**Original article**

# A Study of sex ratio in relation to birth order in Bhopal city

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ABSTRACT:
BACKGROUND: Declining sex ratio is an issue of grave concern in India. Son preference is a major impediment to population stabilization as it makes couples opt for larger number of children in order to ensure at least one male child in the family. The use of ultrasound procedures is largely determined by birth order and sex of the previous child. The ratios become unfavorable for females when the birth order is more than one and the previous child is female. The present study documents previous sex of the child with the present birth order and the possible role of prenatal sex determination.
OBJECTIVES:1) To study the relationship of sex ratio with birth order. 2) To study the status of sex ratio with increasing birth order. 3) To ascertain the contribution of Prenatal Sex Detection in the selective abortion as measured by previous birth sex to the observed sex ratio.
MATERIAL AND METHODS:
STUDY DESIGN: Cross-sectional study
STUDY POPULATION: 1000 women who were residing in the old Bhopal were interviewed.
SAMPLING: Bhopal city was divided into four quadrants and from each quadrant, 250 women were interviewed thus comprising sample size of 1000.
STUDY DURATION: August to September 2011.
DATA COLLECTION: A pre-tested and pre-structured questionnaire was used to collect information on their socio-demographic profile, sex of child & their ANC status and it's outcome, no. of still births, abortions & contraception used.
RESULT: In the present analysis, sex ratios at birth did vary significantly by religion, although Sikhs have the most gender biased child sex ratio followed by Jains . Muslims showed a relatively favorable female child sex ratio. The role of education in improving sex ratios is dubious. Mothers who had a higher educational status had more gender preferences. Education and higher per capita income has actually empowered couples to access newer technology to practice sex-selective foeticide. A remarkable finding observed was that if the birth order is female, the sex ratio in the subsequent birth order for females decreases as the difference between male & female child increases. The unmet need was very high amongst the study group. This article reiterates the fact that the practice of sex determination could explain missing females at birth, though indirectly. It is difficult to demonstrate its role directly owing to the sensitive nature of the issue.
KEY WORDS: Birth order, sex of the child, abortion, still births, religion, contraception

## INTRODUCTION

Skewed sex ratio is an issue of grave concern in India. Family and social pressures to produce a son are immense. Son preference is a major impediment to population stabilization as it makes couples opt for larger number of children in order to ensure at least one male child in the family.

Indirect evidence on the role of prenatal sex determination and sex selective abortion has been explored by ruling out other factors influencing sex ratio at birth. The use of ultrasound procedures is largely determined by birth order and sex of the previous child. The ratios become deplorable for females when the birth order is more than one and the previous child is female. The present study documents sex of the previous child with the present birth order and the possible role of prenatal sex determination.

## OBJECTIVES

To study the relationship of sex ratio with birth order.

To study the status of sex ratio with increasing birth order.

To ascertain the contribution of selective abortion in relation to the previous birth sex with observed sex ratio.

## MATERIALS AND METHODS:-

Study Design: A cross-sectional study.

Study population: 1000 women residing in old Bhopal

Sampling: Bhopal constitutes of 70 wards, divided geographically into quadrant and the selected wards were representative of each quadrant and 250 women were interviewed from these, thus comprising sample size of 1000.

Study duration: The study was carried out from August 2011 to September 2011.

Data collection: A pre-tested and pre-structured questionnaire was used to collect information on the socio-demographic profile, sex of child, ANC status and it's outcome, No. of stillbirths, abortions & contraception used.

RESULTS

The sex-ratio is 946 for the first birth order, which is declining to 788, 731 and 525 as the birth order is increasing.

TABLE I : SEX RATIO IN RELATION TO BIRTH ORDER

| Sr. No. | No. Birth order | Sex Ratio |
|---|---|---|
| 1 | First | 946 |
| 2 | Second | 788 |
| 3 | Third | 731 |
| 4 | Fourth | 525 |

TABLE II : SEX RATIO IN FAMILIES WITH SUCCESSIVE BIRTH ORDER

| Birth order | Male Child | Female Child |
|---|---|---|
| Second | 928 | 965 |
| Third | 905 | 623 |
| Fourth | 833 | 423 |

TABLE III : SEX RATIO ACCORDING TO SOCIOECONOMIC CLASS

| Sr. No. | Socio-economic class | Sex Ratio |
|---|---|---|
| 1 | Class – I | 697 |
| 2 | Class – II | 806 |
| 3 | Class – III | 1020 |
| 4 | Class – IV | 1333 |

TABLE IV : SEX RATIO ACCORDING TO RELIGION

| Sr. No. | Religion | Sex Ratio |
|---|---|---|
| 1 | Hindus | 724 |
| 2 | Muslims | 864 |
| 3 | Christians | 966 |
| 4 | Sikhs | 564 |
| 5 | Jains | 666 |

TABLE V : SEX RATIO ACCORDING TO EDUCATION OF MOTHER

| Sr. No. | Literacy status | Sex Ratio |
|---|---|---|
| 1 | Illiterate | 847 |
| 2 | Primary | 1138 |
| 3 | Middle | 969 |
| 4 | Higher secondary | 983 |
| 5 | Graduate | 691 |
| 6 | Post graduate | 640 |

The results shown in the tables are self explanatory

TABLE VI : TREND OF BIRTH ORDER WITH SUBSEQUENT BIRTHS

| Birth Order | Families with first order birth was male (559) | | | | | Families with first order birth was Female (441) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Male | | Female | | Total | Male | | Female | | Total |
| | No | % | No | % | | No | % | No | % | |
| 2nd Child | 197 | 51.8 | 183 | 48.2 | 380 | 174 | 50.9 | 168 | 49.1 | 342 |
| 3rd Child | 23 | 46.0 | 27 | 56.0 | 50 | 54 | 62.1 | 33 | 37.9 | 87 |
| 4th Child | 4 | 44.4 | 5 | 55.6 | 9 | 12 | 70.6 | 5 | 29.4 | 17 |

TABLE VII : EFFECT OF SEX OF PREVIOUS CHILD ON NO. OF CHILDREN

| No. of Children | MALE | FEMALE |
|---|---|---|
| 1st | 559 | 441 |
| 2nd | 380 (67.97%) 197 | 342 (77.55%) 168 |
| 3rd | 50 (25.38%) 23 | 87 (51.78%) 33 |
| 4th | 9(39.13) 4 | 17 (51.51%) 5 |

TABLE VIII : TYPE OF ABORTION

| Type of abortion | No. of abortion | Percentage |
|---|---|---|
| Induced | 99 | 45.21 |
| Spontaneous | 120 | 54.79 |
| Total | 219 | 100.00 |

TABLE.NO. IX.
TREND OF ABORTION WITH SUBSEQUENT PREGNANCIES IN SEX OF CHILD

| Families | Freq-uency of abort-ion | Perce-ntage (N= 219) | Type of abortion | |
|---|---|---|---|---|
| | | | Induc-ed | Spontan-eous |
| Families where 1st child was male | 44 | 20.09 % | 10 (8.62%) | 34 (33%) |
| Families where 1st & 2nd child was male | 22 | 10.04 % | 7 (6.03%) | 15 (14.5%) |
| Families where 1st child was female | 62 | 28.31 % | 27 (37.9%) | 35 (17.4%) |
| Families where 1st & 2nd child was female | 81 | 36.9% | 52 (44.8%) | 29 (28.1%) |
| Families where 1st child was male & 2nd was female | 10 | 4.56% | 3 (2.58%) | 7 (6.7%) |

Sex ratio with increasing birth order in families having first male child was 928, 905 and 833 where as in families having first female child was 965, 623 and 423, this shows the remarkable decline in sex ratio in 3rd & 4th order in female child as compared to male child which again shows the preference for male child.

Sex ratio was poorest among the higher socio-economic class I and II (697 and 806), which shows that the sex ratio is remarkably low in higher socioeconomic classes as compare to middle and lower income classes thus confirming the assertion that the economically better of are the leaders in this new form of discriminations against the girl child.

Christians And Muslims had sex-ratio of 966 and 864 and Jains and Sikhs had a notably low sex ratio. Sex ratio thus calculated according to religion wise is apparent & observational , but not conclusive.

Literacy wise sex ratio shows that education of women empowers them sufficiently to ensure their say in decision making and were more engaged in this activity. Graduate [691] & PG [ 640 ] mothers had a low sex ratio as compared to illiterate [847] & Primary[1138]

The effect of sex of child in the subsequent births. was calculated. The families having female child were 441 and they were more hopeful for getting male child in second, third and fourth pregnancies so this led to increase the family size. Ch sq -9.81 ,P<.o1 (Table.VII)

Out of 219 abortions, spontaneous abortions was 120 (54.79%) and induced abortions was116 (45.21%) (Table.VIII)

Families having first female child were showing more abortions (28.31%) than the families with first male child(20.09%). Similarly families having 2 female child were showing more no. of abortions (36.9%) than families with 2 male child. This distortion was very lightly due to use of sex selection techniques which helped parents to get rid of unwanted daughters or due to avoiding having children once the minimum desired no. of sons were born. (Table.IX)

## DISCUSSION

The study showed that the overall sex ratio was 788 girls to 1000 boys. We found that the sex ratio in the third babies, if the first two were girls, was even lower at 623. The sex ratio was 928 girls to 1000 boys if the first was a boy. The previous retrospective study showed a similar trend where sex ratio was 716 (CI = 672 to 762) if the first two children were girls and 1140 (CI = 1072 to 1212) if the first was a boy. The data in this study validated the finding of previous retrospective study and suggests that parents tend to manipulate sex of their offspring. 722 mothers had had two previous children and of these 168 had two previous girls and 197 had two previous boys. The remaining 365 had one boy and one

girl. Sex ratio for newborns in families with three previous girls was as low as 423 girls to 1000 boys and this empathically underlines the inference of human interference. There were only 50 mothers with 2 previous boys who went on to have a third child compared to 87 who had 2 previous girls. The fact that there were more mothers with two previous girls than there were mothers with two previous boys suggests a tendency among mothers with girls to have more children in the hope of having a boy, while mothers with boy children tend to stop having more babies. 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.

Sex ratio in mothers with 905 previous two boys was compared to 928 in those with one previous boy. Our findings are similar to the findings of Jha et al who studied sex in second children in a household survey.

In the present analysis, sex ratios at birth did vary significantly by religion, although Sikhs have the most gender biased child sex ratio followed by Jains. Muslims and Christians showed a relatively favorable female child sex ratio of 864 & 966.

Economic prosperity has a major role in the reversing the sex-ratio. Our study thus confirms the assertion that the economically better off are the leaders in this new form of discrimination against the girl child.

The role of education in improving sex ratios is dubious. Mothers who had a higher educational status had more gender preferences. Education and higher per capita income has actually empowered couples to access newer technology to practice sex-selective feticide.

Abortions were likely due to the use of sex selection techniques which help the parents get rid of unwanted daughters.

## CONCLUSION

In conclusion, the present study has shown that there is a preference for male child in the community .

The study shows that the ratio became unfavorable for female when the birth order is more than one and the previous child is female. Son preference makes couple to opt for larger number of children in order to ensure at least one male child in family thus increasing the family size.

Though not measured directly, the study concluded that the most likely explanation for the adverse female to male sex ratios reported at birth was prenatal sex determination followed by selective abortion.

## LIMITATIONS

Since the sample size of the study is not adequate to comment precisely on the factors responsible and hence this data cannot be said to be representative of India.

## RECOMMENDATIONS

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

Monitoring and counseling of Families with previous two girls should be done at the community level.

There is need to bring about change in attitude and mind set of society to draw their attention to the lurking danger of skewed sex-ratio.

The urgent need of the hour is not only to reverse the trend but to achieve a healthy sex ratio in the entire country.

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**If you doubt you can accomplish something, then you can't accomplish it. You have to have confidence in your ability, and then be tough enough to follow through.**

**~ ROSALYNN CARTER ~**

**It is true that you may fool all the people some of the time; you can even fool some of the people all the time; but you can't fool all of the people all the time.**

**~ ABRAHAM LINCOLN ~**