

Gender Difference in Community's Health Care Seeking Behaviour towards Male and Female Newborns in Today's Scenario- A Cross-sectional Study

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ABSTRACT

Introduction: The sex ratio is a crucial social indicator to assess the level of equality between men and women. In several aspects, the gender difference between men and women is the major expression of social and cultural trends of the society.

Aim: To analyse sex ratio at birth and the gender difference in health seeking behaviour among newborns and the natural survival advantage of female newborns by studying the admission, discharges, mortality, follow-up and Leave Against Medical Advice (LAMA) in Special Newborn Care Unit.

Materials and Methods: This cross-sectional study was conducted in Netaji Subash Chandra Bose Medical College and Hospital, Madhya Pradesh and Lady Elgin Hospital, Madhya Pradesh from July 2017 to June 2019. The total number of newborns included in the study was 37,256. The difference in male and female newborns in terms of birth, LAMA, morbidity, mortality and follow-up were studied. The monthly statistical data were entered in an excel sheet. The data were analysed using

SPSS version 22.0 for Windows. The mean values of the monthly percentage were compared gender-wise using the t-test.

Results: Out 20108 male newborns and 17,148 female newborns advised for follow-up care, 1897 females (mean-14.64, SD-11.47) and 3029 males (mean-16.94, SD-12.47) came for follow-up care. The gender difference was statistically significant ($p \leq 0.001$). Females (mean outborn unit-3.07, inborn unit-1.05) took LAMA more than males (mean outborn-2, inborn-0.84) which was statistically significant (outborn: $p \leq 0.001$, inborn: $p = 0.0254$). This implies less health seeking behaviour towards females. Mortality (p -value: outborn-0.0041, inborn-0.0105) and morbidity ($p \leq 0.001$) were lesser in females compared to males which was statistically significant. These factors imply natural survival advantage in females.

Conclusion: The present study concludes that the health seeking behaviour was less towards female newborns despite their natural survival advantage which plays an important role in the declining sex ratio.

Keywords: Gender bias, Gender differences, Health care utilisation, Sex bias, Sex differences, Sexual discrimination

INTRODUCTION

The sex ratio is a sensitive measure of the status of women in developing countries like India. India is one of the few countries in the world where males outnumber females. The declining sex ratio is a matter of great concern, as it will lead to serious demographic imbalance and adverse social consequences. Gender plays a role in the determinants and consequences of poor health and it cannot be assumed that a male model for health also applies to women. The way in which gender affects these determinants and consequences may vary according to the conditions selected and according to the characteristics of the population studied [1].

According to the 2011 Census, the sex ratio in India is 943 females per 1000 males [2]. Although, there is a marginal improvement from the 2001 Census, where it was 933, it continues to be on the lower side. India's sex ratio of 943 is the lowest amongst the other countries in the world, namely Bangladesh (978), Indonesia (1003), Nigeria (995), Japan (1054), Brazil (1031), USA (1026) and Russia (1165) [2].

The Reproductive and Child Health Programme (RCH) initiated in 1997, focuses on gender issues. Gender inequalities in patriarchal societies ensure that men play a critical role in the determination of the education and employment of family members, age of marriage

for girls, education of girls, besides access to and utilisation of health, nutrition and family welfare services. RCH makes a strong commitment to reduce the imbalance through effective programmes [3]. The Twelfth Five Year plan states that the child sex ratio in the age group of children from 0 to 6 years has declined from 927 girls per 1000 boys in 2001 to 914 girls per 1000 boys in 2011. The decline is especially disturbing as it is occurring despite a strong legal and policy framework and various government initiatives [4].

The aim and objectives of the study were to analyse the sex ratio at birth and the gender difference in health seeking behaviour among newborns and the natural survival advantage of female newborns by studying the admission, discharges, mortality, follow-up and LAMA in Special Newborn Care Unit. (SNCU).

MATERIALS AND METHODS

This cross-sectional study was conducted from a period July 2017-June 2019 in two tertiary care institutions, Netaji Subash Chandra Bose Medical College and Hospital, Madhya Pradesh and Lady Elgin Hospital, Madhya Pradesh. The data from July 2017 to Feb 2018 was collected in a retrospective manner and the data from March 2018 to June 2019 was collected in a prospective manner. The study was approved by the institutional ethical committee (IEC/2021/8678).

Inclusion criteria: All the neonates getting admitted to Special Newborn Care Unit in Netaji Subash Chandra Bose Medical College and Hospital and Lady Elgin Hospital and all the live births in both the hospitals were included in the study. The data of all newborns admitted in SNCU with any birth weight and comorbidity were included in this study. The co-morbidities include birth asphyxia, meconium aspiration syndrome, respiratory distress syndrome, neonatal sepsis, necrotising enterocolitis, congenital heart disease, shock, etc.

Exclusion criteria: Children with disorders of sexual differentiation and children with major congenital malformations were excluded from the study.

The total number of new-borns included in the study was 37,256. Three newborns with the disorder of sexual differentiation and 15 newborns with major congenital malformation were excluded.

The difference in health seeking behaviour towards male and female newborns was studied by comparing the percentage of LAMA in males (number of LAMA in males/number of admission in males *100) and females and the percentage of follow-up cases in males and females (number of males came for follow-up/number of males advised for follow-up *100). The bias was removed by comparing not the exact number but comparing the percentage of LAMA or follow-up cases gender-wise.

The survival advantage in the female newborns which is the presence of lesser morbidity and mortality in the female newborns [5] was studied by comparing the percentage of mortality in males and females (number of female deaths/number of female admission *100) and the percentage of morbidity in males and females (number of male admissions in inborn unit/number of male births *100). The bias was removed by avoiding the comparison of the number of male and female deaths directly. The percentage of male and female deaths (out of admission) was compared. The morbidity was calculated only from the admissions that occurred in the inborn unit since there would be bias due to parental factors in the admission of the outborn unit. The sex ratio at birth was calculated by comparing the number of male births and the number of female births.

STATISTICAL ANALYSIS

Data of all the neonates in SNCU was analysed and categorised based on sex difference in admissions, LAMA, mortality, morbidity and follow-up. The monthly statistical data were entered in an excel sheet. The data were analysed using SPSS version 22.0 for Windows. The mean values of the monthly percentage were compared gender-wise using the t-test.

RESULTS

The total number of newborns included in the study was 37,256 which included 20,108 male newborns and 17,148 female newborns. The total deliveries conducted in the study period in both the institutions were 17,531 males and 15,618 females. The total number of newborns admitted in two years in both inborn unit and outborn unit in both the institutions were 5,537 males and 3,818 females. Three newborns with the disorder of sexual differentiation and 15 newborns with major congenital malformation were excluded. Out of 9,355 admissions, 944 newborns were taken against the medical advice of which 593 were females and 351 were males.

A total of 18,308 male newborns and 12,160 female newborns were advised for follow-up. Out of them, 1,897 females (Mean-14.64, SD-11.47) and 3,029 males (mean-16.94, SD-12.47) came for

follow-up. Gender difference was statistically significant ($p \leq 0.001$) [Table/Fig-1].

Variable	Monthly mean	SD	t-test (M&F)	p-value
Children came for follow-up (M) %	16.94	12.47	5.39	≤ 0.001
Children came for follow-up (F) %	14.64	11.47		

[Table/Fig-1]: Comparison between monthly mean of Children coming for follow-up care between male and female newborns.

There were 5537 male newborns admitted out of which 351 newborns left against medical advice. There were 3818 female newborns admitted out of which 593 newborns left against medical advice. [Table/Fig-2] shows that the percentage of female newborns who took LAMA (out of the number of female newborns admitted) was more compared to that of males which was statistically significant (OBN: $p \leq 0.001$, IBN: $p = 0.0254$).

Variable	Monthly mean	SD	t-test (M&F)	p-value
LAMA OBN (F)%	3.07	3.54	4.44	≤ 0.001
LAMA OBN (M)%	2.00	2.46		
LAMA IBN (F)%	1.05	1.22	2.31	0.0254
LAMA IBN (M)%	0.84	1.13		

[Table/Fig-2]: Comparison between monthly mean of Leave Against Medical Advice (LAMA) between male and female newborns. OBN: Outborn unit; IBN: Inborn unit; LAMA: Leave against medical advice

Out of the total number of male births 17531, 2964 male newborns were admitted to the special newborn care unit. Out of the total number of female births 15618, 2291 female newborns were admitted to the special newborn care unit. As shown in [Table/Fig-3], the morbidity was lesser in females compared to males since less percentage of female newborns (Mean-15.15, SD-4.39) were admitted in the inborn unit (Excluding no. of births as confounding factor) compared to males (Mean- 17.40, SD-5.23) which was statistically significant ($p \leq 0.001$).

Variable	Monthly mean	SD	t-test (M vs F)	p-value
Admission IBN (M) %	17.40	5.23	5.77	≤ 0.001
Admission IBN (F) %	15.15	4.39		

[Table/Fig-3]: Comparison between monthly mean of morbidity (admission in inborn unit) between male and female newborns.

There were 2,573 male outborn admissions out of which 483 newborns expired. There were 1,527 female outborn admissions out of which 330 newborns expired. There were 2,964 male newborns admitted in inborn unit out of which 537 expired. There were 2,291 female newborns admitted in inborn unit out of which 406 newborns expired. Mortality was lesser in females (Mean OBN-2.57, IBN-3.00) compared to males (Mean OBN-3.34, IBN-3.48) which was statistically significant (p -value: OBN-0.0041, IBN-0.0105) as seen in [Table/Fig-4].

Variable	Monthly mean	SD	t-test (M vs F)	p-value
Death OBN (M) %	3.34	3.27	3.02	0.0041
Death OBN (F) %	2.57	2.39		
Death IBN (M) %	3.48	3.10	2.67	0.0105
Death IBN (F) %	3.00	2.44		

[Table/Fig-4]: Comparison between monthly mean of mortality between male and female newborns.

The number of birth in females was significantly lesser than the number of male births as shown in [Table/Fig-5]. The sex ratio at birth studied in the two institutions was 891 out of 1000 males.

Variable	Monthly mean	SD	t-test (MV&F)	p-value
No. of birth (M)	365.23	89.63	6.23	≤0.001
No. of birth (F)	325.38	89.46		

[Table/Fig-5]: Monthly mean of number of birth (Male Vs Female).

DISCUSSION

Female newborns have the survival advantage biologically. But in spite of that, the sex ratio is less which is against nature's law of sex ratio (1:1) [5]. In the present study, the increased survival advantage of female newborns was explained by the decrease in mortality and morbidity of the admitted female newborns when compared to the male newborns. The reason was explained by Driscoll DN et al., that the increased survival advantage of females compared to male neonates is due to the increased expression of IRAK [6]. According to Crimmins EM et al., men have shorter lifespan than women. Since women are not as strong and steady as men, women experience more chronic and functioning issues. But men have more fatal diseases [7].

In the present study, we proved another evidence for the decrease in care-seeking behaviour among females by the fact that the percentage of female newborns (out of total female newborns advised) who come for follow-up care is significantly lesser ($p \leq 0.001$) in number than the male newborns coming for follow-up (Mean 16.94, SD 12.47). This study also showed that the percentage of female newborns who took LAMA (out of the number of female newborns admitted) is more compared to that of males. Kshirsagar VK et al., observed in their study that a total of 191 babies were taken against medical advice, 134 (70.15%) females and 57 (29.84%) males. They observed that 7 (14.89%) boys and 40 (85.10%) girls out of 47 neonates who required NICU admission refused healthcare by their caregivers with odds ratio of 3.448 [8].

Saikia N et al., confirmed that female's healthcare expense was significantly less than male health care expense after considering the social and economic factors which signified the less care seeking behaviour for females ($\beta = -0.148$, $p = 0.001$, prevalence: -0.206-0.091) [9].

Shashank KJ et al., observed the early treatment seeking behaviour was found to be 1.8 times lesser in female children when compared with male children with CI 1.19 to 2.95. And the difference in the amount spent for the treatment between male and female cases was statistically significant [10]. This study observed the decrease in care-seeking behaviour among females by the fact that the percentage of female newborns who come for follow-up care was significantly lesser ($p \leq 0.001$) in number than the male newborns coming for follow-up and the percentage of female newborns who took LAMA was more compared to that of male.

Ismail SA et al., suggested in their systematic review of evidence in South Asia that care-seeking rates for female neonates were lower than males. Parents were more likely to pay more and seek care from providers perceived as higher quality for males than females [11]. This study also observed the same by studying the gender difference in newborn follow-up and LAMA in SNCU. Shah R et al., observed the decrease in health care-seeking behaviour in female babies by stating that newborns coming for follow-up is lesser in females ($p < 0.0001$) and females babies left the hospital against medical advice more in number [12].

Kapoor M et al., observed that of 2377028 outpatient visits, excluding obstetrics and gynaecology patients, the overall sex ratio was 1.69 male to one female visit. 402722 female outpatient visits from these four states were unaccounted, which represents 49% of all female outpatient visits. They found gender discrimination in access to healthcare, which was worse for female patients who were in the younger and older age groups, and for those who lived at increasing distances from the hospital [13]. Sheikh M et al., observed that Women had a lower share of hospitalisations (42%), bed-days (45%) and costs (39%) for sex-neutral conditions than men. These findings were observed across 14 of 18 disease categories and across all age groups, but especially for older and younger women [14]. Wang H et al., observed that compared to male students, female students typically have poorer eyesight, and they are much less likely to have their vision examined by their caregivers. The gender gap in healthcare can be minimised by implementing subsidised healthcare policies [15]. Previously published studies [11-13] have shown that illiteracy of the mother, previous girl child, low socioeconomic status, decision maker not being mother have strong association with less care seeking behaviour among female newborns [Table/Fig-6] [8,10-12].

Sl no.	Author's name and year	Place of study	Sample size	Determinants assessed	Conclusion
1	Shashank KJ and Angadi MM, 2016 [10]	Bijapur District, Karnataka	1,046	Gender-related differences in care seeking behaviour for newborns	Among illiterate mothers, the chance of getting ill was 95% more for the female children when compared to male children with CI at 95% was 0.506 to 1.995.
2	Kshirsagar VY et al., 2013 [8]	Karad, Maharashtra, India	12,440	Gender differences in treatment of critically ill newborns	Illiteracy of the mother is associated with denial of treatment in girls (83%) compared to boys (17%). The presence of a previous girl child is associated with denial of treatment in girls (76%) compared to boys (24%), low socio- economic status is associated with the denial of treatment in girls (89%) compared to boys (11%). The factor that the decision maker not being a mother is associated with denial of treatment in girls (80%) compared with boys (20%).
3	Ismail SA et al., 2019 [11]	a systematic review of the evidence in South Asia	17 original article	Gender-related differences in care seeking behaviour for newborns	Evidence across several South Asian countries suggests that care-seeking rates for female neonates are lower than males, especially in households with older female children
4	Shah R and Mullany LC, 2014 [12]	Sylhet district of Bangladesh	27,460	Pattern of care seeking for preterm newborns	Babies of fathers with five or more years of schooling compared to less than five years of schooling or no schooling were 1.33 times (RRR: 1.33; 95% CI:1.02, 1.74) more likely to seek care from qualified providers

5	Present study	Madhya Pradesh, India	37,256	The difference in male and female newborns care seeking behaviour in terms of birth, Leave Against Medical Advice (LAMA), morbidity, mortality	Health seeking behaviour was less towards female newborns despite their natural survival advantage
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[Table/Fig-6]: The determinants leading to less care seeking behaviour among female children in previous studies.

In our study, the number of total female births was significantly lesser ($p < 0.001$) than the male births. The sex ratio at birth is a more accurate and refined indicator of the extent of prenatal sex selection as indicated by Warade Y et al., [16]. Hence, the authors recommended that the programmes of the government which try to eradicate prenatal sex selection like preconception and prenatal diagnostic techniques act and reproductive and child health programme should emphasise to achieve the goal of the Nature's law of sex selection (1:1). The trends in the sex ratio in the country from 1901 onwards are shown in the [Table/Fig-7] [4].

Year	Females per 1000 males
1901	972
1911	964
1921	955
1931	950
1941	945
1951	946
1961	941
1971	930
1981	934
1991	927
2001	933
2011	940

[Table/Fig-7]: Sex ratio in India from 1901 [3].

Ultrasound was introduced in diagnostic and medicine in 1956 [17]. There was a decline in sex ratio even before the introduction of ultrasonography and there is very less rise in sex ratio after the amendment of pre-conception and prenatal diagnostic techniques act in 1994 [18]. Hence, less care-seeking behaviour of females play important role in the declining sex ratio.

The care seeking behaviour towards female newborns can be improved by thorough health education of families by community health workers, anganwadi workers, propagation through audio-visual aids, mass media, etc., as told by Jabeen S et al., that increases were observed in the self-referral of sick newborns for care, compliance after referral by the community healthcare workers and care seeking from qualified providers and decreases were observed in care seeking from unqualified providers [19].

The authors recommended that the health programmes should emphasise on health education of the community to improve care seeking behaviour for female children with the help of community health workers and the counselling sessions in SNCUs should include health education to the parents and relatives regarding the elimination of gender discrimination.

Women's health programmes and gender studies programmes should be incorporated into university health curricula, according to Vlassoff C [1]. However, these programs are still conducted by social activists and are not by medical people. Gender studies have to be included in biomedical programs which will increase the awareness of numerous health issues.

Limitation(s)

This study was conducted in a tertiary care centre and not the whole community thus, the factors determining the care seeking behaviour were not studied; which had been planned to include in the future research.

CONCLUSION(S)

This study concluded that health seeking behaviour was less towards female newborns in spite of their natural survival advantage even in today's modern world which play an important role in declining sex ratio. The health programmes and counselling sessions in SNCUs should emphasise on the health education of community for the improvement in health seeking behaviour towards females. The future researchers are recommended to study about the factors determining gender inequality in newborns so that it could be eliminated in the early of human life.

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