3
3years-less than6years.	86	29.4
6years-less than9years.	48	16.4
9years-less than 12years.	35	11.9
More than 12years.	44	15.0
<b>Total</b>	<b>293</b>	<b>100.0</b>

The table shows that the marital duration for 29.35% of the participants was (3 to 6 years), 27.30% was (1 to 3 years), 16.38% was (6 to 9 years), 15.02% was (more than 12 years) and 11.95% was (9 to 12 years).



**Figure 4.5: Pregnancy distribution before start treatment for respondents who attend to Dr.Elsir Abu Elhassan fertility centre, Khartoum, 2020(n=293).**

The figure shows that the **majority** of the participants did not get pregnant before start treatment by 68% (n=199) and 32% (n=94) get pregnant before start treatment.

This figure indicate most of participants were primary infertile.



**Table 4.2: Infertility duration of respondents who attend to Dr.Elsir Abu Elhassan fertility centre, Khartoum, 2020 (n=293).**

<b>Infertility duration</b>	<b>Frequency</b>	<b>Percent</b>
1 year-less than3years.	105	35.8
3years-less than6years.	103	35.2
6years-less than9years.	40	13.7
9years-less than 12years.	27	9.2
More than 12years.	18	6.1
Total	293	100.0

The table shows that the infertility duration for 35.84% of the participants was (1 to 3 years), 35.15% was (3 to 6 years), 13.65% was (6 to 9 years), 9.22% was (9 to 12 years) and only 6.14% was (1 to 3 years).

**FertiQol Part:**

**Table 4.3: The Overall physical health of respondents who attend to Dr.Elsir Abu Elhassan fertility centre, Khartoum, 2020 (n=293).**

The overall physical health rate		Very Poor	Poor	Neither Good nor Poor	Good	Very Good	N	Weighted Mean	Attitude
	Count	1	3	32	135	122	293	3.28	Very Good
	%	0%	1%	11%	46%	42%	100%		

The table shows that about 88% of the participants rate their healthy as good/very good, 11% rate Neither Good nor Poor and only 1% response with poor healthy. As the weighted mean is equal to 3.28 it concludes that in general the participants rate their healthy as **Very Good**.

**Table 4.4: Quality of health satisfactions of respondents who attend to Dr.Elsir Abu Elhassan fertility centre, Khartoum, 2020 (n=293).**

The health satisfactions		Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied	N	weighted Mean	Attitude
	Count	15	11	15	92	160	293	3.27	Very Satisfied
	%	5%	4%	5%	31%	55%	100%		

The table shows that about 86% of the participants are satisfied with their quality of life, 5% neither satisfied nor dissatisfied and only 5% and 4% response with very dissatisfied and dissatisfied respectively. As the weighted mean is equal to 3.27 it concludes that in general the participants are **Very Satisfied** quality of life.

**Table 4.5: Fertility Quality of Life of respondents who attend to Dr.Elsir Abu Elhassan fertility centre, Khartoum, 2020 (n=293).**

<b>FertiQol Domains</b>	<b>Mean</b>	<b>Standard Deviation</b>	<b>Items numbers</b>
<b>Emotional Subscale Score</b>	66.10	21.73	6
<b>Mind/Body Subscale Score</b>	68.98	25.98	6
<b>Relational Subscale Score</b>	79.49	17.34	6
<b>Social Subscale Score</b>	76.56	22.11	6
<b>Environment Subscale Score</b>	73.95	19.16	6
<b>Tolerability Subscale Score</b>	72.82	23.37	4
<b>Core FertiQoL</b>	72.79	17.93	24
<b>Treatment FertiQoL</b>	73.39	16.93	10
<b>FertiQoL</b>	72.84	15.97	34

The overall FertiQoL total and subscale scores were shown in Table 5 an average over all FertiQoL was 72.84 with standard deviation of 15.97, while the average of Core FertiQoL and Treatment FertiQoL were 72.8 and 73.39 with standard deviation of 17.93 and 16.93 respectively, which were almost similar. In addition, the average of subscales were found to hover around (66.10 – 79.49).

The least impact of infertility was shown on relational subscale, while the most impact were on emotional and mind\body scale.

The impact on environment, tolerability, core, treatment and overall FertiQol were same.

**Table 4.6: FertiQoL vs Gender of respondents who attend to Dr.Elsir Abu Elhassan fertility centre, Khartoum, 2020 (n=293).**

FertiQoL Domains	Gender				P-value
	Female		Male		
	Mean	Standard Deviation	Mean	Standard Deviation	
<b>Emotional Subscale Score</b>	63.39	21.13	70.95	22.04	0.004
<b>Mind/Body Subscale Score</b>	66.49	24.95	73.45	27.28	0.028
<b>Relational Subscale Score</b>	79.7	17.71	79.13	16.72	0.784
<b>Social Subscale Score</b>	76.84	23.22	76.07	20.07	0.776
<b>Environment Subscale Score</b>	74.81	19.49	72.36	18.55	0.351
<b>Tolerability Subscale Score</b>	71.57	22.5	75.15	24.88	0.263
<b>Core FertiQoL</b>	71.6	17.62	74.9	18.37	0.131
<b>Treatment FertiQoL</b>	73.19	16.67	73.76	17.51	0.808
<b>FertiQoL</b>	72.1	15.61	74.18	16.57	0.285

The table shows that the FertiQoL results on different genders. Males showed a statistically significantly higher FertiQoL scores in emotional and mind/body aspects in the Core FertiQoL subscale (70.95 vs. 63.39 in the emotional domain, and 73.45 vs. 66.49 in the mind/body domain). That mean the impact of infertility on emotional and mind/body subscales were more in females than males.

The score was not different statistically on the rest of the six domains.

The mean scores of the Core FertiQoL, Treatment FertiQoL and overall FertiQoL were (71.6 vs 74.9, 73.19 vs 73.76 and 72.1 vs 74.18) respectively in females/males of infertile couples, although, the variation among male group was higher than the variation within female group, but still the differences between the two groups not statistically significant.

**Table 4.7: FertiQol vs Age of respondents who attend to Dr.Elsir Abu Elhassan fertility centre, Khartoum, 2020 (n=293).**

FertiQol Domains	Age								p-value
	15 years-less than 25 years		25 years-less than 35 years		35 years-less than 45 years		45 years-less than 55 years		
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation	
<b>Emotional Subscale Score</b>	60.91	18.32	65.83	21.13	67.48	23.4	68.96	22.48	<b>0.547</b>
<b>Mind/Body Subscale Score</b>	65.69	24.62	69.01	26.27	70.06	26.05	68.54	27.95	<b>0.941</b>
<b>Relational Subscale Score</b>	76.72	17.59	78.89	17.9	80.95	16.93	80.42	15.89	<b>0.733</b>
<b>Social Subscale Score</b>	68.75	21.69	78.12	23.5	78.52	19.45	68.33	23.12	<b>0.054</b>
<b>Environment Subscale Score</b>	78.7	16.07	72.01	20.26	75.25	18.13	72.92	21.78	<b>0.430</b>
<b>Tolerability Subscale Score</b>	72.92	29.37	72.82	21.75	72.79	23.85	72.27	22.82	<b>0.998</b>
<b>Core FertiQoL</b>	68.01	17.65	72.96	17.61	74.25	18.13	71.56	19.7	<b>0.462</b>
<b>Treatment FertiQoL</b>	75.81	19.19	72.42	16.58	74.02	16.73	72.59	17.92	<b>0.896</b>
<b>FertiQoL</b>	70.73	16.44	72.39	15.97	74.5	15.34	70.73	18.88	<b>0.694</b>

The table shows the mean scores on different age groups. There were **no statistically significant** differences in average of all domains nor the overall FertiQoL according to age categories.

**Table 4.8: FertiQol vs Education level of respondents who attend to Dr.Elsir Abu Elhassan fertility centre, Khartoum, 2020 (n=293).**

FertiQol Domains	Education level										P-value
	Never study before		Elementary		Secondary		University		Above University		
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation	
<b>Emotional Subscale Score</b>	27.08	18.16	58.75	23.66	67.04	21.18	68.23	20.96	65.37	20.08	<b>0.001</b>
<b>Mind/Body Subscale Score</b>	34.38	12.44	55	30.37	66.24	27.6	73.99	23.49	69.4	21.37	<b>0.000</b>
<b>Relational Subscale Score</b>	62.5	15.59	80	17.89	78.1	17.27	80.78	16.17	78.3	22.11	<b>0.254</b>
<b>Social Subscale Score</b>	45.83	16.32	69.03	26.91	73.56	20.53	80.18	21.76	77.73	17.76	<b>0.002</b>
<b>Environment Subscale Score</b>	97.92	2.95	78.13	21.67	74.51	18.99	72.27	19.08	75.96	17.77	<b>0.249</b>
<b>Tolerability Subscale Score</b>	62.5	53.03	73.75	31.45	73.09	23.1	74.46	21.38	64.18	24.21	<b>0.331</b>
<b>Core FertiQoL</b>	42.45	8.94	65.69	20.47	71.23	17.81	75.79	16.75	72.7	16.85	<b>0.000</b>
<b>Treatment FertiQoL</b>	80.21	25.04	75.94	23.72	73.8	17.35	73.36	15.64	70.07	16.41	<b>0.774</b>
<b>FertiQoL</b>	53.26	12.15	70	19.27	71.65	16.61	74.77	14.96	71.59	14.24	<b>0.043</b>

The table shows that the overall FertiQol mean scores were **significantly statistically** differ from education level to another, as well the core FertiQoL, that is their p-value were (0.043 and <0.001) respectively, while not the case for Treatment FertiQoL which it's p-value was greater than 5%.

For core FertiQoL domains The P-value were less than 1% in Emotional, Mind/Body and Social Subscale Score that is the average scores differences were **statistically significant** for the different Education levels, while the differences were **not significant for Relational Subscale Score**.

None of the Treatment FertiQoL sub-domains was statistically significant, not the average of Environment Subscale Score nor the Tolerability Subscale Score. The highest impact was shown never study before and lowest impact shown among university education.

**Table 4.9: FertiQol vs Occupation of respondents who attend to Dr.Elsir Abu Elhassan fertility centre, Khartoum, 2020 (n=293).**

FertiQol Domains	Occupation										P-value
	Employment (Public sector)		Self-employment		Retired		House wife		Others		
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation	
<b>Emotional Subscale Score</b>	67.32	21.77	67.57	19.89	87.5	12.15	61.92	22.46	70.32	20.98	0.021
<b>Mind/Body Subscale Score</b>	73.89	22.24	71.67	24.97	82.5	13.63	63.41	27.68	71	26.75	0.041
<b>Relational Subscale Score</b>	78.39	17.77	81.32	15.41	77.5	13.37	78.41	18.68	81.46	16.29	0.724
<b>Social Subscale Score</b>	78.39	16.11	76.87	20.82	87.5	13.18	75.4	26.59	75.43	19.64	0.717
<b>Environment Subscale Score</b>	73.3	19.37	70.64	19.29	81.94	4.81	76.93	19.47	70.73	18.1	0.259
<b>Tolerability Subscale Score</b>	74.65	18.9	72.3	24.24	97.92	3.61	73.03	23.53	68.43	27.47	0.268
<b>Core FertiQoL</b>	74.5	16.05	74.36	16.94	83.75	7.85	69.78	19.52	74.55	17.62	0.157
<b>Treatment FertiQoL</b>	73.98	15.19	71.47	16.34	89.93	3.66	74.98	17.08	69.58	19.28	0.177
<b>FertiQoL</b>	73.39	15.2	73.39	15.63	84.9	6.2	71.62	16.81	73.1	15.93	0.453

The table shows the FertiQoL average Scores and ANOVA –F-test results on different Occupations. FertiQoL scores in emotional and mind/body aspects in the Core FertiQoL subscale’s P-value found to be less than 5%, that is, the average scores differences were **statistically significantly** according to Occupation. While the average scores for remain four core FertiQoL sub-domains were **not statistically significant**, as well as the two treatments sub-scale.

Neither the average score of overall FertiQoL nor the core FertiQoL nor the Treatment FertiQoL were statistically significant differ according to occupation.

The highest effect was shown among housewives.

**Table 4.10: FertiQol vs Marital duration of respondents who attend to Dr.Elsir Abu Elhassan fertility centre, Khartoum, 2020 (n=293).**

FertiQol domains	Marital duration										P-value
	1year-less than 3 years		3 years-less than 6 years		6 years-less than 9 years		9 years-less than 12 years		More than 12 years		
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation	
<b>Emotional Subscale Score</b>	67.34	22.91	64.97	19.82	65.19	21.32	70	19.41	63.92	25.43	0.711
<b>Mind/Body Subscale Score</b>	73.18	23.82	68.7	25.97	67.62	27.74	72.86	23.16	60.32	28.61	0.094
<b>Relational Subscale Score</b>	80.99	18.03	77.08	18.28	78.3	17.34	85.95	12.87	77.65	16.4	0.097
<b>Social Subscale Score</b>	80.52	25.85	76.36	20.1	72.66	20.72	80	15.19	71.31	23.63	0.115
<b>Environment Subscale Score</b>	76.91	16.97	69.95	17.23	75.88	18.28	73.25	22.89	74.79	22.66	0.306
<b>Tolerability Subscale Score</b>	78.89	19.97	70.36	23.21	64.97	27.97	77.42	21.39	71.47	23.2	0.032
<b>Core FertiQoL</b>	75.51	18.16	71.78	17.08	70.94	18.85	77.2	14.42	68.3	19.78	0.111
<b>Treatment FertiQoL</b>	77.9	14.65	70.15	14.87	70.42	18.48	75.34	15.95	73.13	21.27	0.079
<b>FertiQoL</b>	75.79	15.77	70.94	15.03	70.76	16.87	76.04	13.59	70.94	18.18	0.146

The table shows the mean scores on different marital duration. There were **no statistically significant** differences in average of all domains nor the overall FertiQoL according to marital duration accept the Tolerability Subscale Score, its P-value found to be less than 5% that's, the average scores of Tolerability differ **significantly** according to marital duration. The lower impact was shown among who had marital duration 1 year-less than 6years, while highest impact among 6 years-9 years.



**Table 4.11: FertiQol vs pregnancy before start treatment of respondents who attend to Dr.Elsir Abu Elhassan fertility centre, Khartoum, 2020 (n=293).**

FertiQol Domains	pregnant before start treatment				P-value
	Yes		No		
	Mean	Standard Deviation	Mean	Standard Deviation	
Emotional Subscale Score	67.38	21.37	65.49	21.92	0.490
Mind/Body Subscale Score	70.43	23.89	68.3	26.94	0.512
Relational Subscale Score	79.57	17.6	79.46	17.25	0.961
Social Subscale Score	78.06	17.32	75.86	24.06	0.428
Environment Subscale Score	74.46	21.64	73.71	17.9	0.779
Tolerability Subscale Score	68.99	23.5	74.68	23.15	0.080
Core FertiQoL	73.86	16.66	72.28	18.52	0.482
Treatment FertiQoL	71.73	17.97	74.2	16.4	0.295
FertiQoL	73.18	16.09	72.68	15.94	0.803

The table shows the mean scores and –T-test results on previous pregnancy status. There were **no statistically significant** differences in average scores of all domains and the overall FertiQoL as well according to previous pregnancy status. That is FertiQoL score is not different for infertile couples irrespective of whether they get pregnant before start treatment or not.

**Table 4.12: FertiQol vs Infertility duration of respondents who attend to Dr.Elsir Abu Elhassan fertility centre, Khartoum, 2020 (n=293).**

FertiQol domains	Infertility duration										P-Value
	1 year-less than 3 years		3 years-less than 6 years		6 years-less than 9 years		9 years-less than 12 years		More than 12 years		
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation	
<b>Emotional Subscale Score</b>	68.93	21.94	66.59	20.00	60.21	21.82	67.59	20.55	57.64	28.52	.105
<b>Mind/Body Subscale Score</b>	73.69	24.08	70.06	25.25	63.54	27.75	68.06	24.10	48.84	30.34	<b>.002</b>
<b>Relational Subscale Score</b>	80.83	18.38	77.87	17.13	77.29	17.60	84.57	13.71	78.24	16.01	.334
<b>Social Subscale Score</b>	81.31	23.75	76.86	19.67	67.50	20.09	77.62	16.43	65.74	28.82	<b>.003</b>
<b>Environment Subscale Score</b>	75.41	19.35	72.26	18.06	77.53	16.27	72.10	23.04	70.57	23.54	.566
<b>Tolerability Subscale Score</b>	74.92	21.82	72.41	24.37	68.37	26.88	75.00	19.67	70.31	24.10	.691
<b>Core FertiQoL</b>	76.19	17.65	72.85	16.75	67.14	19.11	74.46	15.39	62.62	21.71	<b>.007</b>
<b>Treatment FertiQoL</b>	75.17	17.16	72.33	16.08	72.95	16.73	73.55	16.23	70.44	22.15	.790
<b>FertiQoL</b>	75.66	16.06	72.43	15.19	68.18	15.79	73.96	15.25	67.48	18.84	0.062

The table shows that for core FertiQoL domains The P-value were less than 1% in Mind/Body and Social Subscale Score that is the average scores differences were **statistically significant** for the different Infertility duration, while the differences were **not significant** for Emotional and Relational Subscale Score.

None of the Treatment FertiQoL sub-domains was statistically significant, neither the average of Environment Subscale Score nor the Tolerability Subscale Score.

Moreover, the average core FertiQoL score were **statistically significant** differ according to Infertility duration, while not the case for Treatment FertiQoL and overall FertiQoL as well **not statistically significant**. The lower impact was shown among who has infertility duration 1 year-less than 3 years.

# **Chapter Five**

## **Discussion**

## Chapter Five

### Discussion

This study evaluated the QoL in couples with infertility problems and the variables that influencing the QoL in those couples. About 293 participants were willing to participate.

#### 5.1: Demographic Information:

The main finding of analysis showed that in (figure 4.1) the majority of participants were female (n=188), for this reason the result found about 40% of participants were house wife (figure 4.4).

Half of participants' age (figure 4.2) were in range of (25-35 years old), so more than half of them with university education (figure 4.3) and half of participants with marital and infertility duration (table 4.1 and 4.2) were with range (1year-less than 3 years and 3year-less than 6 years). Most of participants were young and better scores were obtain with less duration. Most of them were primary infertile (figure 4.5) which similar to what found in study done in Saad Abualila Teaching Hospital in Khartoum, Sudan<sup>(3)</sup> that high rate of primary infertility among Sudanese infertile couples.

#### 5.2: FertiQol:

In FertiQol part the participants had very good general physical health and very satisfied about their general life (table 4.8 and 4.9). This result may be due to our general Sudanese perception to our life satisfaction.

The mean Total FertiQoL score in the study population was 72.84 (SD 15.97), which is higher than total FertiQol ( $66.1 \pm 13.0$ ) in Indian women<sup>(10)</sup>, than in Iran ( $62.57 \pm 16.89$ )(42), in study done in Canada<sup>(36)</sup> among Non-Immigrants and immigrants couples the total FertiQol were ( $68 \pm 17$  versus  $65 \pm 18$ ,  $P < 0.01$ , respectively), in Turkish women<sup>(33)</sup> total FertiQoL ( $67.10 \pm 16.71$ ), than in Turkish women ( $66.0 \pm 14.5$ )<sup>(40)</sup>. This due to different culture among countries, this indicate that Sudanese have better life satisfaction than many other countries.

The finding similar to that found in study done among couples with unexplained infertility and polycystic ovary syndrome(43) which found that total FertiQol scores ( $72.3 \pm 14.8$ ) in Women with PCOS, and lower than those with UI ( $77.1 \pm 12.8$ ;  $P, 0.001$ ), also similar to 72.27 (SD=10.42) in Turkish secondary infertile women(44) This because all this studies (include our study) have high relational score, that indicate the role of marital relation on QoL regard less to cause of infertility.

#### 5.3: FertiQoL Subscale:

On subscales the higher impact was seen on emotional subscale (lower score) and lower impact on relational subscale (higher score). which is similar to what were found in studies in Indian women<sup>(10)</sup>, in Turkish women<sup>(33)</sup>, in Turkish women(44). This studies done in different culture but

similarity due to similarity in gender, education and occupation status, which indicated the effect of this factor on over all result.

The emotional score was 66.10(SD=21) which is similar to German couples, higher than in Jordan couples and lower than in Hungarian couples. Mind/ body was 68.98 (SD=25) is similar to Jordan while it lower than in both Hungarian and German couples. Relational was 79.49 (SD=17.34) which similar to German, higher than Jordan and lower than Hungarian couples. Social was 76.56 (22.11) which higher than Jordan and German couples where lower than Hungarian couples, in study conduct on Germany, Hungary and Jordan infertile couples<sup>(39)</sup>. This different due to different demographic factors.

#### **5.4: FertiQol vs Gender:**

The demographic variable has different effect on the different aspect of infertile life, on the gender Our study finding that significant difference in the emotional and mind/body quality of life subscales, male scored higher on these subscales than female.

our finding is consistent with finding that infertility has negative emotional difficulties among Gambian women(45) Due to similarity in culture as supposed woman become mother immediately after married.

Also consistent with the finding among Turkish infertile couples on emotional and mind/body with higher score in male<sup>(38)</sup> and contrast to our finding no significant different on core, tolerability and total FertiQoL scores.

In study done in German, Italian and French couples in Spain (46) it consistent with our finding that higher scores among Italians men than women in the emotional (+13.74;  $P < 0.001$ ), mind/ body (+13.39;  $P < 0.001$ ) and contrast the finding on social (+4.11;  $P = 0.004$ ) subscale, the finding that French individuals had significantly lower emotional (-6.44;  $P = 0.003$ ), mind-body (-7.41;  $P < 0.001$ ) and relational scores (-4.75;  $P = 0.02$ ) among men than women, while German individuals showed higher social scores (+6.41;  $P < 0.001$ ) but lower relational scores (-7.40;  $P = 0.002$ ) in men than women.

Our finding is consistent with the study conduct on Germany, Hungary and Jordan infertile couples<sup>(39)</sup>. And contrast to our finding that no significant on social subscale like that found in Jordan and Hungarian.

Our study consistent with study finding done among German and Hungarian couples(47) that significant differences in the German group were detected on Emotional and Mind/Body scales with high scales among males. And contrast our finding that Hungarian group has significant difference among all subscales.

In study done in couples<sup>(48)</sup> which consistent our finding that infertile women had significantly lower levels of QoL than their partners in emotional and mind/body and contrast our finding on social subscale . As general the effect of infertility on women more than men on emotional subscale due to nature of women to be a mother regardless to culture.

### **5.5: FertiQol vs Age:**

On the age our study finding that there was no significant difference among couples age groups and Qol in all subscales, in study done in Turkish women consistent with our finding<sup>(40)</sup> which finding no significant relation between women's age and Qol.

Some studies contrast our finding, which found that the Turkish younger women obtained low scores from emotional, social and core subscales, while the younger men obtained low scores only from the emotional subscale<sup>(38)</sup>. In study done among Iranian infertile women found that the younger age is predictor of a lower Emotional and Mind-Body subscales of QoL, while older age had lower Relational subscale of QoL(42) in study done in Turkish women(44) found that a statistical significant relation in age group less than 30 years on Relational subscale (high score) on the other hand, the worst Environment subscale was obtain at ages between 30 and 35 among Turkish women. This different may be due to present of some confounding factor as income, live with nuclear family and cause of infertility which is not mention in our study.

### **5.6: FertiQol vs Education:**

On education variable our study found that total FertiQol, core, social, mind/body and emotional were significant statistically with education level and non-significant with rest subscale. The better scores obtain among who have university education.

Our finding consistent with studies done among Iranian women and Turkish women(42)(44) were found Educational status had a positive impact on Qol. Our finding is contrast with study done in turkey<sup>(40)</sup> that was found no significantly correlated with FertiQoL scores and education among women.

In study done in Indian women<sup>(10)</sup> it consistent with our finding, which was found that university education had better impact on emotional subscale in Indian women, at same time this study contrast our finding that no significant difference on relational and significant on total FertiQol, core, social, mind/body. In study done in Turkish couples<sup>(38)</sup> was consist with our finding in that men with higher education obtained better scores from the emotional, mind/ body subscales and contrast our finding in tolerability subscale in men and there was no relationship between the women's educational level and FertiQoL subscale scores. As we noticed different results were obtained from the same country. The only two studies found no significant relation between education level and FertiQol, the majority of participants with primary and less education while the

rest studies talking about university education and more, this indicated the role of education in all life aspects (This indicate the role of education in changing the infertility perception among couples) as all this studies were talking about better emotional score with university education.

### **5.7: FertiQol vs Occupation:**

On occupation our study finding that occupation only was statistically significant in emotional and mind/body subscale with low score among house wife. Our finding consistent with study done in turkey<sup>(49)</sup> which found that Higher emotional and mind/body FertiQoL subscale scores were recorded among male participants who were in employment in comparison with female participants (P=0.003) and compared with male participants who were unemployed (P=0.005). Our finding contrast the study done in infertile Turkish couples<sup>(38)</sup> found that women who had higher income had better scores in social domain, the study done in turkey To investigate the effect of a previous IVF failure on the quality of life among infertile couples<sup>(50)</sup>, it found that low income had lower score compared with middle and high income in environmental subscale. Psychologically when the human had income source this lead to stability in your emotion and their react socially due to their ability to cope with different situation, so it normal to saw different effect of occupation on various domains.

### **5.8: FertiQol vs Marital Duration:**

On marital duration our study finding that only statistically significant in Tolerability Subscale Score. Our finding contrast with the study<sup>(38)</sup> finding in Turkish women and men who were married for fewer than 10 years had a significantly lower emotional score, while men who were married for fewer than 10 years had low social score, FertiQoL, mind/body and core subscales. This may be due to different marital duration as in our study most of them less than 6 years.

### **5.9: FertiQol vs Infertility Duration:**

While on infertility duration our study found that were statistical significant different between infertility duration and mind/body, social and core FertiQol.

Our finding is contrast to what found in Iranian women<sup>(42)</sup> that duration of infertility was not associated with QoL, in study done in turkey<sup>(50)</sup> the infertility duration was found to have an effect on quality of life On the environment scores only in the couples without history of IVF failure.

Our finding consist with finding in Indian women<sup>(10)</sup> that duration of infertility less than 5 years resulted in better mind/body scores (p=.048), In study among Turkish women<sup>(44)</sup> found that Prolonged duration of infertility was associated with lower scores of mind/ body, social, and tolerability domains besides the total QoL score (p < 0.05). May be less duration of infertility indicate better relation between husband and great hope in treatment.

### **5.10: FertiQol vs Infertility Type:**

The infertility type was not statistically significant differences in all FertiQol domains related to infertility type. Our finding is consistent with finding in Indian women<sup>(10)</sup>. This finding contrast with finding in study done in turkey among infertile women(44) that found higher score in women with secondary infertility, In the Core, Emotional, mind/body and social subscales, for the treatment subscale, women with secondary infertility also had higher scores in the tolerability domain, the overall total scores were also significantly higher in women with secondary infertility. These effect seem normal because the felling of how have child, should be better than who never birth child. Our finding may be due to low percentage of participant with secondary infertility (32%).

### **5.11: FertiQol as general:**

As general the median subscale scores in FertiQoL Core, Treatment and subscales (median FertiQoL scores in the range of 60 to 75 across 31 independent samples) as was found in a systemic review done on 23 countries<sup>(8)</sup>, indicate that fertility Problems have a moderate impact on quality of life, with some subscales impacted more than others. The lack of a clinically meaningful threshold is an issue for the interpretation of FertiQoL scores<sup>(8),(9)</sup>.



## **Strength and limitations:**

The strength of the study is:

- The detailed questionnaires.
- To the best of our knowledge, this was study had originality of evaluating and implicated the fertility-related QoL when cost is not a barrier for patients in Sudan.

This study had several limitations:

- The sample of the study taken from single-centre (Dr.Elsir Abu Elhassan fertility centre) it prone to selection bias (participants were volunteer), It consisted of couples with secondary and primary infertility at different phases of their treatment processes (the duration of the treatment process had an effect on the QoL of the couples). The secondary infertility group was small (32% of participants).
- Most of participants were women (some of them their husband not with them and often men not willing to participate).
- The sample wasn't complete due to repetition of patients among the study period and not all were willing to participate.
- The non-probability sample prevent from generalization of result.

**Chapter Six**  
**Conclusion and**  
**Recommendation**

## Chapter six

### Conclusion and Recommendation

#### 6.1: Conclusion:

- The main finding was that the moderate effect on total FertiQoL score was shown among infertile couples who attend to Dr.Elsir Abu Elhassan fertility centre in period of August 2020 to February 2021.
- On subscale:
- The highest impact on emotional subscale.
- The lowest impact on relational subscale.
- On Treatment subscale Environment and Tolerability subscale were almost similar.
- On relation between FertiQol and different demographic factors, No significant difference on age and infertility type in all scales.
- Marital duration is only significant with treatment domains on tolerability subscale.
- Gender and occupation status were significant on Emotional and Mind/body subscales.
- Infertility duration was significant with Social, Core and Mind/body.
- Educational level was significant with overall FertiQol, Core, Social, Emotional and Mind/body.

## **6.2: Recommendation:**

### **6.2.1: For ministry of health level:**

- The health system capacity needs to be built to prevent and treat infertility problems.
- The health system capacity needs to follow up and provide psychological and emotional support among infertile couples.

### **6.2.2: For health professional level:**

- FertiQoL scoring could work as tools for identifying patients' psychological need or lifestyle modification among couples experiencing infertility.
- It is important to increase awareness of the tool among clinical staff.
- Actively reply about the infertility impact among patients, this could facilitate the intervention and lead to improve treatment success.

### **6.2.3: For the community level:**

- Promote healthy behaviours that help to maintain and preserve fertility (reduce exposure to occupational and infectious agents that threaten fertility).

### **6.2.4: For the study centre level:**

- It is recommend to facilitate the psychological support especially for women.

### **6.2.5: For future level:**

- It is recommended that future studies should be conducted with larger populations and different centres.

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# **Annexes**

**Annexes**

Annex I: Location of Khartoum State Localities 2019.

Annex II: Location of Khartoum Locality 2019.

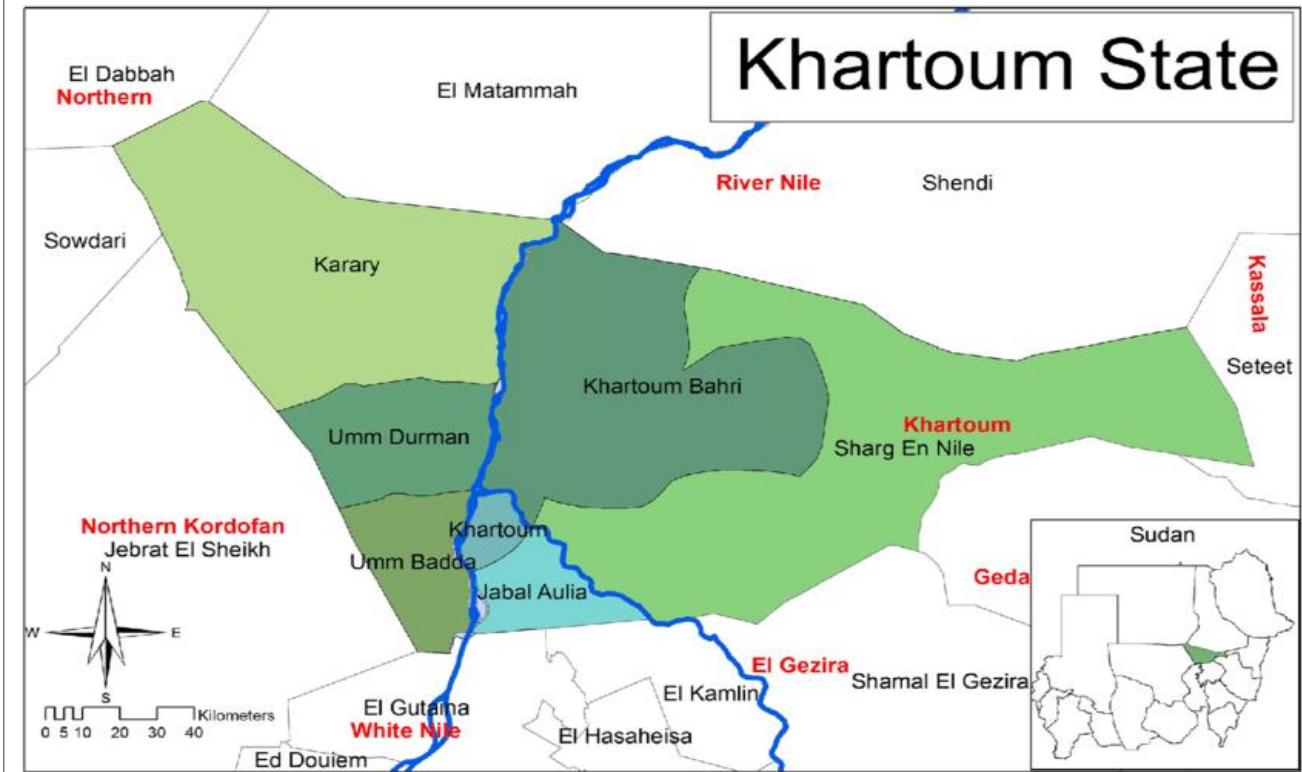
Annex III: Location of Dr.Elsir Abu Elhassan Fertility Centre.

Annex IV: Questionnaire about Quality of Life in Sudanese infertile couples who attending to Dr.Elsir Abu Elhassan Fertility Centre in Arabic language.

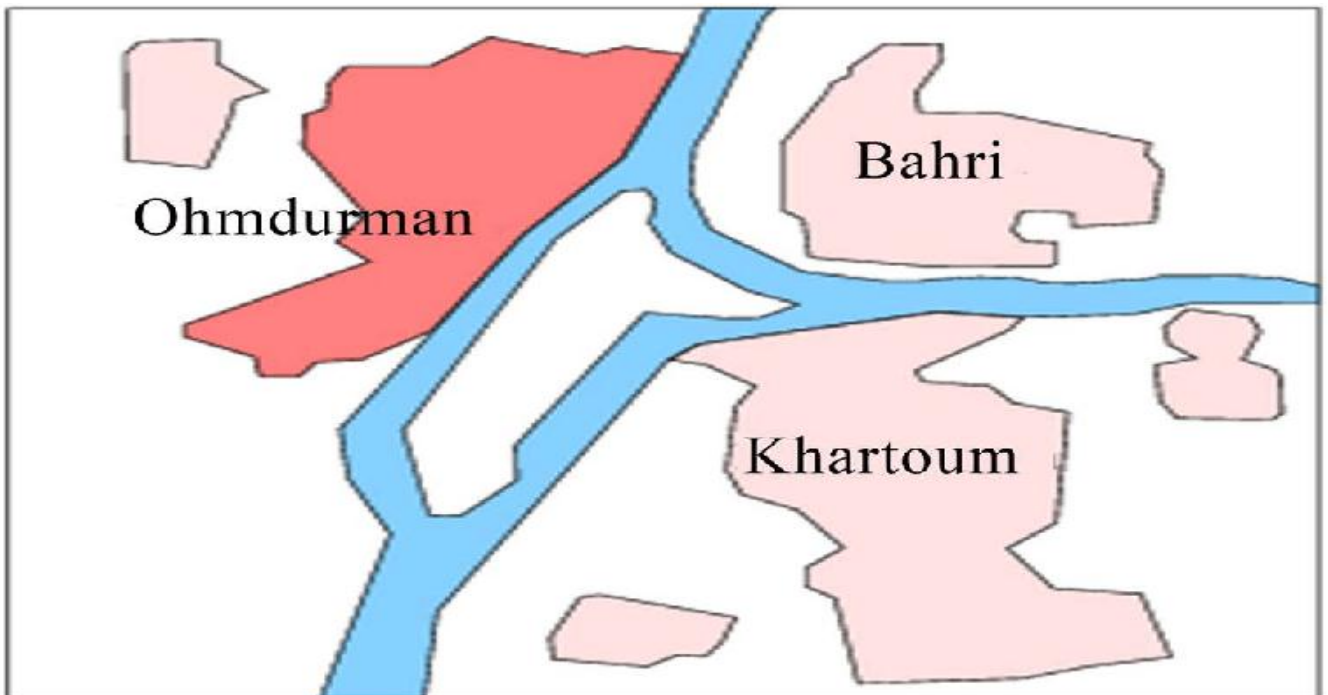
Annex V: Permission from Dr.Elsir Abu Elhassan Fertility Centre.

Annex VI: FertiQol scoring.

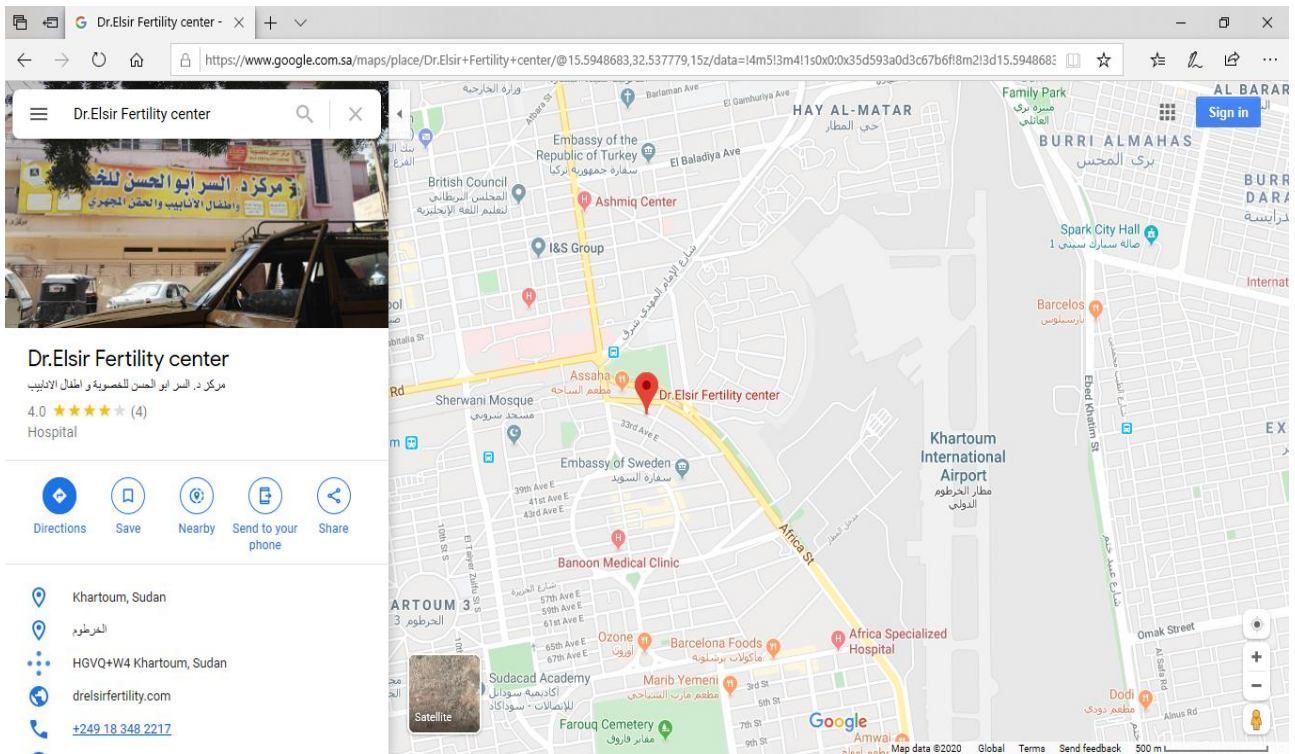
Annex I: Location of Khartoum State Localities 2019.



Annex II: Location of Khartoum locality 2019.



### Annex III: Location of Dr.Elsir Abu Elhassan Fertility Centre.



Annex IV: Questionnaire about fertility quality of life in Sudanese infertile couples who attending to Dr.Elsir Abu Elhassan Fertility in Arabic language.



جامعة أفريقيا العالمية  
كلية الطب  
عمادة الدراسات العليا والبحوث



نوعية الحياة لدى الأزواج السودانيين الذين يعانون من تأخر الإنجاب، الخرطوم، السودان 2020.  
أنا الباحثة زينب سوار الذهب أحمد عيسى أتعهد بأن هذه الاستبانة بغرض البحث التكميلي لنيل درجة الماجستير في الصحة العامة هذه الاستبانة سوف تعامل بسرية تامة بغرض البحث العلمي فقط، المشاركة في هذا البحث طوعية ولا يوجد مقابل مادي لهذه المشاركة و يحق لاي مشترك التوقف وقت ما أراد ذلك، بموافقتك سوف تكون أحد المتطوعين الذين يشملهم البحث والذين عددهم 385 مشترك، الرجاء التكرم بملى الاستبانة بحرص ووضوح.

القسم الاول: المعلومات السكانية الاساسية.  
أختر رقم الاجابة التي تناسبك.

الرقم	السؤال	الخيارات	رقم الإجابة
1	الجنس	(1) أنثى. (2) ذكر.	
2	الفئة العمرية	(1) 15 سنة و اقل من 25 سنة. (2) 25 سنة و اقل من 35 سنة. (3) 35 سنة و اقل من 45 سنة. (4) 45 سنة و اقل من 55 سنة. (5) أكثر من 55 سنة.	
3	المستوى التعليمي	(1) لم يسبق لى الدراسة من قبل. (2) الابتدائي. (3) الثانوى. (4) الجامعي. (5) فوق الجامعي.	
4	الوظيفة	(1) موظف قطاع عام. (2) موظف قطاع خاص. (3) متقاعد. (4) ربة منزل. (5) أخرى، أذكرها .....	
5	فترة الزواج	(1) 1 سنة وأقل من 3 سنة. (2) 3 سنة وأقل من 6 سنة. (3) 6 سنة وأقل من 9 سنة. (4) 9 سنة وأقل من 12 سنة. (5) أكثر من 12 سنة.	
6	هل حملت/ أو هل حملت زوجتك قبل بداية العلاج	(1) نعم. (2) لا.	
7	الفترة الزمنية لتأخر الانجاب قبل أول حمل / أو بعد آخر حمل	(1) 1 سنة وأقل من 3 سنة. (2) 3 سنة وأقل من 6 سنة. (3) 6 سنة وأقل من 9 سنة. (4) 9 سنة وأقل من 12 سنة. (5) أكثر من 12 سنة.	

القسم الثاني: فيرتكول الدولية ( FertiQol International )

استبيان الخصوبة و نوعية الحياة.

لكل سؤال، لطفاً تأكد (بوضع علامة في المربع) من أن الإجابة تعكس أكثر وعن كذب كيف تفكر وتشعر. أربط بين إجابتك وأفكارك ومشاعرك الحالية. وربما تتعلق بعض الأسئلة بحياتك الخاصة، إلا أنها ضرورية لقياس كافة جوانب حياتك على نحو كاف.

الرجاء وضع علامة (✓) أمام الخيار الذي يناسبك

	السؤال	سئ جداً	سئ	لا جيد ولا سئ	جيد	جيد جداً
A	كيف تقيم صحتك؟	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	السؤال	غير راضٍ لحد كبير	غير راضٍ	لا راضٍ ولا غير راضٍ	راضٍ	راضٍ جداً
B	هل أنت راضٍ عن حياتك بشكل عام؟	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	السؤال	نعم، تماماً	الى حدٍ كبير	بشكل معتدل	ليس كثيراً	لا، إطلاقاً
1	هل ضعُف انتباهك وتركيزك بسبب التفكير بتأخر الانجاب؟	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	هل تعتقد بأنه لا يمكنك المضي قدماً لتحقيق أهداف وخطط حياتك الأخرى بسبب مشاكل تأخر الانجاب لديك؟	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	هل تشعر بأنك مستنزف الطاقة ومرهق بسبب تأخر الانجاب؟	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	هل تشعر بأنك قادراً على التعامل/ مواجهة مشاكل تأخر الانجاب لديك؟	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	السؤال	غير راضٍ لحد كبير	غير راضٍ	لا راضٍ ولا غير راضٍ	راضٍ	راضٍ جداً
5	هل أنت راضٍ عن الدعم الذي تتلقاه من أصدقائك فيما يتعلق بمشاكل تأخر الانجاب لديك؟	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
*6	هل أنت راضٍ عن علاقتك الجنسية على الرغم من مشاكل تأخر الانجاب لديك؟	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	السؤال	نعم، دائماً	في الكثير من الأحيان	غالباً	نادراً	أبداً
7	هل تسبب مشاكل تأخر الانجاب لديك الشعور بالغيرة و الاستياء؟	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8	هل تعاني من الحزن و/ أو الشعور بفقدان شيئاً ما حول عدم قدرتك على الحصول على طفل (أو المزيد من الأطفال).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9	هل تتأرجح مشاعرك ما بين الأمل واليأس بسبب مشاكل تأخر الانجاب؟	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	السؤال	نعم، دائماً	في الكثير من الأحيان	غالباً	نادراً	أبداً
10	هل أنت معزول اجتماعياً بسبب مشاكل تأخر الانجاب؟	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
*11	هل تتبادل أنت و شريك حياتك فيما بينكما المحبة والحنان بالرغم من مشاكل تأخر الانجاب لديك؟	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12	هل تتدخل مشاكل تأخر الانجاب لديك مع أعمالك اليومية و التزاماتك؟	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13	هل تشعر بعدم الارتياح لحضور المناسبات الاجتماعية مثل الإجازات والاحتفالات بسبب مشاكل تأخر الانجاب لديك؟	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14	هل تشعر بأن بإمكان أفراد أسرتك أن يتفهموا ما تمر به؟	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	السؤال	نعم، بدرجة قصوى	كثيراً جداً	بشكل معتدل	قليلاً	لا، إطلاقاً
*15	هل قويت علاقتك بشريك حياتك من بعد مشاكل تأخر الانجاب؟	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16	هل تشعر بالحزن والاكتئاب بسبب مشاكل تأخر الانجاب لديك؟	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17	هل مشاكل تأخر الانجاب لديك تجعلك تشعر بأنك أقل شأن من الناس الذين معهم أطفال؟	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18	هل يزعجك التعب بسبب مشاكل تأخر الانجاب؟	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
*19	هل لمشاكل تأخر الانجاب تأثير سلبي على علاقتك بشريك حياتك؟	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
*20	هل تجد صعوبة في التحدث مع شريك حياتك عن مشاعرك المتعلقة بمشاكل بتأخر الانجاب؟	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
*21	هل أنت مرتاح في علاقتك الزوجية بالرغم من مشاكل تأخر الانجاب لديك؟	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22	هل تشعر بضغط اجتماعي عليك لأن يكون لديك أطفال (أو المزيد من الأطفال)؟	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23	هل تؤدي مشاكل تأخر الانجاب لديك إلي شعورك بالغضب؟	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24	هل تشعر بالألم وعدم الراحة البدنية بسبب مشاكل تأخر الانجاب لديك؟	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## FertiQol International

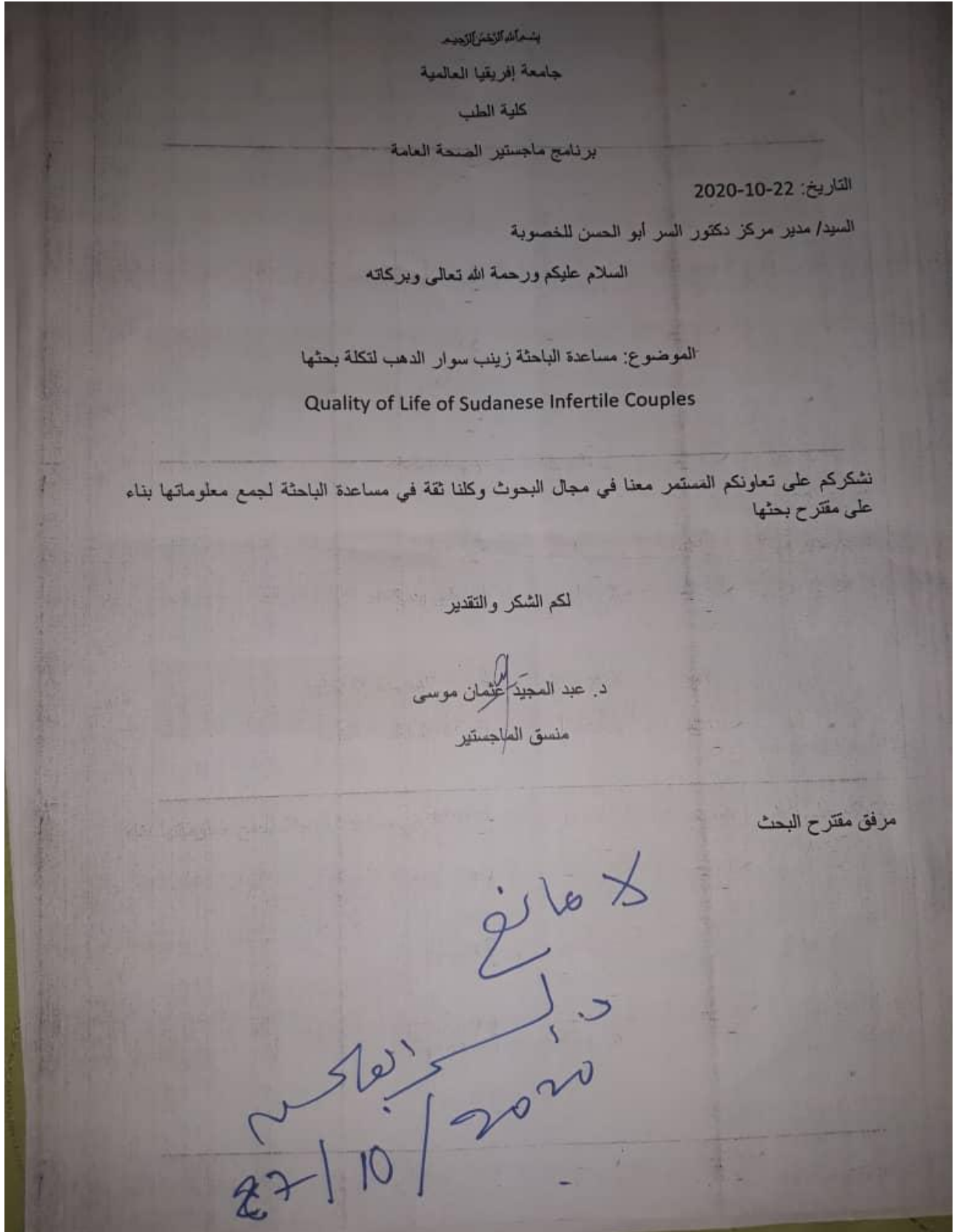
وحدة قياس العلاج الاختياري

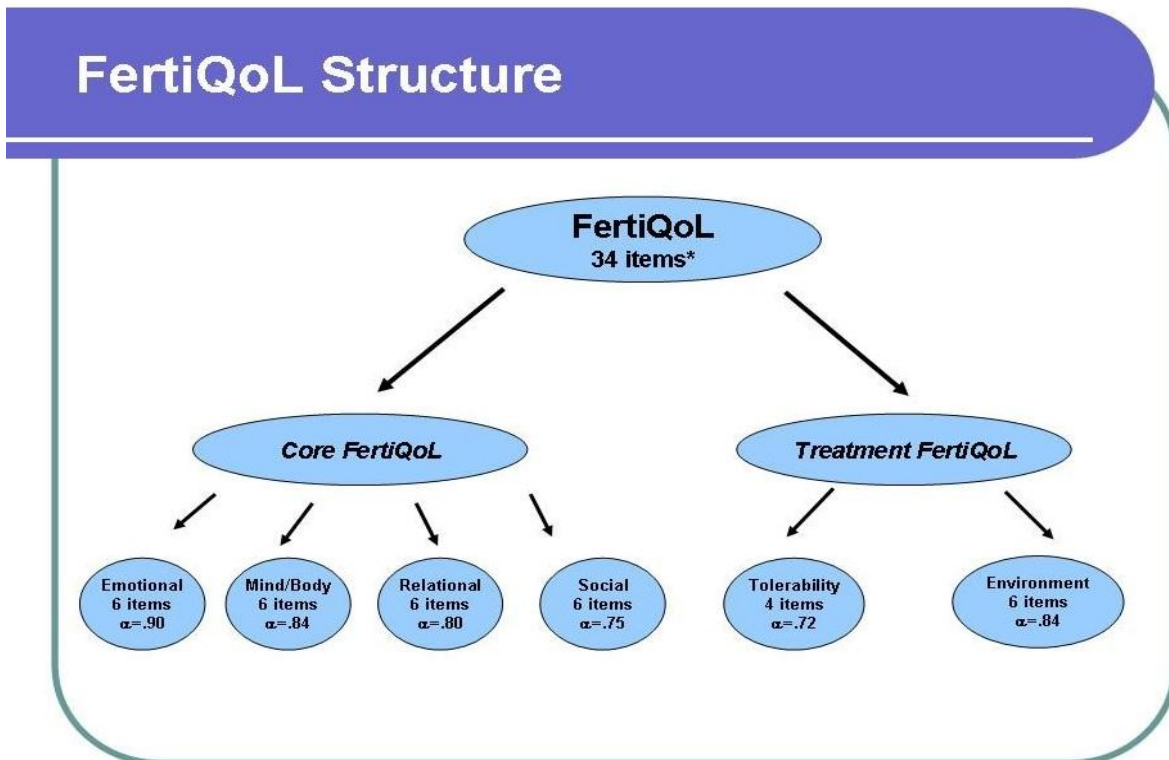
هل بدأت في علاج الخصوبة (وهذا يشمل أي استشارة طبية أو تدخل)؟ إذا كان الرد نعم، يرجى الإجابة على الأسئلة التالية. لكل سؤال، يرجى التأكد (بوضع علامة في المربع) من أن الإجابة تعكس أكثر و عن كذب كيف تفكر وتشعر. أربط بين إجابتك وأفكارك ومشاعرك الحالية. وربما تتعلق بعض الأسئلة بحياتك الخاصة، لأنها ضرورية لقياس كافة جوانب حياتك على نحو كاف.

	السؤال	دائماً	في الكثير من الأحيان	غالباً	نادراً	أبداً
T1	هل يؤثر علاج تأخر الانجاب سلباً على مزاجك؟	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
T2	هل خدمات تأخر الانجاب الطبية التي تريدها متاحة إليك؟	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<b>السؤال</b>	<b>نعم، بدرجة قصوى</b>	<b>كثيراً جداً</b>	<b>بشكل معتدل</b>	<b>قليلاً</b>	<b>لا، إطلاقاً</b>
T3	هل تعتبر عملية التعامل مع الإجراءات و/ أو تعاطي الأدوية الخاصة بك معقدة؟	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
T4	هل أنت منزعج من جراء تأثير العلاج على نشاطاتك اليومية أو على الأنشطة ذات صلة بالعمل؟	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
T5	هل تشعر بأن أفراد الطاقم الطبي للخصوبة يتفهمون ما تمر به؟	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
T6	هل أنت منزعج من الأعراض الجانبية البدنية لأدوية أو علاج تأخر الانجاب؟	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<b>السؤال</b>	<b>غير راضٍ لحد كبير</b>	<b>غير راضٍ</b>	<b>لا راضٍ ولا غير راضٍ</b>	<b>راضٍ</b>	<b>راضٍ جداً</b>
T7	هل أنت راضٍ عن نوعية الخدمات المتاحة لك لمعالجة الاحتياجات العاطفية الخاصة بك؟	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
T8	كيف تقيم العلاج الطبي و/ أو العملية الجراحية التي تلقيتها؟	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
T9	كيف تقيم نوعية المعلومات التي تلقيتها حول العلاج الطبي و/ أو الأدوية و/ أو العملية الجراحية؟	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
T10	هل أنت راضٍ عن مدى تفاعلك مع الطاقم الطبي للخصوبة؟	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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\*Two additional items measure overall satisfaction with physical health and quality of life

The 36 FertiQoL items are rated according to 5 types of response scales.

The response scales are:

1. Evaluation: Very poor (0), poor (1), neither poor nor good (2), good (3), very good (4).
2. Satisfaction: Very dissatisfied (0), dissatisfied (1), neither satisfied nor dissatisfied (2), satisfied (3), very satisfied (4).
3. Frequency: Always (0), very often (1), quite often (2), Seldom (3), never (4).
4. Intensity: An extreme amount (0), very much (1), a moderate amount (2), a little (3), not at all (4).
5. Capacity: Completely (0), a great deal (1), moderately (2), not much (3), not at all (4).

Scores on the response scales are reversed, summed and scaled to range from 0 to 100. Higher scores on the subscales and total scores indicate better quality of life.

To score FertiQoL manually use the following instructions:

Item	Core FertiQoL				Treatment FertiQoL	
	Emotional	Mind/Body	Relational	Social	Environment	Tolerability
	Q4R	Q1	Q6	Q5	T2R	T1
	Q7	Q2	Q11R	Q10	T5R	T3
	Q8	Q3	Q15R	Q13	T7	T4
	Q9	Q12	Q19	Q14R	T8	T6
	Q16	Q18	Q20	Q17	T9	
	Q23	Q24	Q21R	Q22	T10	

Note: Item number refers to item number on the FertiQoL questionnaire. Items marked ‘Q’ are Core FertiQoL items and those marked T are Treatment FertiQoL items. Items marked with an R need to be reversed before summing. For these items use the reverse of the response scale (4 to 0, instead of 0 to 4) so that higher scores reflect higher quality of life.

- 1) Reverse items.
- 2) Calculate raw scores by summing all items that belong to the subscale or total scale. For the Core FertiQoL add all ‘Q’ items (24 items). For the Treatment FertiQoL add all the ‘T’ items (10 items). For the Total FertiQoL add all Core and Treatment items (34 items).
- 3) To compute scaled scores for the subscale and total scales, multiply the relevant raw score by  $25/k$ , where  $k$  is the number of items in the subscale. The scaled scores range is 0 to 100.
- 4) Use items marked A (general physical health) and B (general life satisfaction) as background information.

To More information see <http://sites.cardiff.ac.uk/fertiqol/scoring/>

Example

#### Scoring example

Suppose Mary had given the following scores to the emotional items.

$$Q4R = 0 \quad Q7 = 3 \quad Q8 = 2 \quad Q9 = 2 \quad Q16 = 3 \quad Q23 = 2$$

To calculate the Emotional subscale score (scaled):

Step 1: Reverse item Q4R. \*\*\* Q4R reverse is 4.

Step 2 = Add all subscale items:  $(4 + 3 + 2 + 2 + 3 + 2) = 16$

Step 3 = Multiply raw score by  $25/k$ , where  $k$  is the number of items:

$$16 * (25/6)$$

$$\text{Mary's scaled Emotional subscale score} = 66.7$$

<http://sites.cardiff.ac.uk/fertiqol/files/2017/04/scoringexample.jpg>