Research Article

Awareness and attitudes about prenatal sex determination among pregnant mothers and their perceptions regarding Pre-Conception and Pre-Natal Diagnostic Techniques Act

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ABSTRACT

Background: Pre-Conception and Pre-Natal Diagnostic Techniques (PCPNDT) Act was introduced in India to provide a legal framework to support prevention of fetal foeticide and maintains a healthy sex ratio. Even after implementation of the act, illegal testing and abortions are reported. Awareness and attitudes of pregnant women will give an insight into this problem. **Objectives:** The objectives of this study were to study the level of awareness and attitudes among pregnant mothers at Goa Medical College toward pre-natal sex determination and female foeticide, and to study the perceptions among them regarding the PCPNDT ACT. **Materials and Methods:** This cross-sectional study was carried out among 100 consecutive pregnant women admitted from June 1 to August 31, 2019, in the antenatal wards of the Department of OBG at Goa Medical College, Bambolim, Goa. **Results:** Two-thirds (76%) of the pregnant mothers were aware of the PCPNDT Act and majority (83%) were aware that prenatal sex determination is an offence. The majority (81%) of the mothers had no specific expectations regarding the sex of the child, whereas 8% preferred having a male child and 11% preferred a female child. The most common reason for male child preference was found to be pressure from other family members. **Conclusion:** The majority of the pregnant mothers from Goa were aware of the PCPNDT Act and most of them do not have a specific preference for male child.

KEY WORDS: India; Female Feticide; Gender Preference; Prenatal Sex Determination

INTRODUCTION

Sex ratio is defined as the ratio of number of females to 1000 males. There was a sharp decline in the sex ratio of India from the 1960s.[1] Societal gender bias led to the killing of female infants and under-reporting of births. This was further strengthened with the introduction of pre-natal diagnostic techniques such as ultrasonography, which made it possible to conduct gender-specific abortions earlier on in pregnancy.

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Pre-natal Diagnostic Technique (PNDT) Act 1994 was introduced by the Indian Government to prohibit female foeticide and improves the declining sex ratio in the country. In 2001, the Honorable Supreme Court gave a verdict and directed the government to cover newer preconception sex selection technique under the ambit of this act. Thus, PNDT Act was amended and Pre-Conception and Pre-Natal Diagnostic Techniques Act (PCPNDT Act) 2003 came into existence. The main objective of this act was to prevent misuse of modern diagnostic technique in sex detection and sex selective abortions. The act makes registration of all sonography machines mandatory and allows their use in

antenatal women for the detection of genetic, chromosomal and metabolic disorders only.[2]

Even after introduction of the act, the onus of implementation lay with the local authorities.[1] In theory, pregnant women who seek help for sex selection could face a 3-year prison sentence and a fine of 50,000 rupees, while doctors can have their medical license suspended.[1] However, it has not halted the decline in sex ratio. The situation continues to worsen, and studies have revealed that sex-selected abortions are practiced among all communities despite enactment of laws prohibiting prenatal sex determination.[2] This is evident from statistics that show a plunging sex ratio even after implementation of the act. The child sex ratio in India fell from 945 in 1991 to 927 in 2001 and finally reaching 914 females to 1000 males, the lower most ever, in the 2011 Census.[3] One-third of anesthesiologists who had access to ultrasound at a tertiary care center were found to be non-compliant with PCPNDT regulations.[4] Studies have shown that many women were aware of clinics that help in sex determination illegally, and agree to utilizing them.[5] There have been reports of penal action in some cases, but it is largely ignored.[6] This could be because the PCPNDT Act oversimplifies a complex problem by placing the moral and legal onus on physicians instead of on patients committing female feticide and trying to change the social aspects.[4]

Introducing policies that are not aligned with societal norms and preferences are not likely to normalize the sex imbalance in India.[7] To better understand this contradiction, we need to understand whether how the law is accepted by the stakeholders, that is, the mothers. Perceptions related to sex-selective abortion, gender preference, and knowledge of the laws can give an insight into why the problem persists.

Goa is a coastal state located in the southern part of India. It currently has a sex ratio of 973, which is better than the national average.[3] Although there has been improvement in sex ratio in the state in recent years, it is far from optimal. No study has been done till date to look into the issue in Goa.

Therefore, this study was done with the aim to study the level of awareness and attitudes among pregnant mothers at Goa Medical College toward pre-natal sex determination and female foeticide and to study the knowledge amongst them regarding details of the PCPNDT Act.

MATERIALS AND METHODS

It was a hospital-based cross-sectional study conducted in the Department of Obstetrics and Gynaecology at a government run tertiary care center in Goa. The state has a good public health-care network of primary and secondary care centers. The birth rate is 12.4 and infant mortality rate is 7 per 1000 live births, one of the lowest in the country.[8] As per National Family Health Survey 4, 5% of women and 10% of men want more sons than daughters. Around 89% of women and 95% of men in the reproductive age group are literate. Almost all births take place in health facility, and the majority of them in a government facility.[9]

The study duration extended for 3 months from June 2019 to August 2019. The study population was defined as anyone admitted for delivery in the antenatal ward. Inclusion criteria were any pregnant woman who was a resident of Goa. There were no exclusion criteria. The study was approved by the Institutional Ethics Committee of Goa Medical College, Bambolim.

The sample size was calculated based on the results of a previous study.[10] Assuming the proportion of women with awareness of PCPNDT Act to be 85%, the sample size was calculated to be 100 at 7% absolute precision. Consecutive sampling of all eligible cases who were admitted in the ward was done until sample size was achieved.

Eligible women were approached, and enrolled after obtaining informed consent. Data collection was done using a structured questionnaire. The first part of the questionnaire was socio-demographic details such as age, occupation, and religion. This was followed by questions on parity, previous birth of female children, awareness of the PCPNDT Act, gender preference, expectation to know the gender of the child, and willingness for pre-natal sex determination. Reasons for gender preference were recorded as an open-ended question.

The sample size was calculated using OpenEpi.[11] Data entry was done on Microsoft Excel and analysis using Statistical Package for the Social Sciences (SPSS).[12,13] All outcomes are categorical and expressed as proportions. Fischer exact test was utilized for association between various socio-demographic details and awareness regarding PCPNDT Act. Factors affecting male gender preference were not studied due to the small number. $P < 0.05$ was considered as statistically significant.

RESULTS

The study participants included 100 pregnant women between 25 and 45 years of age. All were literate with a minimum of 10th standard pass educational qualification. Table 1 shows the socio-demographic profile of the pregnant women. The majority of the women were home makers (74%), Hindus (86%), and multiparous (60%) of those who already had children, half had a female child (51.6%).

Table 2 shows the general perceptions among the women with respect to gender equality and gender preferences. One-fourth of the participants felt that females do not have exist as

many rights as males in the society. Only eight women shared that they desired to have a male baby, and five of them were willing continue conceiving until a male child was born. Out of them, six women had a female child from the previous pregnancy and one already had a male child. Although 16 participants reported a desire to know the sex of the baby before delivery, none of them were willing to terminate the pregnancy based on it.

Table 1: Socio-demographic characteristics of the study participants (*n*=100)

Variable	Frequency/Percentage
Age	
≤25 years	9
>25 years	91
Occupation	
Homemaker	74
Employed	26
Religion	
Hinduism	86
Islam	7
Christianity	7
Parity	
Nulliparous	40
Multiparous	60
Previous birth of a female child	
Yes	31
No	69

Table 2: Perceptions related to gender preferences among the study participants (*n*=100)

Variable	Frequency/Percentage
Perception that gender inequality exists in society	
Yes	25
No	75
Desire for a male child	
Yes	8
No	92
Desire to know gender of the present child	
Yes	16
No	84
Desire to know the gender of the child if it was a legal choice	
Yes	27
No	73
Desire to terminate the pregnancy if child is female	
Yes	0
No	100
Desire to continue conception till a male child is born	
Yes	5
No	95

Figure 1 shows the reasons for gender preference among those who reported wanting a male child. The main reason was personal choice followed by family pressure.

Table 3 shows the awareness of pregnant women regarding the PCPNDT Act and their perceptions regarding the same. About 76% of the women were aware that a law existed regarding pre-natal sex determination, but only 17% knew that it is a punishable offence. About 67% had a positive attitude toward the law being a punishable offence but 33% felt that it should not be. The majority (55%) felt that both the doctor and the patient should be held responsible, while 26% felt only the patient should be held responsible. Only one participant considered that it was the sole responsibility of the doctor while 12 participants felt that neither should be punished for it.

Table 4 shows the association of socio-demographic and fertility characteristics with awareness of the PCPNDT Act. Age and parity were found to be significantly associated with awareness of the PCPNDT Act.

DISCUSSION

The study was conducted among 100 women admitted in the antenatal wards. The majority of them displayed no gender preference in children, but around one-fourth desired to know the gender through pre-natal diagnostics if it was a legal option. However, none of the participants were willing to terminate the pregnancy in case of a female fetus. The main reasons cited for gender preference was personal choice and pressure from other family members. Nearly one-fourth of the participants, including those who were multiparous, were unaware of the existence of an act related to pre-natal sex determination. Less than one-fifth of the participants were aware that is a punishable offence. Two-thirds had a positive attitude toward the practice being punishable, and four-fifths felt that the patient should be held responsible,

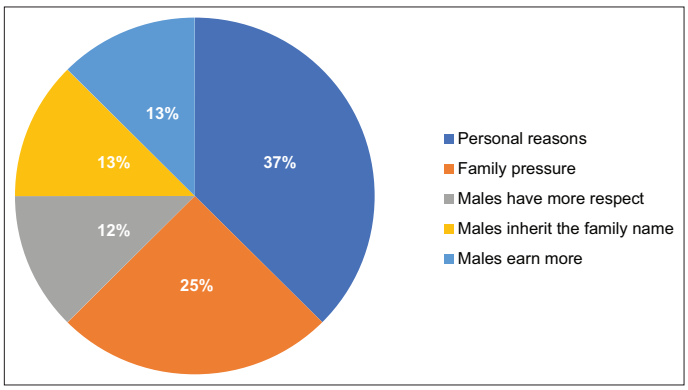

Figure 1: Reasons provided by pregnant women for preferring a male child (*n* = 8)

Table 3: Knowledge and attitude regarding the PCPNDT Act among the study participants (*n*=100)

Variable	Frequency/Percentage
Awareness of existence of the PCPNDT Act	
Aware	76
Not aware	24
Awareness that pre-natal sex determination is a punishable offence	
Aware	17
Unaware	83
Attitude toward pre-natal sex determination being a punishable offence	
Positive attitude	67
Negative attitude	33
Attitude regarding who should be held responsible for pre-natal sex determination	
Patient	26
Doctor	1
Both	55
None	12
Not sure	6

Table 4: Factors affecting awareness of PCPDNT Act among study participants (*n*=100)

Variables	Awareness of PCPNDT Act		*P* value
	Yes, *n* (%) *n*=76	No, *n* (%) *n*=24	
Age			
≤25 years	3 (33.3)	6 (67.7)	0.006
>25 years	73 (80.2)	18 (19.8)	
Occupation			
Housewife	54 (73)	20 (27)	0.293
Working	22 (84.6)	4 (15.4)	
Religion			
Hindu	66 (76.7)	20 (23.3)	0.68
Christian	5 (71.4)	2 (28.6)	
Muslim	5 (71.4)	2 (28.6)	
Parity			
Nullipara	29 (72.5)	11 (27.5)	0.002
Multipara	57 (95.0)	3 (5.0)	

with or without the doctor. The awareness about the act was significantly associated with parity and age. The latter might be associated due to collinearity with parity.

The study results are coherent with pre-existing literature to different extends. The differences could be attributed to differences in socio-cultural values in different parts of the country.

The proportion of women admitting to gender preference in favor of a male child is much higher in all pre-existing literature. In the study by Kansal *et al*., male preference was shown by 22.2% and female preference by 11.8%.[10] The proportion is over 50% in studies done by Yasmin *et al*., Vadera *et al*., and Puri *et al*.[5,14,15] Even among those with a male first child, nearly half were shown to want a male child in the second birth as well.[15] In another study conducted in Delhi slums, two thirds of the participants preferred male children and half perceived female foeticide as acceptable.[16] This positive attitude toward female foeticide was seen in 40% of participants in another study in Gujarat.[14] However, in the current study, none of the participants were desirous of it. This is similar to the findings of Kumar *et al*. in Karnataka, South India, in which only one out of 132 participants were ready to terminate pregnancy based on gender. This similarity could be a strong indicator of regional similarities in societal values as Goa and Karnataka are adjoining states.

The common reasons for male preference recorded earlier are the importance of males in the society with respect to social responsibilities, propagation of the family name, pressure from the family and the idea that females are an economic liability.[15] Some of these are similar to the reasons elicited, in the current study, as well. These points toward the rigid prejudices regarding gender that is still prevalent in the society. It is important to work on societal norms for sex imbalance to normalize.[7]

Even without gender preferences, the previous studies have shown willingness or desire for pre-natal sex determination. In a study done in West Bengal, 34.7% expressed willingness to know the sex of the child, which is slightly higher than the proportion in the current study.[5] However, in another study done by Gaur *et al*., only around 12% of the participants were interested.[17]

A variable number of women were aware that pre-natal diagnosis of gender was possible, ranging from 91.7% to 11.6%.[15,18,19] Awareness of the presence of the PCPNDT Act was found to be <50% in studies done in Indore and slums of Delhi.[16,17] However, it was close to 85% in the study done in Karnataka.[18] The higher literacy rates in Goa and Karnataka could be the reason for the higher awareness rates. However, awareness regarding the details of the Act are still lesser.[19] While Kumar *et al*. recorded that 74% were aware of pre-natal sex determination being a punishable offence, only 65% were aware in a study in Chandigarh, both of which are much higher than the 17% recorded in the current study.[15,18] This points to a large lacuna in clarity of knowledge and the need to educate women during antenatal visits and otherwise. In spite of this, the majority were shown to have a positive attitude toward the same being an offence. Almost all the participants were in agreement in the study done in Indore. Kumar *et al*. showed that two-thirds of the participants agreed that it should be an offence, identical to the current study. Overall, the comparison of results across states seems to point toward a strong geographical pattern in the perceptions of the pregnant women.

The strengths of the study are as follows. It is the first study, to the best of our knowledge, that has looked at prevailing gender bias in the light of the PCPNDT Act. We were able to achieve the intended sample size in the stipulated period. The main limitation of the study is the probability of social desirability bias that might have under estimated the prevalence of gender preference and acceptance of female foeticide. Since it was a hospital-based study, women who do not avail ante-natal care were not captured. Since all the women enrolled in the study were literate and educated to the secondary level, the results regarding awareness and attitudes might be skewed, since lower educational level of the mother has been shown to be an important factor associated with gender preference.[5] Furthermore, since the number of women with gender preference were small, we did not have adequate sample size to look at the factors associated with the same.

CONCLUSION

Some level of gender bias and preference still exists among pregnant women in Goa, but it constitutes a minority. Awareness of details of the PCPNDT Act needs to be increased in the society. Parity is associated with a higher level of awareness regarding the existence of the act.

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