

# **FEASIBILITY OF AN IVF CENTRE IN A LEADING OBSTETRICS AND GYNECOLOGY HOSPITAL**

**Internship Training  
at  
Zulekha Hospital, Sharjah, UAE**

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**Under the guidance of  
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**ZULEKHA HOSPITAL SHARJAH,UAE**

**On**

**“Feasibility Of An IVF Centre In A Leading  
Obstetrics & Gynaecology Hospital”**

Under the guidance of  
**Prof. J.P.Singh**

By  
**Dr. Arushi Vij**

**TO WHOMSOEVER MAY CONCERN**

This is to certify that Dr.Arushi Vij student of MBA Hospital and Health Management from IIHMR University, Jaipur has undergone internship training at Zulekha Hospital from 11/03/2015 to 12/05/2015.

The Candidate has successfully carried out the study designated to him during internship training and his approach to the study has been sincere, scientific and analytical.

The Internship is in fulfillment of the course requirements.

I wish him all success in all his future endeavors.



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The certificate is awarded to

**Dr. Arushi Vij**

In recognition of having successfully completed her  
Internship/Dissertation in our Hospital

**Zulekha Hospital Sharjah, UAE**

and has successfully completed her Project on

**“Feasibility of an IVF centre in a leading Obstetrics & Gynecology  
Hospital”**

from 11<sup>th</sup> March, 2015 to 12<sup>th</sup> May, 2015.

She comes across as a committed, sincere & diligent person who has a  
strong drive & zeal for learning.

I wish her all the success in future endeavors.

  
m.12.15

**Dr. ChandraShekhar S. Jadhav**  
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**CERTIFICATE BY SCHOLAR**

This is to certify that the dissertation titled Feasibility of an IVF centre in a leading Obstetrics & Gynaecology Hospital submitted by (Name) Dr. Arushi Vij Enrollment No 2013-15/1426 under the supervision of Prof. J.P.Singh for award of MBA Hospital and Health Management/ MBA Pharmaceutical Management of the university carried out during the period from 2013 to 2015 embodies my original work and has not formed the basis for the award of any degree, diploma associate ship, fellowship, titles in this or any other Institute or other similar institution of higher learning.

  
Signature

## **Abstract**

**Background** Worldwide, more than 80 million couples suffer from infertility; the majority are residents of developing countries. Infertility defined as a disease has a much stronger negative consequence in developing countries. Social isolation, economic deprivation and violence are commonly observed. **In vitro fertilization (IVF)** is a complex series of procedures used to treat fertility or genetic problems and assist with the conception of a child. IVF is the most effective form of assisted reproductive technology. The procedure can be done using your own eggs and your partner's sperm/from a known or anonymous donor.

**A feasibility study** is an analysis of the viability of an idea. The feasibility study focuses on helping answer the essential question of “should we proceed with the proposed project idea?” All activities of the study are directed toward helping answer this question.

### **Objectives:-**

- To chart out the legal and infrastructural obligations.
- To define the technical requirement in terms of equipment and manpower resources required to implement this project
- To describe what is unique about the model compared to the competition.
- To determine the positive economic benefits to the organization the proposed new department will provide.

### **Methodology**

**Type of Study** - Descriptive Study-

**Location of study** – Zulekha Hospital, Sharjah

**Site of Study** –Zulekha Hospital, Sharjah

**Sample Size**– Total referred cases for an ART

**Data collection tools-**

Primary Data: A Checklist for each of the parameters was prepared as per the MOH.

Secondary data: The medical records retrieved from medical records department.

➤ **Data Collection Tool**

Based on the interactions with the patients a questionnaire was prepared.

**Results:-**

Obtaining the license for running the IVF centre.IVF success rates are better when women are below the age of 35 years of age.The Gynaecology department witnessed a footfall of nearly 16423 patients in the past four months of which the diagnosed male and female infertility cases were 5% female and 1% male infertility cases.The revenue generated per patient for one month was calculated.This figure is based on approximate values obtained from the market research. Based on the competitor analysis and SWOT analysis the competitive advantage is that our IVF centre will be coming up in a hospital famous for its gynaecology facilities.

**Conclusion:-**ART services for infertility management are offered through the private sector in some of the metropolitan cities. The high costs involved in offering such services are the consequence of expensive infrastructure, drugs required for inducing multiple ovulations and maintenance expenses.

The IVF centre in the Hospital is viable and will run successfully based on all the findings.

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**-Dr. Arushi Vij**

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## LIST OF ABBREVIATIONS

|      |                                              |
|------|----------------------------------------------|
| IVF  | In Vitro Fertilization                       |
| ICSI | Intra Cytoplasmic Sperm Injection            |
| ART  | Assisted Reproductive Technology             |
| CDC  | Centre of Disease Control                    |
| IUI  | Intra Uterine Insemination                   |
| WHO  | World Health Organisation                    |
| UAE  | United Arab Emirates                         |
| HEFA | Human Fertilization and Embryology Authority |
| ASRM | American Society for Reproductive Medicine   |
| CAC  | Chemical Air Contaminants                    |
| VOC  | Volatile Organic Compounds                   |
| HVAC | Heating, Ventilation Air Conditioning System |
| HEPA | High Efficiency Particulate Air              |
| SOP  | Standard Operating Procedure                 |
| DQA  | Dubai Quality Award                          |

# **Dissertation Report**

**“Feasibility of an IVF centre in a leading  
Obstetrics & Gynaecology Hospital”**

## 1. INTRODUCTION

Reproductive health is a state of complete physical, mental and social well-being in all aspects relating to the reproductive system and to its functions and processes. Implicit in this last condition is the right of couples to have babies of their own and the right to access appropriate health-care services that will enable them to reproduce.

Worldwide, more than 80 million couples suffer from infertility; the majority are residents of developing countries. Residents of developing countries encounter a lack of facilities at all levels of health care, but especially infertility diagnosis and treatment. Infertility defined as a disease has a much stronger negative consequence in developing countries compared with Western societies. Social isolation, economic deprivation and violence are commonly observed. Infertility defined as a disease has a much stronger negative consequence in developing countries compared with Western societies. Social isolation, economic deprivation and violence are commonly observed. Tubal infertility due To sexually transmitted diseases, unsafe abortion and postpartum pelvic infections are the main causes of infertility in developing countries. Very often those conditions are only treatable by assisted reproductive technologies.

Although preventative measures are undoubtedly the most cost-effective approach, not offering assisted reproduction is not an alternative. In most developing countries, reproductive health care is synonymous with family planning and contraception. In developing countries however, infertility, fetal and neonatal death constitute an important public health problem resulting in a high prevalence of childlessness. Moreover, the negative consequences of childlessness are much stronger in developing countries when compared with Western societies. In many cultures childless women are stigmatized, which may lead to isolation, neglect, domestic violence, or they may end up as a second wife in a polygamous marriage.

**1.1 Infertility** is a world-wide problem affecting people of all communities, though the cause and magnitude may vary with geographical location and socio-economic status. Approximately 8-10% of couples within the reproductive age group present for medical assessment, generally following two years of failed efforts to reproduce. It is estimated that globally between 60-80 million couples suffer from infertility every year, of which probably between 15-20 million are in India alone. The magnitude of the problem calls for urgent action, particularly when in the majority of cases the infertility is avoidable. Infertility, therefore, is a basic component of reproductive health and its prevention and appropriate treatment, where feasible, are essential.

It is estimated that globally approximately more than 80 million couples suffer from infertility every year.

Stress, late marriage, a genetic condition that produces a hormonal imbalance are the leading causes of infertility in women in the UAE. There are no figures as to how many women are infertile in the UAE, but it is estimated that one in six couples have problems with infertility.

Developing countries have a large reservoir of infertility problems, of which bilateral tubal occlusion is the most important one (World Health Organization, 1987; Nachtigall, 2006), a condition that is potentially treatable by assisted reproductive technologies.

Approximately 30% of infertility is due to female factor and 30% is due to male factor.

The dream of having a child of one's own is not easy for many parents, thereby they turn to experts. The experts can be in the form of fertility specialists, clinicians or experienced gynaecologists.

The genetic condition that hinders women from bearing children is called polycystic ovary syndrome (PCOS). This affliction which leaves cysts in the ovaries affects the woman's menstrual cycle. Doctors can detect if a woman has PCOS through blood tests, a pelvic exam or a vaginal ultrasound.

Men also face fertility issues due to smoking, binge drinking or job stress. "If you work long hours and don't sleep well, besides chronic headaches, you will have problems with fertility.

Many Obs & Gyns and Urologists are specially trained to treat the patient having difficulty conceiving. Doctors who specialise in infertility are board certified in reproductive endocrinology.

In most developing countries, reproductive health care is synonymous with family planning and contraception. In developing countries however, infertility, fetal and neonatal death constitute an important public health problem resulting in a high prevalence of childlessness (Bergstrom, 1992). Moreover, the negative consequences of childlessness are much stronger in developing countries when compared with Western societies. In many cultures childless women are stigmatized, which may lead to isolation, neglect, domestic violence, or they may end up as a second wife in a polygamous marriage.

**1.2 In vitro fertilization (IVF)** is a complex series of procedures used to treat fertility or genetic problems and assist with the conception of a child. During IVF, mature eggs are collected (retrieved) from your ovaries and fertilized by sperm in a lab. Then the fertilized egg (embryo) or eggs are implanted in your uterus. One cycle of IVF takes about two weeks.

Today, in vitro fertilization (IVF) is practically a household word. But not so long ago, it was a mysterious procedure for infertility that produced what were then known as "test-tube babies." Louise Brown, born in England in 1978, was the first such baby to be conceived outside her mother's womb.

IVF is the most effective form of assisted reproductive technology. The procedure can be done using your own eggs and your partner's sperm. Or IVF may involve eggs, sperm or embryos from a known or anonymous donor. In some cases, a gestational carrier — a woman who has an embryo implanted in her uterus — might be used. Your chances of having a healthy baby using IVF depend on many factors, such as your age and the cause of infertility. In addition, IVF can be time-consuming, expensive and invasive. If more than one embryo is implanted in your uterus, IVF can result in a pregnancy with more than one foetus (multiple pregnancy).

Your doctor can help you understand how IVF works, the potential risks and whether this method of treating infertility is right for you.

An **IVF procedure** (Figure below) typically begins with hyperstimulation of the woman's ovaries by a combination of fertility hormones. Then one or more eggs are taken from the woman's ovarian follicles and fertilized *in vitro* with either standard insemination, or a technique called intracytoplasmic sperm injection (ICSI), in which a single sperm is injected by needle into the egg. If the egg is healthy and has enough

energy, it will start to divide, and the resulting embryo can be transferred into the woman's uterus 3-5 days after ICSI. These steps typically occur over several months.



Fertility decreases with age because of a decline in both egg health and embryo quality. A key factor for egg health and embryo quality is the energy level in the egg. IVF success declines with age if a woman is using her own egg. The IVF procedure also may be performed using eggs donated from another woman (donor egg). When a woman chooses to use a younger woman's donor egg, studies show that success rates are similar to a younger woman's.

Despite relatively low success rates, risks and other shortcomings, the use of IVF treatments has become increasingly common, especially for women faced with declining fertility due to their age.

It is estimated that the international markets account for 90% of global IVF. Examples of other countries in which a large number of IVF cycles are performed include Japan and Australia. In addition, countries like Brazil, Latin America, Russia, Turkey and UAE are estimated to be growing at a rate of 30-40%. Since its introduction in 1981, IVF and other similar techniques have resulted in more than 200,000 babies.

In vitro fertilization is an option for many couples who cannot conceive through conventional therapies. These embryos are put back into the female partner's uterus (womb) after 3 to 5 days of being in the incubator, hopefully they will then grow into a baby. The reasons IVF is done include - poor sperm quality and/or quantity, obstructions between the egg and sperm, ovulation problems, and sperm-egg interaction problems. These problems can prevent couples having a baby naturally, and IVF helps to solve this.

Especially in developing countries, where poverty and infections are commonplace, fertility and fetal care are affected by many different cultural, environmental and socio-economic factors. The most cost-effective approach to tackle infertility problems in

developing countries is prevention and education (Leke *etal.*, 1993). However, in those cases where prevention has failed, simplified assisted reproduction must be thought of as a valuable option.

On the other hand, new reproductive technologies can only be successfully introduced in this part of the world if socio-cultural and economic prerequisites are fulfilled and politicians are persuaded to support the project. Quality of life will not only be achieved by a correct family planning and mother child programme, but also by an environmentally adapted reproductive health care programme.

IVF can treat :

Specific conditions that might require IVF include:

- Tubal blockage or failed tubal reversal
- Endometriosis
- Cervical factor
- Pelvic adhesions
- Male factor
- Unexplained infertility/ failed conventional therapy
- Genetic testing (PGD) for inheritable diseases
- Genetic testing (PGD) for possible reasons for multiple miscarriages

It is also known that IVF is never the first step in the treatment of infertility. Instead, it is reserved for cases in which other methods such as fertility drugs, surgery, and artificial insemination haven't worked.

Success rates for IVF depend on a number of factors, which includes :

- reason for infertility,
- age. where the couple is having the procedure done

The price of IVF varies and it depends on the following factors:

- where one lives,
- the amount of medications required to be taken,
- the number of IVF cycles a couple needs to undergo,
- the amount of money the insurance company will pay toward the procedure.(A thorough investigation of the insurance company's coverage of IVF will be needed to be done and it is essential to take a written statement of the benefits being provided.

During IVF, mature eggs are collected (retrieved) from your ovaries and fertilized by sperm in a lab. Then the fertilized egg (embryo) or eggs are implanted in your uterus. **One cycle of IVF** takes about two weeks.

**ICSI**, which is pronounced ick-see, stands for intra cytoplasmic sperm injection. ICSI may be used as part of an IVF treatment. In normal IVF, many sperm are placed together with an egg, in hopes that one of the sperm will enter and fertilize the egg. With ICSI, the embryologist takes a single sperm and injects it directly into an egg.

The Success Rate for ICSI –

The ICSI procedure fertilizes 50% to 80% of eggs. (Interestingly, just because a sperm is injected into an egg, it does not guarantee fertilization will happen.) Even if

fertilization takes place, the embryo may stop growing. However, once fertilization happens, the success rate for a couple using ICSI with IVF is the same as a couple doing regular IVF treatment.

The CDC compiles national statistics for all assisted reproductive technology (ART) procedures performed

, including IVF, GIFT, and ZIFT, although IVF is by far the most common; it accounts for 99% of the procedures. The most recent report from 2009 found:

Pregnancy was achieved in an average of 29.4% of all cycles (higher or lower depending on the age of the woman).

The percentage of cycles that resulted in live births was 22.4% on average (higher or lower depending on the age of the woman).

A woman's age is a major factor in the success of IVF for any couple. For instance, a woman who is under age 35 and undergoes IVF has a 39.6% chance of having a baby, while a woman over age 40 has an 11.5% chance. However, the CDC recently found that the success rate is increasing in every age group as the techniques are refined and doctors become more experienced.

It has been noted that WHO has reported that there are 20 million sperms per ml with 50% motility as the requirement for natural conception to occur. Anybody whose count is consistently lower than this may require ART procedure.

You can go through IVF as many times as you wish, but it is advised up to five cycles at the most.

\*The Insemination IUI is a short procedure, lasting about 2 hours, from the time semen is produced till the time the patient is released from the hospital.

IVF is not as expensive as perceived in general. Generally, the cost of IVF cycle depends upon the dose of drugs that would be needed for the required procedures.

## **2. LITERATURE REVIEW**

As the name implies, a feasibility study is an analysis of the viability of an idea. The feasibility study focuses on helping answer the essential question of “should we proceed with the proposed project idea?” All activities of the study are directed toward helping answer this question.

Before beginning with the study identifying and enlisting what all parameters we need to consider before we tread on this path is of utmost importance. Focussing on firstly the legal obligations , the technological front ,how, where, and to whom we intended to sell the service and also assessing our competition plays a vital role.

The feasibility study is important as the information gathered will help us in the following ways:

List out the formalities that primarily need to be fulfilled to make our business work, Identifying the deficiencies that need to be fulfilled further helping our business to work well.

The study will help us form a solid foundation for developing our business plan.

The resources needed to make our business run and all the information about the business.

(The feasibility study outlines and analyzes several alternatives or methods of achieving business success. The feasibility study helps to narrow the scope of the project to identify the best business scenario(s).

The business plan deals with only one alternative or scenario. The feasibility study helps to narrow the scope of the project to identify and define two or three scenarios or alternatives. The person or business conducting the feasibility study may work with the group to identify the “best” alternative for their situation. This becomes the basis for the business plan.

The feasibility study is conducted before the business plan. A business plan is prepared only after the business venture has been deemed to be feasible. If a proposed business venture is considered to be feasible, a business plan is usually constructed next that provides a “roadmap” of how the business will be created and developed. The business plan provides the “blueprint” for project implementation. If the venture is deemed not to be feasible, efforts may be made to correct its deficiencies, other alternatives may be explored, or the idea is dropped.)

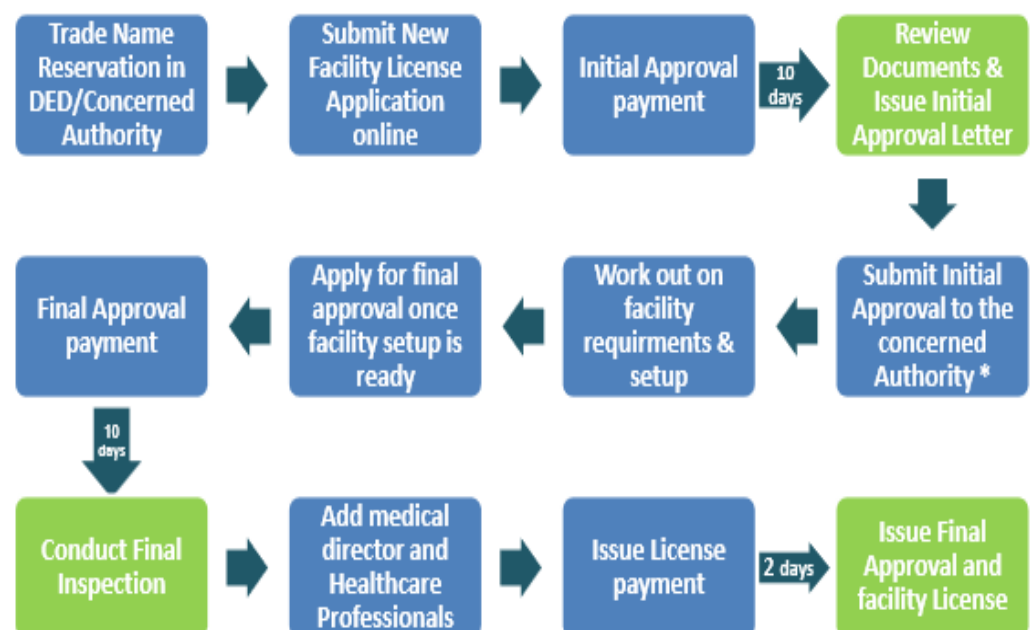
An in depth description of the business; the market analysis; technical and organizational feasibility and the financial feasibility dealing with the start up capital needed and the sources of the capital, etc.

## 2.1 As per the Government of UAE

The fulfilment of the legal requirements plays a very significant role when establishing a new facility / venture.

Attaining license is tedious process which requires following the mentioned steps and obtaining approval on each step as per needs of the government authorities.

### New Facility License Process



### **2.3 The author is Joyce Mathew in the study**

"Setting up an ART Laboratory" states that The primary function of an ART laboratory is to provide an optimal environment for gametes and embryos. To set up an ART laboratory, that is efficient and safe, the three key areas to focus on would be the place or location of the laboratory, the embryologists, and the protocols or procedures.

Some of the suggestions are based on the guidelines provided by the Human Fertilization and Embryology Authority (HFEA) code of practice, 7th edition, and American Society for Reproductive Medicine (ASRM).

First and foremost choosing the location is very crucial when setting up a laboratory with high standards. The IVF laboratory should provide a safe, non toxic, stable, and a pathogen free environment. Therefore, careful consideration should be given when choosing the location.

When starting a new facility for IVF, the design of the laboratory should be logically planned according to the projected workload anticipated. It should be adjacent to the procedure room or operating theatre (American society for reproductive medicine ASRM 2008).

The design of the lab is extremely crucial with regards to the structural design and the environmental design. It has been shown that both laboratory structure and air handling systems may affect air composition. With proper engineering and material selection it is possible to reduce such contamination (Cohen 1998).

Environmental design is to ensure that the quality of ambient air is optimum for all procedures. Structural design refers to the layout of the laboratory and specifications with regards to the bench height, flooring, wall paint, and lighting etc. This planning should be done with the help of clean room experts to try and eliminate volatile organic compounds (VOC's) and chemical air contaminants (CAC) in the laboratory.

The American society for reproductive medicine. Revised guidelines for human embryology and andrology laboratories. The ambient air in the laboratory should be highly sterile. This is achieved by a heating, ventilation air conditioning system (HVAC), and an air handling unit that supplies only to the ART laboratory. Pre filters should be placed on the roof at the fresh air supply inlet. Activated carbon filters and potassium permanganate filters should be placed next to the pre filters at the supply inlet to absorb contaminants. These filters should be replaced regularly to maintain the quality of air that is supplied into the laboratory. High efficiency particulate air (HEPA) filters or Ultra low penetration air should also be placed on the ceiling of the laboratory (Boone 1999). There should be at least 18 air exchanges per hour.

#### **Structural Design :**

Walls of the laboratory should be painted with non odor emitting, nontoxic, glossy, non-vaporizing paint. Ceiling should be solid. Flooring should be slip proof preferably vinyl which is easy to clean.

Cupboards and tabletops should be laminated with matt finish that is washable and made of heat resistant material. Furniture should be of normal working

height and should be ergonomically designed to reduce fatigue for staff. Lighting should be adjustable by dimmer. There should be enough electrical outlets.

All important equipment like the incubators, micromanipulator, refrigerator, freezing machine etc. should be on uninterrupted power supply with trigger alarm feature (Gianaroli 2000). There should be a wall mounted data logger displaying the laboratory ambient temperature and humidity levels.

Gianaroli L, Plachot M, Van Kooij R, Al Hasani S, Dawson K, DeVos, Magli MC, Mandelbaum J, Selva J and Van Inzen W. Guidelines for good practice in IVF laboratories. Hum.Reprod. 2000; 15: 2241-2246.

Each workstation should be self contained with a laminar flow hood, incubator, and microscope to prevent unnecessary movement of staff in the laboratory during procedures.

Commissioning of the laboratory should only be done after appropriate testing to verify that the laboratory meets the specifications for environmental and structural design.

All newly hired staff should undergo a formal training. The training should improve skill sets and give better understanding of procedural and physiological bases of procedures. There should be emphasis on the strict adherence of the standard operating procedures (SOP).

all embryologists handling human embryos should be licensed by the national regulatory board. Embryologists should be given opportunities to increase their knowledge and competence through attending conferences, workshops, and continuing educational programs.

There should be adequate number of staff to do all the procedures.

Understaffing would lead to non adherence to SOP's, staff dissatisfaction, and chaos in the lab.

Laboratory protocols have to be transposed into standard operating protocols (SOP). All activities performed within the ART laboratory need to be clearly written with sufficient details on the techniques (Kastrop 2003). All SOP's should be signed and dated and should be made available to all staff. There should be strict adherence to the SOP. Non adherence to SOP's should be dealt with seriously and should not be excused.

### **2.3 As per Dr Willem Ombelet in Affordable IVF for developing countries**

One in six couples worldwide experience some form of infertility problem at least once during their reproductive lifetime. The current prevalence of infertility lasting for at least 12 months is estimated to be around 9% worldwide for women aged 20-44.

20-30% of infertility cases are explained by physiological causes in men, 20-35% by physiological causes in women, and 25-40% of cases are because of a problem in both partners. In 10-20% no cause is found. Infertility is also associated with lifestyle factors such as smoking, body-weight and stress. Increasing age in the female partner is one of the most common explanations today.

It is now estimated that more than 5 million babies have been born worldwide since the first IVF baby was born in 1978. Most ART treatments take place in women aged between 30 and 39.

### Cycles/treatments

Europe leads the world in ART, initiating approximately 55% of all reported ART cycles.

In 2011, the latest year for which figures are available, 588,629 treatment cycles were reported from 33 European countries. This compares globally (in 2011) with 151,923 cycles from the US and 66,347 cycles from Australia and New Zealand. The number of cycles performed in many developed countries has grown by 5-10% per annum over the last few years, but that growth is now showing signs of slowing.

In 2011 France (85,433 cycles), Germany (67,596), Italy (63,777), Russia (56,253), Spain (66,120) and the UK (59,807) were Europe's most active countries. In the Nordic countries, Sweden leads the table with 18,510 cycles, followed by Denmark (14,578).

### Availability of ART

The Nordic countries and Belgium (but also Iceland and Slovenia) have the highest ART availability in terms of cycles per million population. Around 1.5 million ART cycles are performed each year worldwide, with an estimated 350,000 babies born.

### Pregnancies and delivery rates

An analysis of world data for 2006 put average delivery rate from ART treatment at 20.5% per aspiration and 25.2% cumulative from a single started treatment cycle. Large differences exist between countries in the number of embryos transferred and resulting in multiple births. However, there is a consistent trend towards transfer of fewer embryos. The overall average number is 1.75 embryos per transfer.

In Europe the multiple delivery rate has declined steadily since 2000 from 26.9% to 19.4% in 2011 compared to a multiple delivery rate of 30% in the US (27.5% twin, 2.5% triplet or more deliveries).

Sweden has the lowest multiple delivery rate in the world. In 74.7% of all cases a Treatments.

The most common fertilisation (treatment) technique is ICSI. Overall, ICSI accounts for around two-thirds of all treatments worldwide, and conventional IVF around one-third. However, these proportions vary greatly between countries, even though outcome rates with each technique are comparable.

Success rates from frozen embryo transfer are increasing, as are the number of FER cycles. Vitrifaction, as an efficient cryopreservation technique, has improved the outcome of both embryo and oocyte freezing.

Ovarian hyper stimulation syndrome (OHSS) is a complication related to ART. In 2011 there were 1683 OHSS cases recorded in 28 out of 33 European countries reporting to ESHRE, making up 0.6% of cycles. Russia (520), Italy (189) and Spain (184) reported the highest number of patients with OHSS.

Estimates from the clinic show PCOS (Poly Cystic Ovarian Syndrome) may affect up to 60 per cent of women in the UAE, compared with between 5 and 15 per cent of women worldwide. This accounts for one of the major reasons for infertility in women. Although preventative measures are undoubtedly the most cost-effective approach, not offering assisted reproduction is not an alternative.

UAE's Total Fertility Rate has declined from 4.4 to 1.7 per woman. Between 1990 and 2011 (World Health Statistics 2013 (WHO)).

Declining birth rates are attributed to urbanisation, delayed marriage, changing attitudes about family size, and increased education and work opportunities for women. Increasing prevalence of infertility cases is a major concern in the GCC.

According to the World Health Organisation, women in the UAE are also conceiving fewer number of babies today compared to 20 years ago.

The birth figure was 5.7 children but is now down to two children per woman. The fertility rate in the UAE has fallen from 4.4 in 1990 to 1.75 in 2010, according to a World Bank report published this year.

Government and private hospitals in the Gulf are expected to open more IVF centres to cope with soaring demand for the treatment among infertile couples.

### **3. OBJECTIVES OF THE STUDY**

- To chart out the legal and infrastructural obligations and define the viability according to the feasible atmosphere involved in establishing such a centre in a socio-cultural environment of UAE.
- To define the technical requirement in terms of equipment and manpower resources required to implement this project.
- To describe what is unique about the model/service/product compared to the competition.
- To determine the positive economic benefits to the organization that the proposed new department will provide.

## **4. RESEARCH QUESTION**

- What are the parameters that need to be fulfilled legally and in an infrastructural way to establish an IVF Centre at Zulekha Hospital?
- What is the profitable revenue and benefit to the organization which can be generated from such a facility?

## **5. METHODOLOGY**

### **5.1 Type of Study - Descriptive Study:-**

The proposed feasibility study will be exploratory in nature. A combination of qualitative and quantitative methods will be used in order to map the viability for new/Greenfield venture in IVF treatment.

### **5.2 Location of study – Zulekha Hospital, Sharjah (U.A.E)**

### **5.3 Site of Study –Zulekha Hospital, Sharjah (U.A.E)**

**5.4 Sample Size–** Total cases that have been referred for an ART over the past few months and that are presently being referred for an ART.

### **5.5 Data collection tools-**

**5.5.1 Primary Data:** A Checklist for each of the parameters shall be prepared as per the Government and Ministry requirements of UAE.

The checklists shall be made for checking and meeting up with all the necessary requirements in terms of equipments, manpower and all other necessities needed for getting a licence for the IVF centre.

**5.5.2 Secondary data:** The medical records (retrieved from the Medical Record Department) present in reference to the relevant cases shall be used.

**5.6 Assessment** will be done by following ways:

- Document Review
- Direct Observation
- Discussion with the hospital staff
- Case studies and Journals

**5.7 Timeline:** The project work was done over a period of 2 months.

## **6. PHASES OF THE STUDY**

The study was carried out in different phases. In a hospital which is famous for its obs & gynaecology services, will be incomplete without an IVF centre. Considering the patient foot-fall in especially the gynaecology department the organization conducted a feasibility study for opening an IVF centre in the Hospital.

**Phase 1 :** Identifying the legal requirement

**Phase 2 :** Assessment of technical requirements in terms of equipment and manpower.

**Phase 3 :** Includes the location feasibility study with demographic profile and current infrastructure readiness of the of the location on various parameters.

**Phase 4 :** Scanning of the current scenario of IVF treatment available in Sharjah

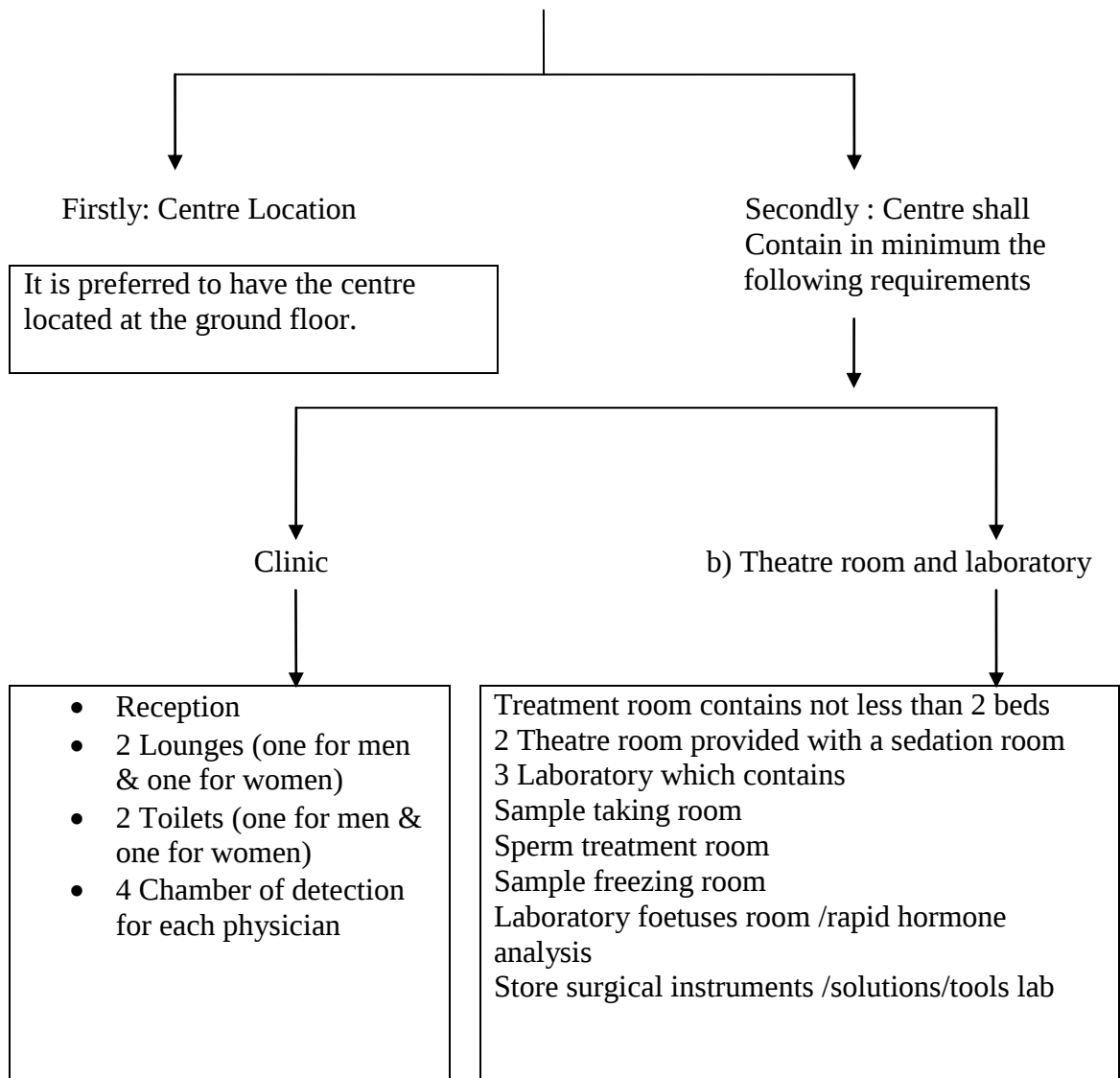
**Phase 5 :** Calculating the economic benefits / Revenue generation per patient.

### **6.1 PHASE 1 – LEGAL REQUIREMENT**

#### **6.1.1 LICENSING OF UNIT**

IVF Units (Fertilisation Centres) in the UAE require licensing according to the Cabinet Decision No 36 of 2009 Issuing the Implementing Regulation of Federal Law No (11) of 2008 Concerning the Licensing of Fertilisation in the State. All IVF Units are to comply with the requirements stated in the Cabinet Decision document.

For the centre licensing it is provided on basis of the technical requirements, specifications and equipments and medical devices according to the following:



## 6.2 PHASE 2 – TECHNICAL REQUIREMENT

It was seen that each applicant who applies for obtaining a license of a fertilization centre within UAE , needs to ensure the availability of medical, technical and management staff.

Based on the requirements a checklist was prepared considering the criteria as per the Ministry of Health, UAE.

## 6.2.1 CHECKLIST FOR MANPOWER

| S.No. | Designation                                                            | Degree & certifications                                                                     | Experience                                    | Other basic requirements                    |
|-------|------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|-----------------------------------------------|---------------------------------------------|
| 1     | Consultant<br>60000-80000AED                                           | Obstetrics & Gynaecology                                                                    | Not less than 8years                          | Pass the interview and technical evaluation |
|       |                                                                        | IVF                                                                                         | 5 years                                       |                                             |
| 2.    | Specialist Physician<br>40000-50000AED                                 | Obstetrics & Gynaecology                                                                    | Not less than 3 years                         | Pass the interview and technical evaluation |
| 3.    | Specialist Physician<br>35000- 45000AED                                | Medicine } of Masculinity Diseases. }<br>Surgery                                            | Not less than 3 years                         | Pass the interview and technical evaluation |
| 4.    | Anesthetist Physician<br>35000- 45000AED                               | Holder of master degree in anesthesia                                                       | Not less than 3 years                         | Pass the interview and technical evaluation |
| 5.    | Specialist Physician<br>35000- 45000AED                                | Genetics                                                                                    |                                               |                                             |
| 6.    | Laboratory Manager<br>20000AED                                         | Ph.D                                                                                        | Not less than 4 years at fertilization centre | Pass the interview and technical evaluation |
|       |                                                                        | Clinical Master / equivalent degree                                                         | Not less than 6 years                         |                                             |
| 7.    | Embryology Technician<br>25000-30000AED                                | Bachelor degree in natural / medical sciences                                               | Not less than 5 years                         | Pass the interview and technical evaluation |
|       |                                                                        | Diploma in Reproductive System                                                              |                                               |                                             |
|       |                                                                        | Masters in Embryology                                                                       |                                               |                                             |
|       |                                                                        | Diploma in Fertilization / Egg fertilization/ Sperm fertilization / Sperm Temperature Study |                                               |                                             |
| 8.    | Anesthesia Technician<br>10000-15000AED                                | Diploma in Anesthesia (3 years)                                                             | Not less than 5 years                         | Pass the interview and technical evaluation |
| 9.    | X-ray Technician<br>10000-15000AED                                     |                                                                                             |                                               |                                             |
| 10.   | Four Registered Nurses (including theatre room nurse )<br>5000-8000AED |                                                                                             |                                               |                                             |

|      |                                          |                |
|------|------------------------------------------|----------------|
| 11.  | Administrative Staff :                   |                |
| 11.1 | Managing & Financial Manager<br>10000AED |                |
| 11.2 | Receptionist                             | } 4000-6000AED |
| 11.3 | Medical Records Clerk                    |                |
| 11.4 | Storekeeper                              |                |
| 11.5 | Concierge                                |                |
| 11.6 | 2 Cleaning Labors<br>(House Keeping)     |                |
| 11.7 | Social Worker<br>(Optional)              |                |

A thorough verification of the employees needs to be done before hiring them, according to the following criteria:

- Employee should not have been constrained by the sentence in a crime against the honour and the honesty.
- Should not have had previously raised strong suspicions against him on the facts of violating regulations and technical standards for assisted reproduction.
- Should not have been convicted by the judicial or disciplinary action on the facts of violating accepted standards of the profession or as a result of medical negligence.

## 6.2.2 CHECKLIST FOR EQUIPMENTS

| Machine                         | Quantity (Unit) | Cost per unit (AED) | Location   | Manufacturer Name | Model No.       | Inhouse/Company Maintenance |
|---------------------------------|-----------------|---------------------|------------|-------------------|-----------------|-----------------------------|
| CO2 Incubator 150L              | 1               | 52,215.00           | Embryology | Heraeus           | Heracell 150    | Company                     |
| CO2 Incubator 240L              | 2               | 70,405.00           | Embryology | Heraeus           | Heracell 240    | Company                     |
| CO2 Incubator                   | 1               | 39,000.00           | Andrology  | Labotect          | C-16            | Inhouse                     |
| Inverted Microscope             | 1               | 1,55,000.00         | Embryology | Olympus           | IX-71           | Company                     |
| Stereomicroscope                | 1               |                     | Embryology | Olympus           | SZX7            | Inhouse                     |
| Microscope                      | 1               |                     | Embryology | Olympus           | CX21            | Inhouse                     |
| Microscope                      | 1               |                     | Andrology  | Olympus           | CX41            | Inhouse                     |
| Camera+ Monitor                 | 1               |                     | Embryology | Olympus           | C5050           | Inhouse                     |
| Micromanipulator                | 1               |                     | Embryology | Olympus           | ON3             | Company                     |
| Centrifuge                      | 1               | 8,200.00            | Embryology | Heraeus           | Labofuge300     | Inhouse                     |
| Centrifuge                      | 1               | 8,200.00            | Andrology  | Heraeus           | Labofuge300     | Inhouse                     |
| Laminar Hood with CO2 incubator | 1               | 4,35,000.00         | Embryology | K-systems         | L-125           | Inhouse                     |
| Laminar Hood                    | 1               |                     | Andrology  | K-systems         | L-423           | Inhouse                     |
| Freezing System                 | 1               |                     | Andrology  | Cryologic         | CL-8800         | Inhouse                     |
| Freezing Tanks                  | 1               |                     | Andrology  | Cryologic         | XC-47 11-6      | Inhouse                     |
|                                 |                 |                     |            |                   |                 |                             |
| Mackler Cell                    | 2               |                     |            | K-systems         |                 |                             |
| Electrical Pipettes             | 2               | 1,000.00            | Embryology | Socorrex          |                 | Outsourced                  |
| Variable Pipettes               | 2               | 650.00              | Embryology | Socorrex          |                 | Outsourced                  |
| Fyrite Analyser                 | 1               |                     |            | Labotect          | In control 1050 | Company                     |
| Fridge                          | 2               | 1,000.00            |            |                   |                 |                             |
| Computer                        | 1               | 750.00              |            |                   |                 |                             |

|                           |   |           |            |           |                |         |
|---------------------------|---|-----------|------------|-----------|----------------|---------|
| UPS Backup                | 1 | 250.00    |            |           |                |         |
| Warm Plate                | 2 | 25.00     | Embryology | Tokai Hit |                | Inhouse |
| Digital Weighting Media   | 0 |           |            |           |                |         |
| <b>OPERATING ROOM</b>     |   |           |            |           |                |         |
| IVF vacuum pump           | 2 | 40.00     | IVF OT     | Labotect  | 4014           | Inhouse |
| Suction UNIT              | 1 | 7,000.00  | IVF OT     | Ardo      | Senator 30     | Inhouse |
| LAPROSCOPY Unit           | 1 | 2,000.00  | Major OT   |           |                |         |
| Telecam                   | 1 | 100.00    | Major OT   |           |                |         |
| Endoflator                | 1 | 150.00    | Major OT   |           |                |         |
| Light Source Xen          | 1 | 10.00     | Major OT   |           |                |         |
| Monitor                   | 1 | 100.00    | Major OT   |           |                |         |
| Anesthesia Machine        | 1 | 74,000.00 | IVF OT     | Penlon    | Prima Sp101    | Company |
| OR Table                  | 1 | 55,375.00 | IVF OT     | Maquet    | Deltaclassic   | Inhouse |
| O2 Monitor                | 0 |           |            |           |                |         |
| Defibrillator             | 1 | 22,000.00 | IVF OT     | Medtronic | Lifepak-20     | Inhouse |
| Ultrasound                | 2 | 35,000.00 | IVF OT     | Aloka     | SSD-500        | Inhouse |
| OR Lamp                   | 1 | 30,500.00 | IVF OT     | Maquet    | Hanualux 3004i | Inhouse |
| Examination Table         | 1 | 4,000.00  | IUI room   |           |                |         |
| ECG Monitor               | 1 | 16,500.00 | IVF OT     | Nellcor   | N5500          | Inhouse |
| Hormone immunoassay       | 1 | 50.00     | Main LAB   | J&J       | Vitros ECIQ    |         |
| UPS with generator backup | 2 | 36        |            |           |                |         |

Once the checklist for the manpower was completed; a checklist for the Equipments including all details from the manufacturer to the cost of each equipment was prepared which can be seen as above.

The above prepared list will further form a part of the expenditures that we will be investing once the legal formalities are complete.

## 6.3 PHASE 3: LOCATION FEASIBILITY

During this phase the feasibility study has been divided into two parameters for a thorough assessment i.e.

### 6.3.1 External Location Feasibility

### 6.3.2 Internal Location Feasibility

The location of centre which shall be within the premises of the hospital plays a vital role when we assessed it how feasible and accessible will it be for our customers (patients).

The location of the centre is assessed on basis of both external as well as internal environment.

### 6.3.1 External Location Feasibility

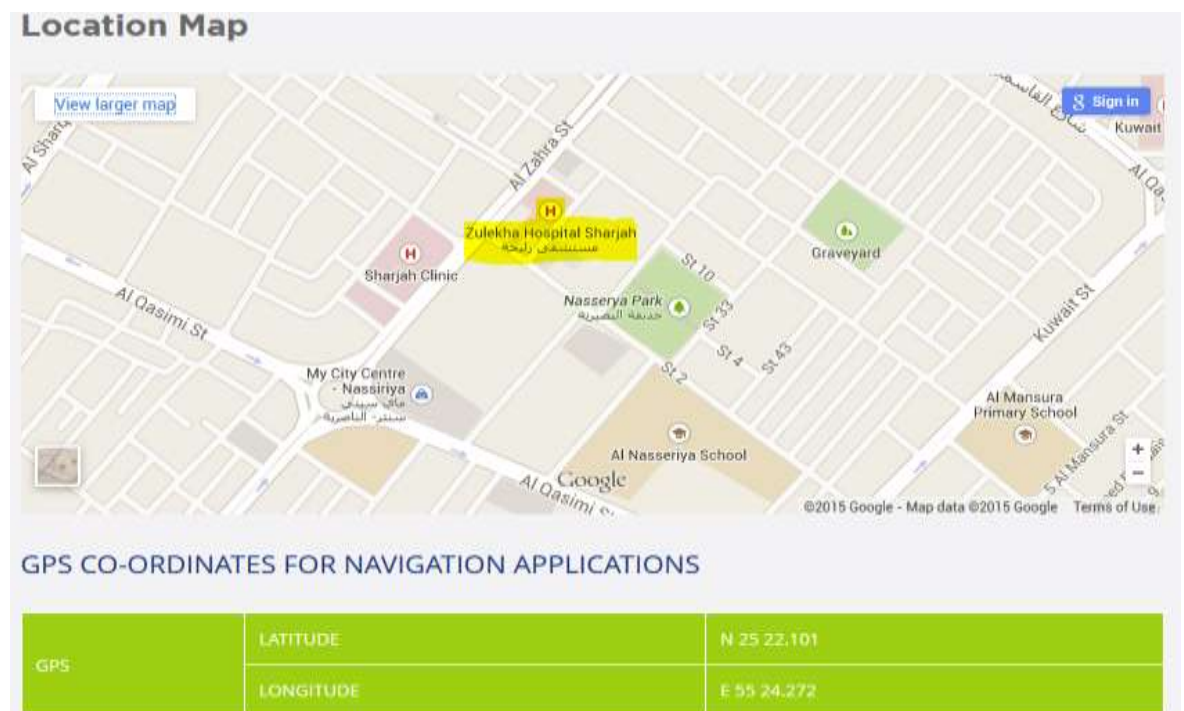
On basis of **External Location feasibility**, the following details were obtained :

#### 6.3.1.a Detailed Location Map

#### 6.3.1.b Connectivity and distances from various parts of the city

#### 6.3.1.c Distances from various referring hospitals and transportation available.

#### 6.3.1.a DETAILED LOCATION MAP



#### 6.3.1.b CONNECTIVITY AND DISTANCES FROM VARIOUS PART OF CITY

- Distance from Sharjah International Airport : 14.3 km 15 min
- Distance from Dubai International Airport : 27 km (25 mins)
- Distance from Bus Stand 10-10 4a St Dubai : 22 km (26 mins)
- Distance from City Centre Sharjah : 16 min

#### 6.3.1.c DISTANCES FROM VARIOUS REFERRING HOSPITAL AND TRANSPORTATION AVAILABILITY

- Ajman Speciality Hospital: 12 km (14 min)
- Kuwait Hospital : 2.3 km (5 min)
- Al Zahra Hospital : 1.7 km (4 min)
- Canadian Specialist Hospital : 15.6 km (30 min)
- eve ivf center : 7 km (12 mins )
- Sharjah Corniche Hospital : 7.9 km (14 mins)

4) Nearest Bus Station: Nasserya.

### 6.3.2 THE INTERNAL LOCATION FEASIBILITY

This is based on the exact location within the premises of the hospital where we shall be coming up with the IVF centre.

First and foremost choosing the location is very crucial when setting up a laboratory with high standards. The IVF laboratory should provide a safe, non toxic, stable, and a pathogen free environment. Therefore, careful consideration should be given when choosing the location.

The primary function of an ART laboratory is to provide an optimal environment for gametes and embryos. Laboratory conditions are of paramount importance in maintaining consistent success rates.

A major area of concern is the negative impact of poor air quality on embryonic development (Cohen 1997).

Ideally the laboratory should be:

- away from polluted areas such as industries
- areas where there is high volume of traffic.
- Locations adjacent to parking lots, gasoline service stations and construction areas should also be avoided to limit the adverse impacts of pollutants to cell tissue culture (Hall 1998).

When starting a new facility for IVF, the design of the laboratory should be logically planned according to the projected workload anticipated.

Environmental design is to ensure that the quality of ambient air is optimum for all procedures.

Structural design refers to the layout of the laboratory.

Laboratory equipment will require emergency power, temperature monitoring and alarms.

The construction of the lab should ensure aseptic and optimal handling of reproductive tissue during all stages of the process. Air conditioning for the Laboratory will include HEPA filters, controlled humidity (20%) and controlled temperature (22 – 24 degrees C). Access to the laboratory should be limited.

The room requires a defined unidirectional workflow for the instruments from clean to sterile and then to sterile store. Sterile stock should not be stored in room to avoid the potential for mixing unsterilized instrument sets with the sterile sets.

All assisted reproductive techniques involve handling of biological material and therefore pose

a potential infection control risk to staff and to other patients' reproductive cells (gametes, zygotes, embryos).

Strict infection control measures are required within the unit to protect laboratory staff from

potentially contaminated body fluids (follicular fluid etc) and to ensure aseptic environment for

reproductive cells, preventing cross infection. Measures will include:

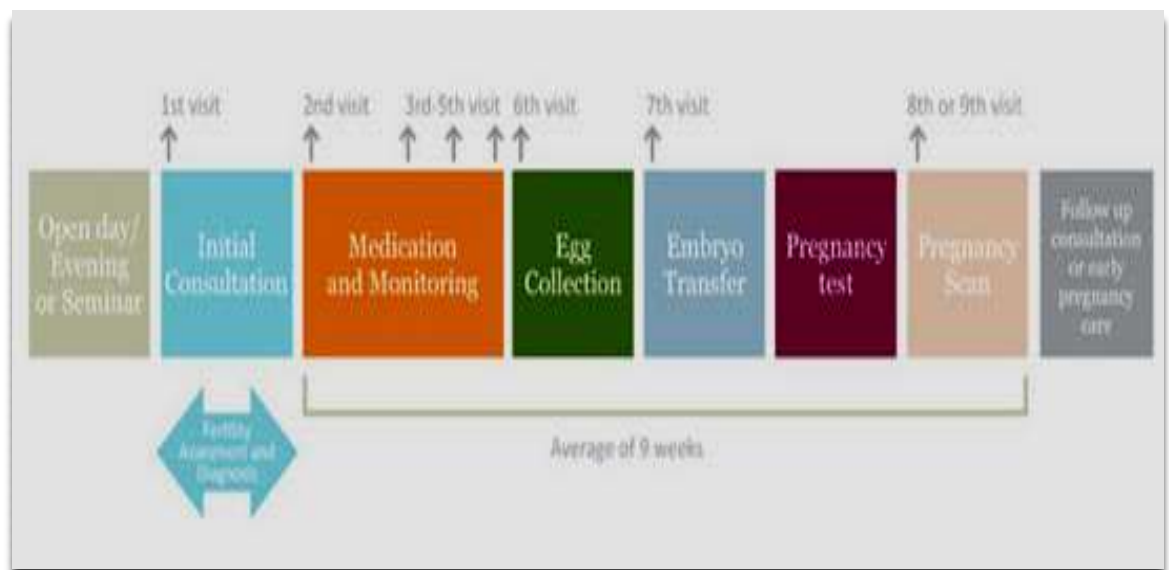
- Handbasins for staff handwashing in all patient areas and laboratories
- Use of laboratory clothing in laboratories
- Use of theatre clothing in procedure rooms
- Use of laminar flow biosafety cabinets in laboratories (a Class II cabinet should be
- available for handling of contaminated samples)
- Sharps containers and clinical waste collection and removal.

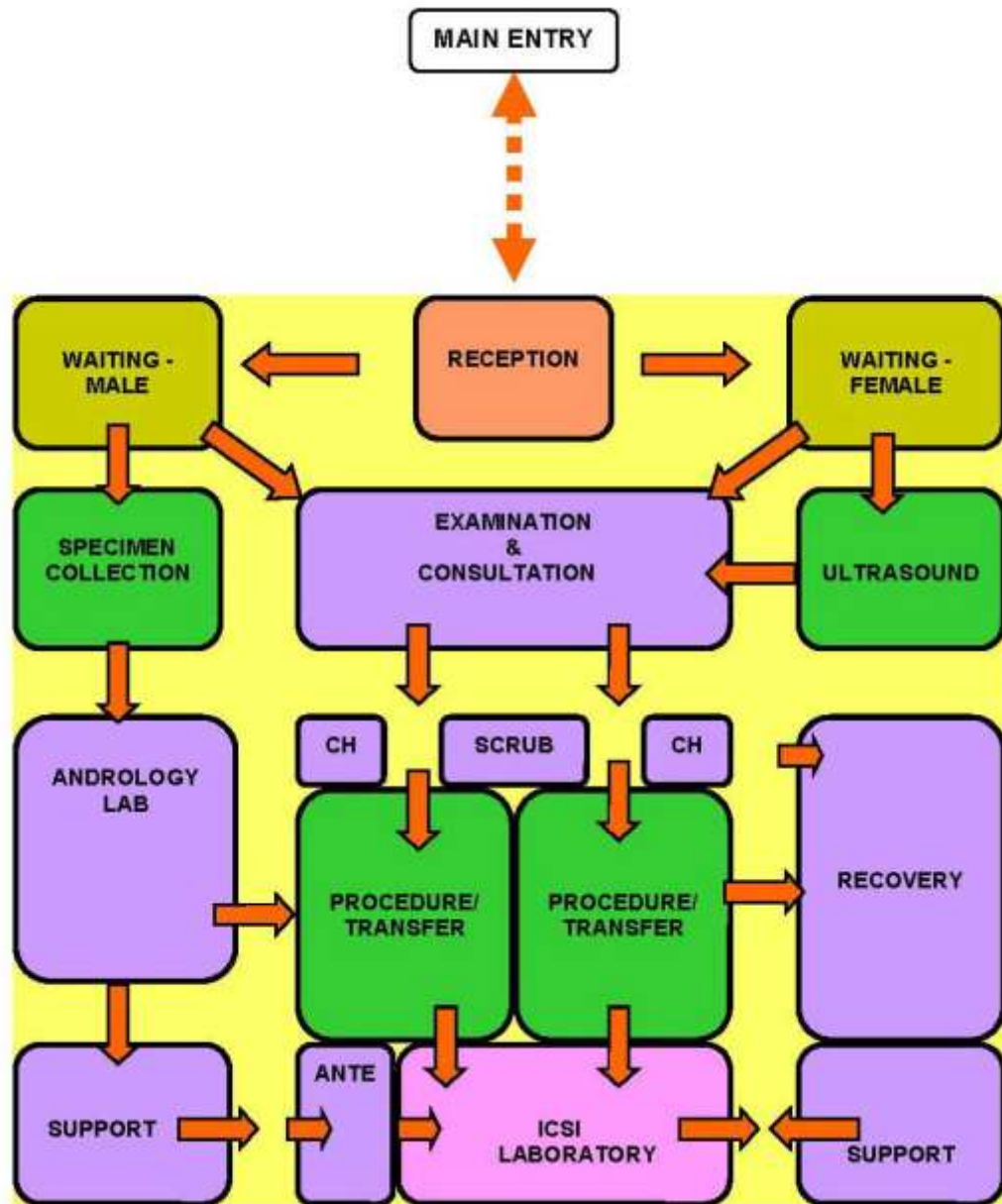
Since the IVF is an extension of the operating theatre every effort must be taken to maintain the sterility in the lab. Strict discipline must be exercised with regards to hand washing and maintaining the parameters in the laboratory.

The laboratory must be cleaned daily. All surfaces should be wiped down at the end of the day. Any spillage during the course of the procedure should be wiped with distilled water followed by dry tissue. Alcohol should not be used for cleaning while oocytes and embryos are being handled. Waste such as seminal fluid, follicular fluid etc. should be removed as soon as the procedure is completed.

There should be maintenance schedule for all the crucial equipment. It can be in the form of a service contract. Incubators which are the most important equipment in the laboratory should be serviced twice a year. All other equipment such as microscopes, laminar flow cabinets, medical refrigerators, hot air sterilizing oven, centrifuge and oocyte suction pump should be done once a year. Temperature thermocouple, pH meter and CO2 analyzer should be recalibrated every year. All these checks are crucial for reproducibility of results.

**6.4 THE PROCESS FLOW** that should be followed in the department during the treatment process for the patients can be represented as following:





Source : Health Authority ([www.haad.ae](http://www.haad.ae))

### 6.5 THE FUNCTIONAL RELATIONSHIP DIAGRAM:

The above diagram is a presentation of how the IVF centre can be designed and planned keeping in mind the cultural constraints of the country. The waiting area for the male and the female is different.

A systematic flow from one area to another can be followed as the diagram presents the different areas on basis of how the procedure is carried out.

## 6.6 PHASE 4 : MARKET RESEARCH FEASIBILITY

When beginning with the market feasibility the following parameters were included :

- 6.6.1 Description of the Industry
- 6.6.2 Current market analysis
- 6.6.3 Competitors Analysis

### 6.6.1 DESCRIPTION OF THE INDUSTRY

The need for new fertility centres in Dubai has been calculated as of 'medium range' by the authority's Policy and Strategy Department but concluded that there has been a definite need for more fertility services since large families are encouraged in the Emirati culture while white-collar expatriate workers also tend to bear their children while working in the UAE. Recommendations pointed out to the need for two more centres to meet the growing needs in the coming few years.

Perceptions on infertility treatments are changing rapidly among men in the country, said a doctor, attributing the change to easy access to information and education. Despite cultural and traditional reservations, talks and tests on infertility options with men are 90 per cent successful now as compared to 10 years ago, said Dr Mohamed El Kalyoubi, Consultant Obstetrics and Gynecology at the Dubai Gynecology and Fertility Centre.

During the Study of the IVF industry and the scenario in the market it was also noted that with the advancement in infertility treatments, the newly married young couples are benefitting the most.

Majority of the people who visit the various centres in Sharjah + Dubai require treatments for infertility ranging from tablets to injections and IVF procedures. The number of patients visiting the various centre has increased considerably over the years. It has also been noted that 30% of patients visiting the centres are males. Also noted a figure worth considering is on an average based on the market study approximately 250 babies are born over a period of one year.

#### 6.6.1.a Demographic profile of UAE as a whole:

|               |                                                                                                                                                                                                                                                                              |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| population    | 5,628,805                                                                                                                                                                                                                                                                    |
| Age structure | 0-14 years: 20.7% (male 597,476/female 570,275)<br>15-24 years: 13.7% (male 457,647/female 311,673)<br>25-54 years: 61.5% (male 2,639,018/female 820,915)<br>55-64 years: 3.1% (male 132,718/female 43,624)<br>65 years and over: 1% (male 35,071/female 20,388) (2014 est.) |
| Ethnic groups | Emirati 19%, other Arab and Iranian 23%, South Asian 50%, other expatriates (includes Westerners and East Asians) 8% (1982)<br>note: less than 20% are UAE citizens (1982)                                                                                                   |

The above mentioned demographics have helped us define our target market. Our prime focus will be render best of our services to all members of community but as per discussion with the hospital marketing team as well, our target market shall be Asians basically.

### **6.6.2 CURRENT MARKET ANALYSIS**

As a part of the market research a general interaction with the patients who were available in the gynaecology department was done to note their general frame of mind when they hear about IVF.

Based on these a questionnaire with the help of which we surveyed our competitors in the field of IVF was made.

On a general basis interview of around 20-30 couples on what they would consider while choosing a fertility centre was done. The main purpose of this was that any reputable fertility clinic should be happy to answer as many questions as possible. In many ways, the way in which they deal with patient enquiries, indicate how they might be treated when they get there. If a fertility clinic is vague about any of the questions, or evasive about their facts and figures, would surely make the patient think whether that particular clinic is worth consideration.

The general questions varied on basis of the following points to which the patients considered were of importance while they would look forward to avail services at an IVF centre.

These were:

- Staff Qualifications.
- Clinical experience
- Treatment procedure
- Costs
- Success Rate
- Patient safety
- Confidentiality and legal matters
- Donors

A survey over a period of 5 days was carried out for the current top 4-5 IVF centres in Sharjah and Dubai based on the above mentioned interaction with the patients.

*The questionnaire – Annexure*

### **6.6.3 COMPETITOR ANALYSIS**

The market was studied and the centres which are already established in the field. The competitors were assessed on the basis of the following 7 parameters. These were:

- Location of the Clinic
- Services provided
- Target clientele
- Charges
- Success rate

- Average patient load
- Distance from Zulekha Hospital

The following Table is the representation of the competitor analysis.

| <u>Competitor</u>          | <u>Location</u>                                                                                | <u>Services Provided</u>                                                                                                                                                                                                                                                                                                                                                                                                                                 | <u>Target Clientele</u>           | <u>Charges</u>                                                                                                                                                                                                                | <u>Success Rate</u> | <u>Average Patient Load</u> | <u>Distance From Zulekha</u> |
|----------------------------|------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-----------------------------|------------------------------|
| <b><u>New Hope IVF</u></b> | AL SONDU S TOWER. AL KHAN STREET, AL MAMZAR CORNICHE, - إمارة - الشارقة - United Arab Emirates | The Hospital provides services for the treatment of infertility including ICSI (Intracytoplasmic Sperm Injection), IVF (In-Vitro Fertilization), IVF Lite, PESA/ TESA (Percutaneous Sperm Aspiration/ Testicular Sperm Aspiration) as well as Blastocyst Culture, Laser-Assisted Hatching, Vitrification and Pre-Implantation Genetic Screening (PGS)/ Pre-Implantation Genetic Diagnosis (PGD).<br>- Ovulation Induction<br>- Intrauterine Insemination | areas in & around Dubai n Sharjah | ICSI & IVF (THIS INCLUDE CONSULTATION,SCAN,ME DICATION,LAB TESTS,EGG COLLECTION & EMBRYO TRANSFER)<br>26000<br>ICSI WITH PGD (THIS INCLUDE CONSULTATION,SCAN,ME DICATION,LAB TESTS,EGG COLLECTION & EMBRYO TRANSFER)<br>44000 | 65%                 | 360 cycle /year             | 11.8 km                      |

|  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |  |  |  |  |
|--|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|--|
|  |  | (IUI)<br>- In Vitro<br>Fertilization<br>(IVF)<br>- Intra<br>Cytoplasmic<br>Sperm<br>Injection<br>(ICSI)<br>- Assisted<br>Embryo<br>Hatching<br>(AH)<br>- Blastocyst<br>Transfer (BT)<br>- Surgical<br>Sperm<br>Retrieval<br>(SSR)<br>(TESA/PESA<br>/TESE/MESE<br>)<br>- Pre-<br>Implantation<br>Genetic<br>Screening<br>(PGS)<br>- Pre-<br>Implantation<br>Genetic<br>Diagnosis<br>(PGD/PIGD)<br>- Semen<br>Freezing<br><br>- Egg<br>Freezing<br>- Natural<br>Cycle IVF<br>-<br>Hysteroscopy<br>- IVF Lite<br>- Egg<br>Banking<br>- Cancer And<br>Fertility<br>Preservation<br>- Endometrial<br>Scratching |  |  |  |  |  |
|--|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|--|

|                          |                                                                                 |                                                                                                                                                                                                                                                                                                                                                          |                                   |                                                              |                                                                                                                                                                                  |                     |          |
|--------------------------|---------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|--------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|----------|
| <b><u>Bourn Hall</u></b> | Hudaiba Awards Buildings Block C, 7th Floor Jumeirah P.O. Box 113931 Dubai, UAE | Treatments available<br>Immune and Anti-Coagulant Therapy<br>In-vitro fertilisation (IVF)<br>Intrauterine insemination (IUI)<br>stimulated Intrauterine insemination (IUI)<br>unstimulated Surgical sperm retrieval (PESA; TESA; MESA)<br>Tests and investigations<br>Preimplantation genetic diagnosis (PGD)<br>Preimplantation genetic screening (PGS) | areas in & around Dubai n Sharjah | AED28,000 without medication<br>AED5000-8000 medication cost | 72% Success Rate                                                                                                                                                                 | 25 cycles per month | 28.6 kms |
| <b><u>Conceive</u></b>   | Near Arab Mall (Old Al Taawun Mall) Al Taawun, Sharjah United Arab Emirates     | Conceive specializes Ovulation Induction, IUI, PESA, TeSA, IVF, ICSI, Blastocyst culture and transfer, Egg and Sperm freezing, Time Laspe studies of Embryos, Pre Implantation Genetic                                                                                                                                                                   | areas in & around Dubai n Sharjah | Costs about 5000\$ add 1000\$ for medicine.                  | Our success in overcoming both male and female infertility is evidenced by the Hospital's pregnancy rates – From 2004 to 2014 we have had the privilege of playing a part in the |                     | 10.9 kms |

|                                    |                                                     |                                                                                                                                                                                                                                                                                                                                                       |                           |                  |                                                                                                                                                                                                                     |  |                |
|------------------------------------|-----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------------|
|                                    |                                                     | Screening of Embryos, Laparascopy, Colposcopy, Hysteroscopy and treatment of recurrent miscarriages. The fully-equipped ultra sound scanning section has facilities for 3- and 4-dimensional ultrasound scanning and colour Doppler. We also offer ultrasound-guided procedures, such as amniocentesis for advanced maternal age and cyst aspiration. |                           |                  | birth of over 2500 babies and due to the faith and goodwill of our patients our family continues to grow.                                                                                                           |  |                |
| <b><u>Eve fertility clinic</u></b> | 3rd Floor<br>304 Al Nakheel Tower Corniche Buhairah | Infertility Department:<br>A. Diagnosis and treatment of various causes of infertility.<br>B. Surgical treatment of infertility including laparoscopic and hysteroscopic surgeries.<br>C. Initiation and Assisted Reproductive Technology cycles (Intra-                                                                                              | areas in & around Sharjah | 20,000-30,000 Dh | our success rates over the past five (5) years which range between 60% - 70%.<br><br>The overall pregnancy rate at our center over the last five years has ranged between 40 to 44%, reaching a peak of 52% at ages |  | 7 km (12 mins) |

|                                        |                                                                      |                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                          |                                                                                                                                                 |                                                                                                                 |                             |          |
|----------------------------------------|----------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|-----------------------------|----------|
|                                        |                                                                      | Uterine Insemination (IUI), In-Vitro Fertilization (IVF), Intra-Cytoplasmic sperm injection (ICSI), Zygote Intra fallopian Transfer (ZIFT) and Testicular Sperm Aspiration (TESA)).<br>D. IVF Laboratory techniques available assisted hatching, cytoplasmic transfer, oocyte and sperm freezing and Embryo biopsy for preimplantation genetic diagnosis<br>PGD |                                                                                                          |                                                                                                                                                 | below 30, 47% at ages below 37 and 41% at ages below 40. For ages between 41 and 44, our pregnancy rate is 18%. |                             |          |
| <b><u>Dr. Michael Fakhi clinic</u></b> | 37, 65b St. - 32b St. Al Wasl Road, Jumeirah 1 P.O. Box 72960, Dubai | Treatment options available at Fakih IVF Fertility Center include IVF-ICSI, Mini IVF, Natural Cycle IVF, IUI, Gender Selection, Comprehensive Chromosomal Screening                                                                                                                                                                                             | Fakih IVF Fertility Center offers IVF treatments in Dubai and Abu Dhabi. Fakih IVF Fertility Center also | AED 30,000 inclusive of all consultations from Day 2/3 of the period, ultrasounds, hormone injections, egg retrieval, ICSI, embryo transfer, up | Patient age Success Rate<br><35 63.4%<br>35-37 59.2%<br>38-40 43.3%<br>41-42 32.0%<br>≥43 12.5%                 | 780 cycles in Dubai in 2012 | 30.7 kms |

|  |  |                                                                                                            |                                                                                                     |                                    |  |  |  |
|--|--|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|------------------------------------|--|--|--|
|  |  | (CCS),<br>Screening for<br>hereditary<br>diseases<br>through PGD,<br>Male<br>Infertility and<br>much more. | offers<br>options<br>for<br>internatio<br>nal<br>patients<br>who are<br>seeking<br>IVF<br>treatment | till the 2nd<br>pregnancy<br>test. |  |  |  |
|--|--|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|------------------------------------|--|--|--|

Once our competitors are assessed, its easier to define and analyse our venture and carry out the SWOT analysis of our IVF centre.

## 6.6 PHASE 5 : THE ECONOMIC BENEFITS / REVENUE GENERATION:

Based on the footfall of the patients that we obtained from the data, along with the treatments offered, the manpower expenditures and other miscellaneous expenditures that will be offered the revenue that these cases could have generated can be seen as follows. In simple words revenue is what is earned, and cost is what is spent.

It was observed that over a period of four months from January 2015 to April 2015 there was an inflow of 70 patients per month who were diagnosed cases of infertility. The profit margin was calculated per patient keeping in mind the cost incurred and the revenue generated per month per patient.

The following data is based on approximate values which were obtained from the market research.

| Revenue                          |                                     | Cost                          |           | Per year  |
|----------------------------------|-------------------------------------|-------------------------------|-----------|-----------|
| Total per patient cost           | 45,850                              | Equipment                     | 1440225   | 120019    |
| Consulation                      |                                     | Manpower                      | 1500000   | 1500000   |
| No. of expected patient per year | 61                                  | Facility Charges              | 2500      | 30000     |
|                                  | 2796850                             | Infrastructure /Building rent | 1000000   | 10,00,000 |
|                                  |                                     | Marketing & other activity    | 75000     | 75000     |
|                                  |                                     | Cost of consumables           | 2326.2    | 27914.4   |
|                                  |                                     |                               | 4020051.2 | 2752933   |
|                                  | <b>Profit Generated</b>             | <b>43,917</b>                 |           |           |
|                                  | <b>Profit generated Per Patient</b> | <b>720</b>                    |           |           |

Assumptions:

1. Approx profits without taxes
2. No. of patients may vary.
3. Assuming that if we provide services to 60 patients (which is an average of number of patients of past four months) annually we will be generating a profit as can be seen above.

## 7. FINDINGS & RESULTS

A) The following representations are based on the research about the total population of UAE. These findings will help us know more about the number of infertile cases and the estimates will facilitate in knowing more about the market and the people who shall be our service users in the future.

**Table 1**

**Population facing infertility issues in UAE**

| Population facing infertility issues in UAE | Population facing infertility issues in Dubai + Sharjah | Women facing infertility issues in UAE | Women in Dubai + Sharjah facing infertility issues | Percentage of population facing infertility issues in Sharjah and Dubai | Percentage of women facing infertility issues in UAE | Percentage of women in Dubai & Sharjah facing infertility issues |
|---------------------------------------------|---------------------------------------------------------|----------------------------------------|----------------------------------------------------|-------------------------------------------------------------------------|------------------------------------------------------|------------------------------------------------------------------|
| 100446                                      | 27276                                                   | 50223                                  | 13638                                              | 27%                                                                     | 50%                                                  | 50%                                                              |

Source : As per the UAE interact . Social Development – Population comprehensive census project for 2015; dated : 09/02/2015

**Interpretation:**

The Table represents the total population of UAE (men + women) facing infertility issues is 1,00,446. Out of this number :

27% - face infertility issues

50% - Women face infertility issues .

The above table represents the population of both Dubai and Sharjah facing infertility issues. 50 % of the population is female population facing infertility issues.

Based on the above data we can say that almost half of the total cases of infertility in UAE are affecting women.

**Table 2**

**Estimated statistics of infertile women seeking medical care and No. of treatment cycles required in 2015 & 2030.**

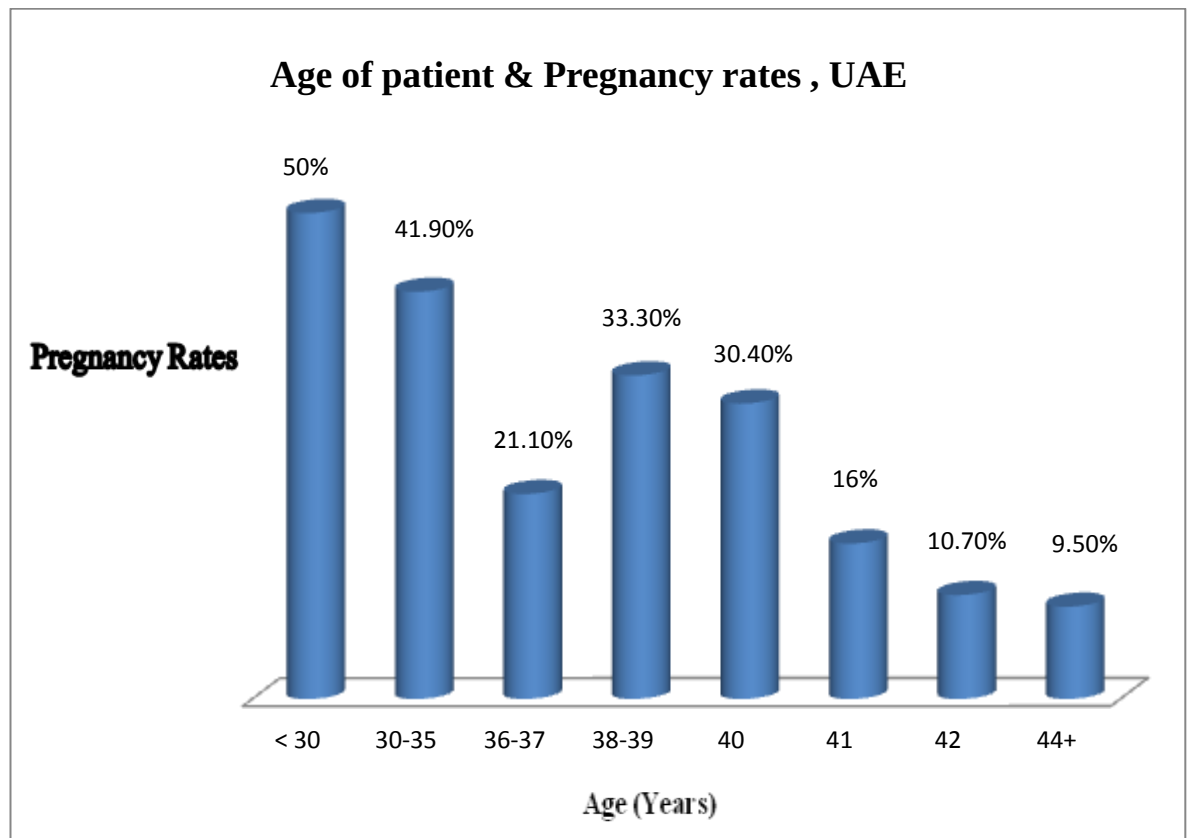
|                                      | Year 2015 | Year 2030 |
|--------------------------------------|-----------|-----------|
| Infertile women seeking medical care | 59750     | 9139      |
| No. Of treatment cycles              | 6796      | 10395     |

Source: Infertility treatment is no more a taboo in Dubai. Asma Ali Zain / 18 October 2013

**Interpretation:**

The above table specifies the number of infertile women who seek / are estimated to be seeking medical care and the number of treatment cycles required in population in Dubai & Sharjah.

**Figure 1:**



Source: *David Robertson, FRCOG, Consultant in Reproductive Medicine, Group Medical Director, Bourn Hall International, Dubai, UAE*

**Interpretation:**

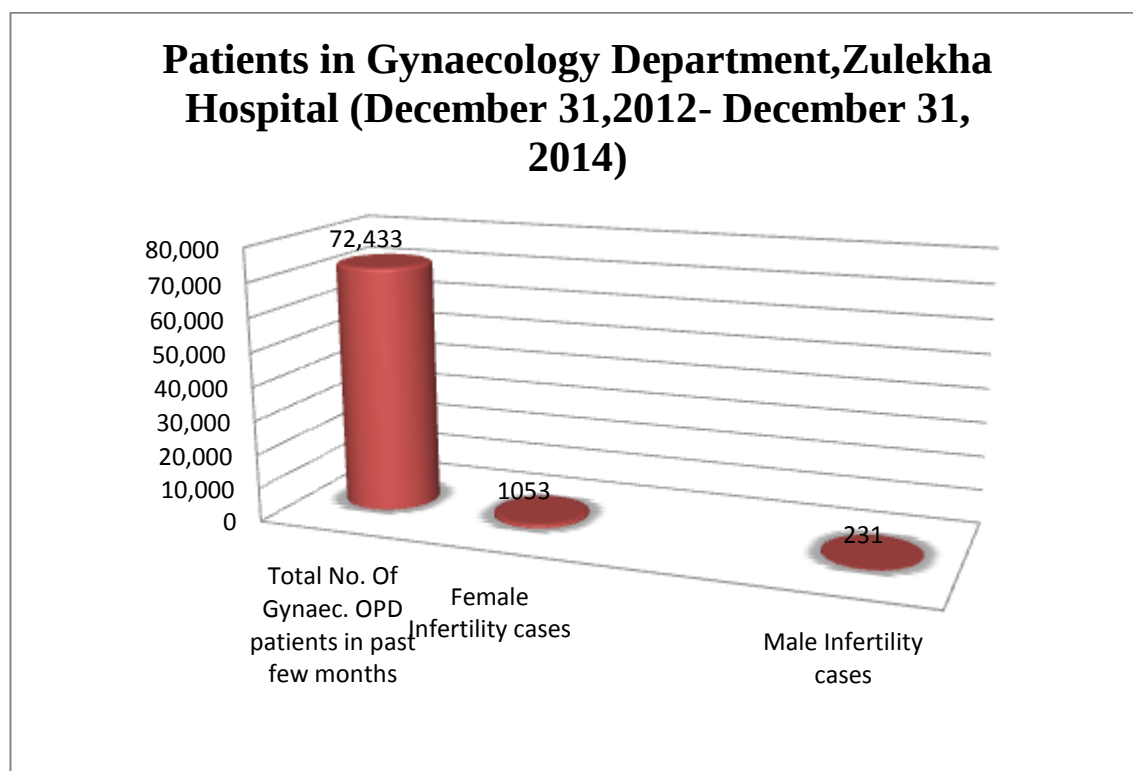
The above Figure 1 represents the pregnancy rates of the women in the different age groups.

It is seen that below 30 years of age the pregnancy rate is 50 %. As the age of the woman increases, the pregnancy rate decreases.

This finding helps us to distinguish our target market. It has been observed that the younger the patient will be the better will be the result of the IVF procedure.

B) Based on the data collected from the Medical records of Zulekha Hospital the following findings were noted. They are represented as follows:

**Figure 2:**

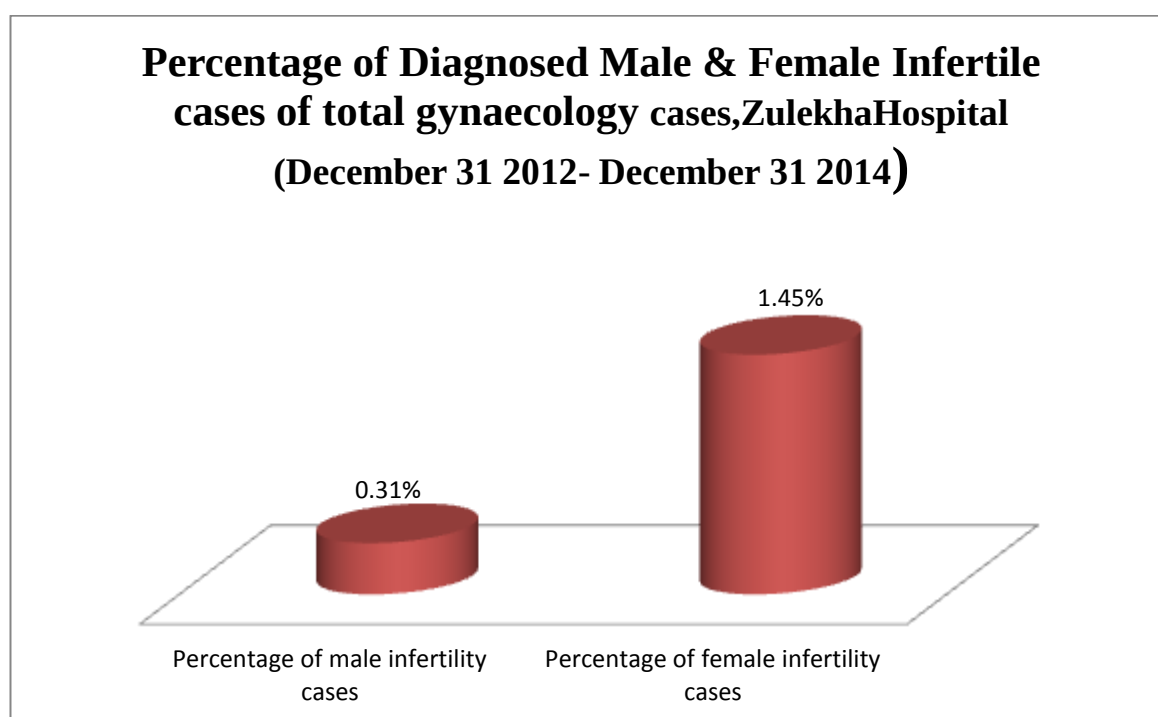


**Interpretation:**

The Figure 2 represents the total Number of patients who have visited the Gynaecology OPD in the past 2 years. The count is 72,433.

On further evaluation of the data it was found out that 1053 cases were the female infertility cases and 231 cases were of male infertility. These were the cases that could be easily converted to be cases by IVF treatment.

**Figure 3:**



**Interpretation:**

Figure 3 presents the percentage of the male and female infertile cases of the total cases in the gynaec OPD . Male infertile cases are 0.31% while female infertile cases are depicted as 1.45% .

**Table 3:**

**No. Of patients in past four months, diagnosed female & male infertile cases**

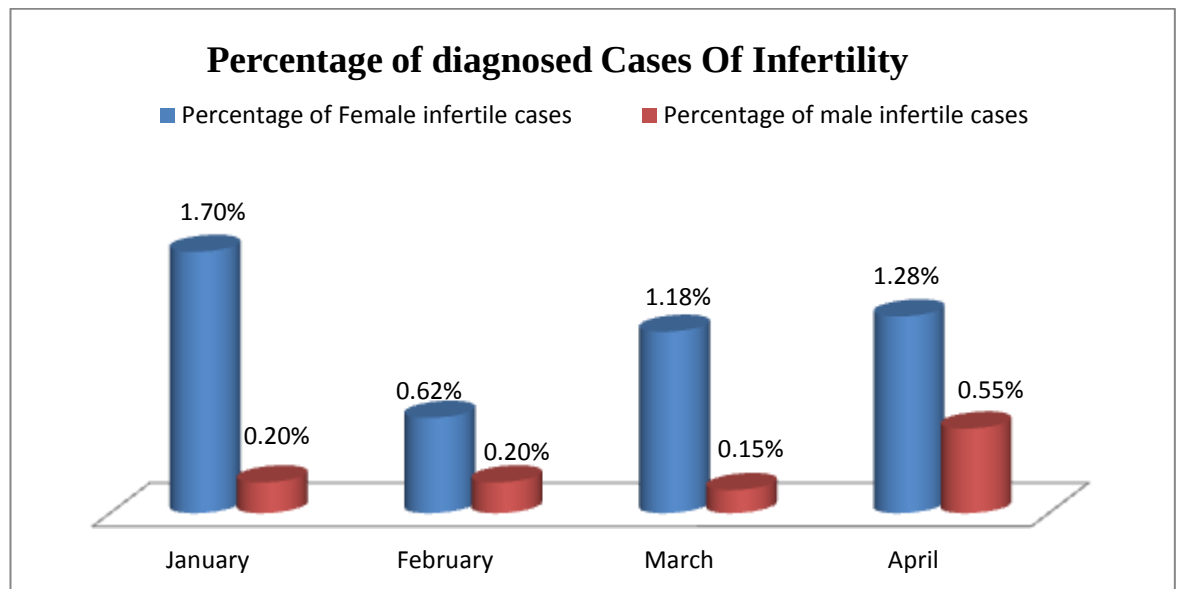
| MONTH    | Total No. Of patients | Diagnosed Female Infertile cases | Diagnosed Male Infertile Cases |
|----------|-----------------------|----------------------------------|--------------------------------|
| January  | 4071                  | 69                               | 8                              |
| February | 3991                  | 25                               | 8                              |
| March    | 4561                  | 54                               | 7                              |
| April    | 3800                  | 49                               | 21                             |

**Interpretation:**

The above Figure 3 and table presents the monthly total no. of patients availing services in the gynaecology OPD, along with the number of female infertile cases.

The above Figure 8 presents the monthly total no. of patients availing services in the OPD, along with the number of diagnosed male infertile cases

**Figure 4:**

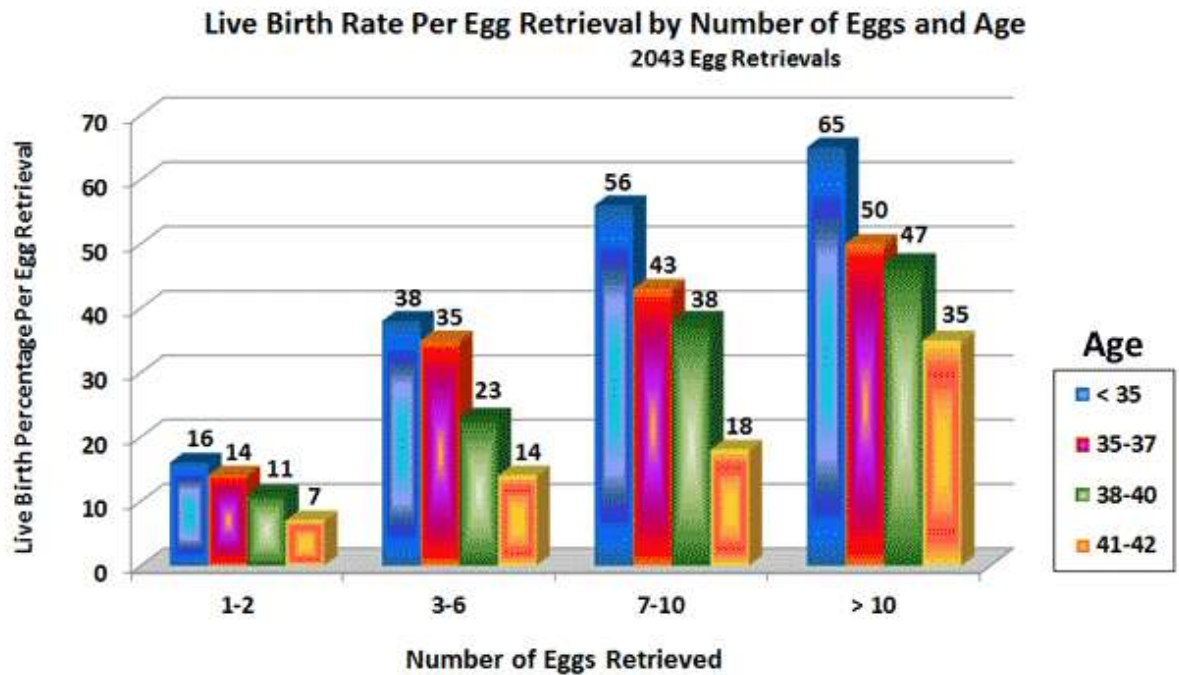


**Interpretation:**

Figure 4 Presents the data in this monthly percentage of the male & female cases of infertility.

It can also be observed that gradually the number of the diagnosed male infertility cases have also increased from a 0.20% to 0.55% from January to april.

**Figure 5**



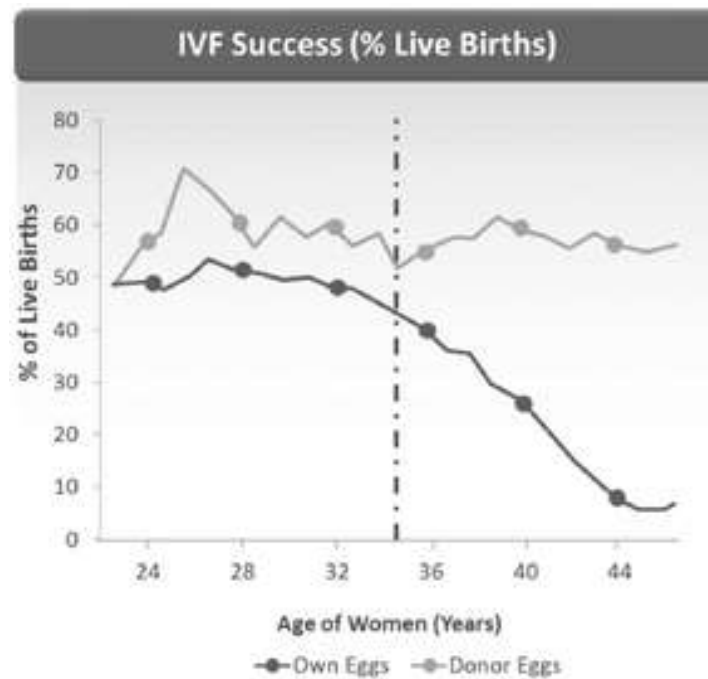
Source : Advanced Fertility Center of Chicago; Richard Sherbahn MD

**This graph shows our live birth rates by the number of eggs retrieved & female age**

**The data in the graph above shows that:**

- Women under 35 have the highest success rates in all of the "egg number" groups
- Women under 38 in our IVF program have acceptable live birth rates even with only 3 - 6 eggs, do better with more than 6 eggs, and do best with more than 10 eggs.
- Women 38-40 and 41-42 years old have low live birth rates with low egg numbers. Success rates are much better when relatively high egg numbers are obtained.
- All age groups have very low success rates with less than 3 eggs retrieved

**Figure 6**



Source : 2010 CDC report,

As can be seen in the Figure 6 IVF pregnancy success rates for women over age 35 remain relatively flat, regardless of the woman's age, when using donor eggs.

## 8. ANALYSIS

According to the study and literature review the analysis approach was to do the SWOT analysis of our proposed IVF centre based on the extensive market research and in depth analysis of the services we shall be providing.

### 8.1 SWOT :

A SWOT analysis (alternatively SWOT matrix) is a structured planning method used to evaluate the strengths, weaknesses, opportunities and threats involved in a project or in a business venture.

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b><u>STRENGTHS</u></b></p> <ol style="list-style-type: none"><li>1. Already part of an established set up- any internal need for a medical staff can be easily met within the premises at any critical hour.</li><li>2. Diversified staff and personalised care</li><li>3. Latest machines and excellent hospital facilities.</li><li>4. Strong commitment to the community mission keeping in mind the present day scenario of the need for better fertility facilities in Sharjah.</li><li>5. Outstanding medical staff</li><li>6. Excellent healthcare quality- Hospital has received 2nd time consecutively the DQA (Dubai Quality Award).</li><li>7. High footfall of patients in the gynaecology department who will be referred to the IVF centre running within the same organization.</li><li>8. Hospital holds various camps &amp; seminars for awareness and education among the masses, further expanding the clientele.</li></ol> | <p><b><u>WEAKNESS</u></b></p> <ol style="list-style-type: none"><li>1. Short of critical staff at the initial stage of the set up.</li><li>2. Initially the cost of running the facility will be higher.</li><li>3. Lack of adequate resources</li><li>4. Initial apprehensions of the patients as it will be a new entrant in this field.</li></ol> |
| <p><b><u>OPPORTUNITIES</u></b></p> <ol style="list-style-type: none"><li>1. Provide specialized lab services to other physicians.</li><li>2. Location : it is easily accessible by all means of transport.</li><li>3. The IVF centre will be at close proximity to the various referring hospitals.</li></ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <p><b><u>THREATS</u></b></p> <ol style="list-style-type: none"><li>1. Already established centres – competitors</li><li>2. Local economy, health and employment levels of the patients availing services.</li><li>3. Competitors have a well established</li></ol>                                                                                   |

|                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4. Collaborating with other co-partner healthcare informatics to get the latest technologies and treatments so as to improve the quality and efficiency of our services. | <p>target market already.</p> <p>4. Established competitors will be providing better schemes as compared to our initial stage of establishment.</p> <p>5. Increasing demands by patients &amp; physicians for expensive medical technology which is not cost effective.</p> <p>6. A growing un- insured population.</p> <p>7. Increasing pressure to reduce healthcare costs</p> |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

The above competitor analysis, followed by the SWOT analysis is used to find competitive advantage by matching the strengths to opportunities. According to the research the advantage that we have over our competitors is the well established and a leading obstetrics and gynaecology department in the hospital.

## 9. DICUSSION

The discussion of the study as per the phases of the study :

### PHASE 1: LEGAL REQUIREMENT

Based on the Ministry Of Health guidelines the legal obligations for obtaining the license will be fulfilled when the centre is designed and planned according to their specifications.

The IVF centre preferably should be located on the ground floor and should contain separate areas for the clinic, theatre room and laboratory.

Keeping this in mind the Hospital authorities had already allocated an area on the ground floor where they could fit the specifications of the rooms to meet upto the specified guidelines.

### PHASE 2: TECHNICAL REQUIREMENT

To meet the technical requirement of the centre the manpower and equipments resources required was enlisted.

A manpower of approximately 20-22 staff members is needed for the IVF centre. The selection process and the recruitment is based on their qualifications and a minimum specified work experience.

The panel was decided and the interviews for the staff for the recruitment were begun as per the Ministry Of Health, Sharjah. The prepared checklist played a vital role as it was guiding the panel at the time of recruitment.

The equipments for the IVF centre were enlisted by having detailed discussions with the Doctors and the Biomedical team. The quotations were called for and the list was prepared with all the specifications mentioned.

### PHASE 3 : LOCATION FEASIBILITY

The external approachability of the hospital was considered keeping in mind the distances from the various parts of the city. There are quite a few hospitals who will be referring patients to our centre; hence the accessibility from these was also considered.

Zulekha Hospital is well connected and easily accessible via all modes of transport available in the city.

The location of the IVF centre within the hospital was decided at the ground floor which is away from the main reception so that it provides an optimal environment for the smooth running of the centre.

The patients visiting the centre at no time should feel that their privacy is being hampered ; hence locating the centre, deciding the approachability and easy access to it are very important parameters.

### PHASE 4: MARKET RESEARCH FEASIBILITY

An in depth detail of the industry clubbed with the current market analysis and the competitor analysis helped us to know about the successful practice of IVF in Sharjah and Dubai.

The mindset of the patients and the functioning and approach of our competitors all came to light when this step was considered.

### PHASE 5: THE ECONOMIC BENEFITS / REVENUE GENERATION

Based on the number of diagnosed infertile cases over the past two years and last four months it can be stated that only when we reach a considerable number of patients availing services at our IVF centre will we be able to generate a profit.

There is a huge expenditure involved in establishing the centre and only when we get a considerable number of patients will we be able to reach a point of the break even analysis.

Initially the per month cases will not be very high but gradually as the cases will increase the profit margins per patient will also increase.

## 10.CONCLUSION

In conclusion, the ART laboratory plays a crucial role in the treatment of infertile couples and setting up a state of the art laboratory is no easy task. To setup a quality ART laboratory, the combination of the three key areas will provide the main framework. The main goal of the laboratory should be to provide a safe and secure environment while maintaining optimal parameters for embryonic development. The embryologists selected should be experienced and highly skilled and be able to deliver consistent results. Every lab has its own unique features .Any architect can design a room, but you must understand the type of work being done in the room to understand the work flow within the room.

The viability of having an IVF centre in the hospital is quite high based on the extensive research and findings done. As can be seen that the in depth market analysis regarding the competitors and the overall target market tells us about the present day need of having an IVF centre which will not only be beneficial for the society based on the increasing demands but will also be running successfully in our hospital.

The facility is already a flourishing mother and child hospital and keeping in mind the number of diagnosed cases of infertility over the past two years based on the data through medical records it can be said that the centre will function well once started. The social hesitations amongst masses are seen to be vanishing with time.

Identifying the fulfilment of all the parameters from the legal to the location to the market analysis, can only help in starting up with the facility soon. For those couples in whom prevention has failed, a specially designed infertility care programme should be provided for the developing countries.

A number of ARTs have been developed which allow parenthood to azoospermic men, women with complete tubal blockage, cases of endometriosis and many others who had at one time lost hope of having a baby of their own. UAE has not remained impervious to such new medical advances. The first scientifically documented test-tube baby was born in India in 1986 and since then the average take-home baby rate with various techniques ranges between 20-30 % per cycle which is comparable to that of the best ART centres in the world.

Currently, in UAE, ART services for infertility management are offered through the private sector in some of the metropolitan cities. The high costs involved in offering such services are the consequence of expensive infrastructure, drugs required for inducing multiple ovulations and maintenance expenses.

The benefits of these scientific advances are limited to only the wealthier sections of the population. It is therefore essential to reduce the costs involved in offering ART so that all the infertile couples could reap the benefits of newer technologies. It is also essential to make efforts to eliminate the preventable causes of infertility.

IVF is an extension of the operating theatre every effort must be taken to maintain the sterility in the lab. Strict discipline must be exercised with regards to hand washing and maintaining the parameters in the laboratory.

The implementation of a cost-effective simplified assisted reproduction programme as a valid treatment protocol in developing countries is certainly the major challenge.

The introduction of simplified, cheap and effective methods might convince local politicians and insurance companies to formulate a policy concerning infertility treatment in their country. Tackling the issue of infertility in low-resource countries using simplified methods might improve the quality of life for numerous childless couples. For a well planned family prevention of infertility as well as diagnosis and treatment of infertility should be incorporated in existing health care centres.

The data and findings clearly indicate towards the number of cases that were diagnosed with fertility related issues could be easily channelled to our IVF centre if there would have been one running in the hospital.

The planning and design of the centre should be done in such a way that it not only keeps the cultural constraints in mind but it is also planned for a smooth work flow.

Quality standards are needed to ensure consistency and reproducibility of all methods. Procedures and processes should be clearly written and available. For a successful ART program, the ART laboratory should establish and maintain strict quality controls.

## **11.ANNEXURE**

Q 1. What is the current success rate for your clinic based on the different age groups?

- <35
- 35-37
- 38-40
- 41-42
- $\geq 43$

Q 2. What is the maximum age of the patients that you treat?

Q3. Are there any fertility conditions that you will not treat?

Q4. How is the pre-treatment carried out?

- Q5. What is your embryo transfer policy? How many embryos will you replace at one time?
- Q6. What is the basic cost of the IVF treatment?
- Q 7. What happens to the costs if the cycle has to be abandoned?
- Q8. What is the success rate of the treatments that have been offered to the patients ?
- Q9. How long would the patient need to be in the city for?
- Q10. Is the clinic registered with any regulatory body?
- Q11. How many cycles do you perform per year at the clinic?
- Q12. What has been the level of satisfaction of the patients who have availed services at your clinic?

## 12. REFERENCES

1. World Health Organization. Recent advances in medically assisted conception. *WHO Tech Rep Ser*, 820 : 2, 1992.
2. The ESHRE Capri Workshop. Infertility revisited : The state-of-the-art today and tomorrow. *Hum Reprod* 11 : 1779, 1996.
3. Guidelines of the MOH (Ministry Of Health) Sharjah, UAE
4. World Health Organization. *The World Health Report*, 1996, WHO, Geneva, p 12, 1996.
5. Human Fertilisation and Embryology Authority (HFEA). *Annual Report 1997*, HFEA, London, p 1, 1997.
6. Anand Kumar, T.C. *In vitro* fertilization and embryo transfer in India. *ICMR Bull* 16 : 41, 1986.
7. *Year Book 1995-96. Family Welfare Programme of India*. Department of Family Welfare, Ministry of Health and Family Welfare, Government of India, p 64, 1997.
8. Rowe, P. J. and Farley, T.M.M. The standardized investigation of the infertile couple. In : *Diagnosis and Treatment of*

9. *Infertility*. Eds. P.J. Rowe and E.M. Vikhlyaeva. Hans Huber Publishers, Toronto, Stuttgart, p 55, 1988.
  10. Farley, T.M.M. and Belsey, F.H. The prevalence and etiology of infertility. In : *Biological Components of Fertility*.
  11. Proceedings of the African Population Conference, Dakar, Senegal. International Union for the Scientific Study of Population, 1:2.1.15, 1988.
  12. National Infertility Awareness Campaign. Reports of the Third and Fourth National Surveys of NHS Funding of Infertility Services. College of Health, London, p 1, 1995.
  13. [http://www.khaleejtimes.com/kt-article-display-1.asp?xfile=data/nationhealth/2013/October/nationhealth\\_October24.xml&section=nationhealth](http://www.khaleejtimes.com/kt-article-display-1.asp?xfile=data/nationhealth/2013/October/nationhealth_October24.xml&section=nationhealth)
  14. <https://www.extension.iastate.edu/agdm/wholefarm/html/c5-65.html>
  15. [http://www.uwcc.wisc.edu/manual/chap\\_5.html](http://www.uwcc.wisc.edu/manual/chap_5.html)
  16. <http://www.webmd.com/infertility-and-reproduction/guide/in-vitro-fertilization>
  17. <http://www.surveygizmo.com/survey-blog/what-is-a-feasibility-study/>
  18. [http://training.i-s-e-t.org/wp-content/uploads/modulesContent/pdfs/ISET\\_ModuleCRFSet3\\_7\\_0.pdf](http://training.i-s-e-t.org/wp-content/uploads/modulesContent/pdfs/ISET_ModuleCRFSet3_7_0.pdf)
  19. <https://www.mja.com.au/journal/2014/201/5/what-new-ivf>
  20. <http://pestleanalysis.com/swot-analysis-in-healthcare/>
  21. [http://www.investorwords.com/15399/financial\\_feasibility.html](http://www.investorwords.com/15399/financial_feasibility.html)
  22. [http://www.mindtools.com/pages/article/newTMC\\_08.htm](http://www.mindtools.com/pages/article/newTMC_08.htm)
  23. [http://www.ivf.net/ivf/journals-b387\\_0.html](http://www.ivf.net/ivf/journals-b387_0.html)
  24. Pelinck MJ, Vogel NE, Hoek A *et al.* 2006 Cumulative pregnancy rates after three cycles of minimal stimulation IVF and results according to subfertility diagnosis: a multicentre cohort study. *Human Reproduction*
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