

Social Impact of IVF (After COVID-19 Pandemic and New Normal)

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Abstract

This study aims to analyse the different IVF services and its possible impact on family and social life, after the COVID-19 pandemic. The authors selected the Kingdom of Bahrain as a context for the research and explored the IVF influence on the ‘family stability’ and the ‘social stability’. The framework proposed shows the importance of future foresight of IVF transformation in both the area of life and livelihood.

The study used a quantitative method to understand the type of demands on the supplied IVF services, and where the capacity could be raised in the new normal. The paper concludes that IVF could be a source for family stability and as one of the means of controlling the rising of psychosocial phenomena in the future. The other implication of this study calls for monitoring the rapid increases of dependency ratio, as fertility ratio drops, and how IVF services should be planned as part of a national policy; especially with the repeated emergency crisis.

Keywords: IVF, Covid-19, New normal, Social impact, Family impact, IVF capacity development

1. Introduction

This paper investigates the effect of COVID-19 pandemic on IVF from the social perspective, taking Bahrain as a context.

The researchers investigated the capacity that needs to be developed in relevance to the expected demand for the IVF procedures, as the world enters new normal era due to the spread of the contagious virus that devastated life and livelihood, which led to both depressions in mental health and the economy. The paper explores whether IVF services can continue to be the same or whether its capacity needs to be re-evaluated or re-designed to meet the new type of demand starting with the adjustment to the Covid-19 pandemic and the future foresight.

The paper explores and foresight whether IVF, as we know it today, i.e. after COVID-19 pandemic would be cost-effective and would need to change the main inputs for its service requirements (Hickman et al., 2020).

The literature reviews the COVID-19 Influence on IVF, and its rising demand due to demographical changes in the last decade. The IVF services in Bahrain, being the context of the study, were linked to both the socio-economic and psychosocial stability of the community today more than ever, due to changes in generations fertility. Thus, the paper sees that IVF has become a source for family stability and as a way of a controlled psychosocial pandemic. The authors further explore the importance of the availability of IVF as a coming essential healthcare service that needs to be selectively supported by the government after debating its role as per the development and demographic growth requirements.

2. Literature Review

2.1 Introduction to in Vitro Fertilization (IVF)

In vitro fertilisation (IVF) is the most effective form of assisted reproductive technology. The procedure has been highly on-demand complex series of procedures since the 1960's. IVF procedures address the issue of fertility which have been decreasing all over the world in the last four generations. Besides, fertility IVF is used to prevent genetic problems and child conception.

One full cycle of IVF takes about three weeks. The procedure starts with the retrieval of mature eggs from the ovaries, which are fertilised by a sperm in a controlled lab environment. Then, the fertilised eggs or the embryos are transferred to a uterus. The process and steps may take longer, depending on the women conditions. The complexity and the success of the procedure would depend on many factors, such as the age of the partners and the cause of infertility. In many cases, IVF can be time-consuming and expensive; besides, it would have lots of psychological impact on the beneficiaries.

2.2 The COVID-19 Influence on IVF

The world gone into a new state to which the economy, the society, etc. experienced major changes following a health crisis. The influence on IVF never been measured after series of

crisis: the financial crisis of 2007-2008, the aftermath of the 2008-2012 global recession, and recently the COVID-19 pandemic.

Countries have followed different strategies in facing the effect of Covid-19 pandemic, following the recommendations of WHO. The studies show that COVID-19 have affected many disciplines and speciality in healthcare; however, no clear evidence that it had a significant negative effect on IVF services in the first few. This may be due to the availability of laboratories protocols that helped to manage the postponement of the specific procedures where the sperm would fertilise the women egg, in the specific setting (Anifandis et al., 2020; Hickman et al., 2020).

However, as the lockdowns and the contagious virus persist the postponing of IVF is expected to have a negative impact on the growth of the population and would slow down the birth rates, as indicated by Smith et al. (2020). Smith and his team showed that each month of the lockdown might result in 369 fewer live birth, which may be as a result of due to the increase of women age.

2.3 The Demand on IVF Services Due to Demographical Changes

The demand for IVF services has been influenced by many factors some are socio-economic but mostly demographic. Figure (1) below shows the decrease in the birth rate worldwide, besides a decrease in the Arab region and in Bahrain (World Bank, 2020).



Figure 1. Birth rate, crude (per 1,000 people)

Source: World Bank (2020).

In certain countries, and as a result of the decrease in birth all over the world, people started

to prefer choosing child sex, which resulted in an increase in the male birth rate. China is a very clear example. Data shows that the sex ratio in China in 1962 was 107, while in 2017, it reached 115, which is the same in Bahrain, as shown in Figure (2) below.

2014	2013	2012	2011	2010	Total Live Births Reported
20,752	19,875	18,992	17,450	18,018	Bahraini
15,743	15,143	14,737	13,436	13,599	Males
8,124	7,800	7,490	6,874	6,887	Females
7,619	7,343	7,247	6,562	6,712	Non-Bahraini
5,009	4,732	4,255	4,014	4,419	Males
2,575	2,390	2,205	2,014	2,249	Females
2,434	2,342	2,050	2,000	2,170	

Figure 2. Bahrain total live birth by sex

Source: IGA (2017),

By looking at marriage age in Bahrain, we find that 10.8% of women married after age 35, while 5.6% are married at 40 years and above (GCC Statistical Center, 2018). Which indicate the high percentage of women doing IVF; hence, age may be one of the reasons.

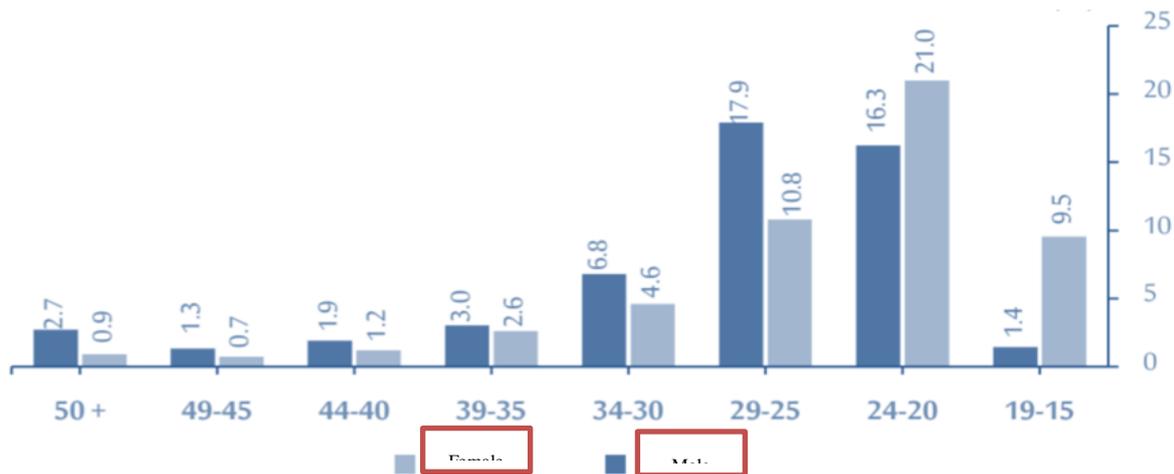


Figure 3. Number of Marriages According to Age in Bahrain in 2016

Source: GCC Statistical Center (2018).

2.4 IVF Services in Bahrain

Bahrain is one of the well-established countries primary and secondary healthcare services. The country has government-supported and paid private IVF centres where approximately

2000 to 2700 IVF procedures are performed in Bahrain annually for various reasons (Alansari, 2019). The fertility rate in Bahrain is 2.50, while the number of procedures is considered to be very high compared to the population of Bahrain. By considering that an average number of marriages in Bahrain per year is around 6000 marriage, this means that around 40% of marriages (Rashid, 2015).

Since the outbreak of COVID-19, the fertility hospitals were not allowed to do IVF procedures for new cases. As the lockdown is relaxed, still some people do not feel safe to go for the clinic.

In general IVF services are in higher demand in Bahrain, despite its high expenses compared to the economic situation of the country. The procedure cost around BD 1500-2000 (US\$ 4000- 5300), which means it could be afforded by only the higher middle class. Therefore, there are many political debates and attempts by the Bahrain parliament to make government consider that IVF services should be part of the country free services (Rashid, 2015).

2.5 Importance of IVF Procedures for Socio-economic Stability

Budali (2015) studied the phenomenon of change in building the basic structure of the Algerian family in relevance to the societal theories. Budali study revealed the percentage of families searching for ways to have more children and their impact on the local community.

A study by Shehata (1989) explored the rise of the infertility phenomenon, especially in ages between (20-35). The study showed the load of feelings among the generation about the inability to fulfil the demands of the role of parents or achieving or maintaining pregnancy. Shehata showed that that the infertility phenomenon is leading to depression in the generation (Mercy, 2016).

Al-Qushaan (2000) concluded that husbands who suffer from manifestations of infertility have low self-esteem homes. Al-Qushaan has seen that the wives have seen to psychologically suffer more than their husbands and more anxious about the problem and the details of infertility. The wives found to be less self-esteem, especially if they do not have the inability to conceive naturally (Mercy, 2016).

There is enormous stress related to the psychological stress associated with IVF treatment. The stress factors come from both social factor and stress associated with having a baby. The stress associated with infertility was very similar between spouses (Ibrahim, 2004). On sexual relations and expecting a pregnancy, females seem to go through more stress during their treatment by the method of (IVF) than their husbands. In many cases, the sources of stress come from overestimating the chances of success of the IVF procedure. (Khattab, 2001)

Stress also found to reduce the fertility capacity of both men and women. A psychological study on the effects of the IVF process before, during and after the operation showed that mental disorders appear after IVF. Physical and emotional changes for both spouses found to increase more once they go undergo through the IVF procedure (Ibrahim, 2004)

The psychological conditions of a woman who gives birth differ from a woman who has

delayed childbearing, especially if they started the treatment at the same time. A wife who gives birth feels that she is safer and more legitimate for her presence in the home, especially if we know that the female in many societies remains dependent on the husband in many cases.

2.6 IVF as a Source of Family Stability

The general public paradigm is that the wife is the main responsible party of infertility in all cases. Without successful children, many marriages in MENA region ends in divorce, or the husband turns to a second wife to search for his paternity. Some men consider the biggest problem occurs when they discover that they are the ones responsible for infertility and not their wives (Khattab, 2001).

Callan et al. since (1988) that women intentions about IVF can be predicted by their attitudes toward another attempt and their perceptions of social pressures. While women intended to continue or discontinue IVF services, they had similar beliefs about the value of motherhood. The satisfaction in having children, and the importance of happy marriages were among the top reasons for IVF and still is till today.

Improving the quality of the family life found to be another good reason for the rising socio-economic impact of IVF. The repetition of the IVF attempts that lead to personal and family stress, disappointment, and financial strain found to be of importance, especially as the economy goes into a deep-recession in COVID-19.

2.7 Psychosocial Impact of IVF Demand

The demand for IVF brought with it both psychological and psychosocial impact for the patients and their families since the outbreak of the COVID-19 pandemic. The fear of contracting and transmitting this new disease besides the experienced stress and lockdown or social-isolation, brought more fear for the patients on their lives. This brought feelings of guilt, anger, anxiety, and depression, especially for patients who start the IVF treatment or been waiting anxiously to start one.

With regard to psychological repercussions during treatment, both men and women experience for waiting for the result of treatment, and the most painful psychological responses those that occur during and during treatment, where depression and anxiety appear clearly. But after the failure of the operation, a feeling of sadness, depression and anger appears. But after the success of the operation, the couple feels more pressure during pregnancy (Ibrahim, 2004).

The IVF departments or service providers need to rethink more of a supportive team such as social workers, psychiatric crisis nurses, psychiatrists, and infectious disease specialists should work together to give support or mitigate and manage the psychological impact on patients and staff.

A Turkish study led by Vehbi et al. (2020) evaluated the level of fear and anxiety related to the COVID-19 outbreak, in infertile women when using Assisted Reproductive Technology (ART). The Vehbi team seen that all the fertility treatments of both eggs and embryos cycles

were delayed due to the pandemic. The study showed that anxiety levels were significantly higher in women above 35 years. Women with diminished ovarian reserve had a higher state-anxiety compared to other causes, but were not found to be significant. Women who thought that the possibility of not being able to get pregnant was more important than being infected with the COVID-19 had higher anxiety levels than women who thought just the opposite. The diminished ovarian reserve and high duration of infertility were found to be significantly associated with higher anxiety levels. The diminished ovarian reserve and previous ART failure significantly predicted the presence of clinical state-anxiety. The state-anxiety was found to be higher in women whose cycles were postponed due to the outbreak, and the presence of diminished ovarian reserve also significantly affected anxiety levels.

Due to Covid-19 hospitals are cancelling surgery, and people are too frightened to seek medical care. Yet the burden of disease due to infertility and endometriosis remains. Women with infertility are worried about the delay to receive services due to the cancellation of elective surgery and a reduction in the availability of consultation services in many countries. Women with endometriosis face chronic pain, aggravated by higher levels of anxiety attributable to economic changes, social restrictions and fears about COVID-19 (Rowe and Quinlivan, 2020).

2.8 Availability of IVF for Those of Priority

As per inspiration economy, any concept or system can be inspired and enhanced if could change its formula from (supply vs demand) to (capacity vs demand). The raising of the capacity depends on being available before the demand occurs, Buheji (2016). To enhance the (capacity vs demand), we need to have higher availability in the context we are targeting. Buheji (2018a).

The availability formula, *Reliability= P (Availability)*

In terms of their perceptions of social pressures, the husbands, the family, the friends, and the doctors play a major role in creating social pressure. In certain situations, we see conflict and difficult attitude change between infertile women attempt and their perceptions of social pressures around them. Thus, it is very important for the health authority and governments, in general, to play a role in monitoring and to manage the fertility history and its characteristics. This would help the government and other community development stakeholders to put an effective plan about enhancing the probability and the capacity of having the IVF services available or accessible to those who need it most. The more we can improve this accessibility, the more we can improve 'IVF reliability'. For example, if the case is a complicated IVF case, then its availability could be affected.

Understanding of what type of availability needs to be improved in IVF services could be considered as part of the development for a resilient business model that could meet the demands for the service even at the unprecedented time, as during the pandemic (Buheji, 2017).

2.9 IVF and the Dependency Ratio

If we have to choose only one main indicator of the potential opportunities for any country that would lead to its long-term competitive advantage, one will choose ‘Dependency Ratio’. The dependency ratio is a very critical indicator that measures the number of dependents that those in ages of productivity need to support. Usually, the dependency ages would be from zero to 14 and from the ages of 65 and over. The Total Dependency Ratio (TDR) shows the number of people of non-working age compared to the number of those of working age (World Bank, 2020b)

A high TDR ratio means those of working age, and the overall economy, face a greater burden in supporting the ageing population. This is the case today in countries as Japan and Germany. Dependency ratios provide very important information for economists and strategic planners to track shifts in the population or in relevance to taxation or sources generating the expected revenue. i.e. As the %age of non-working citizens rises, those who are working are likely subject to increased taxes to compensate for the larger dependent population. The realisation of the level and importance of dependency ratio by the government should help the decision-makers to improve their employment regulations (Buheji, 2018b).

When the fertility ratio drops, i.e. no newcomers to life, the dependency ratio increases. Therefore, IVF here become important, especially if low fertility is a phenomenon for the whole country or nation. Despite Bahrain have a population where the majority of the population (69%) are in the productivity age. Therefore, the total dependency ratio in Bahrain is only 31, compared to, for example, 64 in Japan and 57 in the United Kingdom (World Bank, 2020b).

2.10 IVF and Role of Government

Annas (2020) emphasised that since there are ethical issues and protocols about IVF, governments should stay away from being a service provider, and focus as being only a regulator of the service. Governments should put human reproduction policies that meet their requirements and socio-economic demands. The government should ensure that IVF intervention is likely to lead to a healthy child.

3. Research Methodology

This research uses a quantitative method that strengthens the validity of the findings. Researchers employ more than one method to collect data in order to obtain a valid, holistic and systematic picture when using an interpretative approach. Validity and reliability must be addressed by the researcher throughout the whole process since these are central elements in judging the quality and rigour of the research (Bryman, 2001). The credibility of the data gathered in this study was aided by authors own understanding (Burgess, 1982; Bryman, 2001; Blaxter et al., 2006).

Quantitative data were obtained via the questionnaires answered by a group of 170 people, 39 women from them were women who have been through IVF experience. This paper will present the first data of 39 women for the whole group, and then it shows a view of the whole

sample. The researchers used simple random sampling from the Bahraini society to provide an opportunity for all individuals to participate. A descriptive approach was used as part of the methods of the social sciences, as it is used in describing social problem phenomenon and in its analysis it in order to reach results that contribute to reducing the emergence of the problem (Bryman, 2004; Bryman, 2001; Punch, 2005).

A sample of the Bahraini community followed the snowball method. Nearly 170 people participated in the questionnaire, and the questionnaire contains thirteen questions divided into two parts. The first section contains in the questionnaire is about the preliminary data, and the other section contains questions that would help to explore the reasons for resorting to the IVF procedures. The extent of peer influence on the decision of the spouses and what is the Bahraini society's view of the cost of this operation are also investigated.

4. Results

This study sheds light on the role of peer pressure on spouses to go through and perform IVF as early as possible. This research, therefore, measured the acceptance of the society to the IVF procedures. More than 74% of the sample indicates that there is no embarrassment in declaring to have gone through an IVF procedure, but this would not be shared unnecessarily. In rare cases, some of these spouses would share the news with their parents-in-law and close family members only. The participant precisely mentioned that they are more likely to share it with the female family member than the male family member, as reflected in Figure (4).

While there is no clear significant relation between those, who indicate that their IVF procedures were done under pressure and those who they kept it secretly the couple only.

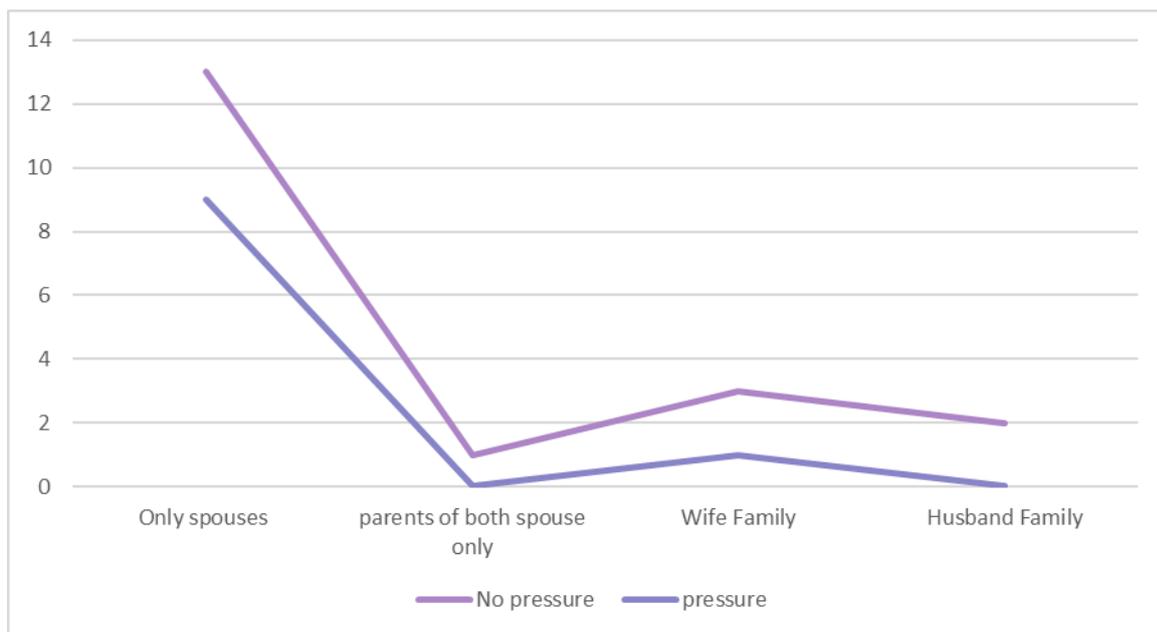


Figure 4. Category of Declaration about going through IVF Procedures with Family Members

The results show that (59%) of the survey participants were males, and (41%) were females. The majority of the sample (72%) knows people who have performed this procedure.

(54%) of the participants were between 21-30 years which either they were married or at the appropriate age for marriage or at the beginning of the marriage. (33%) of the participants were at 40 years. (2.5%) of the sample were filled by 41-50 years, and those above age 51 years, as shown in Figure (5).

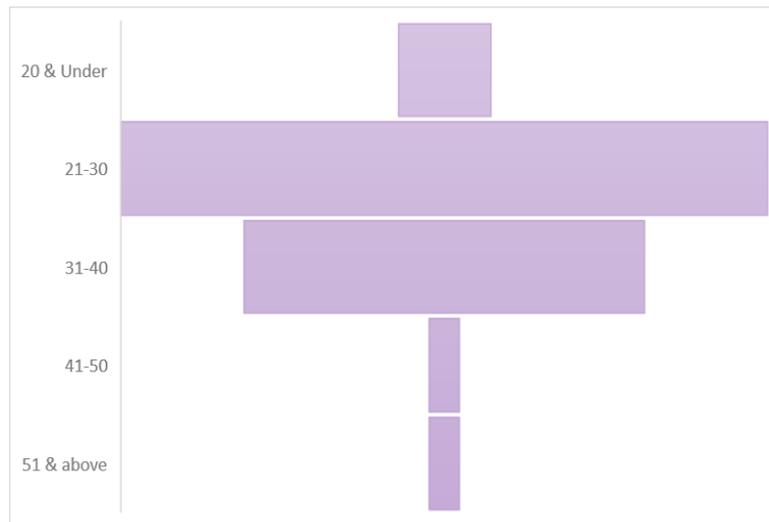


Figure 5. Participants Age

The duration of marriage, as in Figure (6) shows that (79%) of the participants are married in the last 2-6 years, and (13%) of them are married within the 6-10 years. Only (8%) of the participants found to be married for more than 10 years.

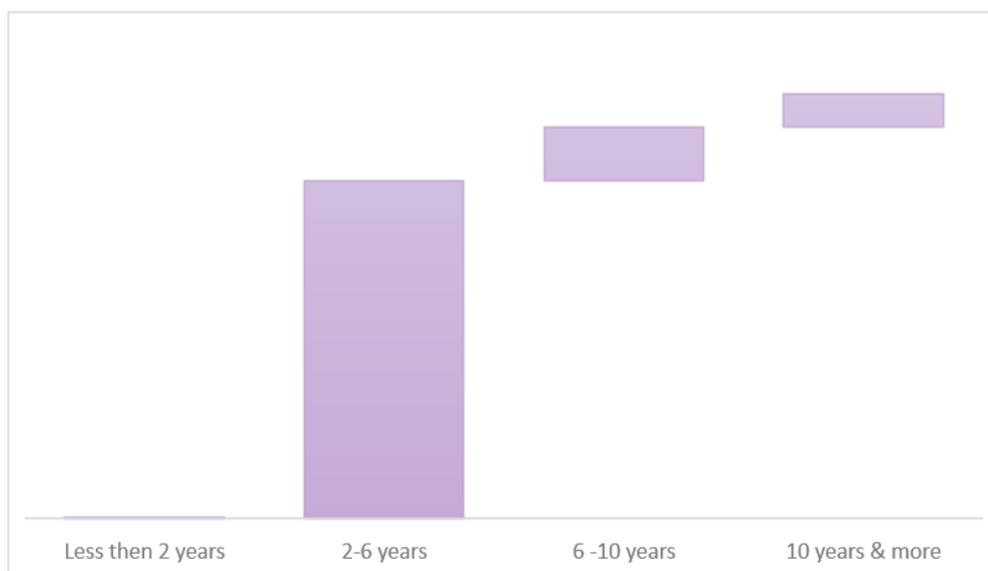


Figure 6. Marriage Duration

The majority of these participants (67%) are higher education graduates and only (15%) doing postgraduate studies. The educated group has shown more community awareness, love of culture and knowledge about the IVF procedures.

(88%) of the participants confirm that they know about IVF procedure and aware about it. Since the income level is very important for the questionnaire measured the ranges of income of those getting IVF treatment procedures. Figure 7 shows that the majority (67%) were of income of 500-1000 Bahraini Dinars. This indicates that the majority of them from upper middle class who can afford IVF expenses. enjoy a good financial position. In addition, sample income goes online with their perception about how costly is IVF.

As for perception of cost, 40% of the participants believe that IVF procedure is beyond their budget., while (84%) of the respondents seen the IVF procedure cost as expensive. Therefore, the majority (69%) of the community believe in the importance and viability of the IVF services and accept it.

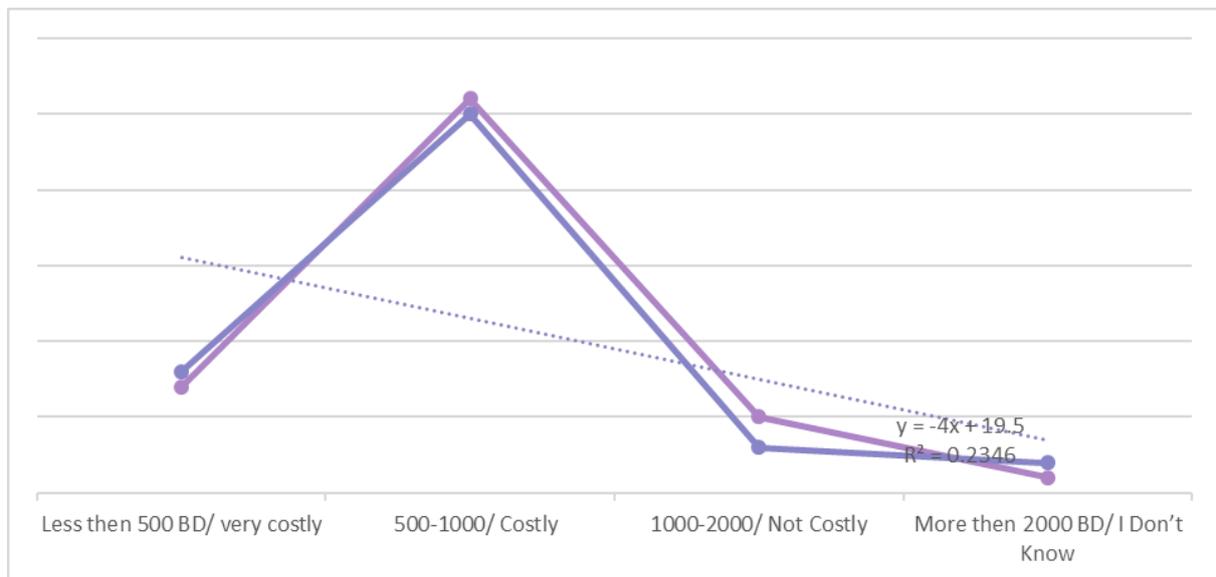


Figure 7. Income vs perception of cost

Only 31% of the participants believed that IVF was a ‘personal choice’. However, the majority of abstained from answering the special reasons for acceptance. This shows the society and family pressure.

More than half of the participants undergo IVF for reproductive problems, (74%) mentioned that they resorted to IVF due to the occurrence of problems in the reproductive process, while the reason for wanting to determine the gender of the fetus made (18%) of the participants use the procedure, hence this may affect balance in sex birth ratio, as it was indicated in the literature review. The survey shows as per Figure (8) that (3%) and (5%) of the respondents seen that ageing and the need to have twins is the main cause for the treatment.

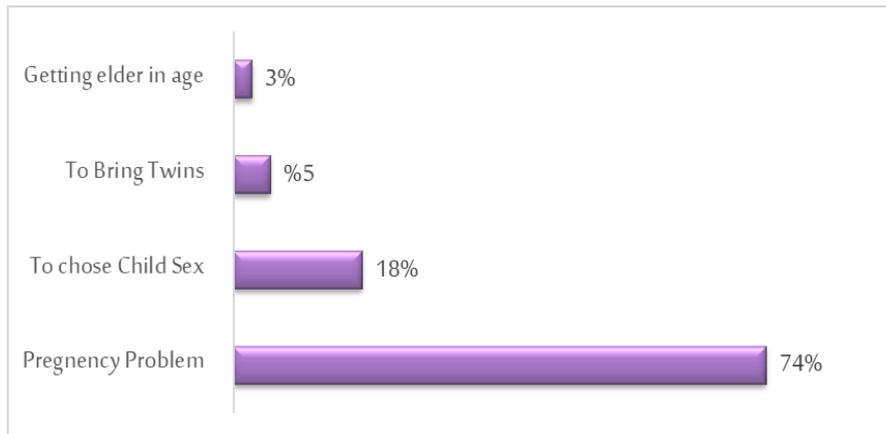


Figure 8. Reasons for Doing IVF

(56%) of the participants said that they wouldn't share the IVF procedure results except with their spouse, while (40%) mentioned that they would include the family of the spouse in the news. (80.3%) of the respondent seen that they would not prefer to separate from partner if they are the causes of the delay in childbearing due to health problems. However, (16.1%) said yes, they would or have the possibility to separate from their partners if they are the cause of IVF procedure failure.

Figure 9 shows the possibility to leave a partner if sterility was from their side. The figure shows that males were more willing to do so than the female.

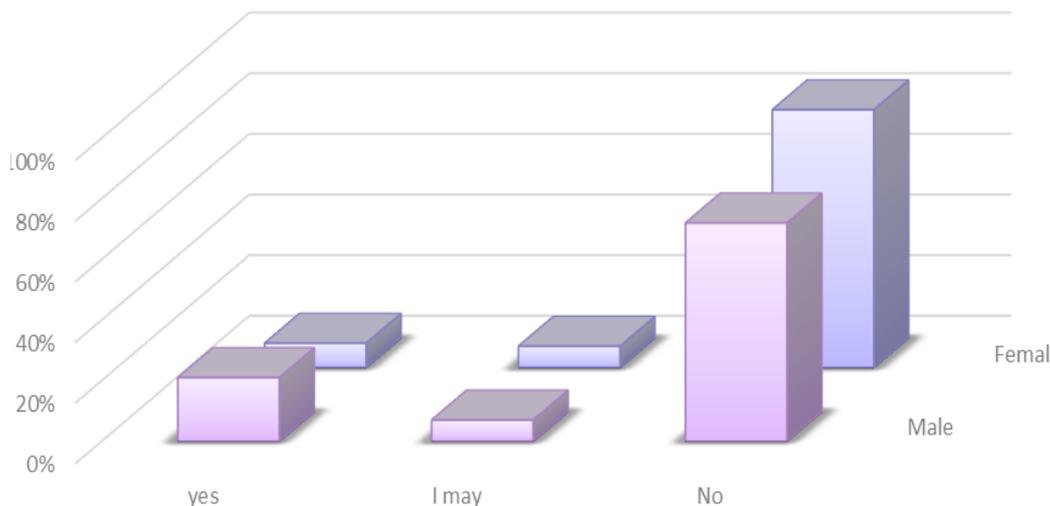


Figure 9. Possibility of separation from partners if sterility was from the other partner (by sex ratio)

On the other hand, Figure (10) shows how the participants think if their partner may leave

them if the sterility was from their side. Despite that the female ratio did not change; men were surer that women would not leave them comparing to their answers that they will leave the women in the previous Figure (9).

This perception measured in Figure (10) shows how they trust each other, which affect family stability. The figure might be related further to cultural values about patriarchal. Therefore, delaying IVF procedure as a result of Covid-19 pandemic lockdown, may affect women more and keep them in fear of both separating from their partner, missing fertility due to time or age.

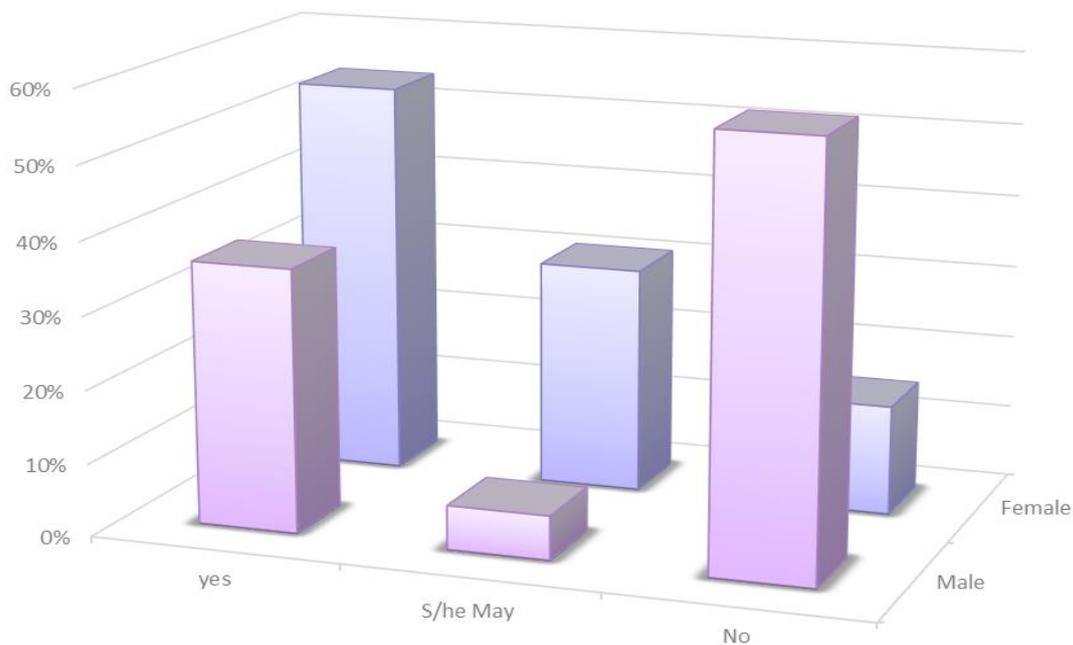


Figure 10. Perception that partner would divorce if the reason for sterility from you

5. Framework Proposed

The research tries to shed light on a new line of research on the IVF influence on the ‘family stability’ and on the ‘social stability’; including the balance between marriage and divorce. The framework proposed shows the importance of foresight of IVF (post-COVID) influence on Life (birth and family stability) and Livelihood (National Economy).

Figure (11) shows the current increase of ‘supply’ and growth of IVF procedures due to the increase of the ‘demand’ of such services, which the authors call (IVF service expansion era). Psych-social and socio-economic influences are considered another source of demand, besides the increase in ‘dependency-ratio’. With the outbreak of COVID-19 pandemic and as we are entering a new normal era, Figure (11) proposes a new formula of (Capacity vs Demand), which means leaner IVF, i.e. higher availability and higher capacity. To reach this desired transformation, the framework proposes a government ‘pull-thinking’ program, i.e. a

program based on selective intervention.

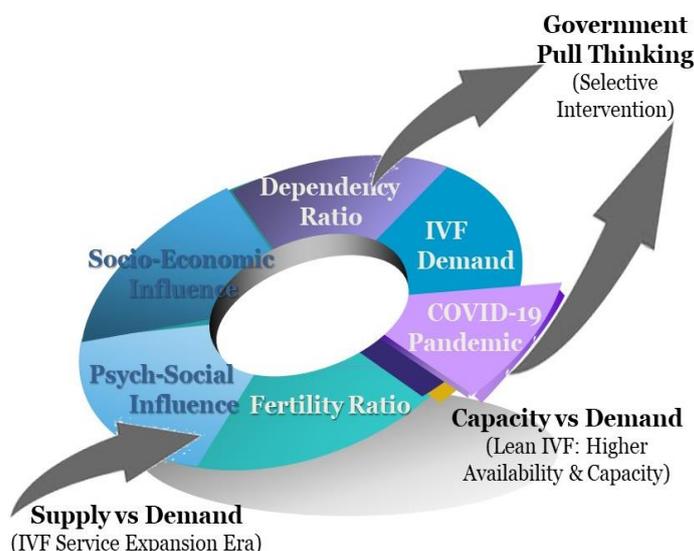


Figure 11. Framework Illustrates the Transformation Needed towards Lean IVF Services (post-COVID-19)

6. Discussion and Conclusion

This paper shows that the rise of the IVF demands with economic and socio-economic development, besides the limitation of fertility. However, it is also influenced by the economic income as the cost of performing the IVF procedure despite the fact that the availability of competition is still high even for high middle-income beneficiaries. In Arab and MENA countries still resorting for IVF procedure considered to be a confidential choice that preferably not shared except with very close family members. The fear of social pressure, especially for new married couples affects this decision.

There are many social impact factors that are pushing for a new national policy that could be led by the government. With negative spillovers of the COVID-19 pandemic, the drop of income, especially in the middle class, the dependency ratio and continuous reduction of fertility is expected to further deteriorate.

The implication of this study emphasises that governments should apply ‘lean thinking’ in the issue of the IVF, especially after the COVID-19. Governments should use ‘pull thinking’ and the (capacity vs demand) by both policies and selective support of where it should intervene, taking into consideration the level of the socio-economic, psychosocial and dependency ratios changes in the world and in the region.

The limitation of this work is that it did not cover the type and length of intervention recommended by the government. More research in this area is highly encouraged to fill the gap in the literature about foresight the future of optimising IVF services in order to benefit

both the family and community stability, rather than staying only as a luxury business.

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