A Study of Awareness on Artificial Insemination among Medical College Students

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Abstract

Introduction: Artificial Insemination (AI) is the deliberate introduction of sperm into a female's cervix or uterine cavity for the purpose of achieving a pregnancy through in vivo fertilization by means other than sexual intercourse. This is one among the methods of assisted reproductive technique. This study aims to find out the level of awareness about Artificial Insemination among medical students

Materials and Method: This is a questionnaire-based study. A self-administered questionnaire in multiple-choice format distributed among the medical students of Saveetha medical college. Total of 120 students, Forty students from each batch from second to final year were randomly chosen to participate in the the survey.

Results: 120 medical students participated in the survey out of which 76.67% of students had adequate awareness on artificial insemination. 85% of students knew the correct definition of AI while 86.74% were able to correctly identify the techniques used for artificial insemination. Final years medical students had more awareness on artificial insemination than their junior colleagues, and 2nd years medical students had least awareness.Students have inadequate knowledge on the technical aspect of artifical insemination like storage of semen (21%, n-25) and the time duration of sperm viability (54%, n-65) etc. Students also having inadequate knowledge on the legal, social and psychological issues like donor selection, consent of the spouse and the importance of understanding between the partners on artificial insemination.

Discussion: Most of the respondents knew about the basics of Artificial insemination with less awareness on its technical aspect, legal and ethical implications. Medical education have been a good source of information and the inclusion of Artificial Insemination as a form of infertility management in the curriculum of medical students could help in increasing awareness among students.

Keywords : *Artificial insemination, Assisted reproductive technique, Awareness, medical students*

Introduction

Artificial Insemination is a method of assisted reproductive technique, by which healthy semen is deposited into the vagina, cervix or uterus by instruments to bring about pregnancy.

There are three types of Artificial insemination: Artificial Insemination Homologues (AIH), Artificial Insemination Donor (AID), Artificial Insemination Homologues Donor (AIHD).[1-2]

A wealth of information about Artificial insemination exists on the internet but current public perceptions and awareness on Artificial insemination among Indian citizens are still unknown because attitude surveys have not conducted. Furthermore, to the best of our knowledge, this is the first survey of its kind in India.

Infertility is nowadays a common medical condition with social, emotional and psychological implications, displaying increasing rates in India and worldwide.

Artificial Insemination is the first line of treatment for infertility. According to PUTOWSKI L et al.[3] :

'Popularity of the Artificial Insemination is due to the relatively simple procedure and the lower cost of

treatment compared with In vitro fertilization. In the case of Artificial Insemination, the time of stimulation is shorter and therefore the stimulation itself is cheaper. In countries where the access to IVF/ICSI is significantly limited by e.g. the lack of even partial coverage of costs, insemination treatment remains an important therapeutic step that can be offered to a couple who is unsuccessfully trying to have a child.'

The term Artificial Insemination (AI) includes techniques like intravaginal, intracervical, intrafallopian, intraperitoneal. In clinical practice the Intrauterine Insemination is most often performed. Its effectiveness in the form of live births outnumbers other methods of insemination[4].

The effectiveness of Artificial Insemination is influenced by many factors, appropriate choice of the treated couple, the duration of infertility, woman's age, semen quality, semen preparation, the number of inseminations in a cycle, mild ovarian hyper stimulation , the number of inseminations that a couple has already undergone.5

Materials and Method

This cross-sectional study was carried out from January 2019 to April 2019 at the Saveetha Medical University , Chennai, Tamil nadu. The convenience sampling technique

Was used to select students for the purpose of enrollment into the study.

This is a questionnaire-based study. A semi structured questionnaire in multiple-choice format was used to collect information in relation to the awareness of the participants about various domains of artificial insemination process.

The questionnaire was handed out to the Students of Saveetha Medical University from second year to final year with various background.

The study was conducted after taking the permission from Institutional ethics committee of the Saveetha Medical University.

On an average forty to fifty students from each batch from second to final year were randomly chosen. 140 Medical students were included, Students who were willing to participate were included in the study. Those who were not willing to participate were excluded from study.

After taking their informed consent the participants were asked to fill out the questionnaire and hand it back . 120 students returned the questionnaire with the response rate of 85.71%.

Questioners returned with incomplete response were excluded from the study.

The questionnaire was pretested before the data collection and necessary modifications were made in terms of content and language.

Data analysis and presentation

The responses from returned and properly completed questionnaires were collated, entered into an Excel spread sheet in a laptop and coded accordingly. The analysis

was performed in terms of descriptive statistics proportions and means.

Results

This study included 120 medical students (Females : 80.833% n-97 and Males : 19.16% n-23) from second to final year with 40 students from each year.

When asked if the students had any prior knowledge of artificial insemination, 115 students said yes while only five said no.

Students had mostly acquired information on artificial insemination from lectures and books while internet, media and CME only played a minor role. (Fig.1)

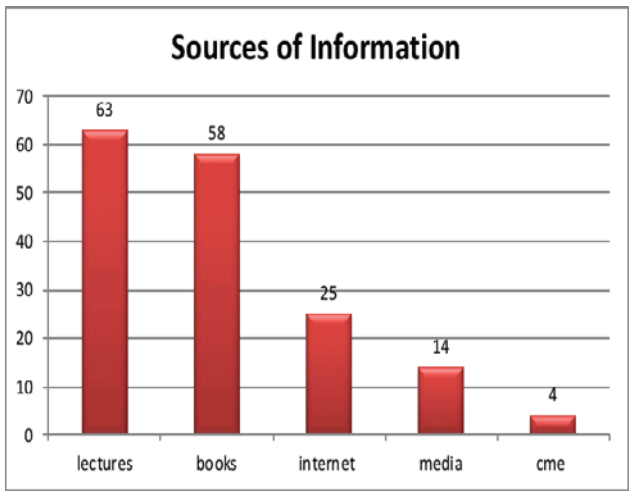

Figure 1. Sources

A total of 15 questions (table I) were analysed using a scoring system where each right answer was coded as 1 and any wrong answer as 0.

Table I Knowledge about artificial insemination among the medical students Questionnaire

Item number	Item	score
1.	What does the term artifical insemination means?	1
2.	What are the techniques used for artifical insemination?	1
3.	What do you think is the overall success rate of artificial insemination?	1
4.	When artificial insemination performed?	1
5.	Whose semen used for artificial insemination?	1
6.	At what temperature is semen stored in semen bank	1
7.	How long do sperms retain the power to fertilize the ovum after Introduction into female genital tract?	1
8.	Is artificial insemination husband legal in India?	1
9.	Is artificial insemination donor legal in India?	1
10.	Can the donor be a relative of the couple?	1
11.	Can the donor be held guilty of adultery in India	1
12.	Does the artificial insemination donor amount to consummation Of marriage.	1
13.	Can the nonconsenting spouse claim divorce on the grounds of Adultery or nonconsummation of marriage.	1
14.	Can Unmarried or widowed women avail artificial insemination	1
15.	Can artifical insemination be used for gender selection	1

Among 40 students from each year , 38 students from final year had more than 50% knowledge on artificial insemination while only 28 from third year had more than 50% knowledge and 26 students from second year had more than 50% knowledge on artificial insemination. In total 76.67% of students had adequate awareness on artificial insemination among all the years

85% (102) of students knew the correct definition s (Fig-2) of AI while 86.74% were able to correctly identify the techniques used for artificial insemination.

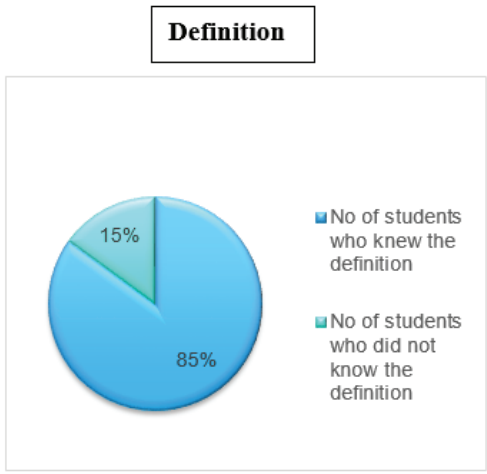

Figure 2 Definition Known correctly

Comparatively only 17% (n=20) knew that the overall success rate of AI is 30-40

72% (n= 86) of the students knows correct timing for Artificial insemination while remaining 28 (n=34) are not known the timing for AI.

When asked whose semen can be used 82%(n=97) answered that either the husbands or donors semen can be used while 7% answered only husbands semen can be used and 9% answered that only donors semen can be used while 2% answered not sure. (Fig-3)

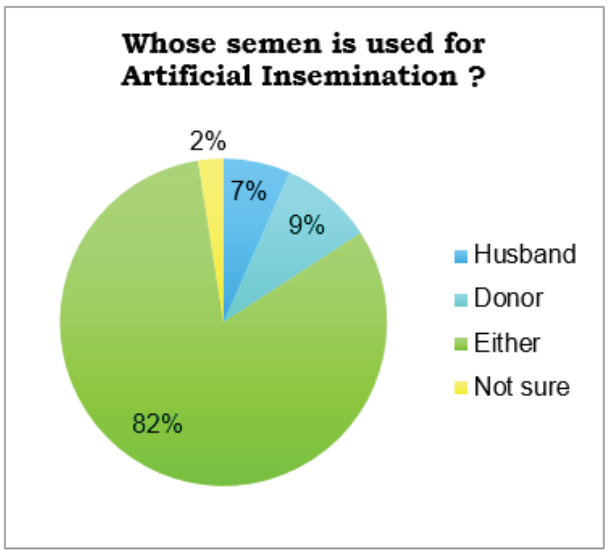

Figure 3 Donor selection

Students seemed to have very little knowledge on the technical aspects of AI only 21% (n=25) knew that the semen is stored at -196 degree C while 48% (n=58) believed the storage temperature to be -4 degree C.

Almost half the participants 54% (n=65) knew that the sperms retain their power to fertilize the ovum after leaving the genital tract for 48 hours. While 31%(n=37) answered that they retain their power only for 24 hours while 8% (n=10) thought it was upto 7 days and 7% (n=8) thought it was less than four hours.

Most of the participants were aware of the legal issues pertaining to AI while some of them were mostly unsure.

73%(N=87) of students were aware that AIH is legal while 3% answering that it is illegal, 25% (n=30) were unsure about it. 68%(n=82) agreed that AID is legal while 7% thought it was illegal.

54% (n= 65) agreed that the donor cannot be a relative of the couple while 35% (n=42) weren't sure .62% (n=75) believed that donor cannot be held guilty of adultery while again 28% (n=33) weren't sure.

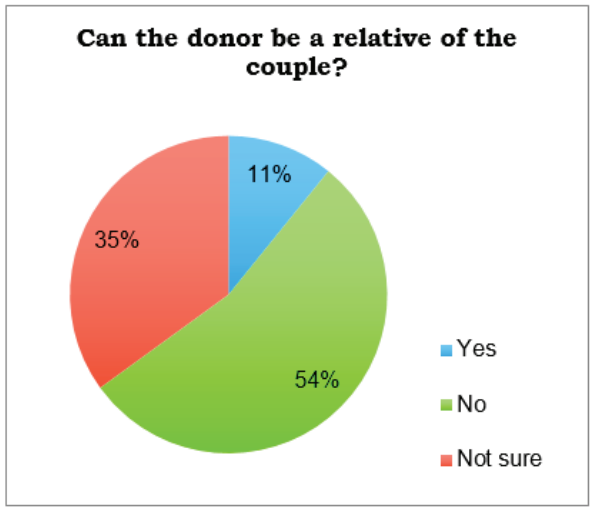

Figure 4 Donor selection

69% (n=83) were aware that artificial insemination does not amount to consummation of marriage while only 6% answered that artificial insemination amounts to consummation of marriage with 25% not sure

Only 39% were aware that the non consenting spouse can claim divorce on the grounds of adultery or non consummation of marriage. While 37% answered no and 24% were not sure.

49% knew that unmarried or widowed woman could avail artificial insemination while 25% weren't aware that unmarried woman can avail artificial insemination.

However most of the students (n=104) agreed that artificial insemination cannot be used for gender selection while only 3 thought that it could be used for gender segregation with 13 not sure.

Discussion

Overall awareness on Artificial Insemination among the students was good. This shows the impact of lectures held by professors and specialists in the field impact step-wise education in the process of solving fertility problems through Artificial Insemination. The inclusion of Artificial Insemination in medical books is also an important factor in students knowledge of the subject. This may also be why a large proportion of respondents agreed that Artificial Insemination should be socially acceptable.

According to Howkin and Bourne[6] :

'The semen used for Artificial Insemination is first washed, concentrated and its quality improved by

the 'swim-up' technique or by use of Percoll gradient. The semen with normal sperms with good motility thus obtained is then inseminated into the female genital tract. Obviously, Artificial Insemination is done around ovulation . About 1/2 mL of concentrated semen is injected 36 h after hCG injection when the ovarian follicle reaches 20 mm. Semen washing removes the abnormal sperms, seminal plasma containing antibodies and other debris, as well as prostaglandins' (p.247)

They also state that:

'Intrauterine insemination is normally done once around ovulation, some prefer to do twice in each cycle. Intrauterine insemination (IUI) is repeated up to 3–6 cycles. One moves to IVF or intracytoplasmic insemination if conception fails. The IUI should be done within 90 min of collection of semen, for optimal results. Prophylactic progesterone is recommended to the woman in the luteal phase· An Artificial Insemination with husband's semen for 4 cycles has yielded 30% overall success with 10% success per cycle.' (p.247)

In this study only 17% of respondents knew the overall success rate of Artificial Insemination

According to ESHRE experts[7] IUI combined with the ovulation stimulation before the IVF treatment trial can be offered to the infertile couples because of low cost of procedure and potential success in the form of pregnancies in numerous couples qualified for such a treatment.

According to the study conducted by Ashrafi M et al[8] :

'The rate of achieved pregnancies per cycle with IUI is the highest among couples with unexplained infertility and the lowest among couples in whom there is a number of factors limiting fertility determined.'

Artificial Insemination can be done with the husbands or donor semen. Unsuccessful attempts with the use of the husband's semen in IVF or ICSI and couples in whom the IVF procedure cannot be proposed (e.g. financial barrier) and the presence of severe oligoasthenoteratozoospermia or obstructive or non-obstructive azoospermia which do not give chance for pregnancy are factors that qualify to IUI with the donor's semen.[9-10]

Majority of students (87%) agree that Artificial Insemination must not be used for gender selection.

Most of the students were unsure about the legal aspects of Artificial Insemination. This problem is also compounded by the absence of a statutory law on Artificial Insemination in India. The status of a child born after Artificial Insemination still remains unclear. A study conducted by Sita Kumari[11] , looked into the legal issues and current existing laws on Artificial Insemination in India and in other countries around the world. The study concludes that the current legal position of India on Artificial Insemination is inadequate and warrants suitable amendments to all existing laws which are related directly and indirectly related to the status of an AID child

On studying the laws of other countries the study concluded that legitimacy will be conferred on an AID child if the husband consents for the same[11]

Another ethical issue related to semen donation is the right to disclosure. There is an increasing tendency to disclose the identity of donors to the resulting offspring. A Swedish study[12] on disclosure behavior and intention suggested that majority of the infertile couples were willing to disclose the donor identity to their offspring. Seventy- eight percent (78%) of the study population were planning to tell their offspring about the donation. However in a study conducted by Ezugwu et al[13] in low resource settings in Nigeria , approximately nine out of ten infertility couples indicated that the identity of the sperm donor should not be disclosed to donor-conceived children This shows the disparity among infertile couples in different countries. In our study, most (44%) were unsure if the child born after Artificial Insemination should be informed after growing up with only 38% agreeing that the child should be informed. Majority (89%,n-107) agreed that donor identity should remain anonymous while only 11% disagreed

This preference may be as a result of the absence of legislation in both Nigeria and India addressing the legal issues involved in gamete (sperm) donation. In countries where donor nonanonymity is practiced, there are usually regulatory bodies and legislations guiding gamete donation and its use in ART. In the UK, sperm donors do not have any legal claim to the child and are also protected from any legal responsibility to the child[14]

Hence this study shows an overall good level of knowledge, awareness as well as perception of Artificial Insemination among medical students. Medical lectures have been a good source of information and the inclusion

of Artificial Insemination as a form of infertility management in the curriculum of medical students has helped in increasing awareness among students

Study limitations

This study has some limitations. First it was a convenient sampling of all medical students from a particular geopolitical area of the country and does not necessarily represent the views, opinions and awareness level of medical students from other parts of Tamil Nadu . Also, a control group of non-medical students could probably have strengthened the study.

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Conflict of Interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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