



A cross-sectional survey of fertility knowledge in obstetrics and gynecology residents

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Abstract

Background: Approximately 48.5 million couples worldwide experience infertility but the majority of the population does not understand natural fertility and age related fertility decline [1]. In the general population, criteria for infertility diagnosis are met by approximately 12.5% of women (2).

Besides women with higher educational attainment and occupational status were more likely to have experienced infertility.

Methods: The Fertility and Infertility Treatment Knowledge Score (FIT-KS) questioner was used to test the fertility knowledge of obstetrics and gynecology residents. The FIT-KS was a web-based survey, with 29 multiple-choice questions. It assessed the knowledge of natural fertility (21 questions) as well as infertility treatment (8 questions). It had previously been validated in both reproductive-aged women in the US as well as in female medical trainees. The questions were formulated on google survey forms in the form of multiple-choice questions

with a score of 1 for each correct answer, maximum score of 29 with no negative marking.

Results: The knowledge about the relation of Smoking, gonorrhoea, obesity, to the infertility is to the tune of 100%. Only 60-77% of resident had knowledge about the relation of prior use of oral pills, being underweight, occasional caffeine intake, self-conducted pregnancy termination and use of certain type sexual lubricant in affecting fertility of women. Only half of the resident gave the correct answers for moderate alcohol consumptions, and age of male partner as a risk factor for infertility.

Conclusion: Knowledge of fertility and age-related fertility decline among obstetrics and gynaecology resident is limiting. Lacunae in knowledge about natural fertility, risk factor for fertility decline, success and treatment method of artificial reproductive techniques may significantly affect the lives of physician and the patients they treat, and this area of knowledge should be improved.

Keywords: Fertility, Knoweldge, Treatment

Introduction

Approximately 48.5 million couples worldwide experience infertility but the majority of the population does not understand natural fertility and age related fertility decline [1]. In the general population, criteria for infertility diagnosis are met by approximately 12.5% of women (2). Besides women with higher educational attainment and occupational status were more likely to have experienced infertility(2).

It has been seen that there is a delay in child bearing among female physicians, especially for surgeons.(3)On average, female physicians were found to have their first child 7.4 years later than the general population(3) Women with higher education are also known to be more likely to underachieve their fertility intentions than those who do not pursue higher education [4, 5–7]. A later start to family-building has been shown to decrease family size[8,9] If, as these data suggest, female physicians have knowledge gaps about their own fertility, it also stands to reason that they may be unable to adequately counsel their patients on this topic. So this study was done with the aim to evaluate whether obstetrics and gynecology residents are appropriately knowledgeable about natural fertility and age related fertility decline.

Material and method

The Fertility and Infertility Treatment Knowledge Score (FIT-KS) questioner was used to test the fertility knowledge of obstetrics and gynecology residents . The FIT-KS was a web-based survey, with 29 multiple-choice questions.

It assessed the knowledge of natural fertility (21 questions) as well as infertility treatment (8 questions).It had previously been validated in both reproductive-aged women in the US as well as in

female medical trainees. The questions were formulated on google survey forms in the form of multiple choice questions with a score of 1 for each correct answer, maximum score of 29 with no negative marking.

Institutional ethical committee clearance was taken. All participants gave written informed consent through the survey, and risk was deemed to be minimal.

In November of 2021, the google survey form link was send via email to all the residents. Two follow-up reminder emails were sent over November and December 2021. Our response rate calculation is imprecise as the exact number of residents who actually received read and not responded , however in number of responses itwas consistent with other surveys performed of this population. Of approximately 1000 active OB-GYN residents in the Rajasthan, 36 responded.

Statistical analysis was performed using either an Analysis of Variance (ANOVA) or two sample t tests as appropriate for the data set. Bartlett’s test was used to verify that variances were equal across the samples, in cases where ANOVA was used, such as whether know- ledge differed by year of residency training. All statistical analysis was performed in Stata 14.0. Of the residents who opened the survey, 14 failed to complete all questions and were discarded from the analysis.

The FIT-KS score was calculated by dividing the number of questions answered correctly by the total number of questions.

In designing this project, an attempt was made to avoid bias by several methods. To avoid bias in our question design, we used a previously validated survey instrument, the FIT-KS.[10].

Results

Among the 1000 resident of Rajasthan ,about 50 residents responded ,of these only 36 completed the questioner, and they were included in the study .

Table 1 shows demographic distribution of the study participants. Most of the OBG residents were female (94.44%) and only 5.56% were male. Mean value of FIT-KS score was 17.1176 among female and among males was 14.50 (p value=0.104). Half of the residents were in final year and 47.22% were in their second year and only

1 resident of 1st year responded. The mean of FIT-KS score among 1st and 2nd year residents was 17 and among 3rd year resident was 16.95. The difference in the mean among year of residency was significant. (p value=0.00001) Mean FIT-KS score was highest in 18–25-year age group and 17 in both 26-35 and 41-45 age group (17.00). the difference was lowest among 31-35 age group (14.00). (p value=0.00001) and this was statistically significant.

Table 1:

Demographics	Variables	Number	%	Mean FIT-KS Score
Gender	Female	34	94.44%	17.1176
	Male	2	5.56%	14.5000
Year of residency	1	1	2.78%	17.00
	2	17	47.22%	17.00
	3	18	50%	16.94
Age group	18-25	2	5.56%	18.00
	26-30	32	88.89%	17.00
	31-35	1	2.78%	14.00

Table 2: Fertility item

	Underestimating	Correct response	Overestimating
Age of maximal fertility decline (in years)		35-39	
Response (N)	6	10	20
Fecundability at age 30(%)		20%	
Response(N)	2	12	22
Fecundability at 40(%)		<5%	
Response(N)	NA	16	20
Miscarriage rate (%)		16-25%	
Response(N)	29*	3	3
IVF success rate at under age 35(%)		41-60%	
Response(N)	27*	7	
IVF success rate at age 44(%)		<5%	
Response (N)	NA	10	24*
IVF twinning rate (%)		21-35%	

Response(N)	20	12	4
Live birth per thawed egg after oocyte cryopreservation (%)		<10%	
Response(N)	NA	3	30*
Sperm survival rate(days)		3-5 days	
Response (N)	23	13	NA

*Blank values/no answer given

In the fertility item questionnaire, only 10 responded correctly to the age of maximum fertility decline, 6 underestimated and 20 overestimated the age. Fecundability at the age of 30 years was correctly answered as 20% by only 20 and underestimated by 2 and overestimated by 22.

Fecundability at the age of 40 was answered correctly as <5% by 16 and overestimated by 20. Miscarriage rate among IVF is 16-25%, this was correctly answered by only 3 and underestimated by 29 and overestimated by 3 (it was unanswered by 1).

The success rate of IVF under the age of 35 was correctly answered as 41-60% by 7 out of 36 and underestimated

by 27 and two left the question unanswered. The success rate of IVF is less than 5 % at the age of 44 however 24 overestimated this rate and 10 answered it correctly and two left the question.

The rate of having twins in IVF is 21-35%. Out of 36 only 12 answered it correctly. It was underestimated by 20 and overestimated by 4.

The number of live births thawed after oocyte cryopreservation is <10%. Only 3 answered it correctly. It was overestimated by 30 and left unanswered by 3.

The sperm survival rate is 3-5 days which was correctly answered by 13 and underestimated by 23. NA means there was no option greater than or less than the correct answer, so no scope for over and underestimation.

Table 3: Risk factors

Risk factors	Correct answer	% Answered correctly
Smoking	True	97.22%
Being underweight	True	77.14%
Prior use of oral pill	False	61.11%
Gonorrhoea/ chlamydia infection	True	97.22%
Occasional caffeine intake	False	75%
Obesity	True	100%
Self-conducted pregnancy termination	False	60%
Using certain types of sexual lubricants	True	61.61%
Moderate alcohol consumption	False	52.78%
Male partner age	True	48.57%

Table 3 shows risk factors for infertility. The knowledge about the relation of Smoking, gonorrhoea, obesity, to the

infertility is to the tune of 100%. Only 60-77% of resident had knowledge about the relation of prior use of

oral pills, being underweight, occasional caffeine intake, self-conducted pregnancy termination and use of certain type sexual lubricant in affecting fertility of women. Only half of the resident gave the correct answers for moderate alcohol consumptions, and age of male partner as a risk factor for infertility.

Gaps in knowledge

Significant gaps in knowledge were noted in relation to the use of fertility assisting techniques and risk factors for infertility. Many answered incorrectly age of precipitous fertility decline, miscarriage rate, In Vitro Fertilization (IVF), success rates. 80% incorrectly identified pregnancy rate per cycle for a woman under 35 years old under going in vitro fertilization. 83% did not know the average survival time of normal sperm in the female reproductive tract. Only 48.5% knew that the male partner's age affected fertility, 52.78% knew that moderate alcohol consumption did not affect fertility, and 60% knew that using certain types of sexual lubricants affects fertility. only 61% answered correctly about the effect of prior used of oral pills in fertility.

Discussion

Substantial gaps exists fertility knowledge among obstetrics and gynecology residents, a strong understanding of this topic is required, as with the lacunae in their own knowledge, they could not be able to properly counsel patients and have family planning discussions during routine visits, which is an essential part of woman care. Our findings should be viewed by residency program directors as a starting place to encourage more exploration of this gap in knowledge in their own programs. Lack of time dedicated to education on this topic during both medical school and residency may be a contributing factor to the decreased knowledge and information about the fertility and its risk factors ,This may also cause insufficient counselling and

engagement of patients on family planning choices, as well as this may also affect the physicians own family planning choices .In prior studies, the median score for reproductive-aged women was 16/29 (55.2%) and in medical trainees the median score was 19/29 (65.5%) [10].

Although it is encouraging that the majority of residents stated that they discuss fertility with their patients, and the majority feel comfortable having this discussion, it remains concerning that several key areas of misinformation were identified, like overestimation of IVF success rate at age 44, Live birth per thawed egg after oocyte cryopreservation.

In this study, there was a large overestimation of success of IVF after the age of 44. The misconception that ART can be used successfully with a couple's own genetic material to compensate for the natural decline of fertility with aging should be counteracted by consistent discussion well before women reach the natural limits of their reproductive capacities [11].

In order for gynecologists to lead these conversations with their future patients, they must receive adequate training on fertility counselling during training.

Limitations of this study includes the response rate. There was also a small over-representation of women in the sample, as approximately 85% of residents in Obstetrics and Gynecology in Rajasthan were female compared to 91% in our sample. Selection bias or women's concerns about their own fertility may be a cause of the overrepresentation of fertility concern in women only, this needs further exploration in future studies. Although not all obstetrics and gynecology residents will desire to have children, those who do may not be adequately prepared to make informed decisions about their future childbearing plans, there are many other factors that encourage physicians to delay

pregnancy, like future career plans, availability of childcare, financial burden of children during residency. If this lack of fertility knowledge encourages physicians to delay pregnancy (for instance beyond the completion of training) they may be inadvertently reducing their chances at childbearing due to natural decline in fertility.

Conclusion

Knowledge of fertility and age-related fertility decline among obstetrics and gynaecology resident is limiting. Lacunae in knowledge about natural fertility, risk factor for fertility decline, success and treatment method of artificial reproductive techniques may significantly affect the lives of physician and the patients they treat, and this area of knowledge should be improved.

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