Skewed Sex Ratio: Relation to Birth Order, Sex of Previous Child and use of Indigenous Medicine

Babita[1], Sonali[2] and JP Majra[3]

[1,3]BPS GMC (W) Khanpur Kalan, Sonepat
2MBBS Student, BPS GMC (W) Khanpur Kalan, Sonepat

Abstract—*In a "normal world," the female population equals or slightly surpasses the number of males. Except in India, that is, where the situation is just the opposite, where the sex ratio is known to be among the most imbalanced in the world .With the average family size decreasing rapidly and preference for male child remaining the same, the female child population is showing a downward trend. Methodology: The present study was done in Primary health centre, Khanpur Kalan which is rural field practice area attached to the department of community medicine, BPS Govt. Medical College for women, Khanpur Kalan , Sonepat, Haryana. Assuming the probability of being born as female is 50%, the calculated sample size was taken as 400 at 95% confidence interval. Data was collected from house to house visit with the help of pre tested and semi structured questionnaire. Results: The overall child sex ratio of the study population was 620. Sex ratio goes on decreasing with increasing birth order. Sex ratio was highest among mothers having one boy previously while it was worst among the mothers having two girl child previously which suggest that sex ratio is being constantly manipulated by couples according to their needs and perceptions about the gender preference. Percentage of females taking drug for male child preference increases as the order of pregnancy increases; about 50% of the pregnancies have outcome of birth of a normal male child, followed by normal female child and seven children were born with congenital anomalies. Suggestions: Strengthen current legal regime to prevent misuse of medical technology for sex selection & plan legislative framework for the future (PC PNDT Act). Use of indigenous medicines for male child must be banned as these may result in congenital anomalies in newborns.*

1. INTRODUCTION

Sex ratio is an important social indicator to measure the extent of the prevailing equity between males and females in a society at a given point of time. Changes in sex ratio largely reflect the underlying socio-economic and cultural patterns of a society in different ways. Determinants of changes in sex ratio vary from sex differentials in mortality, sex selective migration, sex ratio at birth, and at times, sex differentials in population enumeration.[1] As per 2011 census, the sex ratio of India is 940 females\1000 males, while sex ratio of Haryana is 877 females\1000 males, which is lowest amongst all state of India. Child sex ratio is declining rapidly from 945 in census 2001 to 927 in census 2011.[2] With average family size decreasing rapidly and preference for male child remaining the same, the female child population is showing a downward trend.[3]Situation becomes unfavorable for female when birth order is more than one and previous child is female. Sex ratio at birth in families with previous girls is worse than those with previous boy.[4]

There is a trend of use of medicines for sex selection especially among the rural people which have created some havoc like congenital anomalies and increased risk of abortions. The need of the hour is to maintain a healthy child sex ratio especially in north Indian states. This issue need to be addressed urgently especially in Haryana state, which has the lowest sex ratio amongst the country. This study is designed to determine the relation between sex ratio with sex of previous child, birth order and use of traditional medicines. The result of the study can help the authorities for counselling the families as there is a need to bring about change in attitude and mind set of society to draw their attention to the lurking danger of skewed sex ratio.

2. METHODOLOGY

- **Study Design**: Community based cross sectional study

- **Study Setting**: The study was done in Primary health centre, Khanpur Kalan which is rural field practice area attached to the department of community medicine, BPS Govt. Medical College for women, Khanpur Kalan , Sonepat, Haryana. From the Primary Health Centre, two sub centres were chosen randomly from two different villages and lists of interviewing houses were taken from the respective sub-centre.

- **Study Population**: Only those houses were selected, who have children between the age group of 0-6 yrs, mother of the children were interviewed to collect the data.

- **Sample size**: Assuming the probability of being born as female is 50%, the calculated sample size was taken as 400 at 95% confidence interval and the calculated sample was collected from two sub centres under Primary Health Centre Khanpur Kalan.

- **Ethical Consideration**: Ethical approval was taken by I.E.C. (institution ethic committee) B.P.S. government medical college for women, khanpur kalan, sonepat. A prior consent was taken from subject under study before interviewing

- **Sampling Technique:** Simple random sampling by lottery method.

- **Inclusion Criteria:** Women having children of age group 0-6 yrs.

- **Exclusion Criteria**: Women who denied giving consent and women having severe illness or mentally challenged

- **Data Collection:** Data was collected with the help of pre tested and semi structured questionnaire. Information regarding socio demographic profile, antenatal status and its outcome, sex of children, stillbirths, abortion, reasons for preference of male child etc. was collected after taking informed consent. Data was also collected regarding any drug intake during pregnancy for male child preference and its outcome.

- **Statistical Analysis:** Collected data was entered in Microsoft excel spreadsheet and analyzed by applying appropriate statistical tests.

3. RESULTS

A total of the 400 houses were visited from two different villages and the collected sample was analyzed. The sex ratio was calculated as number of females per one thousand males. The overall child sex ratio of the study population was 620.

Table 1: Socio-demographic profile of the study population

Age of mother (years)	Sex of children		Sex ratio	OR
	Female	Male		
<20	10	16	625	0.78
20-25	141	288	526	1
25-30	105	133	790	0.62
>30	5	4	1250	0.39
Religion				
Hindu	254	414	614	0.61
Muslim	7	7	1000	1
Caste				
General caste	182	282	645	1.02
Backward class	32	51	627	1
Scheduled caste	47	88	534	0.85

Table 1 shows that sex ratio is lowest among the mothers of 20-25years of age, which is the most fertile age group. As the age of the mother is increased the sex ratio also increased. Sex ratio is low among Hindu community as compared to Muslim community. When we study the relationship between caste and sex ratio, then we found that sex ratio is lowest in

scheduled caste followed by backward class and it is highest among general caste.

Table 2: Relationship between sex ratio and birth order

Birth order	Sex of children		Sex ratio	Odds ratio
	Female	Male		
First	180	220	819	1.2
Second	93	144	646	1
Third and above	22	48	459	0.70

Table 2 shows that sex ratio goes on decreasing with increasing birth order; it was highest at the birth of first child followed by second and so on. (Fig. 1)
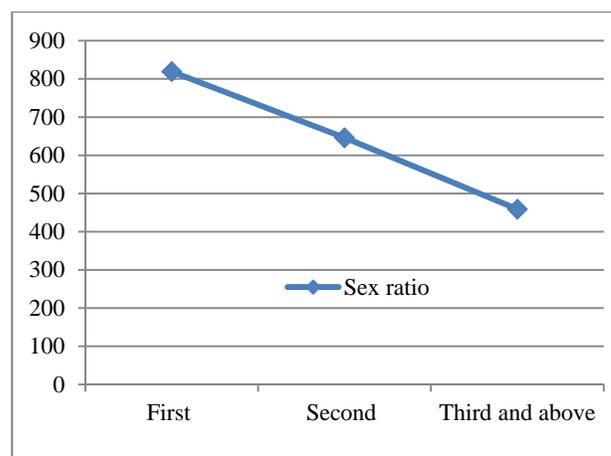

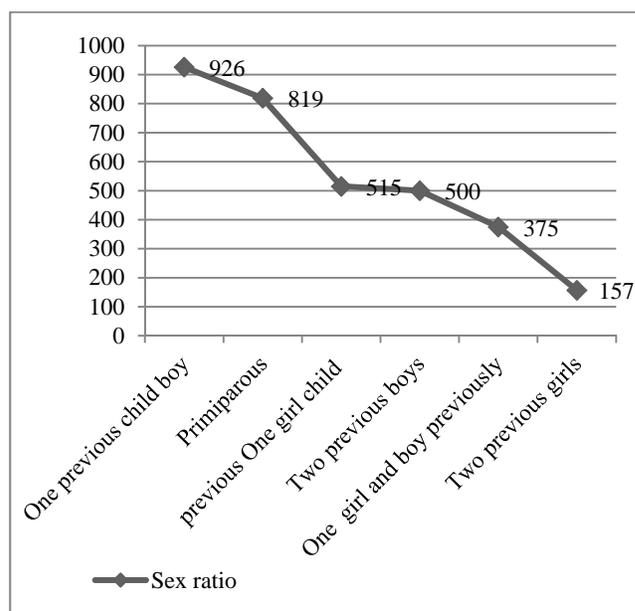**Fig. 1: Relationship between sex ratio and birth order**

Fig. 2: Relationship between sex ratio and sex of the previous child

Fig. 2 shows that sex ratio was highest among mothers having one boy previously while it was worst among the mothers having two girl child previously which suggest that sex ratio is being constantly manipulated by couples according to their needs and perceptions about the gender preference.

Table 3: Drug intake for male child preference

History of Drug Intake	Present	Absent	Total	Percentage
First pregnancy	62	338	400	15.5
Second pregnancy	41	213	254	16.1
Third and above	14	57	71	19.7
Current pregnancy	08	21	29	27.6
Total	125	629	754	16.6

Percentage of females taking drug for male child preference increases as the order of pregnancy increases; it is lowest in first pregnancy and highest in currently pregnant females. (Table 3)

Table 4: Outcome of pregnancy after drug intake for gender preference

Outcome	First pregnancy	Second pregnancy	Third and above pregnancy
Normal male child	31 (50.0)	20 (48.8)	7 (50.0)
Normal female child	20 (32.3)	12 (29.3)	3(21.5)
Abortions	9 (14.5)	07 (17.0)	1 (7.1)
Congenital anomalies (male)	1 (1.6)	02 (4.9)	1 (7.1)
Congenital anomalies (female)	1 (1.6)	0	2 (14.3)
Total	62 (100)	41 (100)	14 (100)

Figures in parenthesis are in percentages

Table 4 shows that in about 50% of the pregnancies have outcome of birth of a normal male child, followed by normal female child. In some of the cases, pregnancies end up with abortions. Seven children were born with one or other type of congenital anomalies.

4. DISCUSSION

Various studies till now on this topic have shown that sex ratio is being manipulated by couples according to their needs, gender preferences and perceptions. The overall sex ratio depicted from the study is 620 girls to 1000 boys. We found that the sex ratio in the third babies, if the first two were girls, was even lower at 157. The sex ratio was 926 girls to 1000 boys if the first was a boy. Our findings are consistent with previous study done in Bhopal, which showed that sex ratio declines to 441 if the first child is female and is 546 if the previous child is male and hence validate the finding of previous retrospective study and suggests that parents tend to manipulate sex of their offspring.[4] In a study conducted by Manchanda S et al showed that more mothers with previous girls tend to use traditional medicines for sex selection, in their subsequent pregnancies. Those taking such medication do not seem to be helped according to expectations. Our findings are consistent with findings of study done by Manchanda S et al as sex ratio is only 178 if the two previous children are female and women having previous child as female tends to take indigenous medication foe sex selection.[5]

In the natural course of events where sex ratio is not manipulated by human intervention, if there is a preference for males, the overall sex ratio will favor girls. This is because of the biological heterogeneity which results in families tending to have children of same sex. This phenomenon is not evident in India which suggests that there is more direct manipulation of the sex ratio in India.[6]

5. SUGGESTIONS

- Strengthen current legal regime to prevent misuse of medical technology for sex selection & plan legislative framework for the future (PC&PNDT Act)

- Evaluate conditional cash incentive and other schemes initiated for females.

- Sensitize frontline health workers & other public officials to promote positive social attitudes towards women.

- Discourage use of any medicine for birth of male child as use of these types of medicines may give rise to congenital anomalies instead of male child.

- Studies to this end should be undertaken in a large scale so that the process of reversing the declining child sex ratio is understood better.

6. ACKNOWLEDGEMENT

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