INFERTILITY IN UAE

A RESEARCH STUDY

BY

Aster
IVF & WOMEN CLINIC
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INFERTILITY IN UAE – A RESEARCH STUDY BY ASTER DM HEALTHCARE

Introduction to Infertility in the UAE

Infertility can be one of the most stressful situations couples encounter, often attributing to emotional, physical and financial distress. In light of this a research study conducted by the team of Aster Hospital and Clinics, reputed healthcare provider and arm of the multinational healthcare conglomerate Aster DM Healthcare. Aster IVF & Women Clinic was further included to the specialty care division of Aster's Gynaecology & Obstetrics making the department an all-inclusive one in terms of services & facilities.

Over the past few years, the Gynaecologists & Obstetricians at Aster Clinics & Hospitals conveyed an increase in demand of specialists & specialized care to treat Infertility in both males and females. Apart from the search for high degree of expertise and service, individuals who reached out to us were also looking for a place where there unspoken apprehensions of being deprived of parenthood can be well understood.

The research study was initiated as a pursuit to look for gaps between the demand & supply of adequate expertise & care available for Infertility treatments.

Studies reflect that infertility has been becoming increasingly common in the UAE region and as per DHA's latest findings around 50% of women in the UAE face issues pertaining to infertility.

The Demand Depth Study

As per various market research study, the Global IVF market is expected to grow at a compounded annual growth rate (CAGR) of 11.6% between 2013 and 2020. The market revenue of $9.3 billion in 2012 is estimated to grow up to $21.6 billion by 2020. Rising rate of infertility is the key factor driving the growth of the IVF market.

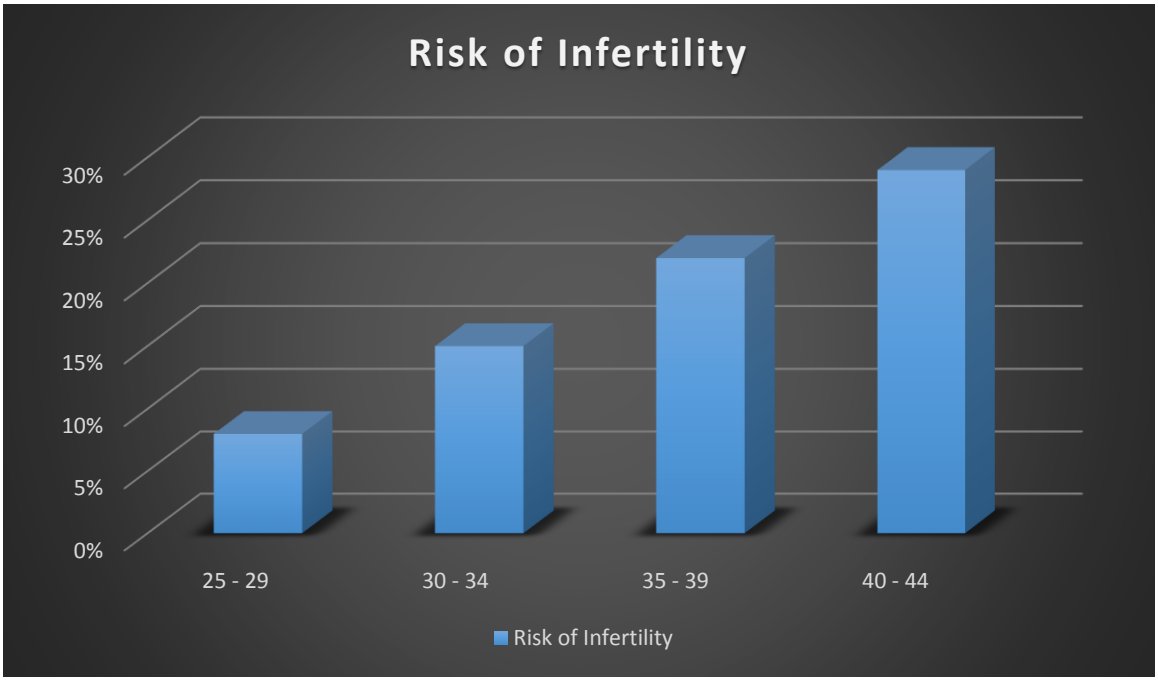
The Global In-Vitro Fertilization market is also witnessing lucrative growth with an increase in Medical Tourism activities in the UAE (particularly Dubai), India, China and Brazil.

A Market overview

UAE is one of the very accommodating nations in the world; along with housing a majority of expat population, it also has a potential to become a hub for medical tourism. All the healthcare facilities in the UAE being fully equipped to meet the International standards of quality boast this further.

As per our recent research, Fertility treatment will be one of the leading drivers of Medical Tourism in the UAE and a key growth area for the country. Clinicians say that in the UAE about one in five couples face fertility issues – a higher figure than in other parts of the world.
The chart below suggests the risk of infertility within different age groups of female by DGFC. The shifting demographic trend coupled with late marriages and consequently late attempt to start a family and other risk factor exposures are likely to drive further rise in the burden of infertility in the coming years.

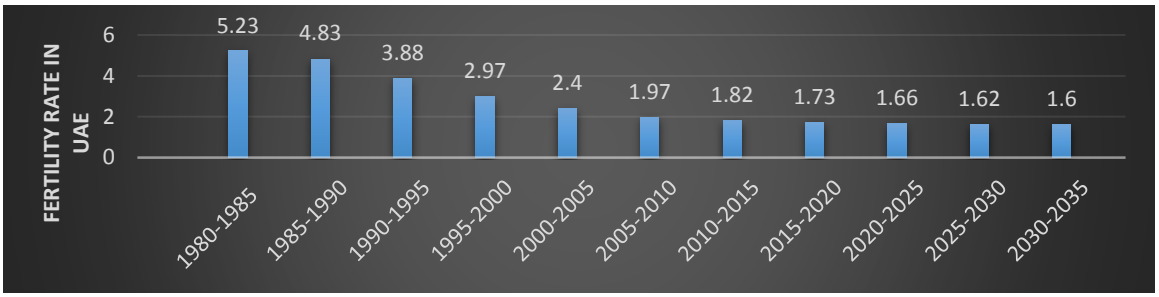
Infertility Rate Determinants



According to a 2010 DHA report on 'The demand for fertility services in Dubai', that estimates the demand for new fertility services in the emirate until 2030), the following is suggested:

- An estimate of 100,446 men and women are facing infertility problems in the UAE. Of these, 27,276 are based in Dubai.
- Of the total infertility cases in the UAE, 50,223 are women and of the total number in Dubai, 13,638 are women.
- The total Fertility Rate in UAE dropped from 5.23 children per woman in 1980-1985 to 2.40 in 2000-2005 &1.97 children per woman in 2005-2010.

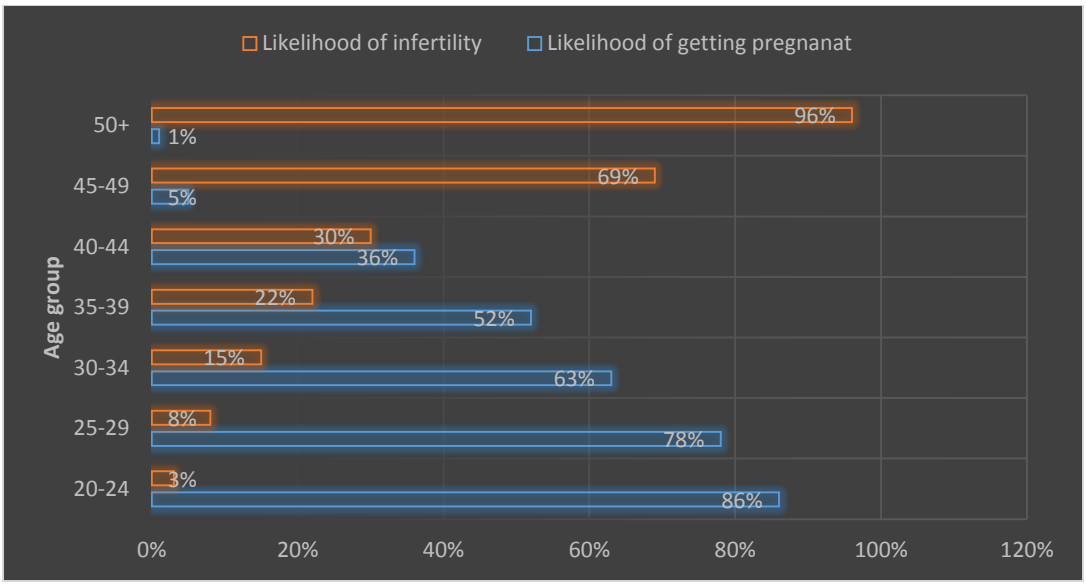
- Projections from United Nations, World Population Prospects: The 2012 Revision, also show that total fertility will decline further to reach **1.60** children per woman in 2030-2035.



Refer the table below for estimated number of infertility cases, infertile women, women undergoing cycles of treatment & number of infertility cycles when the USA prevalence rate of infertility and other above-mentioned estimates, extrapolated on GCC countries and Dubai population. [Based on USA Prevalence Infertility Rate (Source: DHA)]

Country/ Emirate	Population	Infertility Cases	Infertile women	Women undergoing treatment cycles	Infertility cycles
Dubai	1217676	**27276**	**13638**	4432	15512
UAE	4,484,199	**100,446**	**50,223**	16,322	57,127
Kuwait	2,728,041	**61,108**	**30,554**	9,930	34,755
Bahrain	766,926	**17,179**	**8,590**	2,792	9,772
Saudi Arabia	24,645,686	**552,063**	**276,032**	89,710	313,985
Oman	2,785,361	**62,392**	**31,120**	10,114	35,399
Qatar	1,280,862	**28,691**	**14,346**	4,662	16,317

Note: This extrapolation calculation does not take into account any genetic, cultural, environmental, social, racial or other differences across the various countries and regions. Dubai population number excludes the population of labors and construction workers, information source being Dubai Statistics Center, 2009



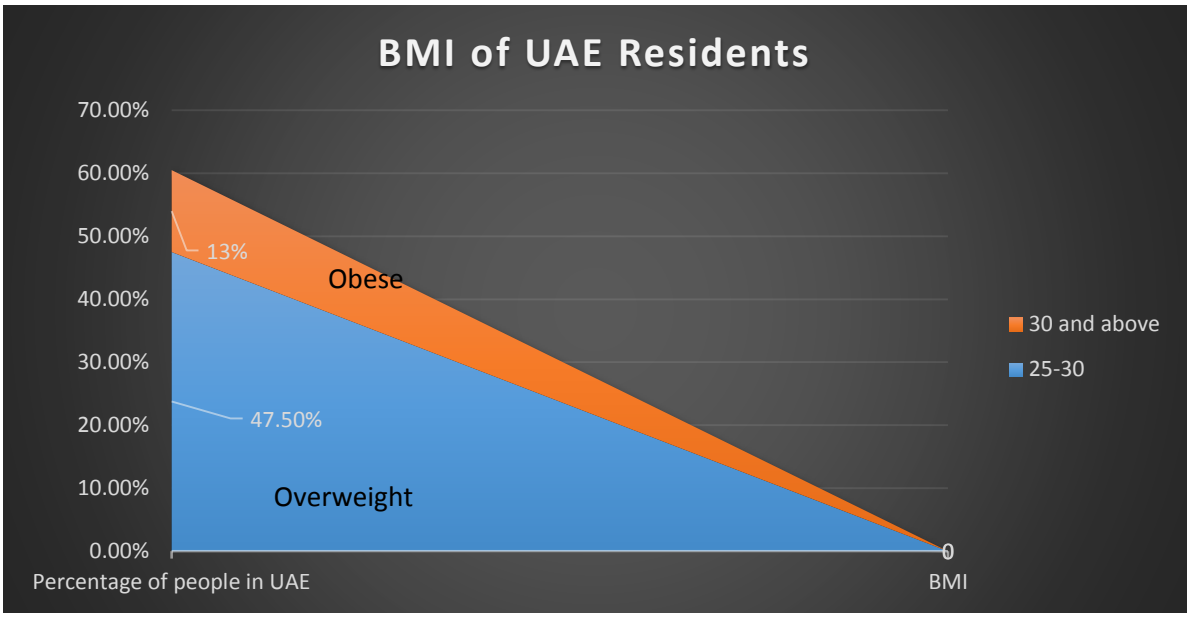
Moreover, other than age group various other influencers are also associated with Infertility. Sedentary lifestyle, a leading cause of Obesity remains one of the leading influencers for Infertility occurrence. According to a disease study report by WHO (World Health Organization), the rate of obesity in the UAE is double the world average.

According to the University of Washington's Institute for Health Metrics and Evaluation, more than 66 per cent of men and 60 per cent of women in the UAE are already overweight or obese.

In a survey released by Zurich International Life, 47.5 per cent of UAE residents were overweight, with a BMI of between 25 and 30, while another 13 per cent were obese, with a BMI of over 30. Since the average BMI in the UAE is 25.6, the average UAE resident is considered overweight.

74% of the random groups studied were either obese or overweight, while 25% of UAE nationals were obese. Obesity is prominent amongst UAE nationals & white-collar expatriates. (Emirates National Diabetes Study (ENCAD), 2006)

High BMI has been associated with infertility due to low semen quality, hormonal imbalances leading to lower testosterone, inhibin B levels and increased plasma estrogen in men, and low levels of AMH in women.

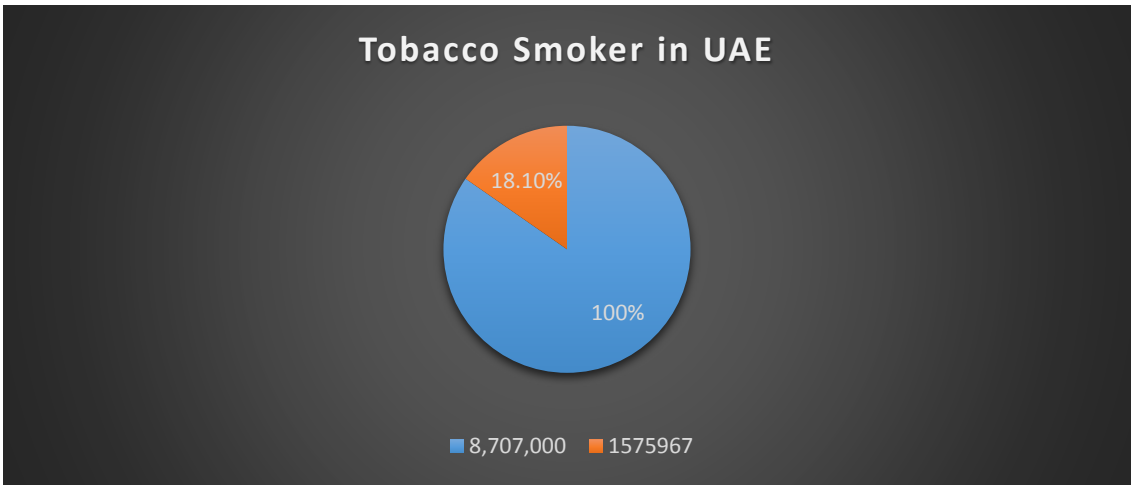


Another important influencer is the age of marriage, more and more people are opting for late marriages and this also leads to an increase in the age at which people opt to have their first child. There's the ticking biological clock in women and decreasing level of hormones in men that can be implicated to lower rates of fertility.

A high level of diabetes in the region is also suggested to cause similar implications as other influencers. According to government health statistics around 25 percent of adults in the UAE have diabetes and a similar percent of population is pre-diabetic. Diabetes causes rise in Insulin levels, which has been found to harm egg production and cause infertility.

Smoking in both men & women has also been suggested as a cause of infertility. Natural conception is twice as difficult for smoking women, causes lower sperm counts in men & also reduces the success rates of fertility treatments.

According to a study by 'Tobacco or Health' 18.1% of UAE population are smokers. Tobacco smoking reduces the chances of IVF producing a live birth by 34% and increases the risk of an IVF pregnancy miscarrying by 30%.



Facts & Figures on Determinant's of Fertility Rate

Factors	Impact	Reference Study
Obesity (BMI>35)	Time to conception increased 2 folds	Hassan and Killick, 2004
Smoking	Rate of infertility increased by 60%	Clark et al., 1998
Alcohol (>2 drinks/day)	Rate of infertility increased by 60%	Egget et al., 2004
Caffeine(>250 mg/day)	Fecund ability decreased by 45%	Wilcox et al., 1998

Assuming, white-collar expatriates retain their original lifestyle while residing in Dubai, a high percentile of them will have one or more of the risk factors mentioned above. All these factors will inflate the need for fertility services in Dubai, UAE.

Key Findings & Conclusions

Applying the result of the international estimates of infertility prevalence and treatment-seeking Dubai women population of age-group 15-44 years, along with reflecting all inflators (higher demand for children, obesity and other lifestyle factors) and deflators (financial access constraints and estimated number of treatment in a given year) lead to the following findings:

- Population growth rate of the region being fairly dominated by expatriates surely has an implication on growing Infertility rate.

- Total fertility rate was 2.37 children born/woman (2013 est.), considering the inflators & deflators role in fertility, this rate will further lower down with years to come by.

- Obesity, smoking, alcohol and caffeine consumption have been cited in the reports as the main lifestyle risk factors that affect fertility worldwide

- Late marriages play a pivotal role in difficulties of conception.

- Although the region has leading players to cater to the needs of population both at governmental & private level; the growing demand of fertility services suggests that there's a huge scope for more players to join in the market as well as expansion of the existing service providers.

- As Health insurance becomes mandatory for all the UAE nationals the demand for IVF will increase further.

- With rise in promotions of medical tourism to the region, there will be an increase in number cases being managed in the country. Currently, a good percentage of GCC couples seeking excellent fertility services are travelling abroad mainly to Jordan, Beirut & Germany. It is very likely that a portion of these would like to avail facilities near to their homes rather than travelling far and wide to seek affordable & quality healthcare services.

Projected Number of Infertile Women in Dubai seeking medical care & Projected no. of treatment cycles to be performed for 2010-2030

	2010	2015	2020	2025	2030
Number of married women aged 15-44 years	187,433	237,086	282,427	320,032	362,644
Incidence of infertile women seeking treatment per year	4,723	5,975	7,117	8,065	9,139
Number of women requiring cycles of treatment	1,535	1,942	2,313	2,621	2,970
Projected total no. of cycles of treatment required	5,373*	6,796	8,096	9,174	10,395
The projections for the no. of married women aged 15-44 years are based on following growth rates: 2010 to 2015 = 4.7%, 2015 to 2020 = 3.5%, 2020 to 2030 = 2.5%.					

Projected results

- The projected number of infertile women in Dubai seeking medical care was estimated at 5,373 in 2015 and 9,139 in 2030.
- The projected number of treatment cycles required were estimated at 6,796 in 2015 and 10,395 in 2030

`In-Vitro Fertilization (IVF) Treatment & Procedures

In Vitro Fertilization (IVF) is the process of collecting eggs from the female under transvaginal ultrasound guidance and sperm from the male and fertilizing them in the IVF Laboratory. Since 1978, it has been helping couples complete their families.

It is used to treat many causes of infertility, including some common ones as under:

- Damaged or blocked Fallopian tubes (can be caused by pelvic inflammatory disease, tuberculosis or prior reproductive surgery)
- Advanced age of the woman (advanced maternal age)
- Poor Ovarian response to stimulation.
- Women with ovulation disorders.
- Individuals with a genetic disorders using IVF with Preimplantation Genetic Screening (PGS) & Preimplantation Genetic Diagnosis (PGD)

- Male factor infertility, including decreased sperm count or absence of sperms in the ejaculate
- Unexplained infertility

Five basic steps in the IVF and Embryo Transfer process:

a. Production of eggs using fertility injections & monitoring their growth using transvaginal ultrasound.
b. Collect the eggs under transvaginal ultrasound guidance in short general anesthesia.
c. Sperm is collected and handed over to the Embryology Laboratory.
d. Combine the eggs and sperm together in the Laboratory and provide the appropriate environment for fertilization and early embryo growth for 3-5 days.
e. Transfer embryos into the uterus.

By a cycle, it means one complete process of IVF treatment, starting from stimulation of oocytes, fertilization of the ovum with the sperm in the lab to transferring the embryo in the woman. IVF success rates are the percentage of all IVF procedures, which result in a favorable outcome. Depending on the type of calculation used, this outcome may represent the number of confirmed pregnancies called the pregnancy rate, or number of live births called the live birth rate

After the IVF procedure

The woman may be told to rest for the remainder of the day. Most women return to normal activities the next day.

Women who undergo IVF must take daily shots and/or vaginal suppositories of the hormone progesterone for 8 - 10 weeks after the Embryo Transfer. Progesterone is a hormone produced naturally by the ovaries that helps thicken the lining of the womb (uterus). This makes it easier for the embryo to implant. Too little progesterone during the early weeks of pregnancy may lead to miscarriage.

What are the risks associated with IVF?

As with all medical procedures there are some associated risks with IVF. These risks include risks of anesthesia and risks of the surgical procedure (<0.001%). It may have other short-term side

effects like mood swings, headache, abdominal pain and bloating among other side effects associated with the hormones administered during the cycle.

The success rate of IVF clinics depends on a number of factors including cause of infertility, maternal age, lifestyle factors as also the skillset of the treating physicians and Embryology Laboratory staff.

IVF Lite - Minimal Stimulation IVF

IVF Lite or Minimal Stimulation IVF is another method that can be used to help women get pregnant with minimal risks and low cost. IVF Lite is an excellent ART tool, which bridges the gap between Natural Cycle IVF and conventional IVF.

It is most useful for:

- Women with low ovarian reserve (poor responders).
- Women with previous multiple IVF failures.
- Women above the age of 40.
- Women with previous OHSS and PCOS patients (Hyper-responders).
- Women with Endometriosis

IVF Lite advantages over conventional IVF

- Less medication
- A simpler treatment schedule
- Fewer injections
- Producing fewer eggs but eggs of higher quality
- Patient acceptability of the milder stimulation protocols is better.
- IVF Lite gives pregnancy rates (PRs) comparable with conventional IVF in patients with a normal ovarian reserve.
- IVF Lite gives pregnancy rate much better than conventional IVF in Older patients, patients with previous conventional IVF failures, patients with poor responders and hyper responders.
- And through a "cost-to-the-patient" point of view, it is more feasible for patients than conventional IVF.
- Another advantage of IVF Lite is that it can reduce the multiple pregnancy rate and also cut the risk of ovarian hyperstimulation.

- Fewer risks (from multiple pregnancy and over-stimulation).
- And psychologically – because stress levels are also tested – patients seem to be happier with the treatment program.
- IVF Lite protocol consisting of Minimal Stimulation IVF (ms-IVF), ACCU-VIT (Accumulation & Vitrification of Oocytes) and rET 9remote Embryo Transfer) is a very successful approach in treating poor responders. Very favorable Pregnancy Rates (PRs) can be achieved with IVF nn protocol.

The Way Forward

a) National educational programs for increasing the awareness of the population regarding infertility causes, prevention and treatment.
b) Inclusion of infertility prevention in the national reproductive care program and increasing awareness about the causes of infertility.
c) The financing option for IVF should be more flexible as we are talking about a new born human life. Banks and medical insurance companies should be more supportive towards new born baby through IVF treatment. More number of banks should provide loans with lesser interest rate. The interest rate can also depend upon the salary of parents, which will make the IVF treatment more affordable for common being.
d) We can also improve financing options for ART through expansion of government and private insurance schemes to include infertility treatment.
e) At last, with the advancement of newer technology one can expect the cost of IVF treatment to go down in future period. The new technology will also help to adopt an innovative method for better results.

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