

## Original Article

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## Attitude and willingness on gamete donation among medical students: An experience from a state university in Sri Lanka

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## ABSTRACT

**Objective:** To assess the attitude and willingness of medical students of the Faculty of Medicine, University of Jaffna, regarding gamete donation.

**Methods:** An institutional-based descriptive cross-sectional study was conducted at the Faculty of Medicine, University of Jaffna, from September 2022 to May 2023 among undergraduate medical students who gave their voluntary participation. A self-administered questionnaire was used as a study instrument to collect data regarding their attitude and willingness toward gamete donation.

**Results:** A total of 345 participants were recruited and their socio-demographic data revealed that 56.8% of the participants were female, 62.3% aged between 26 and 30 years, and 92.2% were unmarried. Many of them received information regarding gamete donations during their clinical appointments. Over half (67.8%) of them showed a negative attitude towards gamete donation. Regarding willingness, only 39.7% of participants had a positive approach for being a gamete donor; among them, 84.7% preferred anonymous donations. Religion and ethnicity had a significant influence on their attitudes and willingness. In addition, male was also found to be more willing to donate gametes.

**Conclusions:** Most medical students have negative views about gamete donation. Imparting awareness and knowledge of assisted reproductive technology and gamete donation within medical students' sociocultural and ethical backgrounds might facilitate a change in attitude towards gamete donation amongst future medical practitioners.

**KEYWORDS:** Medical students; Gamete donation; Assisted reproductive technology; Attitude; Viewpoint

## 1. Introduction

Subfertility is one of the major public health challenges and

affects approximately 1 in 6 people worldwide. It can be due to male factors, female factors, or a combination of both male and female factors, or it may be unexplained (World Health Organization)[1]. Various treatment options are available for subfertility. Gamete donation from a third party to achieve a successful pregnancy and childbirth is one of the treatment options for those couples who are unable to produce their gametes.

Donors are defined as individuals who are not sexually intimate partners of the recipients but donate their gametes. Donor eligibility

## Significance

Globally, infertility is widely recognized as a significant concern for couples, prompting many to seek assisted reproductive technology to fulfil their desire to have children sooner. In Sri Lanka, delayed marriages are a key factor contributing to infertility, leading couples to consider gamete donation as an option. Despite the availability of donation facilities, there is a lack of awareness among couples and healthcare professionals. This gap underscores the need to incorporate education on assisted reproductive technology treatments and gamete donation into the basic medical curriculum. The present study examined medical students' attitudes and willingness towards gamete donation and revealed a reluctance and unfavourable stance, highlighting the importance of addressing this issue at the undergraduate level in Sri Lanka.

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determination is required for donor sperm, oocytes, and embryos[2]. Some patients would invariably require donor sperm and eggs (oocytes) to conceive, especially those with advanced age due to diminished ovarian reserve, significant genetic defects, poor oocyte and or embryo quality and or multiple failures from prior *in-vitro*-fertilization (IVF) attempts[3]. With the success of intra-cytoplasmic sperm injection (ICSI), fewer men are likely to require donated sperm, including those with azoospermia or recurrent failure of oocyte fertilization or embryo development with IVF/ICSI or unsuccessful cycles[4].

Evaluation of a potential donor is usually very detailed, and the donor can either be known to the recipient or anonymous. There is an unmet need for donor gamete treatment in developing countries[3]. The social, cultural, and religious impact during the clinical practice of assisted reproductive technologies (ART) must be considered as they form the basis for establishing ethical and legal norms. International and Sri Lankan guidelines are now in place to ensure ethically correct practices. The "Code of Practice for Centers Providing ART" published by the Sri Lanka Medical Council (SLMC) is a step towards the right direction, which is expected to enhance the development of the legislature and establish an authority to oversee the practice of ART in the country[5].

In Sri Lanka, social and health-related factors include low maternal and infant mortality due to women's education and changes in institutions' reproductive values and behaviour[6]. The institutional level of reproductive health knowledge and perspective would improve by empowering future medical professionals with knowledge of reproductive health education, especially in fertility and subfertility management options. It could improve fertility outcomes in the community by preventing the delay in subfertility treatment by initiating the assessment of the couple in need at the right time and educating them about the available treatment modalities from basic to advanced, including third-party assisted reproduction. Since undergraduate students are future medical professionals, their knowledge of third-party assisted reproduction and gamete donation within the ethical and legal framework would facilitate the subfertile couple who need fertility treatment with third-party involvement and encourage appropriate people to voluntarily donate gametes according to the ethical and legal regulations in Sri Lanka.

This study aimed to determine the attitude and willingness towards gamete donation among medical students and influencing socio-demographic factors on it.

## 2. Subjects and methods

### 2.1. Study subjects

An institutional-based descriptive cross-sectional study was

conducted among selected medical students (3rd, 4th, and 5th year) in the Faculty of Medicine, University of Jaffna, from September 2022 to May 2023.

### 2.2. Sampling

No sampling techniques were adopted. All students ( $n=438$ ) from selected batches who wanted to participate voluntarily in this study were recruited and data were collected from January 2023 to March 2023.

### 2.3. Data collection

A self-administered questionnaire was developed based on an extensive literature review[7-17] and following content validation from the experts who are consultant obstetrician and gynecologist and have special interest in subfertility and ART, used as a study material to collect data, consisting of three sections including section A- socio-demographic data, section B and C - questions regarding attitude and willingness, respectively. Section B contains 12 questions, of which 1 to 10 were used to assess the level of attitudes among students. Each question was rated on a 0 and 1 scale. For the positive sentences, one mark was given for yes/agree, and for negative sentences, one mark was given for no/disagree. A total of 10 marks were given for attitudes, in which 0-5 were considered negative attitudes and above 5 were considered positive attitudes.

### 2.4. Statistical analysis

Data were analyzed by statistical software SPSS 21.0, presented using descriptive statistics of mean, standard deviation, and percentage, and given in tables. Categorical factors were analyzed using the *Chi-squared* test. The statistical significance level was  $P<0.05$ .

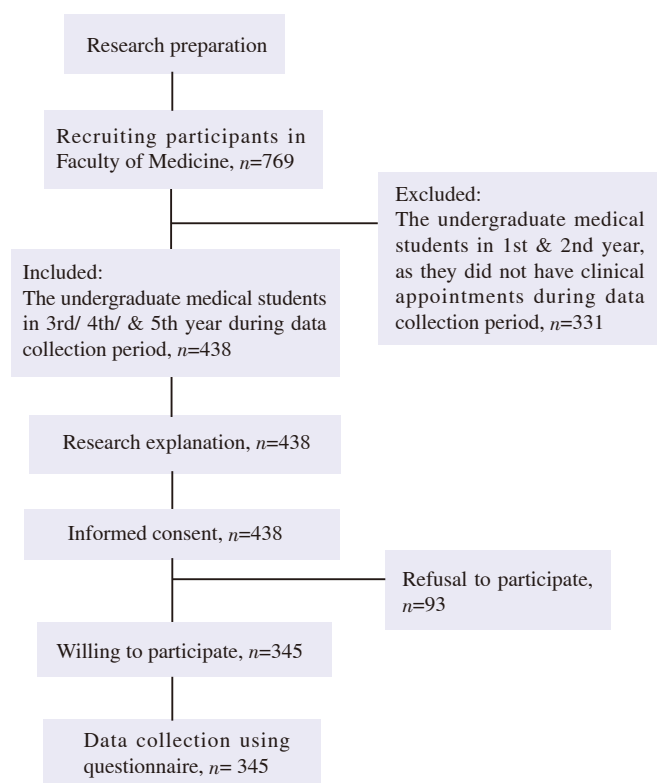
### 2.5. Ethics statement

Ethical approval was obtained from the Ethics Review Committee, Faculty of Medicine, University of Jaffna (J/ERC/22/141/NDR/0282). The study was conducted as per the ethical standards of the relevant institutional ethics committee. All study participants consented using the institutional review protocol before data collection.

## 3. Results

### 3.1. Socio-demographic characteristics

The participant screening process is presented in Figure 1. Table 1 shows the socio-demographic characteristics of participants. Overall,



**Figure 1.** Flowchart of participant screening process.

345 participants were voluntarily recruited and the respondent rate was 79%. The majority (62.3%) of the participants were in the 26-30 years of age category. The age range of the participants was between 22 and 29 years, with a mean age of (25.9±1.3) years. In this study, more than half of the participants were female (56.8%) and unmarried (92.2%), and their parents were their primary source of financial assistance.

### 3.2. Source of information about gamete donation

About half of the participants (57.4%) had known about gamete donation through their clinical appointments. 43.8% and 33% of participants revealed that media and the internet were their main sources of information regarding gamete donation, respectively. The last source (2%) was from someone with experience in gamete donation.

### 3.3. Attitude towards age limit and financial assistance for gamete donation

Almost one-third of the participants revealed that the age limit for sperm donation is 18-40 years, and the age limit for oocyte donation is 18-35 years, even though 12% of the participants said that there was no age limit for sperm or oocyte donation.

Regarding financial assistance, only 43.2% of participants accepted that gamete donors need to be compensated. Among them, 30% were not sure about the exact amount for the compensation. Also,

**Table 1.** Distribution of socio-demographic factors of the participants (n=345).

Characteristics	n (%)
Age, years	
20-25	130 (37.7)
26-30	215 (62.3)
Sex	
Male	149 (43.2)
Female	196 (56.8)
Marital status	
Unmarried	318 (92.2)
Married	27 (7.8)
Academic year	
3rd year	91 (26.4)
4th year	125 (36.2)
5th year	129 (37.4)
Religion	
Hinduism	159 (46.1)
Christianism	27 (7.8)
Buddhism	100 (29.0)
Islam	59 (17.1)
Ethnicity	
Sri Lankan Tamil	178 (51.6)
Sinhalese	108 (31.3)
Muslim	59 (17.1)
Source of financial assistance	
Parents	315 (91.3)
Spouse	13 (3.8)
Self	9 (2.6)
Others	8 (2.3)

they suggested that oocyte donors ought to be provided with greater financial compensation compared to sperm donors. The rest, 56.8% of participants said no compensation was needed for gamete donation.

### 3.4. Attitude towards gamete donation

Table 2 shows distribution of the participants on attitudes towards gamete donation. According to participants' responses, around 234 participants (67.8%) had a negative attitude towards gamete donation. A positive attitude towards gamete donation was expressed by 35.7% of female participants and 27.5% of male participants.

### 3.5. Willingness towards gamete donation

According to the findings, about 39.7% of participants accepted to be gamete donors, with 31.1% of females and 51% of males. However, only 15.3% preferred to be known donors, while the rest preferred anonymity. Almost 60.3% of participants denied being donors, but 21.2% of them showed willingness if legal assurance of anonymity could be given. Practically all participants (98%) had no prior experience with gamete donation, including 99% of females and 96.6% of males.

### 3.6. Regarding reasons to avoid gamete donation

Approximately 60.3% of the participants preferred not to be a

**Table 2.** Distribution of the participants on attitudes towards gamete donation ( $n=345$ ).

Distribution	Yes / Agree		No / Disagree	
	Frequency (n)	Percentage (%)	Frequency (n)	Percentage (%)
Give information about the donor to the recipient without disclosing personal information	193	55.9	152	44.1
Offspring receive information about the donor during childhood	59	17.1	286	82.9
Offspring receive information about the donor during adulthood	90	26.1	255	73.9
The best interest of offspring never be informed about the genetic origin	218	63.2	127	36.8
Child-parent bond could be affected when they learn about their genetic origin	261	75.7	84	24.3
Offspring have the right to learn about their biological parents during adulthood	223	64.6	122	35.4
Contact with biological parents harmful to offspring/family	216	62.6	129	37.4

**Table 3.** Influencing socio-demographic factors on attitude towards gamete donation among participants ( $n=345$ ).

Socio-demographic factors	Level of attitude on gamete donation, n (%)		$\chi^2$	P value
	Positive attitude	Negative attitude		
Age, years				
20-25	43 (33.1)	87 (66.9)	0.078	0.780
26-30	68 (31.6)	147 (68.4)		
Sex			2.607	0.106
Male	41 (27.5)	108 (72.5)		
Female	70 (35.7)	126 (64.3)		
Marital status			0.985	0.321
Unmarried	100 (31.4)	218 (68.6)		
Married	11 (40.7)	16 (59.3)		
Academic year			5.132	0.077
3rd year	33 (36.3)	58 (63.7)		
4th year	46 (36.8)	79 (63.2)		
5th year	32 (24.8)	97 (75.2)		
Religion			10.267	0.016
Hinduism	39 (24.5)	120 (75.5)		
Christianism	7 (25.9)	20 (74.1)		
Buddhism	41 (41.0)	59 (59.0)		
Islam	24 (40.7)	35 (59.3)		
Ethnicity			12.417	0.002
Sri Lankan Tamil	42 (23.6)	136 (76.4)		
Sinhalese	45 (41.7)	63 (58.3)		
Muslim	24 (40.7)	35 (59.3)		

gamete donor. Around 78.7% of the participants revealed that personal preference is the main reason to avoid gamete donation. Around 12.2% and 11% of the participants said moral and religious beliefs were their main reasons for avoiding gamete donation.

### 3.7. Associating factors on attitudes and willingness towards gamete donation

This study found that participants who were female, aged between 20-25 years, married, and Sinhalese in ethnicity exhibited more positive attitude than others. However, religion and ethnicity had a significant influence on their attitude (Table 3).

Furthermore, the participants in this study who were male and unmarried, between the ages of 20 and 25, and Sinhalese in ethnicity

showed a higher positive willingness to donate than other individuals. Their willingness to donate gametes was greatly influenced by their gender, ethnicity, and religion (Table 4).

## 4. Discussion

The respondent rate of our study was 79%, which is almost consistent with a previous study done in Sweden[7]. A Nigerian study revealed that the main sources of information about gamete donation were media (63.3%), the internet (43.7%) and health talks (40.2%)[3]. This is contrary to our findings, which showed that the primary source of information was clinical appointments (57.4%), followed by media (43.8%), and the internet (33%). Moreover, in

**Table 4.** Influencing socio-demographic factors on willingness towards gamete donation among participants (n=345).

Socio-demographic factors	Willingness to gamete donation, n (%)		$\chi^2$	P value
	To be a donor	Not to be a donor		
Age, years				
20-25	60 (46.2)	70 (53.8)	3.618	0.057
26-30	77 (35.8)	138 (64.2)		
Sex				
Male	76 (51.0)	73 (49.0)	13.98	<0.001
Female	61 (31.1)	135 (68.9)		
Marital status				
Unmarried	131 (41.2)	187 (58.8)	3.742	0.053
Married	6 (22.2)	21 (77.8)		
Academic year				
3rd year	40 (44.0)	51 (56.0)	3.512	0.173
4th year	54 (43.2)	71 (56.8)		
5th year	43 (33.3)	86 (66.7)		
Religion				
Hinduism	61 (38.4)	98 (61.6)	24.877	<0.001
Christianism	12 (44.4)	15 (55.6)		
Buddhism	55 (55.0)	45 (45.0)		
Islam	9 (15.3)	50 (84.7)		
Ethnicity				
Sri Lankan Tamil	70 (39.3)	108 (60.7)	23.584	<0.001
Sinhalese	58 (53.7)	50 (46.3)		
Muslim	9 (15.3)	50 (84.7)		

this study, one-third of participants revealed that the age limit for sperm donation was 18-40 years and for oocyte donation was 18-35 years, which is similar to the study conducted among Swedish gynaecologist. It indicated age limits of 23-48 years for sperm donors and 23-37 years for oocyte donors[7]. Current study revealed, 56.8% of participants expressed that gamete donation did not require compensation. In contrast, the Sweden study showed that only one-third of the participants stated that female and male donors should not be reimbursed at all[7]. The same study recommended that oocyte donors should receive more financial compensation than sperm donors. This finding is comparable to ours.

Our study findings show that 67.8% of the participants had a negative attitude towards gamete donation, which revealed the pessimistic perspective and reluctance to explore this area among future medical professionals. Our study also found out that 55.9% of them had a positive approach towards disclosure of some details about the donor without revealing their personal information to the recipients, and 60.9% of the participants agreed that parents should be honest with their children regarding their genetic origin. It is comparable with the study done among Swedish gynecologists; where most (40%) agreed that parents could get information about the donor and should be honest with their child regarding his/her genetic origin[7].

In the present study, participants expressed strong negative attitude about disclosing donor details to the offspring during childhood and adulthood. Most of them (75.7%) believed that the child-parent bond could be affected if the details were disclosed to the offspring, and 62.6% of them had stated that contact with biological parents would be harmful to the offspring and family. This is contrary to the study done in the Western world, which shows that most participants

had a positive approach for disclosing donor information during childhood (50%) and adulthood (70%). Only 10% of physicians were concerned about disclosing donor information as that might affect the child's relationship with his/her parents and contact with the donor could harm the offspring/the family[7]. Moreover, the same study revealed that participants were generally more positive towards anonymous donations than known ones. It is almost similar to the outcome of our study; students have poor willingness (39.7%) to be gamete donors, and most of them (84.7%) preferred anonymous donations compared to known donations. Most students stated that their unwillingness to donate gametes was primarily due to personal preferences.

The present study revealed that almost all the participants, 99% of females and 96.6% of males, had no previous history of gamete donation, which is commensurate with the study done in Nigeria[3]. Confidentiality, disclosure, and privacy protection are key ethical issues accompanied by profound legal, religious, social, and cultural questions in gamete donation[8]. Our study showed that attitude towards gamete donation was significantly influenced by ethnicity and religion, as the willingness regarding gamete donation was significantly associated with ethnicity, religion, and sex.

The current study has many strengths along with a few limitations. The study had different ethnic groups that comprise Sri Lankan populations, which helps generalize the findings to the country as ethnicity and religion influence the attitudes and willingness of medical students towards gamete donation. However, the respondent rate of 79% represents the need for more awareness and reluctance to express their opinion regarding gamete donation, which will still be an essential part of delivering optimal fertility care.

In conclusion, the need for gamete donation is increasing in



advanced fertility treatment due to increasing advanced maternal and paternal age and reduced reproductive potential. As medical students are future medical professionals, their knowledge and perspective towards gamete donation in ART is essential for optimal fertility care in future. In our study, we found that the majority of medical students had a negative viewpoint towards gamete donation, which might have a serious impact on assisted reproductive services in future. Therefore, it is imperative to incorporate knowledge about ART treatment and gamete donation in the undergraduate curriculum to improve their knowledge and bring about a change of attitude among medical students who will be future medical practitioners. Also, creating a proper infrastructure and legislature on gamete donation to maintain anonymity is critical to overcoming personal concerns and false beliefs.

### Conflict of interest statement

The authors declare that there is no conflict of interest.

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This is a self-funded study supported by the Primary author.

### Authors' contributions

Dr. S. Raguraman did the conception and framework of this study. The protocol for this study, the questionnaire and guidance for writing the manuscript were suggested by Prof. K. Muhunthan. Data collection and data analysis was done by temporary demonstrator R. Niroje. Drafting the manuscript was done by Dr. S. Raguraman and R. Niroje. The manuscript has been read and approved by all authors for its publication.

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