The Pulse: 10th Edition
MEDLAB Market Report
In Vitro Fertilization (IVF) & Fertility in the MENA Region 2019
Colliers International Healthcare Advisory & Valuation Services team is solely focused on healthcare related business (OpCo) and real estate (PropCo), from complex medical business related operational advisory to real estate related advisory.

Our group has the expertise and knowledge essential to providing forward thinking solutions to any challenging healthcare related decisions where success is measured in high quality care delivered in a cost effective way.
In Vitro Fertilization (IVF) & Fertility in the MENA Region

Introduction

Louise Brown, the first test tube baby born on July 25, 1978 at Oldham General Hospital in England. The International Committee Monitoring Assisted Reproductive Technologies (ICMART) estimates that globally in last 40 years over 8 million babies have been born using IVF or other assisted reproduction techniques. Today, around the world over half million babies are born each year using IVF or other assisted reproduction techniques with over 2 million treatment cycles performed every year.

The World Health Organisation (WHO) estimates that globally over 10% of women are classified infertile and require assistance to enable conception. The current global IVF market, based on various studies, is estimated to be between USD$ 10 billion to US$ 12 billion. Whilst there is no definitive accurate data available for the Middle East, the estimated IVF market size drawn from a number of studies and discussions with key players is roughly US$ 1 billion.

In the MENA region the population has increased from just over 100 million in 1950 to 380 million in 2017 and is expected to increase to 700 million by 2050. However overall fertility rates have decreased from 7 children per women in 1960 to just below 3 in 2017.

There are a number of reasons for the decline in family size, including socio economic factors, such as female empowerment, increase in female literacy rate, an aspiration to be economically independent, evolution and increase in use of contraception and changes in cultural norms.

However, the rise in lifestyle diseases especially in the Arab countries has also increased demand for infertility treatments as GCC countries have one of the highest diabetes and obesity rates in the world. Many studies, including latest studies published by Global Diabetes Community has shown a direct and indirect link of diabetes and obesity on both male and female infertility.

Based on Colliers research and interviews with industry experts, compared to 10% worldwide, the infertility rate in the region is 15% or even higher, with male infertility becoming a growing problem and affecting approximately 50% of the cases in the GCC and Middle East region mainly due to factors related to lifestyle, diabetes, obesity and genetic diseases.

The growth in the UAE IVF sector stems not only from domestic demand but also the success of the UAE, particularly Dubai, promoting medical tourism and availability of infertility treatment centres which are of international standards.

Colliers International Overview “In Vitro Fertilization (IVF) & Fertility in the MENA Region” the 10th in The Pulse series, provides an in-depth analysis as to why in the MENA region despite an overall high population growth rate, IVF remains so popular. The paper also identifies opportunities and challenges to operators and investors.

Declining Fertility in the MENA Region

The Changing Fertility in the MENA Region 1960 - 2017

Across the globe and in the MENA region fertility rates are decreasing due to several factors which are summarized below. Moreover, the increase in female literacy rate and an aspiration to be economically independent has resulted in late marriages having direct impact on fertility. In addition, male infertility is a growing problem that affects approximately 50% of the cases in the GCC and the Middle East region which is creating a demand for IVF and related treatments.

### Change in Fertility Rate in Selected Countries in the MENA Region

<table>
<thead>
<tr>
<th>Country</th>
<th>1960</th>
<th>2016</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Algeria</td>
<td>4.7</td>
<td>2.8</td>
<td>38.8</td>
</tr>
<tr>
<td>Bahrain</td>
<td>3.7</td>
<td>2.0</td>
<td>46.0</td>
</tr>
<tr>
<td>Egypt</td>
<td>4.7</td>
<td>3.3</td>
<td>29.8</td>
</tr>
<tr>
<td>Israel</td>
<td>4.4</td>
<td>5.9</td>
<td>-13.0</td>
</tr>
<tr>
<td>Jordan</td>
<td>4.4</td>
<td>4.4</td>
<td>0.0</td>
</tr>
<tr>
<td>Kuwait</td>
<td>3.4</td>
<td>3.0</td>
<td>11.8</td>
</tr>
<tr>
<td>Lebanon</td>
<td>2.3</td>
<td>1.7</td>
<td>26.7</td>
</tr>
<tr>
<td>Libya</td>
<td>2.3</td>
<td>2.5</td>
<td>-9.6</td>
</tr>
<tr>
<td>Morocco</td>
<td>7.2</td>
<td>4.0</td>
<td>44.4</td>
</tr>
<tr>
<td>Oman</td>
<td>5.9</td>
<td>4.0</td>
<td>30.5</td>
</tr>
<tr>
<td>Qatar</td>
<td>2.7</td>
<td>2.5</td>
<td>7.4</td>
</tr>
<tr>
<td>Saudi Arabia</td>
<td>2.7</td>
<td>4.3</td>
<td>-38.1</td>
</tr>
<tr>
<td>Syria</td>
<td>1.9</td>
<td>2.9</td>
<td>52.6</td>
</tr>
<tr>
<td>Tunisia</td>
<td>2.2</td>
<td>1.7</td>
<td>23.8</td>
</tr>
<tr>
<td>UAE</td>
<td>4.5</td>
<td>4.0</td>
<td>11.1</td>
</tr>
<tr>
<td>Yemen</td>
<td>4.0</td>
<td>2.6</td>
<td>35.0</td>
</tr>
</tbody>
</table>

### Increase in the Literacy Rates:
The overall literacy rate for both men and women in the Arab World has increased from just below 62% in 1978 to over 85% in 2016, with Saudi Arabia, UAE and Lebanon having above 90% literacy rate and Egypt just over 75%. Whilst the female literacy rate has increased from 50% in 1978 to over 82% in 2016. Increased literacy rate empowers women and this directly influences their fertility behavior as they are included in the household decision making, age of marriage and family planning. There has been a significant decrease in adolescent fertility rates in the Arab World (depicted in the graph below) which is a positive sign.

### Increase in the Female Labour Force Participation:
Based on the latest data available from ILO, overall female labour force participation rate in the Arab world has increased from 20% in 1990 to over 22% in 2016. Most of the GCC countries made significant improvement such as in the UAE the ratio increased from 32% to 42%, KSA (15% to 23%), Oman (21% to 32%), while the ratio in Egypt remains more or less static increasing from 23% to 24%. The increase in female participation in labour force and an aspiration for economic freedom has a direct impact on marriage age and fertility.

### Change in Adolescent Fertility Rate (Births Per 1,000 Women Ages 15-19)

<table>
<thead>
<tr>
<th>Country</th>
<th>1990</th>
<th>2016</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Algeria</td>
<td>27.8</td>
<td>16.4</td>
<td>-40.6</td>
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<tr>
<td>Bahrain</td>
<td>26.4</td>
<td>18.1</td>
<td>-30.8</td>
</tr>
<tr>
<td>Egypt</td>
<td>82.4</td>
<td>51.0</td>
<td>-37.8</td>
</tr>
<tr>
<td>Israel</td>
<td>70.9</td>
<td>79.2</td>
<td>-11.6</td>
</tr>
<tr>
<td>Jordan</td>
<td>51.6</td>
<td>28.5</td>
<td>-45.1</td>
</tr>
<tr>
<td>Kuwait</td>
<td>28.5</td>
<td>13.4</td>
<td>-52.0</td>
</tr>
<tr>
<td>Lebanon</td>
<td>43.8</td>
<td>12.3</td>
<td>-71.6</td>
</tr>
<tr>
<td>Libya</td>
<td>43.8</td>
<td>13.7</td>
<td>-68.7</td>
</tr>
<tr>
<td>Morocco</td>
<td>40.5</td>
<td>31.7</td>
<td>-21.6</td>
</tr>
<tr>
<td>Oman</td>
<td>81.3</td>
<td>49.5</td>
<td>-40.2</td>
</tr>
<tr>
<td>Qatar</td>
<td>69.8</td>
<td>69.8</td>
<td>0.0</td>
</tr>
<tr>
<td>Saudi Arabia</td>
<td>69.8</td>
<td>34.0</td>
<td>-51.2</td>
</tr>
<tr>
<td>Syria</td>
<td>55.4</td>
<td>19.7</td>
<td>-65.7</td>
</tr>
<tr>
<td>Tunisia</td>
<td>51.8</td>
<td>28.2</td>
<td>-46.1</td>
</tr>
<tr>
<td>UAE</td>
<td>148.7</td>
<td>61.8</td>
<td>-57.2</td>
</tr>
<tr>
<td>Yemen</td>
<td>17.4</td>
<td>17.4</td>
<td>0.0</td>
</tr>
</tbody>
</table>

Key Insights on UAE’s IVF Industry

Below are the key insights on UAE’s IVF Industry based on discussions with key market players.

**Top Nationalities**
Most common nationalities seeking IVF treatment in the UAE are Emiratis, GCC nationals, expatriates from sub-continent and Africa. Recently, patients have also started coming from China.

**Medical Tourism**
Medical tourism accounts for 10% to 15% of the IVF patient volumes.

**Why UAE?**
The success rates in the UAE are relatively high. Patients also come for gender selection, as UAE is one of the few countries where gender selection is still permitted.

**Dubai: "The Destination" Factor**
Patients often plan to combine a holiday along with their treatment. Dubai being an attractive "tourism destination" offers several entertainment, cultural and shopping options which are "pull" factors for medical tourism beside the quality of medial offering.

**The Second Child**
Approximately 15% to 30% of parents opt for IVF treatment to conceive second child (having first child through natural conception), while 10%-15% return to IVF centres to have another successful treatment cycle to conceive their second child using IVF treatment again.

**Male Infertility**
In over 50% cases, male infertility is the reason for seeking IVF treatment. The factors contributing to male infertility include lifestyle, diabetes, obesity, hypertension and genetics.

**The Twin Factor**
The reason for multiple pregnancies is due to multiple embryos transferred. Some patients perceive a twin pregnancy as an attractive option especially with IVF treatment being complicated and expensive.

**The IVF Treatment Cost**
The average cost of an IVF treatment ranges between AED 20,000 to AED 30,000, but it may vary depending upon the type of treatment recommended for each patient including the cost of medications, stimulation protocols, procedural charges, blood tests etc.

**Key Challenges**
The key challenge is restriction on embryo freezing which results in repeated cycles of full treatment, thereby increasing patients’ costs and morbidity.

**Regulatory Challenges**
Restrictions on embryo freezing is one of the main regulatory challenge faced by IVF providers. Another key challenge is the separate licensing requirements across the different Emirates. A single, unified UAE licensing process can resolve this challenge.
Dr. Braulio Peramo, Medical Director at Al Ain Fertility Center highlighted that the fertility market in the next 5-10 years is expected to change significantly as the IVF treatment is not only expected to be used for infertile patients but also for fertility preservation for women similar to western markets. Moreover, in the coming years most couples will check the embryos not only for chromosome diseases, but also for monogenic diseases as well, thus having positive impact on the fertility sector in the UAE.

Prakash Janardan, Director IVF Operations, NMC Healthcare highlighted that the field of reproductive technology is rapidly progressing with many medical advancements leading to improved IVF outcomes. Development in embryo culture medium and emergence of innovative technologies such as embryonic genetic testing, detection of genetic diseases before transfer of embryos, oocyte preservation and next-generation sequencing platforms are all gradually creating paradigm shifts in the field of assisted reproductive technology. At Fakhri IVF, we have been witnessing a significant growth in the number of patients seeking infertility treatment and we expect this trend to continue in future, thanks to the rising awareness about fertility treatments amongst the general population.

Ms. Hoda Abou-Jamra (Bourn Hall International Group CEO) highlighted that there are number of factors that support growth in the fertility market in the coming years. As on one hand, natural fertility rates are trending downward and many couples are waiting longer to start having families and on the other hand the incidence of non-communicable diseases attributed to lifestyle factors is on the rise reducing the fertility of both partners so there is a real emphasis to focus on clinics that deliver high quality and standards that provide strong outcomes. Furthermore, the UAE’s fertility market has reached saturation stage as currently, there are large number of players in the market. Moreover, due to economic slowdown the disposable income of people is decreasing which could have an impact on expending money on IVF treatment, especially for second child. These factors are expected to keep the growth of the market in equilibrium in short to medium term. Nevertheless we feel we are well positioned to compete in this market environment.
The 80% Success Myth!

The success rate is dependent on a number of factors with women’s age being the most important factor. Generally for women aged 35 and under the success rate could be as high as 30%-35%, whereas, for women aged 50 years and above, success rate drastically drops to less than 1% for natural full term live birth.

The success rates between frozen and fresh eggs are almost similar in younger women. However, with older women frozen cycles have higher success rate.

For the older women who want to have babies, donor eggs are a solution. Moreover, surrogacy is also becoming a common choice for couples facing challenges to conceive.

IVF & Child Adoption

Based on a recent report by The Independent, the IVF success rate in the UK has almost quadrupled in the last 40 years, rising from 7% to 29% for women under-35 years while the adoption rate in England and Wales has fallen by almost 2/3 (62%).

In 2017, 72,670 children entered the care system but less than 5,000 children were adopted compared to 12,121 in 1978.

The 50 Year Barrier

Actress Brigitte Nielsen gave birth to a baby girl in June 2018 at the age of 54, giving hope to many 50+ women to have their own babies.

Based on data obtained from the UK Office for National Statistics by the Mail, the number of babies born to women over 50 increased from 55 in 2001 to 238 in 2016, and for women over 55, it has increased from 2 in 2001 to 20 in 2016.

However, most of these pregnancies are a result of using frozen eggs or donor eggs and one has to be careful as the age related complications can have a negative impact on the health of mother and baby.
The Future of IVF

New Innovations

- The latest advancements in the embryo culture medium, emergence of innovative technologies, such as embryonic genetic testing, detection of genetic diseases before transfer of embryos, oocyte preservation, next-generation sequencing platforms are gradually creating paradigm shifts in the field of assisted reproductive technology.

- Gametogenesis is expected to revolutionize the IVF treatment. Once In Vitro, Gametogenesis (IVG) is developed, any tissue from a human body can be converted into artificial gametes that could create an embryo, bringing about a breakthrough to counter infertility.

- Innovations associated with fertility can help improve the health and wellbeing of the baby through genetic screening and testing. Along with resolving fertility problems, these innovations are also beneficial in minimizing the chances of certain types of genetic disease.

Improved Testing Techniques

- Laboratory techniques have continuously evolved over the years and offer the greatest contributions to increased success in pregnancies. The development of new genetic tests now allow greater, in-depth assessment of embryos both for the detection of a specific disease and general screening purposes to detect abnormalities. The ability to detect the best embryo continues to be the “Holy Grail” of IVF and whilst this is improving we are still lacking a clinically applicable “breakthrough” in this area.

Short to Medium Term Growth

- Besides the medical reasons for infertility, a trend towards late marriages and more couples concentrating on their careers to gain economic independence also influences fertility behavior.

- The incidence of non-communicable diseases attributed to lifestyle factors is on the rise, especially in the MENA region which has one of the highest prevalences of diabetes, obesity and hypertension, further reducing the fertility of both the partners.

- All these factors are expected to add to the burden of infertility and increase the demand for IVF treatments.

Source: Colliers International, 2018
69 countries

$2.7 billion in annual revenue

2.0 billion square feet under management

15,400 professionals and staff

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