

Feminisation of Vulnerable Employment- Evidence from Indian States

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Abstract

The paper is an endeavour to study the feminisation of vulnerable employment across Indian states using the data from the recent Periodic Labour Force Surveys (PLFS). The plight of vulnerable employment has been miserable for women despite a continuous rise in the educational enrolment and rate of labour force participation among them. They are nearly 12 percentage points more likely to be in the stated category (60 per cent of female employment) than male workers. Across the General Category States (GCS), the incidence is alarming in Uttar Pradesh, followed by Rajasthan, Bihar and Jharkhand. Among the non-farm sectors, the highest feminisation of vulnerable employment is observed in Manufacturing and Retail trade. Using the Multinomial Logit model, we have estimated the impact of education and vocational/technical training on the probability of different categories of vulnerable employment among female workers of rural and urban areas. In the rural area, consecutive levels of 'general education', 'early experience', and 'formal vocational training' exert an instrumental role in reducing the feminisation of the most vulnerable employment category. The incidence is likely to be reduced only after acquiring a college or equivalent education in urban area. One alarming observation is that any formal training enhances the probability of being own account workers. One distinguishing observation is that female workers from reserved castes are now comparatively better off in employment outcomes than the unreserved category in GCS.

Keywords: Vulnerable employment; Gender bias; World Development Indicators; PLFS; Logit

1. Introduction

In most developing countries dearth of productive employment opportunities and comprehensive social safety nets like unemployment benefits and job search subsidies, leaves workers barely unemployed. Vulnerable jobs are more likely to appear as avenues of last resort (Bue, et al,2022). The situation owes its support to the fact that today vulnerable employment is the dominant category in most developing countries. According to World Development Indicator (2023) it constitutes around 72.76 per cent of the total workforce in India and the plight has been miserable for women (79.57 per cent). Literature recognises this as the issue of 'feminisation of vulnerable employment' (Adeleye, 2019). In India, the continuous rise in educational attainment and labour force participation among women is coexisting with their sharp over-representation in the group of vulnerable employment. These jobs are less likely to have formal work arrangements, more likely to lack decent working conditions, social security and a voice through effective representation by organisations like trade unions. Further, these tasks are identified with inadequate earnings, low productivity and difficult working condition undermining workers' fundamental

rights (ILO, 2011). These are the forms of employment featuring high precariousness. This category is identified as the sum of the following employment status - 'Own account worker' and 'Contributing family workers'. These two are the subcategories of self-employment. The World Bank Group has conceptualised 'Contributing family workers' as the most precarious of the two in the sense that a high proportion of these workers often indicates weak development because their efforts are often not translated into immediate benefits like revenue, income and hence empowerment.

The incidence of over-representation in precarious work poses an additional threat in a social context where existing norms predominantly constrain women from availing outside jobs. In such a situation group of female workers who, in the first instance, are unable to get productive employment opportunities are concentrated in vulnerable employment status by necessity and despite of putting more effort into the stated work their efforts are not translated into poverty reduction (Yerrabati, 2022). Under this situation researchers find corroborating support for the fact that the rising number of female employees in vulnerable categories stifles economic growth in India (Adeleye, 2019). These observations are not only indicative of a lack of gender inclusive growth process but also the country's inability to harness a large segment of its potential capacity, threatening the country's growth prospects. The significance of greater gender equality in labour market has also been highlighted by the global financial and economic crisis in its role to support recovery, revival of the economy. Reduction of gender barriers to decent work has been critical to advancing the inclusive growth agenda and optimizing the positive effects of increased income for women, and their families (ILO, 2011). Existing literature adds to the fact that India has the highest percentage of females in vulnerable work in Asia and it is second to Nepal in SAARC countries (Adeleye, 2019). In India, the percentage of women in vulnerable work is twice that of East Asia and five times that of Western Asia. However, the issue of 'feminisation of vulnerable employment' across the major Indian states in post Pandemic situation is less explored, and an in-depth analysis of the recent rise in 'feminisation of vulnerable employment' at the individual level using a national survey is almost non-existent. With this background, our present study is an endeavour to substantiate the existing research gap of analysing the issue at the state and individual levels respectively.

Here, we investigate the issue of 'Feminisation of Vulnerable employment' at the state level using data from recent Periodic Labour Force Surveys. Our analysis also attempts to solve the puzzle of inequality in the labour market by looking at the effectiveness of the consecutive levels of education and various training initiatives.

Our study supports the fact that the recent rise in female labour force participation is coupled with an increase in the feminisation of vulnerable employment¹. Females are overrepresented in the vulnerable category of employment by 12 percentage points at the national level. There exists a huge interstate variation in the probability of feminisation of vulnerable employment. Using PLFS (2023-24) data, general observation is that gender disparity in employment outcome is in line with the national average among the General Category States (GCSs). Southern states are observed to be better performers in this context. It also reveals the unconditional probability of being exposed to the perilous employment status among males and females across different age groups, levels of general and technical education and different industries. Hardship is glaring among young female workers belonging to the age group of 15-29. One

¹ World Development indicator shows vulnerable employment among male and female in India 2021, 2022 and 2023 were 74.55 %, 72.59, 70.14% and 77.75%, 77.95% and 79.57 respectively.

Female labour force participation with basic education has increased from 22.98 to 31.72%. the statistics for male is 76% and 77% respectively (World Development Indicators) from 2021 to 2023. (<https://databank.worldbank.org/source/world-development-indicators>)

interesting observation is that with college or equivalent qualification, feminisation of vulnerable employment nearly disappears. Among the non-farm sectors, female workers in manufacturing, wholesale and retail are more likely to be exposed to the risk. The multinomial logit estimation analysis for GCS explores the impact of individual (age, general and vocational or technical education, early experience, marital status) and household characteristics (family size, caste, religion) on the probability that women are at risk of vulnerable employment in rural and urban areas separately. Instead of examining a binary outcome, we consider a multinomial estimation. We considered two subcategories of vulnerable employment: ‘own account work’ and ‘unpaid family work’, separately because they appear qualitatively different (as indicated by the World Bank group). We find variation in the impact of general education and vocational training in the rural and urban areas of GCS. Our findings highlight the importance of education at the college-university level unambiguously as a crucial determinant in uplifting women from vulnerable employment. One distinguishing observation is that female workers from reserved castes are now comparatively better off in employment outcomes than the unreserved category in both rural and urban areas of GCS.

The paper is organised in the following sections. Section 2 fetches evidence from existing literature in support of our conjecture that women are more vulnerable in the labour market to various socio-economic factors. Section 3 describes the data source used in our study and presents the distribution of male and female workers in vulnerable employment across rural and urban areas, social and ethnic groups, different levels of general and technical education and industries. Section 4 provides observations from different GCS and. Section 5 explains the estimation methodology and presents the estimation analysis. The last section concludes our paper.

2. Literature review

Gender equality and empowerment of women are goals that are not only intrinsically desirable for women themselves but are critical for achieving long-run sustainable development. MDG 3 (Millennium Development Goal, 2015) addresses the issue and the indicators trace crucial aspects of gender equality such as parity in educational attainment, participation in non-traditional work and representation in parliament respectively. India’s overall performance on MDGs is mixed. The country is about to achieve parity in terms of educational attainment but that parity is not transmitted in their labour market outcomes. This is implicit in labour force participation rate differentials between men and women². However, we observe a decline in the participation rate differentials in the post-COVID situation, which is accompanied by a sharp rise in female vulnerable employment³.

The gender gaps in labour market access are often analysed in the context of gender disparity in terms of wage inequality. Wage inequality delivers only a truncated picture of the labour market conditions of women in developing countries. Literature finds (Donovan et al, 2018) that labour market features of developing countries are quite different from those of rich economies. It is evident in the fact that less than half of the working population has access to wage work in developing economies like India. The situation is even worse in the context of women⁴. Further, unemployment and inactivity appear close substitutes in developing countries. Whereas wage work and Self-employment are not, contrary to that in developed

² Annual report, PLFS 2023-24. LFPR among male and female in rural area -57.9% and 35.5% and in urban area 58.9% and 22% respectively.

³ For post COVID situation in the LFPR see the appendix.

⁴ Nearly 59.4 and 73.5 per cent of working men and women are found to be self-employed following PLFS 2023-24 data according to UPSS.

economies (Donovan et al, 2018). The set of job seekers is typically equated to the stock of unemployed in rich countries, but this mapping often breaks down in countries where unemployment insurance is nonexistent. Self-employed in rich countries are likely to persist and unlikely to transit to wage work. However, the self-employed in a poor country are half as likely to find wage work as the unemployed (Donovan et al, 2018). Therefore, this status of employment has proximity with the idea of what literature recognises quasi employment, quasi search activity (Donovan et al, 2018). Besides the group of self-employed in rich countries are mostly employers, whereas in developing countries, they are more likely to be ‘Own account worker’ or ‘subsistence entrepreneur’ and ‘Unpaid Family Worker’ (Poschke, 2019)⁵. According to ILO, these two sub-categories of self-employed are vulnerable by definition while employers and employees are not. ILO motivates its definition of vulnerable employment with reference to two key features, namely i) a lower likelihood of having formal work arrangements (ILO, 2016) and ii) Inadequate earning with low productivity (ILO, 2010). WDI also refers to these two subcategories of self-employment (own account work, unpaid family work) as ‘Vulnerable’ category in developing countries. Following WDI data, we observe that in 2021 nearly 75 and 70 per cent of female and male workers in India belonged to this group. This situation is implicit in the over-representation of women in vulnerable employment or what literature recognises as the ‘Feminisation of Vulnerable employment’ (Adeleye, 2019).

Therefore, in most developing countries, referring to the gender gap in wages as an indicator of disparity against women is informative but appears as a partial representation of the situation. Hence, to understand the broader picture of gender inequality in the labour market of developing countries we need to study a comprehensive labour market indicator. Under this backdrop our present study contributes to the existing literature by analysing the current situation of labour market inequality in India in reference to the incidence of their over-representation in precarious employment.

Vulnerable workers are less likely to have formal work arrangements, access to benefits or social protection programmes, voice through effective representation in unions and are more vulnerable to economic fluctuations (ILO,2013). Further, this category is also considered as a proxy of informal employment, backed by the observation that both measures are highly correlated and declining with economic development (ILO, 2016). The significance of greater gender equality in the labour market has been highlighted by the global financial and economic crisis in its role to support the recovery and revival of the economy. Reduction of gender barriers to decent work has been critical to advancing the inclusive growth agenda and optimizing the positive effects of increased income for women, and their families (ILO,2011).

The process of development in most developing regions accompanies several structural transitions like movement of workers from farm to non-farm sector (manufacturing, construction or service sector) and the migration of workers from rural to urban area (urbanisation) respectively (Chaudhary, 2014). These transitions are associated with increasing education, decreasing fertility and hence they have major implications for women’s labour force participation. However, female labour force participation is quite a debatable issue and literature looks at it as a response to a declining household income on layoffs in the household (added work effect – Abraham, 2009), especially at times of economic downturn.

It can also be the consequence of increasing educational attainment, changing social norms, and available opportunities resulting from structural transition through the process of economic development.

⁵ In India, according to 2023-24 PLFS data, nearly 4% workers are employers, whereas the respective percentages for Own account and Unpaid Family Workers are 37% and 13%. For female the percentage of employers is hardly 1% according to the usual principle status.

Undoubtedly transfer of women's work from household to commercial employment is an integral feature of economic development (Lewis, 1954) but this process of labour market participation is often subject to household decisions, women's household workload, and safety concerns. The issue of understanding women's work is often not as straightforward as the men's. Women's labour market norms which most of the time restrict women's mobility and access to non-vulnerable (paid and secure) jobs in the labour market (Beneria, 1982) often push them to take up non-wage vulnerable employment or remain out of labour force (Thomas, 2012; Das, 2006). The implication of a large share of women in precarious category is the country's inability to harness properly a large segment of its potential capacity, which in turn threatens the country's growth prospects (Adeleye, 2019). Reports also find that women have a greater chance of living in poverty. They are in low-paid work throughout the world; around 600 million women in developing countries are in the most insecure and precarious forms of work (Oxfam India, 2020).

Adeleye et al (2019) in their paper has documented that India has the highest percentage of females in vulnerable employment in the whole of Asia and second to Nepal among SAARC countries. India's percentage of women in vulnerable employment towers its regional average of 69.6 per cent, twice that of East Asia at 43.8 per cent and five times that of Western Asia at 17.5 per cent. This vulnerability aspect and low employment rate together affect the income of women. Throughout the world, when men earned 1 dollar of labour income, women could earn only 51 cents. The pandemic, climate crisis and war situation may further aggravate the issues of inequalities in the labour market (United Nations Meeting Coverage and Press Release Report (2023)).

Bue et al (2022) using the World Bank's Integrated Income Distribution Data (I2D2) for all the developing regions (101 countries) find that women are 7 percentage points more likely to be in vulnerable employment than their male counterparts. Here, marriage and parenthood are found to be the important determinants. All the consecutive levels of education and the household head's educational attainment are found to be important factors in reducing the risk of being in the precarious employment status.

Gomis et al (ILO, 2023) in their paper have reported ILO's Jobs Gap indicator. This captures all unemployed persons who are interested to find job opportunities and shows that women have a more difficult time to get a job compared to men. 15 % working-age women as against 10% of men would like to work but do not get a job which clearly highlights the gender gap and it remained almost unchanged for two decades (2005-2022). There is gender disparity in decent work as evidenced by the fact that women tend to be overrepresented in some types of vulnerable jobs like household helping or in their relative's business rather than being engaged in own-account work.

Chakrabarty (2023) and Gupta et al (2021) in their respective articles have documented that women have a greater chance of being victims of vulnerable employment. The features of this vulnerable employment, as described in the studies, can be summarised as follows: there is time-related underemployment, as shown by the fact that women often work for fewer hours than men, especially in developing countries. Women perform substantially higher around three times more unpaid household and care work than men. Women are mostly employed as contributing family workers, often poorly paid and they lack social protection. There is also a lack of statutory rights to maternity leave and limited access to social protection which again hinders employment opportunities for women. Women face lower entitlements to social protection, especially in pension schemes. The crisis fails to portray the plight of women who stopped searching for work after repeated failures in many attempts. It has also been documented in a recent study (Das. P, 2023) that there exists significant difference in labour market transition in India from job to joblessness for male and female. Using PLFS data here it has been observed that young women in urban

area are more vulnerable of losing jobs from their casual and regular salary status as compared to male workers.

In a recent study by Lakemann (2023), the author has redefined the definition of vulnerability. Within the category of self-employed, vulnerability has been defined as the risk of having business income below a living wage threshold. The paper augments the ILO definition of vulnerable employment by inclusion of the category of employers within it and analyses the income differentials as an indicator. Unlike the stated analysis we restrict our study of 'Feminisation of vulnerable Employment' considering ILO definition of vulnerable employment in the context of India as women constitute a very meagre percentage in the group of self-employed as employer. Further the wage analysis is also supposed to give a truncated view of labour market inequality.

According to the United Nations Meeting Coverage and Press Release Report (2023), the pandemic, climate crisis, and war situation has further aggravated existing inequalities across the world in access to education, health, assets, and work opportunities. Under this circumstance, our present analysis adds to the existing literature with extensive documentation of precarious employment status among women across the major states from the latest available PLFS data. It also concludes that 'Feminisation of vulnerable employment' is of a greater concern among the youth in the labour market and individual's higher education and early experience are observed to impart an instrumental role in overcoming the challenges.

3. Data and Descriptive statistics

We use data from the Periodic Labour Force Surveys in India, 2023-24 for our analysis to have a close look at the situation of feminisation of vulnerable employment in India in the post-COVID period. The PLFS gives estimates of key employment, and unemployment indicators. It also provides a vast set of detailed socio-economic and demographic information on each individual of the households selected in the sample across all the states of India. For employed individuals, the industries are recorded using the five-digit National Industrial Classification (NIC) 2008. Following the World Bank's World Development Indicator classification, we identify an individual as vulnerable in terms of employment if the person is working as an 'Own account worker' or 'Contributing family worker' according to the usual principle status. These two are the subcategories of self-employment. Therefore, this variable is binary and restricted to the group of employed. In the following section, we compare the rate of vulnerability among men and women across their individual and household characteristics.

The figures in each column of the following table (Table 1) represent male vulnerable employment (% of total male employment), female vulnerable employment (% of total female employment) and total vulnerable employment (% of total employment). Using PLFS data for the year 2023-24, we observe that the rate of vulnerable employment among female workers is 12 percentage points higher than that among male workers (48% for male and 60% for female workers at the national average) - a clear depiction of over-representation of women in the precarious status of employment. Here we observe vulnerability among working males and females across sectors, caste and religion respectively.

The situation is more precarious in rural areas, with nearly 67% of the female workers engaged in one. However, in urban areas, the gender disparity is balanced in recent years, with 32% and 35% of male and female workers belonging to the stated status.

We observe that male workers are very unlikely to be Unpaid family workers (8%), whereas female workers are equally likely to concentrate in both subcategories (30%) of vulnerable employment status.

Table 1- Vulnerable employment across location Caste and Religion (% of total employment)

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Sector	Male	Female	Total
Rural	54	67	58
Urban	32	35	33
Categories of Vulnerable employment			
Own account worker	39	30	37
Unpaid worker	8	30	15
Non_Vulnerable	52	40	49
State Average			
GCS_Average	48	59	51
SCS_Average	48	70	55
UT_Average	35	48	38
National Average	48	60	51
Caste			
ST	50	62	55
SC	37	49	40
OBC	52	64	55
GEN	48	60	50
Religion			
Hindu	48	59	51
Muslim	49	72	53
Christian	42	52	45
Other	41	59	44

Source: Author's calculation from PLFS 2023-24 unit level data

Comparing the population average, we observe the rate of vulnerable employment is below, at and above the national average for UTs, GCSs and SCSs, respectively.

Gender disparity is at the national average among all caste groups. Muslim female workers are most likely to be in the category of vulnerable employment. Gender disparity is highest among Muslims.

Table 2 reports vulnerability across different age groups, levels of general education and industries of employment, respectively. Here we find that vulnerability of employment is more likely among the older age group. However, the feminisation of vulnerability is most likely among youth. Young women are nearly 15 percentage points more likely to be in a precarious status than male youth. For the elderly age group, vulnerability of employment is more likely a general concern as compared to gender specific inequality. Therefore, feminisation of vulnerable employment is an alarming issue among the youth workforce.

Table 2- Vulnerable employment across different age groups, levels of General education and different Industries of employment (% in vulnerable employment)

Age Group	Male	Female
15-29	40	55

30-59	47	60
59<	68	69
General Education		
No education	54	65
Primary	49	63
Secondary	50	65
Higher Secondary	50	60
Tertiary	33	25
Industry		
Agriculture	77	75
Manufacturing	26	70
Construction & Transport	23	1
Whole sale & retail	58	75
Service sector	26	14
Total	48	60

Source: Author's calculation from PLFS 2023-24 unit level data

With a movement from no education to primary and secondary level, we can barely observe any difference in the likelihood of employment in the precarious group. However, qualifying secondary, especially a college and university degree, fosters the likelihood of non-vulnerable employment. A woman with a college education is almost 40 percentage points less likely to be at risk of precarious employment. With such a movement, a male worker becomes only 21 per cent less likely to be vulnerably employed. It is implicit that education beyond a threshold level plays an instrumental role in eliminating the issue of feminisation. In other words, with a college or University degree, a female worker is less likely to be a vulnerable worker compared to their male counterpart.

There are 21 industries following the NIC 2008 classification. Based on the concentration of female workers across sectors, we organised the industries into five groups- Agriculture fishing (farm sector), Manufacturing, Whole sale & retail, Construction & Transport and Other (consisting of mostly service-based industries). Here we observed that the gender disparity in the non-farm sector is highest in Manufacturing, followed by Wholesale and retail trade. This exists in both rural and urban areas.

4. Interstate comparison

In this section we have a comparison between different General Category States of India- 18 GCS (including the newly added state-Telangana), for the post-Pandemic period -2021-22 2022-23 and 2023-24.

In percentage terms, we see that vulnerability among female has almost remained unchanged at the average, but the disparity in terms of their over-representation in the precarious category has increased. This scenario is also observed in most of the GCS in post COVID situation. Haryana, Rajasthan, UP, Jharkhand are the states where more than 70 per cent of female workers are absorbed in deplorable working conditions. These are also the states with higher gender disparity. The feminisation of vulnerable employment in Bihar has spectacularly increased during 2021-23. The situation in UP and Rajasthan has remained nearly unchanged. In West Bengal, Haryana and Punjab it has increased considerably. In southern states like- Kerala, Goa, Telangana, Karnataka the situation is comparatively better.

Table 3- Vulnerable employment across GCS

GCS	Male			Female			Disparity		
	2021	2022	2023	2021	2022	2023	2021	2022	2023
Punjab	38	37	38	40	42	47	2	5	9
Haryana	39	36	36	44	48	54	5	12	18
Rajasthan	59	58	57	85	83	82	26	25	25
UP	64	61	63	82	83	82	18	21	20
Bihar	58	61	59	52	65	73	-6	4	14
West Bengal	40	42	41	45	55	54	5	13	13
Jharkhand	51	54	52	78	80	76	26	25	24
Odissa	52	49	44	60	67	64	8	19	20
Chhattisgarh	60	60	58	72	70	69	12	10	11
MP	59	57	59	59	62	66	0	5	7
Gujrat	46	43	45	61	61	63	15	18	18
Maharashtra	40	40	40	45	50	49	5	9	9
AP	41	42	43	43	45	48	2	2	5
Karnatak	45	46	47	42	46	49	-3	0	2
Goa	28	28	28	32	25	32	4	-3	4
Kerala	28	27	28	25	29	26	-3	2	-2
Tamil Nadu	28	25	23	39	39	38	11	14	15
Telangana	59	50	49	63	58	55	3	8	6
GCS average	49	48	48	56	59	59	7	10	11

Source: Author's calculation from PLFS 2021-22, 2022-23 and 2023-24 unit-level data

5. Methodology

We estimate the impact of different levels of formal education, early experience and training on female workers' employment outcomes. The analysis is done for rural and urban areas of General Category States (GCS), respectively. This required the estimation of four sets of equations. Here, the dependent variable is categorical and unordered. An individual chooses among more than one option, deriving the maximum utility. A female faces 3 choices. Choice 1 and 2 show the cases where she is either working as 'Own Account Worker (OAW)' and 'Unpaid Family Worker (UFW)', respectively. The response variable assumes the value '0' if she is employed in the non-vulnerable category. Random utility model motivates the unordered choice models. For the *i*th individual faced *J* choices, if selects *j*th choice then we assume U_{ij} is maximum among *J* utilities (in this case *J*=3). The statistical model is driven by the probability that choice *j* is being made. Which is

$$\text{Prob}(U_{ij} > U_{ik}) \text{ for } k \neq j$$

The model is made by the particular choice of the distribution of the disturbance (ϵ_{ij}). $U_{ij} = W_i' B_j + \epsilon_{ij}$. Here our multinomial study is based on the case specific variables because explanatory variables are visible only for chosen alternatives and not for the other alternatives. Multinomial logit model is the simplest one for various reasons. Computation and interpretations are simple. Other models, like probit model are usually considered with stricter requirement of normal distribution while logit model is

considered with comparative flexibility. Let Y_{ij} be the choice made by i th person if J disturbances are independently and identically distributed.

$$\Pr(Y_i = j|w_i) = P_{ij} = \frac{\exp(w_i' \beta_j)}{\sum_{k=0}^2 \exp(w_i' \beta_k)}$$

The estimated equation provides 3 probabilities for set of choices for a decision maker with characteristics w_i . The model ensures that $P_{ij} < 1$ and $\sum_{j=0}^2 \exp(w_i' \beta_j) = 1$. For model specification $\beta_j = 0$ for one of the categories (known as a base category) and the coefficients are then interpreted with respect to that category. It is more helpful to interpret the odds ratio or Relative Risk Ratio (RRR). The Relative Risk ratio for choosing j th alternative over the base category is

$$\Pr(Y_{i=j}) / \Pr(Y_{i=0}) = \exp(w_i' \beta_j)$$

It represents the proportionate risk of choosing j th alternative over the base category when the explanatory variable changes by one unit. In our results, the RRR from any of the columns represents the proportionate risk of being in the vulnerable categories of work (OAW or UFW) with respect to non-vulnerable work when the individual specific variable changes by one unit. If the value is greater than 1 then the risk of vulnerable employment is comparatively high otherwise low.

Estimation Results

We examine the effect of educational attainment with the underlying hypothesis that better-educated and better-skilled individuals have better employment opportunities and are more likely to opt for non-vulnerable, paid and secured employment in industries. This, in turn, is expected to reduce the probability of vulnerability.

Any vocational training is also included with the expectation of addressing the issue of skill mismatch and hypothesised to increase the likelihood of getting non-vulnerable employment. Here we have categorised vocational training into two groups: ‘Informal’ and ‘Formal’. The informal group includes those who have received some training from sources like ‘hereditary’, ‘self training’ and ‘other’.

The marital status of women influences their labour force participation decisions since they are mostly under the pressure of performing household duties and reproduction. So single status of women is hypothesised to be associated with a higher probability of pursuing better employment (Panda, 2003). Besides, females’ selection of work is often considered as a household decision rather than an individual choice (Sudarshan and Bhattacharya, 2009). Therefore, household size is also likely to influence the type of employment. More specifically here we focus on the household size with the hypothesis that a larger burden will lead a woman to opt a vulnerable work.

To assess all these issues, we construct the necessary variables and incorporate them into the analysis. Table 4 and 5 report Relative Risk Ratio and standard errors from multinomial logit estimation with all the variables we have mentioned so far, for rural and urban areas of GCS for PLFS (2023-24).

The value of RRR is less than 1 for age, implying that a rise in age is associated with the probability of getting non-vulnerable work. However, RRR for square age is negative implying an “U” shape relation between age and non-vulnerable work.

Table 4- Multi-Nomial Logit estimation- Relative Risk Ratios

Variable	RURAL		UFW
	OAW	SE	
	RRR	SE	

Age	0.986	0.000	***	0.874	0.000	***
age square	1.000	0.000	***	1.002	0.000	***
Education						
Primary	0.865	0.000	***	0.805	0.000	***
Secondary	0.898	0.000	***	0.823	0.000	***
HS	0.663	0.000	***	0.655	0.000	***
Tertiary	0.169	0.000	***	0.253	0.000	***
Early Experience						
	0.736	0.001	***	0.243	0.001	***
Vocational Training						
Informal	2.062	0.001	***	1.874	0.001	***
Formal	2.344	0.002	***	0.487	0.001	***
Household Size						
	1.066	0.000	***	1.199	0.000	***
Marital Status						
Currently married	1.615	0.001	***	1.339	0.001	***
Widowed	1.205	0.001	***	0.161	0.000	***
Seperated	0.422	0.001	***	0.167	0.000	***
Caste						
St	0.246	0.000	***	0.581	0.000	***
Sc	0.381	0.000	***	0.296	0.000	***
Obc	0.780	0.000	***	0.776	0.000	***
Religion						
Muslim	1.708	0.001	***	0.817	0.001	***
Christian	0.854	0.001	***	0.662	0.001	***
Otherrel	1.198	0.001	***	0.447	0.000	***
Constant	0.845	0.002	***	8.014	0.016	***

Source: Author's calculation from PLFS 2023-24 data. "*", "**", "***" signify significance at 10, 5 and 1 per cent level

This suggests that, beyond a threshold age, labour market opportunities are narrowing down for female workers are more likely to engage in the labour market as vulnerable worker. A higher probability of being in the group of vulnerable workers among women beyond a cut off age is indicative of constraints among the older women in the labour market. They hardly have any opportunity to develop skills and are more likely to be under the compulsion of supporting their family enterprises as unpaid contributors.

We have considered completed levels of education. The table above shows that successive levels of education significantly reduce the probability of being OAW and UFW. With atleast higher secondary education, the likelihood of getting a non-vulnerable job significantly increases. Such a probability of better employment with a college or equivalent qualification is even more appreciable (the relative risk ratios being 0.169 and 0.253 in cases of OAW and UFW).

Any early work experience also translates to better employment outcomes.

Any formal training significantly reduces the probability of being an unpaid family worker. However such a training significantly increases the probability of becoming OAW. It implies that the formal training

may raise reservation wages, making women more likely to run their own enterprises instead of competing for lower wages in the labour market.

Summing up we can say that women below a threshold age with higher levels of education and some ‘on the job training’ are better placed in rural areas. We maintain that higher education and formal training successfully transmits to better labour market outcome among the rural female.

Among the control variables, the marital status of women has diverse effect on their employment status. Relative risk ratios suggest that married women are more likely to be in the group of vulnerable employment compared to unmarried, widowed and separated.

Vulnerability of employment among women rises with larger size of the household.

Here one observation worth mentioning is that in the rural areas of GCS women from reserved castes are now less likely to work as vulnerable workers.

In GCS Muslim female workers are significantly more likely to work as unpaid workers.

In urban area again a ‘U’ relationship between age and probability of being Unpaid Family Worker is observed exhibiting a higher probability of being in the group of vulnerable workers among women beyond a cut-off age. This is similar to what we have observed in rural area, indicating the constrained witnessed by older women in the labour market.

Table 5- Multi-Nomial Logit estimation- Relative Risk Ratios

Variable	URBAN			URBAN		
	OAW			UFW		
Age	1.092	0.000	***	0.843	0.000	***
age square	0.999	0.000	***	1.002	0.000	***
Education						
Primary	1.077	0.001	***	1.080	0.001	***
Secondary	1.463	0.001	***	1.233	0.001	***
HS	1.490	0.002	***	1.349	0.002	***
Tertiary	0.372	0.000	***	0.334	0.000	***
Early Experience	0.511	0.001	***	0.245	0.001	***
Vocational Training						
Informal	2.129	0.001	***	1.347	0.001	***
Formal	2.250	0.002	***	0.593	0.001	***
Household Size	1.101	0.000	***	1.255	0.000	***
Marital Status						
Currently married	1.652	0.002	***	2.756	0.004	***
Widowed	1.213	0.002	***	0.216	0.001	***
Seperated	0.999	0.002	***	0.286	0.001	***
Caste						
St	0.530	0.001	***	0.373	0.001	***
Sc	0.617	0.000	***	0.364	0.000	***
obc	0.896	0.001	***	0.964	0.001	***
Religion						

As has been verified in this study, women are overrepresented in vulnerable status of employment. The issue is more concerning in the rural areas. Descriptive and estimation analysis support the hypothesis that general education and specific vocational training programmes transmit gainful outcomes in rural and urban areas. More specifically higher education, early experience unambiguously play instrumental role in reducing the relative risk of being in most vulnerable employment status. Any formal vocational training is observed to increase the probability of being OAW, reducing the risk of being an unpaid family worker. 'Own Account Worker' category, even though it is considered to be less precarious than the other, is indicative of a lack of aspiring opportunity among urban women. This particular area calls for further investigation as to whether the training is likely to enhance entrepreneurial skills among women, making them more likely to be job creators for themselves rather than working for someone else. There are different policy needs for rural and urban areas of GCSs. In the rural areas, expansion of successive levels of education is more likely to reduce the probability of 'feminisation of vulnerable employment', whereas in the urban areas, availability of good opportunities seems a probable prescription. Here, the degree of feminisation is observed to be lower, but the availability of employable opportunities is again an issue of concern when we observe that workers with Higher secondary qualifications are confined in the most precarious status of employment.

The situation is alarming and reflects vast economic and competitive loss with larger segment of female workers confined in a vulnerable category. Following our observations in this paper we may conclude that investment in productive employable skill formation programmes along with the availability of productive opportunity, has the potential not only to reduce the disparity. In general, policymakers must take the initiative to create decent local employment opportunities coupled with better conditions of work and fair pay for female workers. Creating an environment of equal opportunity and gender-neutral treatment in the labour market would also bring significant contributions.

Also, in future discussions, we would like to explore other categories of vulnerability from wage work to observe the significance of education and background factors (family's financial status), especially in the non-farm industries of rural and urban areas

Data availability: For the present analysis raw data has been fetched from MOSPI. Three PLFS rounds have been considered for descriptive part. PLFS-2021-22, 2022-23, 2023-24. Estimation analysis is based on PLFS 2023-24 data. Data files can be provided.

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