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Research Article

Awareness amongst Saudi Females about Age and Fertility

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Abstract

Introduction: Female fertility significantly declines with the advancing of age. Studies all across the globe suggest that women are not aware of the relationship between age and female fertility and Saudi women are no exception. This research was conducted to investigate the level of awareness regarding fertility issues among Saudi women and this research is important because it can be very helpful in spreading awareness and curtailing the overestimation of other productivity aids such as IVF.

Method: This cross-sectional study was conducted At King Abdulaziz University Hospital from October 2019 until January 2020. Using a survey questionnaire comprised of simple fill in the blank, yes/no questions, multiple-choice questions, and choose from a list of options. The questionnaire was short and could be filled within 5 minutes.

Results: Although the majority of the participants were aware of the fact that female fertility declines with the advancement of age, they lack sufficient knowledge about the issue being investigated. Moreover, they also exhibited a willingness to change their plans and have pregnancy earlier in life if they were well-informed about the relationship between age and fertility.

Conclusion: Knowledge and awareness among Saudi women need to be spread to avoid multiple risks associated with pregnancy after 35 years of age. Medical healthcare workers are the most desired source of getting information regarding the issue at hand while video source comes second. This is imperative for the betterment of Saudi women.

Keywords: *Pregnancy; Fertility Issues; Saudi Women; Fertility Awareness; Age; Fertility*

Abbreviations

IVF: *In Vitro* Fertilization; ICSI: Intracytoplasmic Sperm Injection; USA: United States of America

Introduction

Ageing causes decreased physiological performance resulting in reduced survival and fertility [1]. Infertility means the incapacity of sexually active couples to conceive in one year without using any contraception methods [2]. Fertility in women starts to decline during the last years of the 3rd decade of life [3]. That is why delayed conception is usually defined as pregnancy occurring in females over 35 years of age [4].

There are many causes of fertility decline that can be listed. The primary cause of fertility decline is due to Oocytes atresia and is compromised before the onset of perimenopausal menstrual irregularities [5].

Though women frequently think that health and fitness are the best indicators of fertility [6]. Pregnancies in older women have increased risk of other complications, including gestational diabetes, hypertensive disorders, placenta previa, operative delivery, and maternal mortality [7].

A review of current literature reveals that some women are aware of age-related effects on pregnancy [7] while others are unaware there is an effect [8].

A lot of studies have been conducted all across the globe that suggests that this problem is consistent throughout the world. A large number of Chinese university students were unaware of the relationship between age and fertility and were found underrating the relationship between fertility and age [9].

In a similar study conducted in Uganda (Africa), female students were reported to be less aware of the fertility issues [10].

Europe is also having problems regarding a lack of education and awareness among females about the relationship between age and fertility. A study suggests that female post-graduate students in Sweden wish to bear children in the age when fertility significantly declines [11,12].

The majority of Finnish university students also lack awareness regarding the relationship between age and fertility [13]. The majority of Danish students, who responded to a study, also wished to bear children during an age when female fertility is significantly declined [14].

The USA and Canada is no exception at all in this regard. Several studies have been conducted in the past that suggest that a considerable population is not aware of the fertility issues with ageing. American males and females also have incorrect perceptions of the relationship between fertility and ageing that can lead to involuntary childlessness [15].

The level of awareness is also overshadowed by the personal desires and needs as well as the over-dependence on the new fertility technologies. Even if women are well and truly aware of the relationship between age and fertility, also then they desire and prefer to bear children during that age where there are more chances of reduced fertility. In a population-based survey conducted in the UK and Denmark, 83% of women were found to be well aware of the relationship mentioned above. Yet, the majority of them had the desire to bear children during the late thirties [16].

It is also part of the literature that people take risks of late childbearing because they firmly believe that *in vitro* Fertilization (IVF) will help them to overcome the aging effects as far as fertilization is concerned [7].

The educational background and overall education also influence the thoughts and perceptions of the females regarding the relationship between age and fertility. Medical students have more awareness as compared to non-medical students [17]. This is not always the case either, even 20 - 40 years old female health professionals were found to be underrating the impact of age on fertility [18]. Moreover, besides academic background, gender, personal desires, needs, and lifestyle also affect the perceptions and understanding of fertility issues [17].

Females from all over the world do not possess enough knowledge and awareness regarding the effects of ageing on fertility. However, awareness among Saudi women regarding the relationship between age and fertility has never been investigated before. This study is intended to focus on this research gap.

It is also important to educate people regarding this issue to raise awareness because education regarding this issue is imperative [19,20].

The American College of Obstetrics and Gynecology and American Society for Reproductive Medicine also recommends counselling women in the reproductive age about age-related fertility decline and pregnancy risks. It provides timelines for evaluation for infertility [3].

Background

A considerable amount of literature is present on awareness among women regarding the relationship between age and fertility. Studies on the subject have been conducted all across the globe, and there are varied results and findings. There are several cultural differences between Asia and the West, and yet results are almost similar. The impact of age on women fertility is critical and has been explained thoroughly in the previous researches.

The best reproductive period of the woman is from 20 to 30 years. Fertility gradually decreases after the age of thirty, particularly after the age of thirty-five. A healthy and fertile woman of thirty years has a 20% chance of becoming pregnant for each monthly attempt. At the age of 40, the chance of getting pregnant with each cycle is less than 5% [23].

The decrease in the quantity of oocytes is called "reduction of the ovarian reserve". Ovarian reserve drops dramatically long before menopause begins and most women after 45 will not be able to get pregnant again. These percentages are extremely real, both for natural conception and for assisted procreation techniques such as *in vitro* fertilization [23].

The woman's age profoundly affects the success of some reproductive techniques such as IVF, ICSI, etc. In fact, after the age of 45, the oocytes lose their reproductive capacity and pregnancies are generally obtained by egg donation (i.e. by receiving the egg from a young donor woman). Age-dependent loss of reproductive capacity is closely related to the decline in the quality and quantity of oocytes [21].

The qualitative deterioration of the oocytes linked to age causes, in addition to a decrease in the percentage of pregnancies, an increase in the number of spontaneous abortions. In fact, there is a greater frequency of genetic alterations called aneuploidies (presence of an irregular number of chromosomes in the oocyte) which means that, if fertilization is successful, the embryo will still have chromosomal alterations. Well known is Down syndrome in which the embryo has an extra chromosome 21.

Most of these cases with an altered number of chromosomes result in miscarriages [21]. It is essential that women who wish to become pregnant are informed and aware of the impact of age on fertility. Women over 37 years of age who are trying to become pregnant should undertake a diagnostic and therapeutic course already after six months of failure, or even earlier if there is a precise clinical indication [21,23].

A study was conducted to investigate the awareness among Chinese women regarding female fertility, and the results showed that just like Western counterparts, Chinese women also underrate the decline of fertility with increasing age [9].

A similar study was conducted in Sweden to investigate attitude to parenting and awareness of fertility among post-graduate students, and the results depicted that women were overly optimistic about getting pregnant after 35 years of age [12].

Another study conducted in Sweden showed that half of the female respondents had insufficient awareness regarding the decline of female fertility with age [11].

In another study, the desires of childbearing and awareness about the impact of age over female fertility among Finnish university students were investigated, and the results illustrated that one-third of the female respondents believed that female fertility declines after 45 years of age [13].

Poor knowledge about the relationship between age and fertility was also observed in a study that was aimed at finding fertility awareness among Danish university students [14]. Females of the UK were also found lacking knowledge regarding the ageing effects on female fertility [16].

Many similar studies have also been conducted in the USA and Canada, and similar results have been reported. A study was conducted to investigate the level of fertility awareness among university students, and the results depicted that participants showed a lack of awareness regarding fertility issues [15].

A similar study also illustrated that there is an overestimation of the late fecundity of females, especially among medical trainees in the USA and females also overate the usefulness of IVF technology [19].

Moreover, several studies depict that females want to be informed about the relationship between age and fertility [7] and fertility knowledge can be provided through tailored-education [22].

Although a lot of literature is present on the subject, yet there is a research gap that needs to be investigated. There is not any specific study available that ever investigated awareness among Saudi women about the relationship between age and female fertility.

Therefore, this study endeavors to investigate awareness among Saudi women regarding the issue.

Materials and Methods

King Abdulaziz University Biomedical Ethical Committee approved this cross-sectional study. A non-validated survey composed of 7 questions was sent via E-mails, phone numbers, and handed out to Saudi females over the age of 18 years. Informed consent was included.

The data was collected from King Abdulaziz University Hospital from October 2019 until January 2020. The Awareness Amongst Saudi Females about Age and Fertility survey was developed for this study and contained questions that cover the following.

Demographic information (3 items), prior pregnancy and infertility history (3 items), and the preferable source for health-related fertility information (1 item).

The question types included fill in the blank, yes/no questions, multiple-choice questions, and choose from a list of options. About 5 minutes was the time required to complete the survey.

The data collected was arranged based on the following factors.

By addressing the nationalities of the respondents, 259 (92.8%) of them were Saudi, and 20 (7.2%) were Non- Saudi. Whereas, the higher number of respondents 166 (55.6%) were singles followed by married (40%) 133. The least awareness respondents were divorced and widowed with a number of 8 (2.9%), (1.1%) respectively. On the other hand, despondences age ranged between 19 - 30 showed the highest percentages of awareness 58.1% (162) compared with age ranged between 31 - 40 with a percentage of 16.8 (47). Followed by other age ranges that showed the least awareness 51 - 60, 31 - 40, less than 18, and more than 61, with percentages of 9%. 7.9%, 6.8%, and 1.4 % respectively. However, the number of women respondents who has pregnancy before were 113 (40.5) compared to who do not have pregnancy 166 (59.5%). While the number of respondents who have children before 114 (40.9 %) is lower than who do not have 165 (59.1%). Finally, data showed 12 (4.3%) respondents were required a prior fertility Rx.

The following table showed that 115 (55.6%) of the respondents were single, 113 (40.5%) were married, 8 (2.9%) were divorced and 3 (1.1%) were widowed.

The addressed figures showed the age groups distribution of the respondents, in which 162 (58.1%) of the respondents were from 19 - 30 Years, 47 (16.8%) were from 31 - 40 Years, 25 (9%) were from 51 - 60 Years, 22 (7.9%) were from 41 - 50 Years, 19 (6.8%) were less than or equal 18 Years, and 4 (1.4%) were more than or equal 61 Years.

Table 1 revealed that about 113 (40.5%) of the respondents have been pregnant in the past, and 166 (59.5) haven't been pregnant.

Variable	Number	Percentage
Nationality	259	92.8
Saudi	20	7.2
Non-Saud		
Marital Status		
Single	155	55.6
Married	113	40.5
Divorced	8	2.9
Widowed	3	1.1
Age		
< 18 years	19	6.8
19 - 30	162	58.1
31 - 40	47	16.8
41 - 50	22	7.9
51 - 60	25	9
> 61	4	1.4
Been pregnant before		
Yes	113	40.5
No	166	59.5
Any children now		
Yes	114	40.9
No	165	59.1
Required a prior fertility Rx		
Yes	12	4.3
No	253	91.0
N/A	13	4.7
Medium Individuals Prefer for Information		
Brochure	26	9.3
Heath Care Provider	111	39.8
Video	95	34.1
Website	46	16.5
Total	279	100

Table 1: *Frequency table of nationalities.*

As shown in table 1, 114 (40.9%) of the respondents have living children, and 165 (59.1%) haven't any living children.

The impending data addressed the frequencies of pregnancy difficulties among the respondents, in which 147 (52.7%) of them didn't have any previous pregnancy difficulties, 21 (7.5%) of them have previous pregnancy difficulties, and 111 (39.8%) were not applicable.

Regarding the fertility therapy before the pregnancies, in which 253 (90.7%) of the total respondents didn't require any fertility therapy through their previous pregnancies, 12 (4.3%) of them had required fertility therapy, 13 (4.7%) not applicable and there is a one.

	Do you believe that your chances of getting pregnant declines as you get older? **Yes (211)**	**Do you believe that your chances of getting pregnant declines as you get older?** **No (68)**	**Odd Ratio - 95 confidence limit**	**P-value**
Age				
Less than 30	130	51		
More than 30	81	17	0.535 (0.289 - 0.990)	0.029
Nationality				
Saudi	198	61		
Not Saudi	13	7	1.748 (0.667 - 4.577)	0.187
Marital status				
Single	113	42		
Married	98	26	0.714 (0.408 - 1.248)	0.148
Previous pregnancies				
Yes	91	22		
No	120	46	1.586 (0.891 - 2.822)	0.75
Living children				
Yes	91	23		
No	120	45	1.484 (0.838 - 2.628)	0.112
Infertility				
Yes	18	3		
No	193	65	2.021 (0.577 - 7.082)	0.119
Any RX				
Yes	177	41		
No	34	27	3.428 (1.865 - 6.302)	0.001

Table 2: *Do you believe that your chances of getting pregnant declines as you get older?*

Results and Discussion

Data from table 2 showed that 211 responders were aware that their chances to get pregnant will declines as they get older, 130 of them were less than the age of 30 whereas 81 were above the age of 30. However, 68 responders were unaware of the decline in the pregnancy rate as they get older, 51 of them were below the age of 30, and 17 were above the age of 30 with *P* value (0.029).

198 of the responders among 211 responders awarded that their chances to get pregnant will declines as they get older, were Saudi and 13 were from other nationalities. Whereas 68 responders were unaware of the decline in the pregnancy rate as they get older, 61 were Saudi and 7 were non-Saudi. with a *P* value (0.187).

Data also showed that responders who were aware that their chances to get pregnant will declines as they get older, 113 of the responders were Single and 98 were married. While, 68 responders were unaware of the decline in the pregnancy rate as they get older, 42 were single and 26 were married. with a *P* value (0.148).

Our results indicated that 211 responders were aware that their chances to get pregnant will declines as they get older, 91 of them had previous pregnancies and 120 never got pregnant before. Additionally, among responders who were unaware of the decline in the pregnancy rate when they get older, 22 got pregnant before, and 46 never got pregnant with a P value (0.75).

On the other hand, 91 of the responders who have living children aware that their chances to get pregnant will declines as they get older, and 120 do not. However, 68 responders were unaware of the decline in the pregnancy rate as they get older, 23 had living children and 45 don't. with a *P* value (0.112).

Furthermore, data showed that awarded responders that their chances to get pregnant will declines as they get older were 18 infertile and 193 were fertile. Whereas, 3 of unawarded responders were infertile and 65 were fertile with a *P* value (0.119).

Data showed responders awarded that their chances to get pregnant will declines as they get older, 177 of them were on prescribed medications and 34 are not on any treatment. However, 41 of unawarded responders were on prescribed medication treatment and 27 were not taking anything with a *P* value (0.001).

The goal of the current study was to investigate the awareness among Saudi women on the relationship between age and female fertility. A total of 279 Saudi women were respondents in the study consisting of 259 Saudi and 20 were non-Saudi. We found that 211 participants believed that female fertility declines with age and hence chances of getting pregnant significantly reduce. 68 participants had a different opinion. Our results illustrate that majority of the Saudi women have a reasonable awareness of the issue being investigated. All of the respondents had no clarity about the exact age after that fertility begins to decrease. This depicted that even though they believe that fertility declines with age, they do not have sufficient awareness about the age when fertility begins to decline. 253 of the respondents did not require any fertility therapy before the pregnancies that indicate that currently, Saudi females aren't facing any serious fertility issues. Yet when asked about getting more information about the issue and would prefer getting information through different mediums. Discussion with healthcare providers was found the most prefer medium with 111 votes and a significant number of participants also prefer video sources to get information. This suggests that these mediums can be used to spread awareness regarding the issue among Saudi women through these preferred mediums.

This study was unique in the sense that there was a research gap that needed to be researched. The awareness among Saudi women about the relationship between age and fertility was never investigated before and this study focused on that research gap. Apart from that, the strength of the current study was the diversity of angles with which the gap was investigated. This study is also a starting point for several future endeavors. For example, it will be interesting to research the role of educational background on awareness regarding the issue among Saudi women although we didn't investigate it in the current study.

It is found that although Saudi women have satisfactory knowledge and awareness about the relationship between the age and the fertility relationship they also lack knowledge regarding several other important related issues such as the age limit where fertility begins to decline. Saudi women want more knowledge about the issue and they are willing to change their plans and have children earlier than before when they had a lack of knowledge.

It is imperative to spread awareness and knowledge among Saudi women regarding the issue because fertility significantly declines after specific age levels. According to the current study, medical professionals and videos are among the most desired mediums that can be efficiently employed for the cause. Healthcare providers should be employed with a critical mission to disperse awareness regarding the decline of fertility with age. The productive-aged Saudi women need to have sufficient knowledge about the issue to avoid risks associated with pregnancies during later stages of life and also to avoid childlessness. Not only in Saudi Arabia, it is important education all across the globe and the world is also focusing on the issue. For example, the American College of Obstetricians and Gynaecologists and the American Society for Reproductive Medicine have also recommended improved education and better awareness among the females regarding the effects of age on female fertility.

However, there are several limitations to the current study. The first and foremost limitation is the small sample size of just 279 participants. The questions asked were also limited such as important questions like educational background were missing in the study. It is suggested for future research that a wider sample should be incorporated with more questions. It will also be beneficial to include online surveys for the ease of Saudi women.

Conclusion

The goal of the current study was to investigate the relationship between age and female fertility. Data was collected from 279 Saudi females belonging to different ages and marital status. The data was gathered through a survey consisting of questions that were designed purposely for the current study. After analyzing the data and all the discussion, it is concluded that Saudi women have significant awareness about the aging effects on female fertility.

However, the knowledge in this regard is at the surface level only. They do not have a deep understanding of the issue. Saudi women also wish to have more information about the fertility issue and responded that they would change their plans if they get more information about the relationship between age and fertility.

Public education and campaigns will increase the awareness of the decline in fertility in relation to age. Increased exposure between a woman and her health care provider during pregnancy is an excellent opportunity to give an educational material to women in a nondirective way as the majority of the participants preferred the discussion with a health care provider as a method of getting more information followed by online videos to perceive more information.

Therefore, providing information through any source is a great way to spread awareness among Saudi women.

Conflict of Interest

The authors listed certify that they have NO affiliations or any conflict of interest in the subject matter or materials discussed in this manuscript.

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