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Gender Dynamics in Literacy: A Comparative Analysis of Non-Agricultural and Non-Household Industrial Workers in the Offshoot Districts of the Erstwhile Lower Subansiri district of Arunachal Pradesh

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ABSTRACT

The study investigates gender disparities in workforce participation in the three districts of Arunachal Pradesh. District Keyi Peniyor, Kamle and Lower Subansiri are the area of the study, where the first two districts are curved out from the third district. Despite near parity in population gender ratio, female workforce participation lags behind males. It explores the relationship between female literacy and workforce engagement, aiming to understand the impact of literacy on opportunities for women. This study examines literacy and work participation rates in the three districts. It analyzes the relationships between different worker categories and literacy levels, focusing on main and marginal other workers. Regression model have been used to understand workforce dynamics. The results shows that when comparing male and female populations, the participation of literate males as 'other workers' exceeds that of female. Whereas, for 'worker (all categories)', the work participation rate is more for females than male.

Key words: work participation, literacy rate, urbanization, Other workers.

Introduction:

In India, gender equality in workforce is still far from reality. Inspite of increasing female literacy all over the country, a clear gender difference is seen in economic participation with low female work participation rate in organized sector, (Bhattacharyya 2021). In today's rapidly evolving global landscape, the role of women in the workforce is not only crucial for economic development but also for achieving gender equality. One of the fundamental pillars underpinning women's empowerment is literacy, which serves as a catalyst for increased participation in the

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workforce. However, despite the undeniable benefits of literacy for women's workforce participation, significant challenges persist. Gender disparities in access to education, cultural norms, and societal expectations often hinder women's educational attainment and workforce participation. Addressing these barriers requires a multi-faceted approach involving government policies, community engagement, and advocacy efforts aimed at promoting gender equality and investing in education and skill-building initiatives tailored to women's needs. (Chatterjee 2018). This paper is an attempt to make a study on the trend of women literacy rate and pattern of work participation in the three districts Keyi Peniyor, Kamle and Lower Subansiri of Arunachal Pradesh in compared to the male counterpart of the same districts.

Operational terms:

In Census of India, 2011, the economic activities of individuals are mainly classified into three categories, namely (1) main workers, (2) marginal workers, (3) Non worker. Each Main and Marginal workers are further categorized in (1) Cultivator, (2) Agricultural labour, (3) Household industry worker and (4) other workers. The table 1 below holds a brief description of these classification of workers

Table 1: Classification of work type as per Census

Type of workers	Work description
Main workers	A person who has worked for major part of the reference period (i.e. six months or more during the last one year preceding the date of enumeration) in any economically productive activity is termed as 'main worker'
Marginal workers	Who worked for less than six months (180 days) in the reference period are termed as Marginal Workers. Marginal workers are further bifurcated into two categories i.e. those who worked for 3 months or more but less than 6 months and those who worked for less than 3 month.
Cultivators	A person is classified as cultivator if he or she is engaged in cultivation of land owned or held from Government or held from private persons or institutions for payment in money, kind or share.
Agricultural Workers	Any individual working on any land which belongs to some other person, for wages, in money or otherwise, or even on sharing basis, will be termed as Agricultural labour.
Household industry	Household industry is defined as an industry conducted by one or more members of the household at home or within the village in rural areas

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workers	and only within the precincts of the house where the household lives in urban areas. The activity relate to production, processing, servicing, repairing or making and selling of goods.
Other workers	All government servants, municipal employees, teachers, factory workers, plantation workers, those engaged in trade, commerce, business, transport, banking, mining, construction, political or social work, priests, entertainment artists.
Source: Census report 2011	

Literature review:

Female labour force participation rate has been computed based on characteristics such as fertility rate, average household size, literacy rate, sex ratio, urbanization rate, and dependency ratio, in a study by T.C. Lama 2021. The research paper concludes that there will need to be an increase in the supply of jobs that women typically select. In addition, measures aimed at gender sensitization and flexible work schedules are crucial for increasing the percentage of women in the labour force.

R.Lahoti and H. Swaminathan (2013) examined the relationship between women's employment, the composition of economic growth, and the level of output in their study .This study employed a different method to estimate the female labour force participation. The report concludes that while there is a U-shaped association between economic development and women's employment in some cross-country case studies, however there is no establish relationship between economics development and women labour force participation rate. Women are more affected than men by India's lack of employment-intensive economic growth. Although they usually require a lot of labour, the manufacturing and agriculture sectors have not driven India's economic expansion. The rise of the service sector has been primarily driven by its high skill requirements, which most women do not possess.

The degree of literacy in a few chosen villages in Nawada district, Bihar, is examined by M.Yadav (2024). The study reveals that, in comparison to the district as a whole, Bihar, India, and the sample villages, literacy rates are extremely low. Men are significantly more literate than women. The female literacy rate in each of the sample communities is remarkably low. These villages' occupational structures are significantly lower than the district and national averages. The rate of work involvement is unusually low, especially for women.

A similar study was done by S.Nagaich & P.Sharma (2014) in the state of Punjab. The study reveals that the women’s engagement in Punjab was lower and varied by region in comparison to

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their male counterparts. The paper's main conclusion is that women's WPRs do not rise in tandem with rising educational attainment. There was not a single district where the WPR of women exceeded that of men. Reproductive labour and household responsibilities are found to be important factors influencing female labour force participation on the supply side.

Another study of S. Dasgupta and S.S.Verick (2017) emphasizes on the difficulties that Asian women encounter in obtaining more and better professions, based on in-depth fieldwork and unique comparative study. The continent's remarkable growth narrative has been greatly aided by the substantial contributions made by women throughout. Still, their degrees of participation are constrained by social conventions and financial considerations.

N. Srivastava & R. Srivastava (2010) highlighted that the employment of women in rural areas has increased over time, most of them are still self-employed or work as temporary employees in the agricultural industry. They experience a variety of discriminatory practices, including as being forced into low-paying positions due to job-typing. Increased labor involvement alone does not produce better results; it must be combined with assets and/or greater levels of education. While women's participation in the workforce may not be significantly impacted by education, among those who are employed, education is the most significant factor in determining higher-quality non-agricultural jobs. Women's autonomy allows women to enter non-agricultural employment; it is measured by their mobility, desire to join self-help groups, and ownership over their land.

The country of Sri Lanka, which has a long history of gender equality in enrollment in and completion rates of schooling, is the subject of this study. Sri Lanka has also been marked by low and stagnating female labour force participation. The reason for Sri Lanka's inability to convert the increases in education of its high school girls into female labour force participation is still a mystery. The findings of the study by Gunewardena, (2015) stated that women are similar to men in terms of having non-cognitive talents that are valued by the market and have greater assessed cognitive competence than males. Instead, the data demonstrate how the market treats men and women differently when it comes to skills: males get paid more. Furthermore, women who enter the labour market do not show any monetary returns related to cognitive skills, which suggests that state intervention in the labour market may be necessary.

K. S. Das & D.K. Mishra (2018) looks at the nature of employment opportunities, the trend, and the underlying causes of women's labor force involvement in rural areas of Assam. Women in the eastern plains and districts with a greater concentration of tea plantations report higher levels of work engagement when it comes to regional differences in female labor force participation. The study analysis, a complex interaction between a number of individual, household, societal, and economic factors leads to female workforce involvement. Additionally, the data shows that

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having land and having a higher degree of education are beneficial variables that encourage female workforce involvement in rural locations. But having kids in the home completely destroys a woman's ability to enter the rural labor market.

D. Chatterjee (2018) stated that the tertiary sector has employed the second-highest labor force behind agriculture and contributed more than half of the GDP. With the growth of new services like IT and BPO and the extension of already-existing services like health and education, among others, the economic reforms of 1991 raised hopes that women would participate in the labor force more frequently. Though women's lives have improved in many areas as a result of service liberalization, their employment situation has not changed all that much. Research indicates that women are still overrepresented in the unorganized sector and in low-wage, low-mobility jobs. The current study examines the status of female main and marginal workers in the tertiary sector in relation to socio-economic demographic characteristics and recommends policies to boost the proportion of women employed in this industry.

Objective of the study:

To examine the disparity between Male and Female population among Literate people according to their engagement as working category. In ideal situation, the higher literate people would be engaged in non agricultural and non household industrial sector.

The administrative structure and demographic indicators of the study area:

The erstwhile Subansiri District in Arunachal Pradesh underwent multiple administrative reorganizations over time. In May 1980, it was divided into Upper Subansiri and Lower Subansiri districts. Later, in September 1992, Papumpare District was created from Lower Subansiri. Thereafter, Kurung Kumey District was formed in April 2001, followed by Kamle District in October 2017. The most recent division occurred in February 2024, when Keyi Panyor District was established with Yachuli as its headquarters.

According to the 2011 Census, Lower Subansiri had 8 administrative circles, 579 villages, and a population of 83,030 (41,843 males and 41,187 females). After the Arunachal Pradesh (Reorganisation of Districts) (Amendment) Act, 2017, Kamle District was created with its headquarters at Raga. With the creation of Keyi Panyor in 2024, the number of villages needs to be reorganized as per the Census 2011 list.

District Name	Number of villages
Lower Subansiri	236
Kamle	170

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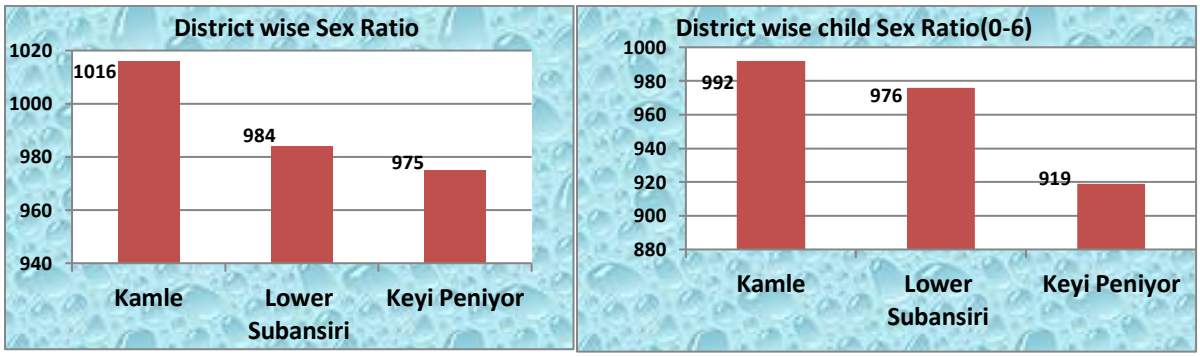
Keyi Penyor	**183**

Sex ratio in the District:

The Primary Census Abstract (PCA, 2011) data have been reorganized according to the jurisdictional changes that occurred after the 2011 Census, to assess the social and demographic indicators of the newly formed districts.



Among the three districts, Kamle records the highest overall sex ratio (1016) along with a relatively balanced child sex ratio (992). Lower Subansiri ranks next, with an overall sex ratio of 984 and a child sex ratio of 976, both reflecting a fairly balanced gender distribution. In contrast, Keyi Peniyor shows the lowest values in both indicators, with a particularly low child sex ratio of 919.

Literacy Rate:

District	Overall	Male	Female
Kamle	62%	68%	55%
ke Peniyor	71%	79%	64%
lower subansiri	81%	86%	76%

In every district, Male achieve higher literacy levels than Famale, though the difference is least pronounced in Lower Subansiri. Kamle, on the other hand, registers the poorest performance in both overall literacy and female literacy.

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Work Participation Rate (WPR) –Overall and genderwise.

District	WPR (T)	WPR (M)	WPR (F)
Kamle	38%	40%	37%
ke Peniyor	35%	39%	31%
lower subansiri	37%	44%	30%

While Kamle reflects the highest overall WPR with minimal gender disparity, Keyi Peniyor records the lowest WPR with a moderate gap, and Lower Subansiri shows the widest gender differential despite the highest male participation.

Notably, despite the fact that Lower Subansiri is having the highest literacy rate, the WPR in Kamle is highest, whereas it has lowest literacy rate.

Methodology:

Since this study is on the literacy and Work Participation rate (WPR), it is pertinent to mention that, the work participation rate is calculated as (Total population/Total worker). In this study, since the target populations is the combined three districts, the WPR of female = (Total female population/ Total female worker) similarly for Male WPR = (Total male population/ Total male worker). The main variable is 'Other worker', which includes 'main other workers' and 'marginal other worker'. The source of data for the study is primary data collected from 14 villages of these districts.

Data Collection:

Around 2% of villages in each district were picked at random, and from these villages, roughly 5% of households were randomly included in the study to ensure a representative sample.

District Name	**Number of villages**	**number of villages**
Lower Subansiri	236	6
Kamle	170	4
Keyi Penyor	183	4

Once the villages were chosen, household for each village were estimated by applying a growth factor to the 2011 figures. This factor was calculated based on the population increase between

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2011 and 2022. According to the Sample Registration System Statistical Reports for 2011 and 2022, the population in 60 statistically selected sample units rose from 36,000 to 53,000. This corresponds to an approximate 47% increase, which was used to adjust household numbers in the villages included in this study.

Subsequently, 5% of households from each selected village were surveyed for this study. The sample population are in the age group 18 and above are enumerated. As such, 179 individuals from Kamle district, 301 from Lower Subansiri district, and 173 from Keyi Penyor district were enumerated for data collection.

Variables collected for the study is as follows:

1. Name.	5. Worked any time during the last year (main worker, Marginal worker, Non worker)
2. Sex.	6. Category of Economic activity (cultivator, Agricultural worker, Industry worker, Other worker) (for Main and Marginal worker)
3. Age	7. Occupation (actual work) if 8 is not cultivator or Agricultural work.
4. Literacy Status	

Now for analytical purpose, the variables have been re coded as follows:

Sex: male-1, female-2 ; **Literacy Status**: 1. Illiterate; 2. Literate without formal education; 3. Below Class 4; 4. Above class 4 but below class 8; 5. Above class 8 but below class 10; 6. Above class 10 but below class 12; 7. ITI / Diploma / Certificate; 8. Bachelor / Undergraduate; 9. PG Diploma; 10. Master/Post graduate; 11 M.Phil/Doctorate & above; **Occupation**: There are two categories of occupation: **Category 1**: Worked any time during the last year ; Main worker (worked in 6-12 moths in last 12 months); (ii)Marginal worker (worked in 0-6 months in last 12 months; (iii)Non worker; **Category 2:** Occupational Sector (i)Agricultural worker; (ii) Cultivator; (iii) Industry worker, and (iv) Other worker

We recode the above as follows:

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Work status	Category 1	Category 2
9	Main worker	Other worker
8	Marginal worker	Other worker
7	Main worker	Industry worker,
6	Marginal worker	Industry worker,
5	Main worker	Cultivator
4	Marginal worker	Cultivator
3	Main worker	Agricultural worker,
2	Marginal worker	Agricultural worker,
1	Non worker	

For analytical purpose, considering combined 3 districts, the relationships between the following variables are worked out.

(i) Number of Main other workers and Number of literates

(ii) Number of (Main+ Marginal)_Other workers and Number of literates

(iii) Number of Total Workers (includes all categories) and Number of literates

The equation for analyzing the data is as below. The same equation will be used separately for analyzing the male and female data.

1. $y_{1i} = a_1 + a_2 x_i + e_i$ where
   $y_{1i} = Number\ of$ Main Other Worker in ith village and
   $x_i =$ Number of literates in ith village. i = 1,2, ……,14
2. $y_{2i} = a_1 + a_2 x_i + e_i$:
   Where $y_{2i} = Number\ of$ Main and Marginal Other Worker in ith village
   $x_i =$ Number of literates in ith village. i = 1,2, ……,14
3. $y_{3i} = a_1 + a_2 x_i + e_i$:
   Where $y_{3i} = Number\ of$ Worker (all categories)in ith village
   and $x_i =$ Number of literates in ith village. i = 1,2, ……,14

Results of the regression:

As per the equations frame for the regression the result are as below:

For female population data,

I. Equation 1 results as $y_i = 1.92 + .27x_i$, (R = .4, p >.001) which implies that if female literacy is increased by 100, Work participation of female literate persons under Main

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Other Worker will be increased by 27. Further, while such literate people are working in the ideal situation, there is no significant difference between their literacy level.

II. Equation 2 results as, $y_i = -1.3 + .60x_i$, (R = .70, p <.001)which implies that if female literacy is increased by 100, Work participation of female literate persons under (Main + Marginal) Other Worker will be increased by 60. Here, p value indicates that there is significant difference in the literacy level of female population.

III. Equation 3 results as, $y_i = -2.1 + .87x_i$, (R = .92 and p <.001), which implies that if female literacy is increased by 100, Work participation of female literate persons under Worker (all categories) will be increased by increased by 87. In this case, p value suggests that there is significant difference in the literacy level of female population, while they are working in all categories.

Point I & II infers that (60% - 27%) = 33% female literate persons will be working as 'Marginal Other Worker'. Point I ,II & III suggest that (87% - 60%)=27% female literates are working either in 'Agricultural sector' or 'household industry sector'.

For male population data,

I. Equation 1 results as $y_i = -16. + .51x_i$, (R = .73, p (.003) > .001)which implies that if male literacy is increased by 100, Work participation of male literate persons under Main Other Worker will be increased by 51.

II. Equation 2 results as, $y_i = -.92 + .67x_i$, (R = .79 and p =.001), which implies that if male literacy is increased by 100, Work participation of male literate persons under (Main + Marginal) Other Worker will be increased by 67.

III. Equation 3 results as, $y_i = .69 + .85x_i$, (R = .97 and p (0) <.001), which implies that if male literacy is increased by 100, Work participation of male literate persons under Worker (all categories) will be increased by increased by 85.

Here, for male population, it can be seen here that (67% - 51%) = 16% male literate persons will be working as 'Marginal Other Worker'. Point I, II & III suggest that (85%-67%) = 18% male literates are working either in 'Agricultural sector' or 'household industry sector'.

Discussion :

A relative comparison among male and female population on the above outcome is as follows:

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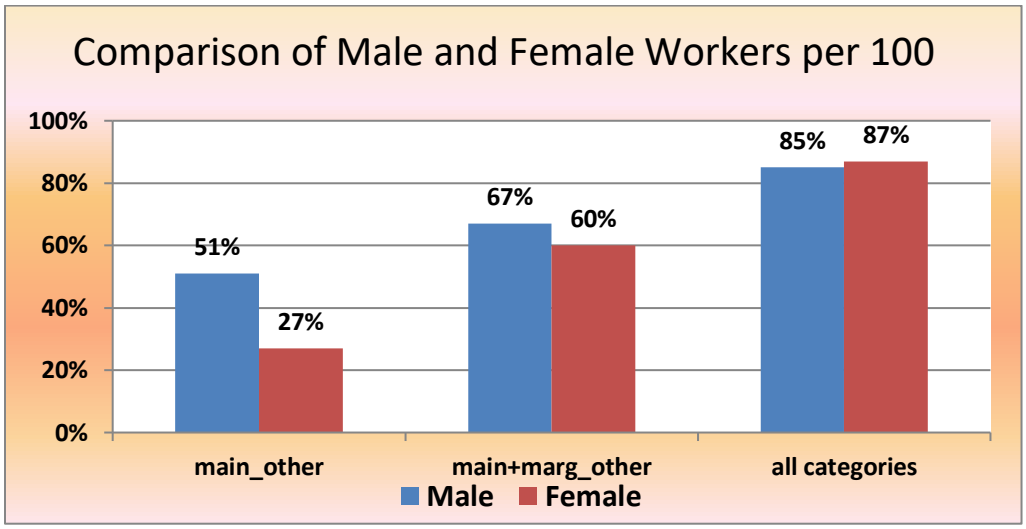

The chart compares male and female workers (per hundred literate persons) across three categories: main other, main + marginal other worker, and all workers. Males are almost twice as represented as females in main other worker category and domnate strongly (51% vs. 27%). However, the gap narrows when marginal work is included (male-67% vs. female- 60%), reflecting higher female participation in marginal (other)work. Overall, all kind of work, i.e., included agricultural work as well as household industry work along with other works, females slightly surpass males (87% vs. 85%), showing stronger female participation among literates when all forms of work are considered.

Conclusion:

Impact of education on occupational structure highlights the extent of educational inequality existing among different sections of occupational structure. (M. Yadav, 2020, R. Kapur. 2018). The present study finds an existing inequality among the gender in term of literacy rate and work participation. As the result of the regression reveals that with every increase in literacy the rate of increase in work force participation of female compared to male in case of main other worker, which is ideal work for literate people is significantly low. Whereas, while considering agricultural and household industrial works, female literae are higher than male literate.

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