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Spatial and Regional Variations in Impacts of Female Work Participation Rate on Child Sex Ratio of Punjab

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ABSTRACT :

The present study is an attempt to examine the spatial and regional variations in Impacts of female work participation rate on child sex ratio of Punjab. The study is based on secondary data which is borrowed from the Census of India 1991, 2001 and 2011. Further, the present study identifies the factors responsible for the variations in impacts of female work participation on child sex ratio. It has been observed that with the increase in female work participation rate, the child sex ratio had also increased to some extent in the state, especially during 1991-2001. The study found that a positive correlation has been found between these two variables during this period. On contrary, in 2011, female work participation rate and child sex ratio was negatively correlated. It has also been found that the female work participation rate and child sex ratio was always positively correlated in Majha region of the state during the entire study period.

Keywords: Child sex ratio, female work participation rate, spatial variations and regional variations.

Introduction

Female work participation (FWP) rate is defined as the percentage of total female workers to the total female population (Census of India, 2011). It has been taken as the economic indicator in which females are engaged in economic activities. Relatively high levels of female work participation rate show the higher earnings of females and high economic worth of women which determines the value and position of females in society. It is assumed that the status of women automatically rises in society when she indulges in work participation (Jesani, 1990). Hence, it is an important indicator of economic and social well-being. According to the International Labour Organization (2018), the labour participation rate of females in the world is 48.5 percent which is 26.5 percent points less than the male's labour participation rate (75 percent). The existing gender gap in the workforce is the result of a complex inter-functioning of demographic, socio-economic, cultural and historical factors (Gosal, 1991; Nayak and Ahmad 1984). On the other hand, the economic participation of females in the household and society has remained unrecognized due to a male-dominated society. Because all the work done by women is seen as their obligation toward the family. This is the reason that it is difficult to separate various household tasks performed by females right from the beginning and their contribution towards the economy although small, goes unnoticed.

Female work participation is a contributing factor towards the enhancement of women's status in society (Bhattacharya, 2006; Rehman and Rao, 2004). It increases the status of women economically, socially, politically and culturally. In addition to this, the entry of women into the paid labour force has triggered changes in women's status and their spatial behaviours (Zelinsky et al., 1982). Females who have their earnings are valued more in the household as compared to those who do not. Moreover, those females who make economic contributions towards the household also influence the composition of their own families. Economically active females are also in the best position to overcome bias against their daughters (Dyson and Moore, 1983; Berik and Bilginsoy, 2000).

Therefore, the female work participation rate is closely related to the levels of son preference and child sex ratio. Because it varies from one area to another and can affect the child sex ratio of any area differently. There is extensive literature that deals with female work participation rate and its impact on the sex ratio and child sex ratio. For instance, a relatively low female work participation rate and limited female job opportunities are associated with fewer births of female children than male children (Rosenzweig and Schultz, 1982; Qian, 2008). With the increase in female work participation ratio, the survival rate of females also increases (Kishor, 1993); in dry-land cultivation areas of India the females are more neglected due to their less labour participation than that of wet cultivated lands (Gupta, 1987). The lower rate of work participation rate of females than the males reduce the relative economic value of girls in the household (Carranza, 2014). Women's economic and educational status is the most significant link between the national development and child sex ratio (Fuse and Crenshaw, 2006).

The discussed literature shows that there is a relationship between female work participation rate and child sex ratio, which needs to be explored. But very few studies have been conducted to examine the impact of female work participation rate on child sex ratio in Punjab. Thus, the present study is an attempt to understand the relationship between female work participation rate and child sex ratio over space and time in the state of Punjab.

Objectives

I. To investigate the relationship between female work participation rate and child sex ratio during 1991-2011.
II. To examine the spatial as well as regional variations in this regard.
III. To identify the factors responsible for the differentials in impacts of female work participation rate on child sex ratio.

Research Methodology

The present study is based on secondary data which is obtained from the Census of India 1991, 2001 and 2011. District is used as a spatial unit for analysis. To understand the spatial variations in the impact of female work participation rate on child sex ratio, choropleth maps have been prepared. Correlation has been calculated to examine the relationship between these two variables. For this purpose, following Karl Pearson's coefficient of correlation formula has been used:

$$r = \frac{\sum(x - \bar{x})(y - \bar{y})}{\sqrt{\sum(x - \bar{x})^2 \sum(y - \bar{y})^2}}$$

To understand the impact of female work participation rate on child sex ratio; the state has been spatially divided into the following correlation categories:

Degree	Positive	Negative
Perfect	1	-1
Strong	0.75 to 0.99	-0.75 to -0.99
Moderate	0.25 to 0.74	-0.25 to -0.74
Weak	0.01 to 0.24	-0.01 to -0.24
No	0	0

4. Results and Discussion

As far as the correlation between these two variables (female work participation rate and child sex ratio) in the state was concerned, both found weak positive correlation (0.24) in 1991. In 2001, a moderate positive correlation (0.36) emerged between both the variables. In the next decade 2011, it is surprising to note that both the variables show weak negative correlation (-0.16).

4.1. Areas with Positive Correlation

Only one district of Punjab namely, Gurdaspur showed perfect positive correlation (1) between female work participation rate and child sex ratio in 1991. It was located in *Majha*, at extreme north of the state (Map 1). After a decade, in 2001, one district (Taran Tarn) of *Majha* recorded perfect positive correlation (1) in this context (Map 2). But in 2011, not even a single district of the state showed perfect positive correlation between female work participation rate and child sex ratio (Map 3).

In 1991, twenty percent districts of Punjab reported strong positive correlation between female work participation rate and child sex ratio. Out of these, the strongest positive correlation (0.96) between these two variables was registered in Moga district followed by Faridkot (0.95), Rupnagar (0.92) and Kapurthala (0.77). Half the districts of this category belonged to *Malwa* and another half to *Doaba*. Whereas in 2001, only one district of the state namely, Moga showed the strongest positive correlation (0.95) in this respect. One decade later in 2011, two districts namely, Bathinda (0.94) and Muktsar (0.80) found strong positive correlation between these two variables (Table 1).

Moderate positive correlation between female work participation rate and child sex ratio was found in fifteen percent districts of the state in 1991. Among these, two districts were located in *Malwa* and rest in *Majha* (Map 1). In 2001, about sixty-five percent districts recorded moderate correlation in this regard. About three-fourth districts of *Doaba*, sixty-nine percent of *Malwa* and one of *Majha* are included in this category. After one decade in 2011, about twenty percent districts of the state reported moderate positive corelation.

As far as the low positive correlation between these two variables in 1991 was concerned, three districts of the state namely, S.B.S Nagar (0.17), Firozpur (0.22) and Jalandhar (0.24) recorded low positive correlation in this regard. Ten years later in 2001, not even a single district of the study area lies in this category. While in 2011, three districts belonged to this category. All these districts are in *Malwa* (Map 3).

Analysis reflects that the correlation between female work participation rate and child sex ratio was highly significant during the entire study period (Table 1). The relationship between these two variables reveals that a positive effect of female work participation rate on child sex ratio was seen in almost half the areas of the state in 1991. It is significant to note that the relationship between both became more interactive in 2001. Because the child sex ratio was increased with the increase of female work participation rate in all the areas of the state except a few in 2001. But after the passage of one decade in 2011, female work participation rate was found to have negative impact on child sex ratio in most of the areas of Punjab, especially in the central areas. *Malwa* region was found significantly affected in this context.

Overall, it has been observed that with the increase in female work participation rate, the child sex ratio had also increased to some extent in the state. But in 2011, this situation had been changed. It is a fact that participation of females in work raises their socio-economic status in the household and society. High level of labour force participation by females may enhance their value and reduce son preference (Dyson and Moore, 1983; Rosenzweig and Schultz, 1982). There is positive association between the labour force participation of females and the relative survival of girls in the society (Rosenzweig and Schultz, 1982). Because of females' economic self-dependence, their perceptions towards the patriarchal society begin to change. Among these perceptions, there is also a perception of gender equality. Because females become well aware of the importance of daughters in society as that of the sons (Kishor, 1993). Areas of higher social status have higher labour force participation rates (Zelinsky et al., 1982). Thus, the work participation rate of females contributes positively to increase the child sex ratio.

Table 1: Correlation between Female Work Participation Rate and Child Sex Ratio in Punjab

Sr.	District/State	1991	2001	2011
1	Amritsar	0.62	0	0.45
2	Barnala	0.55	-0.60	-0.46
3	Bathinda	-0.46	0.60	0.94
4	Faridkot	0.95	0.72	-0.50
5	Fatehgarh Sahib	-0.90	0.35	0.11
6	Firozpur	0.22	0.50	-0.16
7	Gurdaspur	1	0.68	-0.62
8	Hoshiarpur	-0.47	0.35	0.67
9	Jalandhar	0.24	0.35	-0.67
10	Kapurthala	0.77	-0.90	0.46
11	Ludhiana	-0.31	-0.63	-0.35
12	Mansa	0.55	0.32	0.20
13	Moga	0.96	0.95	-1
14	Patiala	-0.14	0.33	0.16
15	Rupnagar	0.92	0.26	-0.12
16	S.A.S Nagar	-0.71	0.43	0.37
17	Sangrur	-0.26	-0.20	-0.45
18	S.B.S Nagar	0.17	0.44	-0.38
19	Muktsar	-0.73	0.27	0.80
20	Tarn Taran	-1	1	-0.75
PUNJAB		**0.24**	**0.36**	**-0.16**

Source: *District Census Handbooks of Punjab, 1991, 2001 and 2011.*

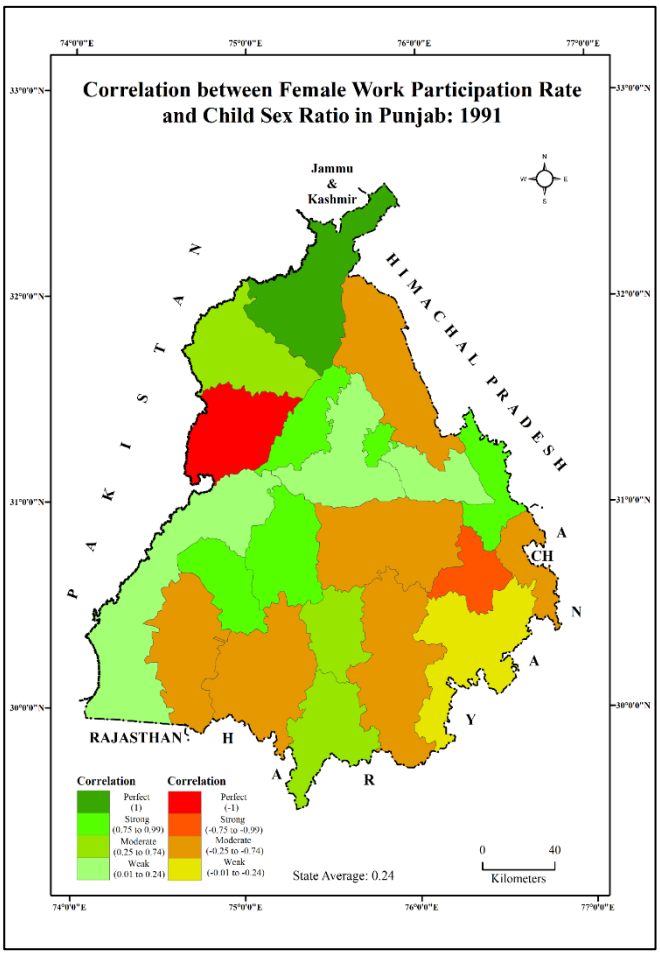

Figure: 1

Source: District Census Handbooks of Punjab, 1991

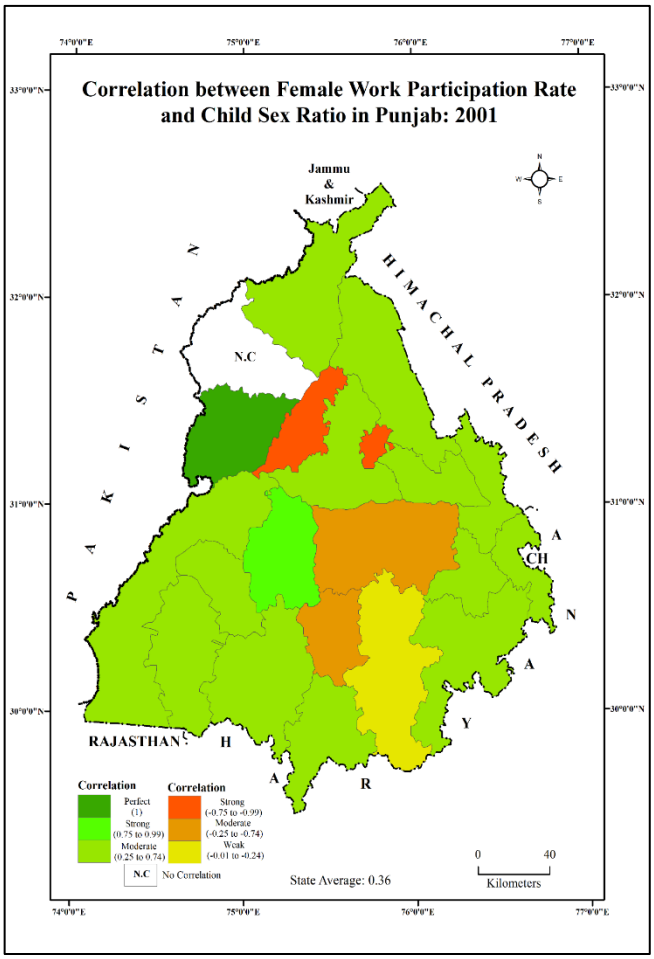

Figure: 2

Source: District Census Handbooks of Punjab, 2001

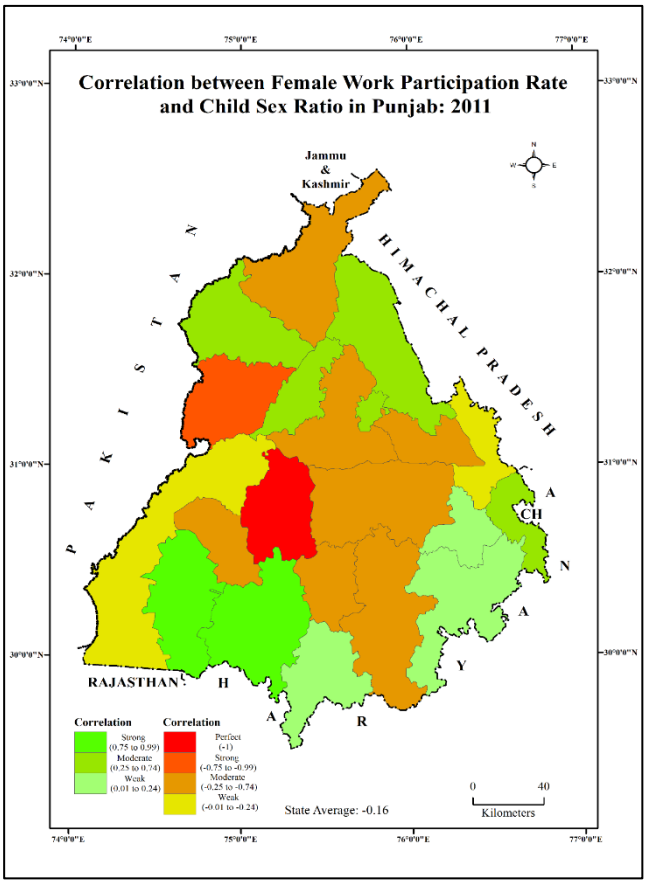

Figure: 3

Source: District Census Handbooks of Punjab, 2011

Apart from this, earning women especially in rural areas create comfortable environment in the household as well as in society from the economic point of view. It has a reforming effect on the patriarchal structure. Due to the economic status of females, people start treating girls as equal to boys and do not shy away from giving birth to girls. Women's income is a positive indicator of reducing son preference and increases the value of girl child. It ultimately leads to increase in the number of girl children and high child sex ratio. Secondly, due to more exposure of working women than that of housewives, they are comparatively more exposed to gender discrimination in the society. It ultimately has a positive impact on child sex ratio.

4.2. Areas with Negative Correlation

Only one district of the state namely, Tarn Taran from *Majha* recorded perfect negative correlation (-1) between female work participation rate and child sex ratio in 1991. It is significant to note that not even a single district lies in this category after one decade in 2001. In 2011, again one district of the state namely, Moga reported a perfect negative correlation (-1) between these two variables (Table 1).

Strong negative correlation (-0.90) between female work participation rate and child sex ratio in 1991 was shown by one district of the state namely, Fatehgarh Sahib. In 2001, Kapurthala district recorded the strongest negative correlation (-0.90) in this regard. Ten years later in 2011, only Tarn Taran district comes under this category.

About thirty percent districts of Punjab showed moderate negative correlation between these two variables in 1991. Top position in this regard was occupied by Muktsar district which showed -0.73 points correlation. It is worthwhile to mention here that out of all these districts, five belonged to *Malwa* and rest of one to *Doaba* (Map 1). One decade later in 2001, only two districts (Ludhiana and Barnala) appeared with moderate negative correlation between these variables. Both the districts were distributed in *Malwa*. In 2011, more than one-third districts of the state found moderate negative correlation in this context. Among these, four districts come from *Malwa* and two from *Doaba* and one from *Majha*.

As far as the weak negative correlation between female work participation and child sex ratio was concerned, only one district of the state namely, Patiala recorded the weakest negative correlation (-0.14) between these two aspects in 1991. Going forward in 2001, only Sangrur reported the weakest negative correlation (-0.20) between female work participation rate and child sex ratio. In 2011, two districts of the state showed weak negative correlation between these two variables. The weakest negative correlation (-0.12) was reported in Rupnagar district. Both the districts of this category lies in *Malwa* (Map 3).

Map 1, 2 and 3 depicts that some central and south-eastern districts of the study area had always reported negative correlation between female work participation and child sex ratio throughout the study period.

Along with the positive impact, female work participation rate also had a negative impact on child sex ratio in Punjab. This negative impact was very high during 2001-2011. Female work participation rate also works like a double-edged sword in society. In fact, the entry of females into paid labour force has triggered changes in female's position and their spatial behaviours in the society (Zelinsky et al., 1982). On the one hand, it raises the economic status of females in the society and on the other hand, due to greater social exposure of females, they become more aware of sex determination techniques. This phenomenon is more prevalent in urban areas than in rural areas (Sudha and Irudaya Rajan, 1999). Even earning rural

females also become aware of the use of sex determination techniques like ultrasound and abortions due to their outside exposure. Females who actively participate in work force do not hesitate to kill the girl foetus to fulfil the desire of a son in the family because of the means of good earnings and awareness about abortions. Consequently, female work participation rate negatively affects the child sex ratio.

Another significant fact is that Green Revolution also led to changing social norms of Punjabi society with the passage of time. Due to the advent of Green Revolution, the human labour of the state has been replaced by machinery. The process of mechanization impacted the labour, especially the local female labour in the most adverse manner (Mukherjee, 2013). These mechanical innovations contribute to lowering the female work participation rate in Punjab which is further responsible in reducing the economic importance of females in the household and in the society. It ultimately increases son preference which leads to low child sex ratio in Punjab.

4.3. Regional Variations in Impacts of Female Work Participation Rate on Child Sex Ratio

At the regional-level, differences in correlation have been found between female work participation rate and child sex ratio during the entire study period (1991-2011. Correlation between these two variables varies from one region to another.

In case of *Majha* region, moderate positive correlation (0.26) had been registered between female work participation rate and child sex ratio in 1991. Both the variables observed strong positive correlation in 2001 and 2011 i.e., 0.77 and 0.87 respectively (Table 2).

Table 2: Region-wise Correlation between Female Work Participation Rate and Child Sex Ratio

Region/State	1991	2001	2011
Majha	0.26	0.77	0.87
Malwa	0.10	0.14	-0.12
Doaba	0.24	0.48	-0.04
PUNJAB	**0.24**	**0.36**	**-0.16**

Source: *District Census Handbooks of Punjab, 1991, 2001 and 2011.*

As far as the correlation between female work participation rate and child sex ratio in *Malwa* was concerned, it was a weak positive correlation i.e., 0.10 in 1991 and 0.14 in 2001. But a very surprising finding has come out that in 2011, the relationship between these two variables was found weak negative (-0.12).

Doaba had reported low positive correlation (0.24) in this regard in 1991. In 2001, a moderately positive correlation (0.48) was seen between these two variables in this region. It is surprising to note that a weak negative correlation (-0.04) between both the variables emerged in 2011.

It is quite obvious from the analysis that the female work participation rate and child sex ratio was always positively correlated in *Majha* region of the state during the entire study period. It appears that with the increase of female work participation rate, the child sex ratio was on increase in *Majha* during this period (Table 2). It is significant to mention here that in the beginning, *Malwa* and *Doaba* showed positive correlation in this context whereas it was negative in 2011.

Summing Up

The study found that with the increase in female work participation rate, the child sex ratio also increased in Punjab, especially during 1991-2001, whereas in 2011, the situation reversed in this regard to some extent. It has been observed that participation of females in work raises their socio-economic status in the household and society. High level of labour force participation by females may enhance their value and reduce son preference. There is positive association between the labour force participation of females and the relative survival of girls in the society. The analysis also shows that the female work participation rate and child sex ratio were always positively correlated in *Majha* region throughout the study period. But *Malwa* and *Doaba* reflected negative correlation in 2011.

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