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Sex Ratio: Trends and Patterns at World Level

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Abstract

The sex ratio represents composition of population in terms of ratio of males and females. There are spatial and temporal variations in sex ratio in the world. Sex ratio depends on determinants of fertility, differential mortality of males and females and sex composition of migrants. From 1960 to 2015 sex ratio has declined from 1000 females per 1000 males to 983 females per thousand males. This decline is most noteworthy in child sex ratio in Asia. Within Asia the declining trend of sex ratio is most well established in China, South Asia and Middle East. The trend of declining sex ratio in India, Pakistan and China is due to neglect of the girl child resulting in their higher mortality at younger age, high maternal mortality, sex selective female abortions and female infanticide. In case of Middle East it is due to male dominance in society and male dominated immigration. The objectives of the present paper are – (i) to describe the trends of sex ratio at continental level and world level; (ii) to analyse the world patterns of sex ratio; (iii) to highlight trends of child sex ratio in world, especially in India; and finally (iv) to discuss the trend of declining sex ratio along with its causes and consequences.

Keywords: Sex ratio, child sex ratio, decline, preferences, dislikes

Introduction

Sex ratio represents the ratio of males and females in a population. It is an important characteristic feature of population composition. Spatial and temporal variations in sex composition are indicators of variations in social, cultural and economic conditions and gender imbalances. As per Census of India, sex ratio is number of females per 1000 males in the population. In United Nations reports it is generally considered as number of males per 100 females in the population. In some countries, for instance, in New Zealand it is also calculated in terms of number of females per hundred males. Sex ratio is generally measured in total population and at the time of birth and also in age specific cohorts such as 0 to 6 years children in India. All these different measurements have their own advantages. Sex composition of population depends on determinants of fertility and sex ratio at birth, differential mortality of males and females, sex composition of migrants and differential enumeration of sexes at the time of census counts.

World Trend of Sex Ratio

Due to changes in socio-cultural, economic, technological and political conditions sex ratio keeps on changing over space and time (Table 1). In 1960, the overall sex ratio in the world was in perfect balance i.e. 1:1 or 1000 females per thousand males. But over the period of time it has declined to 984 females per thousand males. In the old age group of 60 years or 70 years and above female-dominance has continued due to high life expectancy of females as compared to males and participation of male in risky occupations and crisis situations such as wars. The sex ratio has declined in all age groups of 0-24 years, 25-69 years and 70 year and over, population since 1960 to 2015.

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Table 1: Sex Ratio and Age Specific Sex Ratio in the World Population, 1960-2015.

Year	0 - 24	25 -69	70+	Total
1960	959	1028	1434	1000
1970	958	1011	1477	995
1980	957	1001	1501	993
1990	956	992	1452	987
2000	949	993	1479	986
2010	940	992	1333	984
2015	937	992	1310	983

Source: Knoema.com.

The tertiary sex ratio (proportion of females and males in the total population at the time of enumeration) is also influenced by secondary sex ratio (sex ratio at the time of birth) and primary sex ratio (sex ratio at the time of conception). In human species i.e. Homo sapiens, like majority other species, natural or biological sex ratio is slightly in favour of males. The natural sex ratio is about 952 female births per 1000 male births. As genetically females are stronger after some years due to differential rates of mortality a balance in sex ratio can come naturally, but due to socio-cultural and other anthropogenic conditions in many parts of the world the sex ratio imbalance further gets disturbed in favour of males.

The continental level trends in sex ratio indicate that sex ratio has remained in favour of females in Europe, North America, Latin America and Caribbean countries (Table 2). In Oceania region or Pacific region over the period of time sex ratio has remained in balance between males and females. Like Oceania, in Africa the sex ratio is in perfect balance of about 1:1 and it shows a marginal decline in last two and half decades. As compared with other continents the sex ratio is lowest in Asia continent. The relative share of Asia in world population has increased over the period of time and at present it constitutes about 60 per cent population of the world. Therefore, the overall sex ratio in the world shows a declining trend. The decline in sex ratio in Europe, North America and Africa has also made some contribution in this overall decline in world sex ratio from 993 to 983 females per thousand males.

Table 2: Continent-wise World Sex Ratio

Continents	1980	1990	2000	2010	2015
Europe	1051	1065	1064	1058	1055
North America	1050	1048	1036	1031	1029
Africa	1017	1004	1003	1001	999
Latin America & Caribbean	1011	1023	1028	1032	1033
Oceania (Pacific)	983	996	1004	1000	1000
Asia	960	962	962	964	964
World	993	987	986	984	983

Source: Demographic Year Book, 1982 and Statistical Division of UN ESPAC.

World Pattern of Sex Ratio

Although the sex ratio in Asia is lowest among continents, there are regional variations. In East and North East region the overall trend shows a decline in sex ratio from 951 to 943 females per thousand males but this is due to sex ratio decline in China only. The sex ratio in China declined from 938 to 929 females per thousand males between 1990 and 2015. The sex ratio in Japan (1057), South Korea, North Korea and Mongolia is in favour of females. South Korea has changed the trend from declining to increasing sex ratio. In South East Asia region the sex ratio is in favour of females, for instance, Malaysia (1059), Myanmar (1059), Thailand (1044), Vietnam (1024) and Singapore (1025) and only exceptions are Indonesia (988) and Philippines with 997 females per thousand males in 2015. In Central Asia region, again the sex ratio is in favour of females and it is lowest in Tajikistan but here also it is 995 females per thousand males.

The sex ratio at continental level is highest in Europe. In 2015, there were 1055 females per thousand males and in Russia it was 1170 females per thousand males. In countries like Latvia (1185), Lithuania (1173) and Ukraine (1172) this ratio is high due to male specific emigration from these countries. In case of Europe the relative deficiency of males is associated with great losses of males in the Second World War. In addition to this, women empowerment, liberty and equality have also contributed in this. Further, the ageing of population due to decline in fertility and improvement in health and medical facilities, has increased female life expectancy more than male and result is increased proportion of females in old age population of Europe. Gender justice and ageing of population are also valid in case of Japan, New Zealand (1036) and Australia (1010), North America and South America.

The figure 1 shows sex ratio variations at world level on the basis of pink shades for female dominated areas and blue shades for male dominated areas. The ratios are on the basis of male per female and value 1 indicates gender balance. For instance the value 0.95 represents 0.95 male per female or sex ratio of more than 1052 females per thousand males. The pink shaded areas show that in these parts males are outnumbered by females. These include Europe, Russia, Japan, South and North Korea, South East Asia, New Zealand, North America, South America (excluding Peru and Paraguay), and in Africa (especially Zimbabwe, Chad, Mauritania and Sierra Leone). The darkest blue shades areas represent the lowest sex ratio of less than 970 females per thousand males. This category sex ratio dominates in Asia mainly in China, South Asia (especially India and Pakistan), Middle East (mainly Qatar, UAE, Oman, Bahrain, Kuwait and Saudi Arabia) and Libya and Nigeria in Africa, and Papua New Guinea. In Asia all these countries are male dominated societies or are patriarchal and there is strong preference for male child and dislike for girl child. In Middle East countries it is due to male dominance in immigration.

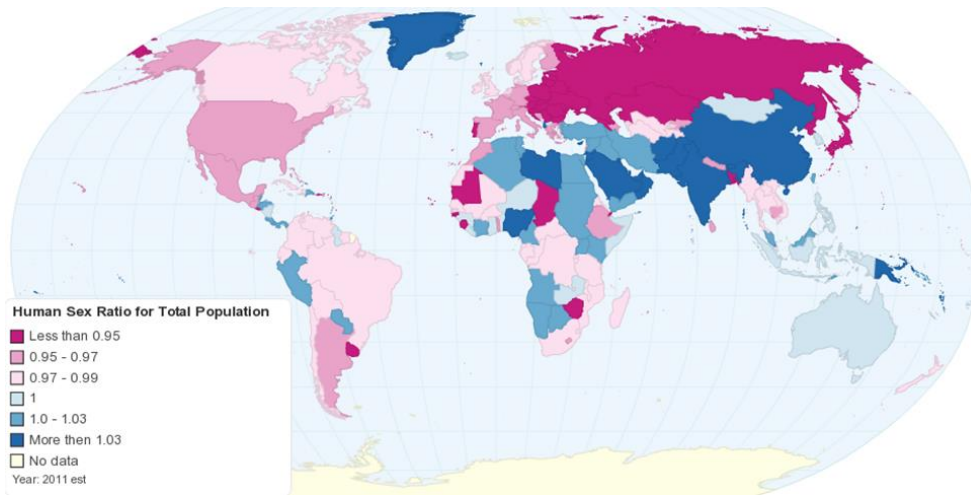


Fig 1: World Sex Ratio Pattern.

Source: http://cdn3.chartsbin.com/chartimages/l_2337_348c16b07896e722fece14f9d40fa6f0

Child Sex Ratio

A better indicator of sex ratio is child sex ratio because it depends on contemporary conditions and factors of last few years. At United Nations data the child sex ratio is represented by ratio of boys aged 0-14 years to girls aged 0-14 years. The child sex ratio at world level was 951 and it declined to 942 girls per thousand boys (Table 3). All over the world decline was recorded in this except North America. But the decline of child sex ratio in Asia is noteworthy. In Asia it has declined to 908 in 2015 from 942 girls per thousand boys in 1990.

Oceania (Pacific)	947	942
Asia	942	908
World	951	942

Source: Statistical Division of UN ESPAC.

Table 3: Child Sex Ratio at Continental Level, 1990-2015.

Continents	1990	2015
Europe	954	949
North America	953	958
Africa	979	947
Latin America & Caribbean	970	960

In Asia, the most significant decline in child sex ratio has been recorded in China, where it declined from 929 in 1990 to 857 in 2015. In case of South Korea it declined from 921 in 1990 to 894 in 2000 but preventive and curative policies of the country were reflected in its increase to 935 girls per thousand boys by 2015. The declining child sex ratio trend in India is also well established since 1960s. Female infanticide, female foeticide and high infant mortality rates of girls and patriarchy are the main causes for decline in sex ratio in China and South Asia. The world pattern of child sex ratio indicates worldwide dominance of male child at the time of birth (Figure 2).

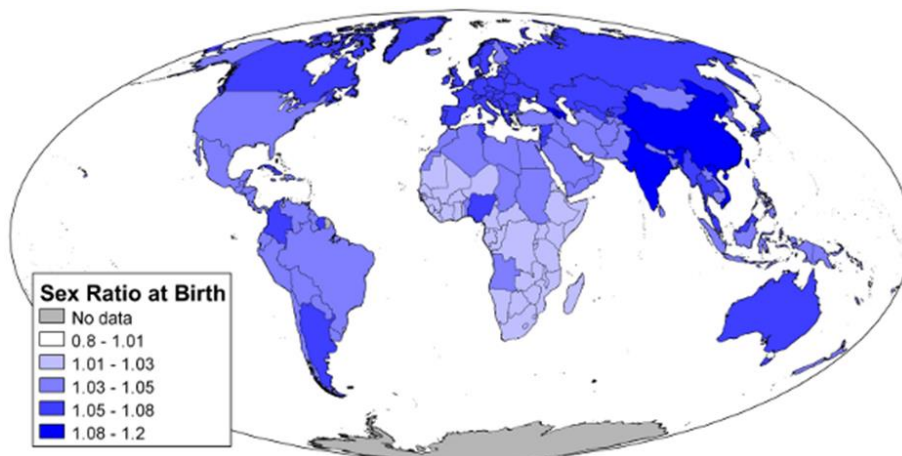


Figure 2: Sex Ratio at Birth.

Source: http://debitage.net/humangeography/images/Sex_world.png

Trend of Sex Ratio in India

Indian population is characterised by a deficit of females over males and this deficit has been widening since the turn of the last century. It has also been a matter of investigation and research among social scientists and policy makers alike. In India the sex ratio is measured in terms of number of females per thousand males and this ratio has recorded a

general decline in the country throughout the twentieth century except for on two occasions; first, when the 1951 census revealed an improvement in the sex ratio by one point over 1941, and the second, when the 1981 census saw an improvement by four points over 1971 census data. The Census of India-2011 also shows an improvement in sex ratio by ten points over the 2001 data (Table 4).

Table 4: Trend of Sex Ratio in India (1901-2011)

Census Year	Sex Ratio
1901	972
1911	964
1921	955
1931	950
1941	945
1951	946
1961	941
1971	930
1981	934

1991	927
2001	933
2011	943

Source: India 2017, P-15.

The improvements in sex ratio in the last three decades have brought some relief to the scholars. However, what is still worrisome for many is the fact that sex ratio among children in the age group of 0-6 years has undergone a drastic decline from 945 in 1991 to 927 in 2001 and 919 in 2011 (Figure 3).

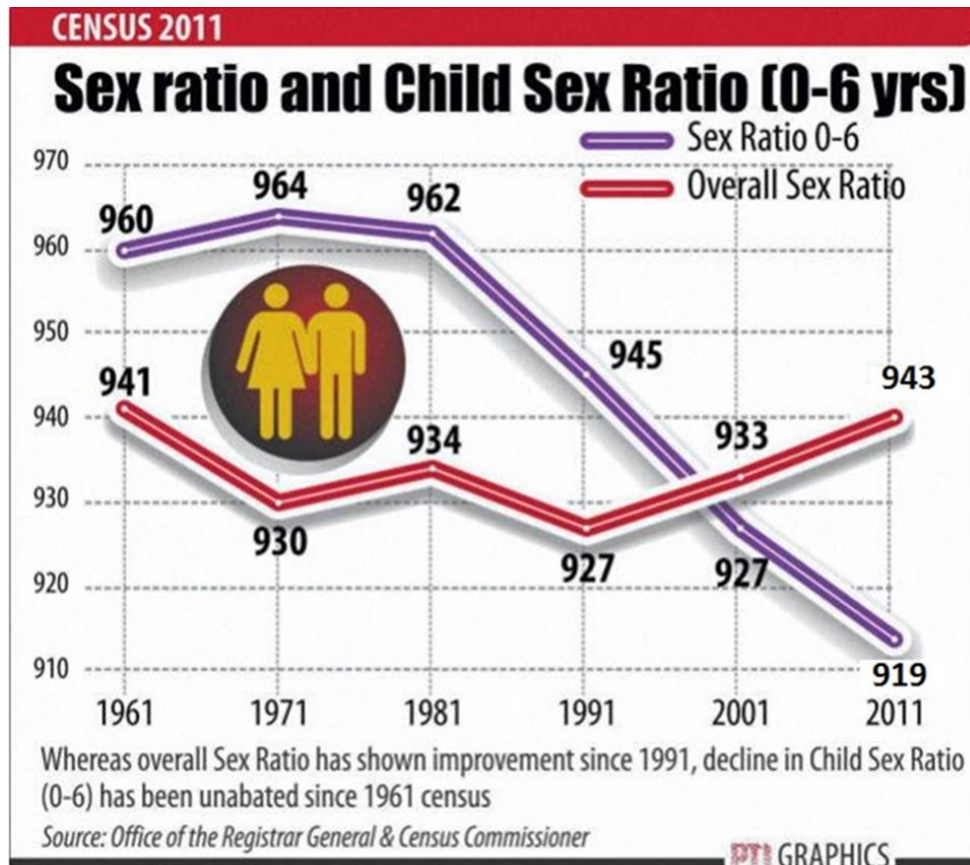


Fig 3: Trend of Sex Ratio and Child Sex Ratio in India

Source: <http://www.jagranjosh.com/imported/images/E/Articles/1901-to-20111.jpg>

Causes of Low and Declining Sex Ratio

Some of the important factors responsible for low sex ratio in China and South Asia are following:

Natural Sex Ratio

It is a biological fact that in human species more males are born than females. The ratio is about 105 boys per 100 girls. It has been observed worldwide that natural sex ratio remains in the range of 943 to 952 females per thousand males. Hence the sex ratio tends to be unfavourable to females due to differences in natural rates of births of male and female children. But due to genetic superiority of females they outnumber this advantage of males at birth over a period of time, if only natural conditions determine the outcome. But it is not so and in societies where gender discriminations against females operate sex ratio declines to low levels. The child sex ratio decline from 942 in 1990 to 908 by 2015 in Asia, decline from 929 to 857 in China in the same period cannot be explained on the basis of natural sex bias towards male. Likewise the drastic decline in child

sex ratio (0-6 years) in India from 964 in 1971 to 919 in 2011 cannot be explained by this logic and it means technological and socio-cultural, economic and political factors are mainly responsible for this sudden decline in child sex ratio. In 1961 the male infant mortality rate was 122 and female infant mortality rate was 108 per thousand. This shows the genetic superiority of girls. By 2011 the male infant mortality rate declined to 43 and female infant mortality rate to 46 per thousand. In case of Goa in 2011 the lowest infant mortality rates were recorded but gender discrimination due to anthropogenic reasons was reflected in double rates of IMR for females as compared to males i.e. 7 infant mortality rate for male and 14 per thousand female infant mortality rate. This shows the preferential treatment to male child in these societies.

Preference for Male Child and Dislike for Girl Child

Sex ratio is often considered as a manifestation of gender relations in a society. In South Asian and Chinese societies the human relations are governed by patriarchal structure.

Male dominated social ethos discriminate against females in several ways. This is manifested in the sex differential in mortality rates, both during childhood and childbearing age groups. The infant mortality rate is higher in case of girl child and maternal mortality rates are still high. Unequal treatment of male and female children in a society characterized by male-dominated social ethos inevitably results in higher death rates among female children leading to an adverse sex ratio in this age group. Preference for male child in family, health and nutrition and education and negligence of girl child in all these aspects results into sex ratio imbalances. Dislike for girl child is due to the insecurities associated with the practice of dowry and high crime rates against women including rape and molestation and the challenge of 'guarding her chastity'. Due to insecurities associated with females the parents do not want girls. Even the women who give birth to daughter or daughters face more domestic violence and social criticism and harassment. Therefore, even women prefer sons instead of daughters. On the other hand preference to male child is given to insure old age and to attain mokesh (salvation) as well as for inheritance of parental property which further intensifies gender discriminations. In the Census of India (2001) following factors were identified responsible for declining sex ratio - neglect of the girl child resulting in their higher mortality at younger age, high maternal mortality, sex selective female abortions and female infanticide. Thus there is socio-cultural acceptance of neglect of girl child which is deep rooted in South Asian social traditions and in Chinese culture.

Female Infanticide

Female infanticide is a traditional practice to manage the number of children and to get rid of the undesired female child. During British time it was reported by scholars from different parts of India especially from northern part from Gujarat to eastern Uttar Pradesh region. In several communities it was practiced and to eradicate it the Female Infanticide Prevention Act 1870 was implemented but it continued with reduced frequency, illegally. The main causes listed for female infanticide by scholars are inferiority and superiority associated with the system of hypergamy, dowry practice, superstitions and anti abortion laws.

Female foeticide

In recent times, infanticide has been taken over by more extensive practice of female foeticide. Under this practice

female fetuses are selectively aborted after pre-natal determination using sophisticated technologies, thus avoiding the unwanted birth of the girl child. Although law is there to prevent it but illegal practices are going on and educated and upper middle and higher class persons also use these methods. Rather the most affluent regions of the country have reported the shaped fall in child sex ratio in recent decades. Female foeticide in South Asia and China is due to the socio-cultural-economic and religious traditions and political conditions of these societies. It is one of utmost demonstrations of violence or crime against women. The female foeticide has diffused in different directions even in pockets where there was no tradition of female infanticide along with the introduction and the proliferation of cheaper ultrasound machines and sex determination clinics.

Small Family Norm

In patriarchal societies of China and India sex ratio was relatively high when total fertility rates were high. In large size family the probability of birth of at least one male child was very high. In this situation there was limited pressure on parents to have son or sons. But due to small size preferences or two child norm in 1976 in India and One Child compulsory policy in China in 1980, the pressure to give birth to one son in just one or two chances increased. With small family norms, many young couples do not go for a second child if the first child happens to be a male. In China the pressure to have son was such that majority parents did not want to miss the chance of being parents of a son. Therefore, majority adopted technologies for pre determination of sex of the child and in case it is reported girl, get it aborted. Similarly in India, due to socio-cultural and economic reasons preference for small size family surfaced that too with desire of at least one male child. In case the first child is male, parents can stop reproduction or can take one more chances with or without worrying about the sex of the second child. But in case the first child is female, for maintaining small size as well as one male child they will prefer to take help of technology to insure that the desired result comes otherwise get the girl child aborted and take the next chance with guarantee from technological aid. The sex ratio at births number two, three and four strongly prove the use of technology, which is illegal (Figure 4). Therefore, squeeze on family size is fuelling 'the missing women'.

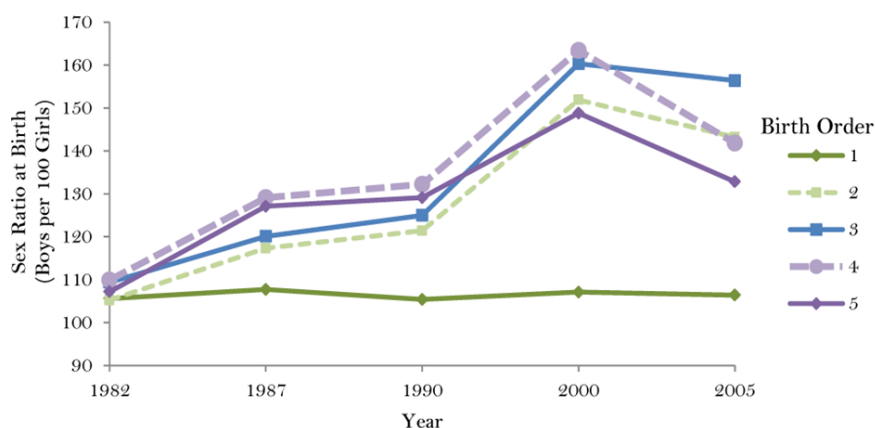


Fig 4: Sex Ratio at Different Birth Orders in China

Source: http://www.thenewatlantis.com/imgLib/20111213_EberstadtFigure31000w.gif

Unsafe Motherhood and Unsafe Abortion

In India and Pakistan the maternal mortality rates are high mainly due to unsafe motherhood and unsafe and frequent abortions. Poor nutrition, mal nutrition and imbalanced diet, lack of awareness, discriminatory attitudes and lack of health and medical facilities are responsible for very high maternal mortality rates especially in India. According to National Family and Health Survey (2005-06) only 48.8 per cent deliveries were by trained persons and only 40.8 per cent were institutional. The maternal mortality rate in India was 215 per lakh live births in 2010 though the national population policy target for that year was to bring it to less than 100 and in 2015 it was about 174 per lakh live births which is still very high. In some states it is even at present more than 250 deaths per lakh live births, for instance in Assam and Uttar Pradesh.

Consequences of Declining Sex Ratio

Declining sex ratio has many serious and complex consequences for society. The gender imbalance in terms of high demand (for brides) and low supply may result into increased value or status of women in society. The rising shortage of females and their increased participation in decision making process may help in eradication of the evil of dowry system. This shortage may also result into increase in inter-caste, inter-religion, inter-state and inter-country marriages. In this condition of shortage of women they can be more assertive of their rights and it is reflected in increased cases of divorces and divorcees remarriages. All these consequences reflect positive implications of declining sex ratio but in reality majority implications are negative in outcome.

One of the consequences of declining sex ratio is threat to the institution of marriage. In South Asian and Chinese societies marriage is a social compulsion and almost universal. The shortage of brides will left many men unmarried. It may lead to child marriage, polyandry, homosexuality, abduction and trafficking of girls, increased crime and violence against women like rape and molestation. Due to shortage of women in Punjab and Haryana men are buying brides from Assam, West Bengal, Jharkhand, Madhya Pradesh, Odisha, Chhatishgarh and Nepal. After marriage they are condemned to a life of slavery and in some cases after giving birth to male child are sold to someone else. The paucity of females will result in expansion of the sex industry and sexually transmitted diseases (STDs) including HIV/AIDS. The decline in sex ratio may also result into decline in total fertility rates due to absence of many men in reproduction process. Further, the paucity of women also decreases or de-motivates or impairs the economic capabilities and work performance of men.

Conclusion

Sex ratio, which represents the ratio of males and females in a population, is an important characteristic feature of population composition. Spatial and temporal variations in sex composition are indicators of variations in social, cultural and economic conditions and gender imbalances. Sex composition of population depends on determinants of fertility and sex ratio at birth, differential mortality of males and females, sex composition of migrants and differential enumeration of sexes at the time of census counts. At world level in last 50 years sex ratio especially child sex ratio has

declined at a faster pace. The declining trends are well established in South Asia, China and Middle East. In Europe, Latin America and North America sex ratio is in favour of females and in Australia and Africa situation of gender balance in numbers operates.

The main causes of declining sex ratio are natural sex ratio, preference for male and dislikes for girl child, female infanticide and female feticide, small size family norms, unsafe motherhood and above all patriarchy and associated gender discriminations. The consequences of declining sex ratio are complex. These include practices such as bride purchase, child marriage, polyandry, homosexuality, abduction and trafficking of girls, increased crime and violence against women like rape and molestation.

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Web Links

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