

Assessment and Comparison of Perception of Female Foeticide among the Medical and Nursing Students: A Cross-sectional Study from the Uttarakhand State

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Abstract :

Introduction: Gender discrimination is an important social context and it starts in the nuptial stage of female foetus death before its arrival in the outside world. Thus, awareness level assessment of health functionaries is must so as to curb female foeticide. **Objective:** To assess and compare the percept of medical and nursing students about female foeticide. **Method:** The total medical (n=279) and nursing students (n=438) were studied in the present study and information was collected using predesigned pretested questionnaire. **Results:** Overall, more than 90% students were aware about female foeticide and television was the greatest source of information in 83.7% (medical) and 67.5% (nursing). **Conclusion:** Gender, age, type of nursing course and different semesters of MBBS students does not effect/influence the awareness of female foeticide.

Introduction:

In India, female infanticide has been practiced for centuries with the earliest evidence being provided by Sir Jonathan Duncan in 1789.^[1] In India, female infanticide in recent decades has substantially been reduced but this progress has been counter-balanced by the commencement of induced female foeticide after fetus sex detection with the help of modern medical technologies since the mid 1980s.^[2]

The overall sex ratio in India has increased to 940 as per 2011 census against 930 as given by 2001 census. However, the area of grave concern is that the child sex ratio plummeted to 914 from 927 in 2001.^[3] Sex ratio at birth is an indirect measure of female foeticide.^[4] The worsening of the country's hugely skewed sex ratio is largely due to misuse of prenatal diagnostic techniques despite stringent laws banning their use for sex selection and consequent increase in cases of female foeticide.^[5]

About 5.75 lakh females go missing every year due to practice of female foeticide.^[6] India is a secular, democratic and a republic country with a population of 1.2 billion.^[7] It has made tremendous advancements in scientific, social and economic fields, yet certain social evils like female foeticide continues to be practiced in our country. National Girl Child Day is observed every year on Jan 24th with year 2017 theme "Beti Bachao Beti Padhao" to spread awareness about the inequalities faced by the female gender.

Because of more opportunity to contact with community during their postings so they can spread message about female foeticide awareness, prevention and its harmful effects, it is the need of the time to explore the gaps in the mindset of future young health functionaries (medical and nursing students) about their percept for female foeticide.

Table 1: Percept of students about dangers and measures for stoppage of female foeticide

Dangers of Female Foeticide*	Nursing (n=438) Number (%)	Medical (n=279) Number (%)
Increase in sexual and social crimes against women	155 (35.4%)	105 (37.6%)
Increase in prostitution, sexual exploitation	24 (5.5%)	45 (16.1%)
Increase in sexual transmitted infections (STIs) including HIV/AIDS	27 (6.2%)	42 (15.1%)
Affect the women's health because of repeated pregnancies & forced abortions	200 (45.7%)	223 (79.9%)
Don't know	81 (18.5%)	15 (5.4%)
Methods for Stoppage of Female Foeticide*	Nursing (n=438) Number (%)	Medical (n=279) Number (%)
By increasing awareness by doing nukkad natak, puppet shows, rallies	37 (8.4%)	43 (15.4%)
By telling our parents, grandparents and neighbours	7 (1.6%)	19 (6.8%)
By giving Punishment to people/doctor conducting illegal ultrasound	47 (10.7%)	54 (19.4%)
By giving equal opportunities to girls in education/jobs	8 (1.8%)	24 (8.6%)
By enforcing strict laws like ban on prenatal sex determination	7 (1.6%)	85 (30.5%)
By discouraging dowry system in society	6 (1.4%)	30 (10.8%)
All of the above	291 (66.4%)	195 (69.9%)
Did not attempt	51 (11.6%)	6 (2.2%)

*Multiple Responses

Objectives:

Primary objectives

a) To assess the knowledge of students (medical & nursing) about female foeticide, its dangers and corrective measures for its prevention.

b) To find the association of awareness of female

foeticide with some of the selected variables
Secondary objective:

c) To know their perception towards gender preferences and family size and family composition.

Method:

Study design: Cross-sectional

Study subjects: Medical & nursing students

Study Place: Government medical college and three private nursing colleges of block Haldwani, District Nainital

Study period: November 2013-April 2014

Sample size : Complete enumeration that is available at the time of data collection that is n= 279 medical students and n= 438 nursing students.

The medical students were MBBS students of different academic years studying in the Government Medical College, Haldwani, Uttarakhand. The information from medical students was obtained by the investigator in the lecture hall through pretested semi-structured questionnaire and the intern students posted in the community medicine department were also approached. The nursing students that were enrolled in the study were studying in 3 private nursing colleges of Haldwani Block, district Nainital i.e Pal college (n=142), Dronh college (n=152) and Nancy college (n=146). The investigator approached the nursing tutors for the collection of filled questionnaires by the students. All of them were ready to participate in the study who were present on the day when the questionnaire was administered to them.

Statistical analysis: Frequency tables were prepared and percentages were calculated and inferential statistics using chi square/fisher exact test is carried out. Analysis was done with the help of MS excel and SPSS version 18.

Ethical approval: The study being approved by the institute ethical committee approval.

Results:

The socio-demographic profile of the students in the current study is as follow.

The Bsc nursing students were in higher percentage of 52.3% among the nursing students studied followed by GNM of 44.3% and ANM of 3.4%. The percentage of medical students was 1st year MBBS, Batch 2013 (20.4%), 2nd year MBBS, Batch 2012 (22.2%), 3rd year MBBS, Batch 2011 (33.7%),

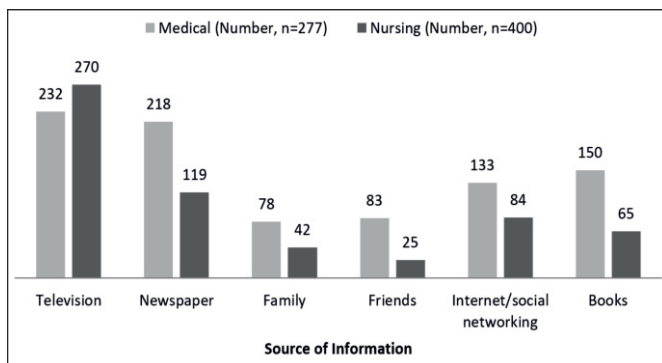
4th year MBBS, Batch 2010 (17.6%) and only 6.1% intern female MBBS students, Batch 2009 posted in the department.

There were n=2 fathers amongst nursing students who were expired. The mean age of the medical students is comparatively greater than that of nursing students (21 versus 19 years). Female students outnumbered the males with 92.7% (n=406) in nursing and 60.6% (n=169) in medical students. Majority of them were hindus in both nursing (91.1%, n=399) with (67.4%, n=295) of them belonged to the general caste and medical (88.2%, n=246) with (70.6% , n=197) of them belonged to the general caste. The relative percentage of literates fathers in nursing and medical students was 80% & 85.7% respectively. Whereas, the corresponding percentages of literate mothers were 78.1% & 76.7%, respectively. The mothers of most of these students was housewives in nursing (71.7%, n=314) and medical (64.5%, n=180). The fathers of these students who were in government jobs was 54.4%, n=237 in nursing and 63.8%, n=178 in medical. The combined percentage of their fathers who were farmer was 21.5% (n=82).

Among the 11 professional fathers in nursing students, 2 of them were engineers, 1 was dentist and rest were teachers in school and the 3 professional mothers were teachers. Among the 45 professional fathers in medical students, 14 were doctors, 17 were engineers, 4 were advocates, 2 did MBA, 3 did Phd, 1 was police officer and 4 were teachers. While among 19 professional mothers in medical students, 3 were doctors, 2 were advocates, 13 were teachers and one did MBA/CA.

Figure 1 shows that nine out of ten students in nursing (91.3%, n=400/438) and almost nearly 100% students in medical (99.2%, n=277/279) had heard about female foeticide. Mass media (Television and newspaper) was the major source of information in amongst nursing and medical students. The percentage of television and newspaper was higher in medical (83.7% versus 78.7%) than in nursing (67.5% versus 29.7%) respectively.

Figure 1: Sources of information about female foeticide



***Multiple Responses**

Regarding the percept of students about the dangers of female foeticide, maximum students of nursing & medical with 35.4% (nursing) and 37.6% (medical) were aware about the increase in sexual and social crimes against women. There were 4.8% (nursing) and 1.8% (medical) students who were unaware about the dangers of female foeticide.

All the listed measures for the stoppage of female foeticide consisting of increasing awareness by doing functions/rallies, educating parents/grandparents, giving punishment for illegal actions, giving equal opportunities to girls, by enforcing strict laws, by enforcing ban on prenatal sex determination and by eliminating dowry system, was given according to 66.4% (nursing) and 69.9% (medical) students.

Only less than 10 % (8.7%) amongst nursing students were aware about the PCPNDT Act as compared to 44.4% in medical students. In medical students who are aware (n=124), the 26.6% said yes but no further explanation and 20.2 % said yes with year of implementation/amendment of the act was given. While nursing students said yes with no further explanations in 81.6%. Amongst those who were aware about PCPNDT, the 10.5% (n=4) nursing students said it is for the stoppage of female foeticide vis a vis in 8.1% (n=10) medical students. According to 40.3% (n=50) medical students, the act is meant for the prohibition of sex determination with none of the nursing students held this view and while 2.4% (n=3) medical students said it is for determining genetic defects. The view of giving punishment under this act

to persons conducting illegal ultrasound was held by 5.3% medical students. Also, the 2.6% (n=1) nursing vis a vis 2.4% (n=3) medical students said for the full form of the act.

Almost more than nine-tenth of the students in both nursing and medical were of the opinion that female foeticide is a harmful practice and it should be stopped. There were 16.9% (nursing) and 7.2% (medical) students who have not been educated about female foeticide in the school.

The comparatively more number of medical students (99.3%) were aware about female foeticide than nursing (91.3%) and this difference in proportion is significant statistically. Also, out of the total nursing students (n=438), pertaining to their course of study, the higher BSC nursing (94.3%) were more aware about female foeticide than ANM/GNM (88%) with statistically significant difference seen. But in context to medical students, no significant difference was found in their awareness level of female foeticide as per their course of study.

The gender and age of the students (n=729) does not have any significant effect seen regarding their awareness about female foeticide.

Maximum nursing (80.5%) and medical (78.8%) students had preferred that boys carries name of the family followed by the reason of taking care of parents respectively as the viewpoint in 11.4% nursing and 18.9% medical students. There were 1.8% nursing students who remained with unspecified reasons for male preference whereas amongst 3.2% medical students said that no dowry issue problem with male gender. The other reasons like trends/superstitions/safety issues was given in higher percentage (68.2%) amongst nursing students on asking about the female gender not preferred as against 13.6% medical students said for potection/ male dominant society/ Indian mentality. There was more preference towards family composition with one boy & one girl in 74.4% nursing and in 62.3% medical students. Figure 2 shows that regarding their percept for family size, more students had given viewpoint for having 2 children in family as

Table 2: Awareness of students about PCPNDT (Preconception Prenatal Diagnostic Technique) Act and various statements given for the act and opinion of students about some aspects of female foeticide

Aware about PCPNDT Act	Nursing (n=438) Number (%)	Medical (n=279) Number (%)
Yes	38 (8.7%)	124 (44.4%)
No	400 (91.3%)	155 (55.6%)
Different statements given by those who aware	Nursing (n=38) Number (%)	Medical (n=124) Number (%)
Said yes with no further explanations	31 (81.6%)	33 (26.6%)
Said yes with year given	0%	25# (20.2%)
For foeticide provision	2 (5.2%)	0%
It is preconceptional antenatal diagnostic technique	1 (2.6%)	0%
Act used to stop the female foeticide	2 (5.3%)	10 (8.1%)
Punishment is given under this act to people/doctor conducting illegal ultrasound	2 (5.3%)	0%
Banned sex determination for increasing sex ratio	0%	2 (1.6%)
Misuse of diagnostic technique for sex selection	0%	7 (5.6%)
Prohibition of sex determination/selection	0%	41 (33.1%)
It is regulation of prenatal diagnostic technique (PNDT)	0%	3 (2.4%)
It is regulation of PNDT for genetic defects	0%	3 (2.4%)
Is Female foeticide harmful for society	Nursing (n=438) Number (%)	Medical (n=279) Number (%)
Yes	371 (84.7%)	270 (96.8%)
No	67 (15.3%)	9 (3.2%)
Whether educated about Female Foeticide in school	Nursing (n=438) Number (%)	Medical (n=279) Number (%)
Yes	364 (83.1%)	259 (92.8%)
No	74 (16.9%)	20 (7.2%)
Female Foeticide Practice should be stopped	Nursing (n=438) Number (%)	Medical (n=279) Number (%)
Yes	372 (84.9%)	270 (96.8%)
No	66 (15.1%)	9 (3.2%)

Among these medical students there n=7 who had given wrong year about the implementation/amendment of PCPNDT Act i.e 1994/1996.

according to 77.2% nursing and 83.1% medical students.

Discussion:

Although curbing of female foeticide is a herculean task and medical and nursing students are the future health workforce in whom the knowledge has to be imparted right from the undergraduate level since the impact is life long, our study is an

attempt to reveal the medical and nursing students perception about female foeticide.

In the studies conducted on medical students and on interns by Nath A et al in Delhi and Avachat et al in Maharashtra revealed less than half proportion of female that is 43% and 40.5% respectively. [8,9] Our study showed greater percentage of female gender in both medical (60.6%) and nursing students (92.7%). This finding corroborates with the study done on

Table 3: Association of awareness of female foeticide in context to gender, age wise, course of study and medical/nursing students

	Medical (n=279)	Nursing (n=438)	Odd ratio	Inferential test
Aware Female foeticide	277 (99.3%)	400 (91.3%)	13.158	Chi sq is 20.496 df=1 P is 0.001
Not aware female foeticide	2 (0.7%)	38 (8.7%)		
	Male (n=142)	Female (n=575)	Odd ratio	Inferential test
Aware female foeticide	133 (93.7%)	544 (94.6%)	0.842	Chi sq is 0.194 df=1 P is 0.660
Not aware female foeticide	9 (6.3%)	31 (5.4%)		
	Age (≤ 20 years) (n=424)	Female (> 20 years) (n=293)	Odd ratio	Inferential test
Aware female foeticide	404 (95.3%)	273 (93.2%)	1.480	Chi sq is 1.463 df=1 P is 0.226
Not aware female foeticide	20 (4.7%)	20 (6.8%)		
	ANM/GNM (n=209)	BSC (n=229)	Odd ratio	Inferential test
Aware female foeticide	184 (88%)	216 (94.3%)	0.443	Chi sq is 5.448 df=1 P is 0.020
Not aware female foeticide	25 (12%)	13 (5.7%)		
	1st/2nd year MBBS (n=209)	3rd/4th/MBBS/interns (n=229)	Odd ratio	Inferential test
Aware about female foeticide	117 (98.3%)	160 (100%)	-	P is 0.181 #

fisher exact test

Table 4: Gender and family composition preferences among the students

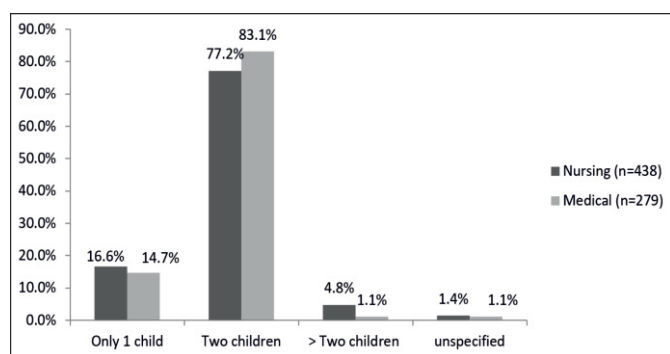
Reasons for male preference*	Nursing (n=438) Number (%)	Medical (n=279) Number (%)
Carries name of family	353 (80.5%)	220 (78.8%)
Takes care of parents	50 (11.4%)	53 (18.9%)
Boys are more strong	3 (0.68%)	10 (3.6%)
Burden on family	61 (13.9%)	48 (17.2%)
Dowry	97 (22.1%)	111 (39.7%)
Cant take care of parents	11 (2.5%)	11 (3.9%)
All the above	72 (16.4%)	123 (44.1%)
#Others/non specified	8 +299 (1.8% + 68.2%)	9+38 (3.2% + 13.6%)
Percept for family composition*	Nursing (n=438) Number (%)	Medical (n=279) Number (%)
One boy & one girl	326 (74.4%)	174 (62.3%)
Only boys	6 (1.4%)	14 (5.01%)
Only girls##	13 (2.9%)	7 (2.5%)
Can be anyone	91 (20.8%)	90 (32.2%)
Unspecified	8 (1.8%)	0 (0%)

Multiple Responses

The number before plus sign indicates non- specified and the number after plus sign indicates others like safety issues/trends/ superstitions / protection /male dominant society/ Indian mentality

one student in medical said son is son till he gets wife and daughter is daughter through her life

Figure 2: Perception of students for ideal family size



nursing students by Devi Simmayee in Odisha where 70% were female.^[10]

Regarding the awareness about female foeticide, more than 90% students in amongst nursing and medical in the current study was aware about female foeticide. In a study by Devi Sinmayee on nursing

students in Odisha has also found that 94% students were aware about the female foeticide.^[10] In another study also, on non-medical/non-nursing adolescents by Anjana Ramesh et al in Mangalore, it was revealed that 89.3% of them knew about female foeticide.^[11]

In our study, the 81.5% medical and 94.5% nursing students knew about the dangers of female foeticide. While in study by Sidhu et al in their study conducted among medical students reported that lesser respondents (43%) knew about the dangers of female foeticide.^[12] And Nath et al found that slightly more than 60% male and female interns knew about implications of declining sex ratio as increase in crime and 52% reported that there will be effect on women's health.^[8]

To curb FF, legislative efforts (PCPNDT Act 2013) along with IEC measures in raising the status of women is helpful in this direction. Nath et al found that majority of interns (77.2%) stated that creating awareness about declining sex ratio is an effective measure while 62.2% opined strict implementation of law is necessary to deal with this issue.^[8] A study by Shubhadaavachat et al on 79 medical interns in Maharashtra found that a total of 61 interns opined that creating awareness is the effective measure to combat declining sex ratio while 49 interns thought that legislative measures are the useful means and 51 said that ban on sex selection practices should be practiced.^[9] Whereas in the present study, more than 50% students in both medical (69.9%) and nursing (66.4%) had opined for the usual measures for the stoppage of female foeticide like increasing awareness, giving punishment to wrong doers, giving equal opportunities to girls, enforcing strict laws with ban on prenatal sex determination and eliminating dowry system.

The studies done on general public (married women) by S Puri and on pregnant women by Vadera et al has also revealed the thought of deep rooted male preference. It may be due to continuation of family name, old age support and societal responsibilities.^[13,4] Regarding the gender preferences in the family, the present study observed that 62.3% medical and 74.4% nursing students had preferred for one boy and one girl. Overall, very few students had opined for only boys that is 6.4% and only girls that is 5.4%. The thought of disfavouring only girl child in the family is revealed from the current study. Same thought is seen in the study carried on medical undergraduates in Mumbai by Patil et al where only 7% opined to have one daughter as ideal number of children and none of them preferred to have both daughters.^[14] Unlike 62.3% medical students preference for one boy and one girl in the family, the study by Sidhu TK et al among medical students has found higher respondents (75%) supported the view of one male and one

female child as ideal number of children.^[12] However, the study by Anjana Ramesh et al in Mangalore on school going adolescents, majority (92.3%) had opined for one girl and a boy.^[11]

Conclusion and Recommendation:

More than 90% students of nursing and medical were aware about female foeticide with television the greatest source of information in 83.7% (medical) and 67.5% (nursing). The reasons for female gender discrimination given were safety issues in 68.2% (nursing) and dowry issue in 39.7% (medical). However, more than 50% students (both medical & nursing) had preferred for one boy and one girl presence in the family. Very few percentage (6.6%) of students lacked awareness about the dangers of female foeticide. Majority of them knew about the common measures to stop the female foeticide, but, however, their awareness about PCPNDT act was less than 50%. Gender, age, type of nursing course and different semesters of MBBS students does not affect/influence the awareness of female foeticide. However, in the study, overall medical students had higher odd than nursing students in context to their awareness of female foeticide. Thus, the study concludes that as the awareness level of medical and nursing students about female foeticide, it's dangers and prevention methods is proportionately better than about PCPNDT act perception. Hence, the study recommends for the strict implementation of legal measures to tackle female foeticide, there is a need to create awareness among medical and nursing fraternity along with their active involvement.

Limitations: There is lack of generalization of the findings of the study to the medical and nursing students of the Haldwani block because sample size has not been calculated.

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Conflict of Interest: Nil

References :

1. Pakrasi KB, Haldar A. Sex Ratios and Sex Consequences of Births in India. *J BiosocSci*, 1971; 3 : 327-37.
2. Sen A. Missing Women-Revisited. *BMJ* 2003; 327: 1297-8.
3. Janaki G, Chandrasekarrayya T, Murthy P. Declining Sex Ratio in India: Trends, Issues and Concerns. *Asia Pac J SocSci*, 2011; 3 : 183-98.
4. Vadera BN, Joshi UK. Study on Knowledge, Attitude and Practices Regarding Gender Preference and Female Foeticide Among Pregnant Women. *Ind J Community Med*, 2007; 32 : 1-4.
5. Bhat MP, Zavier FA. Factors Influencing the Use of Prenatal Diagnostic Technique and the Sex Ratio at Birth in India. *Econ PolitWkly*, 2007; 42: 2292-303.
6. SamsunnessaKhatun, Aznarul Islam. ' Death Before Birth'- A Study on Female Foeticide in India. *MS Academic* 2011; 1(3): 94-9.
7. Provisional Population Totals: India: Census 2011 (online). Government of India, Ministry of Home Affairs. URL: <http://censusindia.gov.in/2011-prov-/results/indiagance.html>.
8. Nath A, Sharma N, Ingle G. Knowledge and Attitudes of Medical Students and Interns with Regard to Female foeticide. *Indian J Community Med*, 2009; 34: 164-5.
9. Shubhadaavachat, PritishRaut, MrinalZambare, Dilip Kumar Gund, RutujaPundkar. Perspectives of Medical Interns Regarding Female Feticide and Declining Sex Ratio in India. *North American Journal of Medical Sciences*, Aug 2013; 5(8).
10. Mrs Devi SinmayeeKumari. A Study to Assess the Level of Perception and Awareness Regarding Female Foeticide Among the College Students with a View to Develop an Awareness Programme in a Selected College of BBSR, Odisha. *International Journal of Advances in Nursing Management*, 2015; 3(4): 309-14.
11. Anjana Ramesh, DarshanBhagwan, Ramesh Holla, BhaskarunUnnikrishnan, RekhaThapar, PrasumMithra, Nithin Kumar, VamanKulkarni. Knowledge and Perception Towards Female Foeticide Among Adolescents of Coastal South India. *National Journal of Community Medicine*; Sept 2016; 7(9): 736-40.
12. Sidhu TK, Kumar S, Kaur PA. Study of Knowledge and Attitude of Medical Undergraduate Students Regarding Prenatal Sex Determination and Female Feticide. *Indian J Matern Child Health*, 2011; 13: 2-6.
13. S. Puri. Gender Preference and Awareness Regarding Sex Determination Among Married Women in Slums of Chandigarh. *Indian Journal of Community Medicine*, 2017; 1(1): 60-3.
14. Subita Patil, Vijay Singh, Smita Chavan, Mithila Godkari, RM Chaturvedi. Knowledge and Attitude Regarding PCPNDT Act Among Medical Undergraduates: A Study Conducted in Teaching Institute, Mumbai. *Innovative Journal of Medical and Health Science*, vol 4, March-April 2014; 83-5.