

Journal of Social Sciences Research & Policy (JSSRP)**Impacts of Regional Barriers on the Workforce Participation of Female Healthcare Providers****Ehtesham Anwar¹, Haji Ur Rahman², Khalil Ur Rahman³, Shakeel Ahmad⁴**

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Abstract: Female healthcare providers in Pakistan face regional barriers which are obstacles for retention of career. The population for this study was from District Mansehra and Abbottabad in the Hazara Division. The population was female healthcare providers working at Ayub Teaching Hospital, Abbottabad, and King Abdullah Teaching Hospital, Mansehra. For sample Slovin's formula was used to select a stratified random sample of 289 respondents. The margin of error was 5 percent with 95 percent confidence. Data came from a structured questionnaire on a 5-point Likert scale. The analysis used SPSS with univariate, bivariate (chi-square and Goodman-Kruskal's gamma), and multivariate cross tabulation methods. Univariate results showed that most respondents strongly agreed about regional barriers like mobility limits and safety risks. Bivariate tests confirmed these results, where unsafe transport structure had strong negative effects on workforce participation. Multivariate cross tabulation examined whether the results remain same or there are some effects after controlling for background factors such as age, marital status, job experience, residence, and income.

Introduction

Although the women in Pakistan have access to education and number is increasing day by day especially in the field of medical and health related fields but when we look at the professional sectors such as healthcare then the participation of the female remains low as compared to their number of graduates are other professional diploma in health related fields. In the context of Pakistan, especially the area like Hazara Division where people prefer their traditional values we can see the number of women who are graduating in different medical degrees is increasing day by day, but when we look their participation in the professional fields such as healthcare the number of working women is not satisfactory. The phenomena which is very common and known as doctor bride syndrome reflects this contradiction. A lot of women obtain their graduation in medical field but they do not enter in practical life or they enter but do not continue their profession for the long term. The lack of participation in the

professional works for the long term is due to many social and regional barriers. As the result we can see there is a significant loss of human capital and it has great impact on the healthcare delivery system and denying communities the benefits of gender-balanced care.

Regional factors belong to geographical and contextual challenges which limit the female healthcare providers' participation in professional field. These include in rural areas people face lack of infrastructure like transportation and healthcare facilities which make it quite difficult for female healthcare professionals to travel and access jobs and as a result they prefer to stay at home over professional job. Safety concern are often related to lack of safe transportation services, harassment due to inadequate services especially in backward and hilly areas of districts Mansehra and Abbottabad. These safety risks restrict the women from night shifts or distant postings. Local norms and values in backward areas also enforce stricter gender roles, limiting women's mobility and do not allow the freedom in career choices. Regional barriers are those restrictions which include long travel distances to hospitals, scarcity of public transport, unsafe travelling especially during early morning or night shifts. This is very common in rural or mountainous areas of District Mansehra and Abbottabad. The absence of reliable and secure transport facility especially in backward areas is a great hurdle for female healthcare professionals. In emergency cases it is not possible for those professional to be there in time and often causes casualties. Furthermore, in such regions local values and norms do not allow women to travel alone and those who take steps and continue their profession are not socially acceptable. These regional challenges affect the female employment in health sector as well as in other sectors and as a result it becomes challenging for female to continue long term career.

In Hazara Division there is a mix of urban centers and remote rural areas and many of which are difficult to access. Transportation is a major challenge for women, especially for those females who are living in mountainous or from backward villages. The lack of reliable and safe public transport is the major issue which makes it nearly impossible for many female healthcare workers to travel to their workplaces. This problem effect more to those females who live far from hospital facilities. Roads are underdeveloped or unsafe in most areas, particularly during rainy seasons or in areas prone to landslides. There is the absence of female friendly travel options due to which females only have option of vans or hospital shuttles which further limits the females' access to employment opportunities. In such situations many women prefer to discontinue their professional duties and remain at home. Safety concerns are also a major regional barrier. In many backward and hilly areas of Mansehra and Abbottabad women face harassment due to inadequate transport facilities. These safety risks restrict women from accepting night shifts or distant postings. Families do not allow women to travel alone or to perform duties during late hours because of these insecurities. In such situations, many educated women even having healthcare qualifications cannot continue their job in such backward areas.

There are gender based inequalities especially when providing education to girls and boys. Financial resources are prioritized for male children in low-income households while girls as compared to boys often receive limited educational and professional opportunities. For those women who enter in the healthcare field face economic hardship such as they cannot afford transportation, uniforms, or even the informal "social costs" associated with working. The intersection of class, gender, and regional identity creates a greater burden of discrimination on many female healthcare providers in the region of Hazara Division. Women from poor families are therefore more likely to leave their jobs due to these economic and regional pressures. Language is also acting as a regional barrier in the Hazara Division. In this region many women speak local dialects such as Hindko or Pashto. However, healthcare training often conducted in Urdu or English. The mismatch of this linguistic will cause challenges in professional

communication, understanding of medical terminology, and following the institutional protocols. Female healthcare workers in the rural area of Hazara feel isolated in workplace environments that do not accommodate their native language. This sense of exclusion lowers women's confidence. It also limits their chances for teamwork and career growth.

In District Mansehra and Abbottabad, women face many regional barriers. These include poor infrastructure, unsafe travel, security risks, long distances to hospitals, language gaps, and financial problems. Together, these barriers work as obstacles which reduce the female participation in the healthcare profession. As a result, we can see many qualified women are unable to continue their careers in the healthcare sector. This creates shortage of female professionals in the region and also negatively affects the healthcare system.

Research Objectives

1. Identify urban and rural differences in mobility limits and safety concerns for female healthcare providers.
2. Assess how long travel distances affect duty attendance and acceptance of night or early shifts.
3. Examine how unsafe routes, such as broken roads or landslides, reduce willingness to continue the job.
4. Analyze how travel costs (low, medium, high) affect regular attendance and long-term job continuation.

Literature Review

Regional factors play the major role in the shaping of the experiences of female healthcare providers in Hazara Division. The districts of Mansehra and Abbottabad have unique socio-cultural, geographical, and infrastructural characteristics that can create difficulty to the participation of women in the workforce. This section examines the specific regional barriers that affect the ability of women to get job and remain in healthcare professions.

In Hazara Division, there is mix of urban centers and remote rural areas and many of which are difficult to access. Yusuf and Zafar (2022) highlight transportation as a major challenge for women, particularly those women who residing in mountainous or isolated villages. The lack of reliable and safe public transport is the major issue which makes it nearly impossible for many female healthcare workers to travel to their workplaces. Especially it is difficult for those who live far from hospital facilities (Yusuf and Zafar, 2022).

Mumtaz and Salway (2005) emphasize that mobility restrictions already strong in such areas because of the cultural norms, are worsened by the actual physical geography of the region. Roads are underdeveloped or unsafe in most areas, particularly during rainy seasons or in areas prone to landslides. There is the absence of female friendly travel options due to which female only have option of vans or hospital shuttles which further limits the females' access to employment opportunities (Mumtaz and Salway, 2005).

Security concerns are another major barrier for women in Hazara Division. In many areas, the threat of harassment, robbery, or even violence limits the women from travelling or working late hours. Families often refuse to allow women to take jobs that involve evening or night shifts, which are common in healthcare settings (Khan and Bibi, 2020). Female healthcare workers frequently face harassment not only during their travelling to jobs but also within the hospital environment. The lack of institutional support or proper harassment control policy in smaller healthcare facilities increases these challenges for women. As a result, women often leave their jobs due to a constant sense of insecurity (Khan and Bibi, 2020). In rural areas people face lack of infrastructure like transportation and healthcare facilities

which make it quite difficult for female healthcare professionals to travel and access jobs and as a result they prefer to stay at home over professional job (Khan et al., 2021). Safety concern are often related to lack of safe transportation services, harassment due to inadequate services especially in backward and hilly areas of districts Mansehra and Abbottabad. These Safety risks restrict the women from night shifts or distant postings (Nasir et al., 2019).

Inequality on the basis of socio economic factor is deeply rooted in the Hazara region. Naseem et al. (2019) note that financial resources are prioritized for male children in low-income households while girls as compare to boys often receiving limited educational and professional opportunities. For those women who enter in the healthcare field face economic hardship such as they cannot afford transportation, uniforms, or even the informal "social costs" associated with working such as gifts for supervisors or paying bribes for job placement (Naseem et al., 2019). Language is also acting as a regional barrier in the Hazara Division. In this region many women speak local dialects such as Hindko or Pashto. However, healthcare training often conducted in Urdu or English. The mismatch of this linguistic will make cause of the challenges in professional communication, understanding of medical terminology, and following the institutional protocols. Iqbal et al. (2020) mention that female healthcare workers in the rural area of Hazara feel isolated in workplace environments that do not accommodate their native language. This sense of exclusion can hinder the confidence of female and also reduce the opportunities for females for collaboration and career advancement (Iqbal et al., 2020). Regional barriers are those restrictions which include long travel distances to hospitals, scarcity of public transport, unsafe travelling especially during early morning or night shifts. This is very common in rural or mountainous areas of district Mansehra and Abbottabad. The absence of reliable and secure transport facility especially in backward areas is a great hurdle for female healthcare professionals. In emergency cases it is not possible for those professional to be there in time and often causes casualties (UNDP, 2020). Furthermore, in such regions local values and norms do not allow women to travel alone and those who take steps and continue their profession are not socially acceptable. These regional challenges effect the female employment in health sector as well as in other sectors and as a result it becomes challenging for female to continue long term career.

Research Methodology

Research Design

The research design provides the overall plan and the research methodology explains the techniques and procedures used. This study employs a quantitative, cross-sectional, descriptive design. Data were collected through a self-administered structured questionnaire from female healthcare providers working at Ayub Teaching Hospital, Abbottabad and King Abdullah Teaching Hospital, Mansehra.

Study Population and Sample Size

A stratified random sampling technique was used and the sample size was 289 (Slovin's formula, 95% confidence, 5% margin of error). The questionnaire measured regional barriers (mobility constraints, transport availability, route safety) and workforce participation on a 5-point Likert scale. Data were analysed in SPSS (v25) with univariate summaries, chi-square and Goodman–Kruskal's gamma for associations, and multivariate cross-tabulations controlling for age, marital status, residence, job experience, and monthly income.

Sample Type and Justification of Sample

For this research, a stratified random sampling technique was used. We used Slovin's formula (Slovin, E. 1960) at a 95 percent confidence level and 5 percent margin of error and the sample size we get is:

$$n = \frac{N}{(1 + N(e)^2)}$$

The final sample size is 289, distributed proportionally in the below tables:

Proportional allocation of sample size

Hospitals	Population	Sample Size
Ayub Teaching Hospital Abbottabad	899	244
King Abdullah Teaching Hospital Mansehra	165	45
Total	1064	289

Conceptual Framework

Background variable	Independent variable (Regional)	Dependent variable
Age	Regional Barriers	Female Healthcare Providers Workforce participation
Marital status		
Residence (urban/rural)		
Job experience (years)		
Monthly income		

Results and Discussion

Demographic characteristics of respondents (n=289)

Table 1

Profile	Frequency	Percentage
Age		
18–28	66	22.8%
29–40	108	37.4%
40–50	84	29.1%
51 and above	31	10.7%
Marital status		
Single	102	35.3%
Married	179	61.9%
Divorced	8	2.8%
Residence		
Urban	164	56.7%

Rural	125	43.3%
Job experience (years)		
1–10	218	75.4%
11–20	53	18.3%
21–30	18	6.3%
Monthly income		
25k–50k	103	35.6%
50k–100k	106	36.7%
>100k	80	27.7%

From Table 1 we can see in age distribution portion the respondents respond the answer about “what is your age?” and (37.4 percent) are in the 29–40 age groups. 29.1 percent of the respondents are in the 40–50 age groups while 22.8 percent respondents are in 18–28 age groups. Only 10.7 percent respondents were aged 51 or above. Data in Table 1 also showed that married respondents are among the majority as they included 179 respondents covering 61.9 percent of the sample. The single respondents are 102 covering 35.3 percent and divorced women are only 8 females covering 2.8 percent of the sample. The number of people living in urban areas is 164 which is 56.7 percent of the sample. On the other hand the number of respondents living in rural areas is 125 which is 43.3 percent of the population. Table 1 also shows that 218 respondents (75.4 percent) have 1–10 years of experience which shows early career respondents are among the majority. After that 53 respondents (18.3 percent) are among the range of 11–20 years of job experience, and only 18 respondents which cover 6.3 percent of the sample are in the range 21–30 years of job experience. By income the data shows that the 36.7 percent of respondents are earning among the range of 50k–100k. After that 35.6 percent of the total respondents are earning between the ranges of 25k–50k. The people who are earning more than 100k are 27.7 percent of the total respondents.

Table 2 Regional Barriers (rf1–rf10) Frequency and percentage (N = 289)

Item	SA	A	N	D	SD
1. I have trouble getting to work because transport is not available.	77 (26.6 %)	132 (45.7 %)	31 (10.7 %)	41 (14.2 %)	8 (2.8 %)
2. I don't feel safe while traveling to work.	59 (20.4 %)	115 (39.8 %)	40 (13.8 %)	62 (21.5 %)	13 (4.5 %)
3. Public transport is unsafe or hard to use.	59 (20.4 %)	131 (45.3 %)	49 (17.0 %)	42 (14.5 %)	8 (2.8 %)
4. Long distance makes it hard for me to work.	48 (16.6 %)	112 (38.8 %)	54 (18.7 %)	61 (21.1 %)	14 (4.8 %)
5. I don't work night shifts because it's unsafe.	58 (20.1 %)	96 (33.2 %)	44 (15.2 %)	67 (23.2 %)	24 (8.3 %)

6. No place to stay near work limits my job options.	46 (15.9 %)	123 (42.6 %)	68 (23.5 %)	43 (14.9 %)	9 (3.1 %)
7. The area I live in makes it hard to get to work.	48 (16.6 %)	100 (34.6 %)	65 (22.5 %)	72 (24.9 %)	4 (1.4 %)
8. Travel costs make it hard to keep my job.	59 (20.4 %)	88 (30.4 %)	65 (22.5 %)	61 (21.1 %)	16 (5.5 %)
9. Hospital shift times don't match public transport schedules.	41 (14.2 %)	82 (28.4 %)	81 (28.0 %)	73 (25.3 %)	12 (4.2 %)
10. I miss professional events because of travel problems.	54 (18.7 %)	116 (40.1 %)	59 (20.4 %)	41 (14.2 %)	19 (6.6 %)

Note: SA = Strongly Agree, A = Agree, N = Neutral, D = Disagree, SD = Strongly Disagree

Univariate analysis Regional barrier

The findings in Table 2 show that transport and safety barriers strongly affect women's mobility. As in table data for the first item (rf1) shows that 72.3 percent of respondents are agree that lack of transport at needed times is a major problem. This shows that female healthcare providers depend on irregular public transport or family help, which makes reaching hospitals on time very difficult. Since healthcare requires round-the-clock work, unreliable transport becomes a serious obstacle. For the second item (rf2), 60.2 percent agreed that general travel safety is a problem. This shows that women remain exposed to insecurity and harassment during daily travel. For the third item (rf3), 65.7 percent agreed that public transport is unsafe or difficult to use. This shows that unsafe travel systems discourage women from relying on public options. Iqbal et al. (2020) and Yusuf and Zafar (2022) also confirmed that poor infrastructure and cultural restrictions increase travel risks for women.

For the fourth item (rf4), 55.4 percent agreed that distance to work is a barrier. This shows that women in rural or semi-urban areas face greater difficulties because hospitals are far from their homes. For the fifth item (rf5), 53.3 percent agreed that night shifts are unsafe. This shows that working at night increases cultural stigma and safety risks. Rehman et al. (2018) also found that family disapproval and security fears are strongest when women travel at night. As in table data for the sixth item (rf6) shows that 58.5 percent of respondents reported lack of nearby housing. This shows that women often have to travel long distances due to the absence of hospital accommodation. For the seventh item (rf7), 51.2 percent agreed that poor infrastructure is a barrier. This shows that weak roads, seasonal hazards, and poor facilities make commuting difficult in hilly areas like Mansehra and Abbottabad. Mumtaz and Salway (2005) also confirmed that poor roads and hazards like floods and landslides worsen women's travel conditions. For the eighth item (rf8), 50.8 percent agreed that travel costs are a burden. This shows that modest salaries are not enough to cover regular transport expenses, discouraging women from long-term healthcare jobs. For the ninth item (rf9), 42.6 percent agreed and 28.0 percent stayed neutral about transport schedules matching duty shifts. This shows that while some women manage transport, many still face stress and uncertainty about reaching their workplaces. For the tenth item (rf10), 58.8 percent agreed that they missed professional events such as workshops, trainings, or conferences because of travel problems. This shows that mobility barriers not only restrict daily work but also block career growth opportunities.

Table 3 Female Healthcare Workforce Participation Index (FWWPI1–FWWPI10)

Item	SA	A	N	D	SD
1. I am confident in continuing my career long-term.	76 (26.3 %)	142 (49.1 %)	41 (14.2 %)	24 (8.3 %)	6 (2.1 %)
2. I can grow professionally in this sector.	75 (26.0 %)	133 (46.0 %)	50 (17.3 %)	25 (8.7 %)	6 (2.1 %)
3. I aspire to leadership roles.	72 (24.9 %)	134 (46.4 %)	37 (12.8 %)	36 (12.5 %)	10 (3.5 %)
4. Traditional gender roles discourage women from full-time work.	9 (3.1 %)	47 (16.3 %)	27 (9.3 %)	123 (42.6 %)	83 (28.7 %)
5. No sufficient maternity leave is provided at my workplace.	8 (2.8 %)	46 (15.9 %)	45 (15.6 %)	133 (46.0 %)	57 (19.7 %)
6. No mentorship or career guidance is provided.	22 (7.6 %)	79 (27.3 %)	84 (29.1 %)	73 (25.3 %)	31 (10.7 %)
7. I plan to pursue further training or specialization.	88 (30.4 %)	105 (36.3 %)	53 (18.3 %)	36 (12.5 %)	7 (2.4 %)
8. I would recommend healthcare as a career to other women.	76 (26.3 %)	122 (42.2 %)	54 (18.7 %)	28 (9.7 %)	9 (3.1 %)
9. I am satisfied with my professional journey.	83 (28.7 %)	117 (40.5 %)	45 (15.6 %)	31 (10.7 %)	13 (4.5 %)
10. I feel my contribution is valued.	65 (22.5 %)	132 (45.7 %)	48 (16.6 %)	33 (11.4 %)	11 (3.8 %)

Note: SA = Strongly Agree, A = Agree, N = Neutral, D = Disagree, SD = Strongly Disagree

Univariate analysis: Workforce participation

The findings in Table 3 show very positive trends in how female healthcare providers view their careers. As in table data for the first item (FWWPI1) shows that 75.4 percent of respondents are agree that they can continue in healthcare. This shows that women believe they can stay in the profession for long term despite challenges. For the second item (FWWPI2), 72.0 percent agreed that they have positive opportunities for career growth. This shows that women are optimistic and motivated about their future in healthcare. For the third item (FWWPI3), 71.3 percent showed confidence that they could reach leadership roles with effort. This shows that women are ambitious and see themselves as active contributors in the health sector. For the fourth item (FWWPI4), only 19.4 percent agreed that cultural restrictions hinder their career while 71.3 percent disagreed. This shows that many women resist

cultural barriers and continue to work despite restrictive norms. For the fifth item (FHWPI5), just 18.7 percent agreed that insufficient maternity leave is a major problem while 65.7 percent disagreed. This shows that women do not consider weak maternity leave policies as a strong reason to leave their jobs. These results reflect both commitment and a slow shift in family and workplace attitudes (Iqbal et al., 2020; Ahmed and Jabeen, 2020). As in table data for the sixth item (FHWPI6) shows that 34.9 percent of respondents agreed that mentorship supports participation, 36.0 percent disagreed, while many remained neutral. This shows that mentorship is not consistent and not equally available to all. Birhanu, Deressa, and Feyissa (2023) and Qureshi et al. (2021) also found in his research that mentorship is limited in public hospitals. This situation discourages younger staff from keeping long-term careers. For the seventh item (FHWPI7) in the table we can see 66.7 percent of respondents reported that they want more training and specialization. This shows females are interested in development programs have ambition and desire for long-term career. For the eighth item (FHWPI8) in the table 68.5 percent respondents agreed that they will recommend healthcare jobs to other women. This shows they are pride of their profession and recognition of its social value. As in table data for the ninth item (FHWPI9) shows that 69.2 percent of respondents expressed career satisfaction. For the tenth item (FHWPI10), 68.2 percent agreed that their work is highly valuable to society. This shows that women not only feel satisfied in their career but also recognize their role in serving the community.

Overall the data in table 3 shows those female healthcare providers are motivated, ambitious, and strong. They see healthcare as a valuable and long-term career choice. However, there are still structural barriers like weak mentorship, institutional rules, and mobility issues that limit their full participation. Feminist perspectives explain that these restrictions are not due to the lack of motivation in females but are systemic barriers that weaken career continuity (Shaheed, 2010; Kandiyoti, 1988). Thus, while motivation and commitment are strong positive forces, it is also necessary to make reforms such as female friendly policies, safe transport, maternity leave, mentorship, and fair promotions that are necessary to ensure long-term success for female healthcare providers in Hazara Division.

Bivariate analysis

Table 4 Association between Regional Barriers and Workforce Participation

Independent Variable	Dependent Variable	Statistics
I have trouble getting to work because transport is not available.		$\chi^2 = 24.313$ $P = .002$ $\gamma = -0.187$
I don't feel safe while traveling to work.		$\chi^2 = 28.103$ $P = .000$ $\gamma = -0.112$
Public transport is unsafe or hard to use.		$\chi^2 = 9.445$ $P = .306$ $\gamma = -0.054$
Long distance makes it hard for me to work.		$\chi^2 = 4.748$ $P = .784$ $\gamma = 0.111$
I don't work night shifts because it's unsafe.		$\chi^2 = 11.551$ $P = .172$ $\gamma = -0.123$
No place to stay near work limits my job		$\chi^2 = 3.701$

options.	Workforce Participation	P = .883 $\gamma = 0.028$
The area I live in makes it hard to get to work.		$\chi^2 = 17.372$ P = .026 $\gamma = -0.066$
Travel costs make it hard to keep my job.		$\chi^2 = 16.350$ P = .038 $\gamma = 0.084$
Hospital shift times don't match public transport schedules.		$\chi^2 = 13.331$ P = .101 $\gamma = -0.013$
I miss professional events because of travel problems.		$\chi^2 = 10.572$ P = .227 $\gamma = 0.098$

The findings in Table 4 show that transportation and safety barriers affect women's participation in healthcare, but their strength varies. For the first item, "I have trouble getting to work because transport is not available," the result is significant ($\chi^2 = 24.313$, $p = .002$) with gamma = -0.187 . This weak negative gamma shows that lack of transport reduces women's participation but this relation is not very strong. In simple terms, when transport is unavailable, women struggle to stay in jobs. The World Bank (2018) also found that weak mobility infrastructure is a barrier for women's economic activity. The second item, "I don't feel safe while traveling to work," is significant ($\chi^2 = 28.103$, $p = .000$) with gamma = -0.112 . This weak negative gamma shows that safety concerns lower participation. Women are discouraged from working if travelling facilities are not safe for them. Ali and Syed (2017) also confirmed this in studies on gender and mobility. The third item, "Public transport is unsafe or hard to use," is not significant ($\chi^2 = 9.445$, $p = .306$) with gamma = -0.054 . This very weak negative gamma shows no strong statistical effect, though in practice unsafe public transport may still discourage women. Farooq and Sultana (2020) also discuss in their research that safe and reliable transport help women to travel safely and in result they remain in jobs. For the fourth item, "Long distance makes it hard for me to work," the result is not significant ($\chi^2 = 4.748$, $p = .784$). Gamma is 0.111 , a weak positive value. This suggests distance alone does not reduce participation. In some cases, women still work even when commuting far. ILO (2019) noted that many healthcare workers travel long distances as their job place is far away from their residence and opportunities are limited for them in local areas. The fifth item, "I don't work night shifts because it's unsafe," is not significant ($\chi^2 = 11.551$, $p = .172$) with gamma = -0.123 . This weak negative gamma shows that many women avoid night work for safety reasons. But the results are not significant so we can say that it does not strongly reduce participation overall. Javed and Mughal (2019) also found in their research that avoiding night shifts can limit career growth in healthcare.

The sixth item, "No place to stay near work limits my job options," is not significant ($\chi^2 = 3.701$, $p = .883$) with gamma = 0.028 . The gamma value is near zero and results are not significant so it means there is no statistical relationship for this item. Accommodation issues may matter in remote areas, but they are not a major factor here. The seventh item, "The area I live in makes it hard to get to work," is significant ($\chi^2 = 17.372$, $p = .026$) with gamma = -0.066 . This very weak negative gamma shows that a backward area where transport system is not well enough slightly reduces participation but the

relationship is very weak. Women in backward areas and hilly areas face more challenges and it is consistent with the findings of UN Women (2021).

The eighth item, "Travel costs make it hard to keep my job," is significant ($\chi^2 = 16.350$, $p = .038$) with gamma = 0.084. This weak positive gamma shows that high costs do not directly stop participation but they increase financial pressure. Many women keep working out of necessity, even with expensive commutes. For the ninth item, "Hospital shift times don't match public transport schedules," the result is not significant ($\chi^2 = 13.331$, $p = .101$). Gamma is -0.013 , nearly zero. This shows no relation between this item and workforce participation though negative gamma value highlight some effect due to rigid schedules which cause daily difficulties. The tenth item, "I miss professional events because of travel problems," is not significant ($\chi^2 = 10.572$, $p = .227$) with gamma = 0.098. This weak positive gamma shows little impact on overall participation. The results are non-significant so simply we can see there is no relation of this item with workforce participation.

Overall, Table 4 shows that the some barriers strongest effect the access to job places and as a result a lot of women could not continue their job because of these obstacles. Some strong transportation and safety barriers are lack of transport, unsafe travel and residential backward areas issues that affect most. These significantly reduce women's participation. Other factors such as distance, travel costs, and rigid schedules show weaker effects. The reason behind them is that career growth is not possible without following such rigid schedules. The findings from the previous studies also confirm that women's employment depends on safe, affordable, and reliable mobility infrastructure, consistent with global research (World Bank, 2018; UN Women, 2021).

Multivariate Cross Tabulation Analysis

Table 5 Association between Regional Barriers and Workforce Participation Level – Age-Controlled Analysis

Age Group	Statistics	Level of Significance for Entire Table
18–28	$\chi^2 = 41.284$ $P = .000$ $\gamma = -0.421$	$\chi^2 = 76.537$ $P = .000$ $\gamma = -0.486$
29–40	$\chi^2 = 22.109$ $P = .001$ $\gamma = -0.398$	
41–50	$\chi^2 = 8.932$ $P = .015$ $\gamma = -0.352$	
51 and above	$\chi^2 = 4.212$ $P = .031$ $\gamma = -0.288$	

The findings in Table 5 show that transport and safety barriers affect the participation of female healthcare providers, but the strength of this effect changes with age. For the group in range 18–28, the result is significant ($\chi^2 = 41.284$, $p = .000$) with moderate gamma value which is -0.421 . This negative gamma shows that lack of safe and reliable transportation reduces workforce participation strongly for young women. In other words, women at the start of their careers are especially dependent on secure and affordable transport facilities. The World Bank (2018) also talks about the fact that young women

face greater restrictions when transport systems are unsafe or limited.

For the group in range 29–40, the result is significant ($\chi^2 = 22.109$, $p = .001$) with moderate gamma value which is -0.398 . The negative gamma shows that unsafe or costly transport continues to discourage women's participation, though the effect is slightly weaker compared to the youngest group. Women in this age range often manage to balance job and family responsibilities but still transport difficulties remain an obstacle for females. Farooq and Sultana (2020) also mention that women in this stage experience additional strain when mobility is limited.

For the group in range 41–50, the result is significant ($\chi^2 = 8.932$, $p = .015$) with moderate gamma value which is -0.352 . This weaker negative gamma shows that transport and safety issues still exist but have less effect when women gain seniority. In other words, many women in this age group may already be well established in their careers and may have better access to private or safer travelling options. Ali and Syed (2017) also support the view that established professionals are less vulnerable to mobility barriers. For the group in range 51 and above, the result is significant ($\chi^2 = 4.212$, $p = .031$) with moderate gamma value which is -0.288 . This negative gamma shows that transport and safety concerns still matter but their effect is the weakest among all age groups. Women in this stage are often near the end of their career and retirement is very close. They are already well settled in their positions so impact of mobility barriers does not affect those most.

Overall, the association across all age groups is very strong and significant ($\chi^2 = 76.537$, $p = .000$) with gamma = -0.486 . This shows that transport and safety barriers significantly reduce women's participation across the workforce. The negative effect is strongest for younger women and gradually weakens with age and experience. In simple terms, the younger the woman, the more transport and safety issues restrict her participation in professional healthcare jobs.

Table 6 Association between Regional Barriers and Workforce Participation: Marital Status-Controlled Analysis

Marital Status	Statistics	Level of Significance for Entire Table
Single	$\chi^2 = 12.740$ $P = .121$ $\gamma = 0.225$	$\chi^2 = 27.116$ $P = .041$ $\gamma = -0.262$
Married	$\chi^2 = 6.513$ $P = .590$ $\gamma = 0.042$	
Divorced	$\chi^2 = 2.311$ $P = .315$ $\gamma = 1.000$	

The findings in Table 7 show that transport and safety barriers affect female healthcare providers differently depending on their marital status. For the group of single women, the result is not statistically significant ($\chi^2 = 12.740$, $p = .121$) with gamma value which is 0.225 . This positive gamma is weak, showing that transport and safety barriers do not strongly limit participation for unmarried women. In other words, young or single women may still continue working despite facing travel challenges, possibly because they are at the start of their careers and are motivated to stay in jobs. Ali

and Syed (2017) also highlight that early career women often persist in employment even when mobility issues exist. For the group of married women, the result is not significant ($\chi^2 = 6.513$, $p = .590$) with gamma value which is 0.042. This positive gamma is extremely weak, showing almost no real effect. In other words, married women face more obstacles from family responsibilities and job environment than from transport and safety issues. Farooq and Sultana (2020) also found that in South Asia, cultural and domestic roles affect married women more than mobility concerns. For the group of divorced women, the result is not significant ($\chi^2 = 2.311$, $p = .315$) but the gamma value is 1.000. This unusually high positive gamma suggests that divorced women are not discouraged by transport and safety barriers. In fact, they may be more motivated to continue working regardless of commuting difficulties, largely because of financial necessity.

Overall, the association across all marital status groups is significant ($\chi^2 = 27.116$, $p = .041$) with gamma = -0.262 . This shows that transport and safety barriers overall reduce women's workforce participation, though the impact is uneven across different marital statuses. The strongest negative effect is visible at the overall level, while single and divorced women sometimes continue working despite mobility challenges. In simple words, transport facility and safety during travelling remain important obstacles but their influence varies according to the marital status of the females.

Table 7 Association between Regional Barriers and Workforce Participation Level – Residence-Controlled Analysis

Residence	Statistics	Level of Significance for Entire Table
Urban	$\chi^2 = 74.170$ $P = .000$ $\gamma = 0.819$	$\chi^2 = 83.871$ $P = .000$ $\gamma = 0.739$
Rural	$\chi^2 = 28.851$ $P = .000$ $\gamma = 0.607$	

From the data in table 7 we can see for urban women the results are highly significant ($\chi^2 = 74.170$, $p = .000$). The gamma value is 0.819. This value is very strong and positive. This shows that better facilities such as childcare at job place, flexible working hours, and training opportunities greatly encourage women to stay in the workforce. Earlier studies argued that friendly institutional policies for women help them in continuation of their career especially in competitive urban labor markets (Ahmed and Javed, 2020). For rural women, the link is also significant ($\chi^2 = 28.851$, $p = .000$). The gamma value is 0.607. This value is strong and positive, though slightly weaker compared to urban women. This means that lack of healthcare access, transportation, and supportive facilities limit rural women's participation, but improvements in these areas can substantially increase their workforce engagement. Previous research also observed that resource support in rural settings has a direct positive effect on women's employment opportunities (Akhtar and Shafique, 2019).

Overall, Table 7 shows a very strong and significant link ($\chi^2 = 83.871$, $p = .000$; $\gamma = 0.739$). Resources and workplace facilities are key enablers of women's participation in both urban and rural areas, with stronger effects in urban contexts (Iqbal et al., 2020).

Table 8 Association between Regional Barriers and Workforce Participation Level – Job Experience-Controlled Analysis

Job Experience	Statistics	Level of Significance for Entire Table
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1–10 Years	χ^2 = 61.785 P = .000 $\gamma = 0.756$	χ^2 = 83.871 P = .000 $\gamma = 0.739$
11–20 Years	χ^2 = 41.796 P = .000 $\gamma = 0.812$	
21–30 Years	χ^2 = 2.250 P = .522 $\gamma = 0.429$	

From the data in table 8 we can see for women with 1–10 years of job experience the results are highly significant ($\chi^2 = 61.785$, $p = .000$). The gamma value is 0.756. This value is very strong and positive. This shows that if there are better facilities and access to resources such as training, career growth opportunities, and workplace friendly environment strongly support young women to remain active in the workforce. Earlier studies highlight that institutional support is most crucial for early-career women (Iqbal et al., 2020).

For women who have 11–20 years of job experience, the results are significant as values are ($\chi^2 = 41.796$, $p = .000$). The gamma value is 0.812. This value is very strong and positive. This means that mid-career women particularly benefit from resources and facilities as these help them balance both professional and family responsibilities. Earlier studies also confirm that institutional support is necessary to sustain career continuity amidst family pressures (Aslam, Bari, and Malik, 2019). For women with 21–30 years of experience, the data shows the results are not statistically significant ($\chi^2 = 2.250$, $p = .522$). The gamma value is 0.429. This means resources and facilities effect women somehow but other factors such as having retirement age near may play stronger roles in this stage of life. Also the results are not significant so it means the effect on workforce participation is not available for this age group. Previous research also discussed that the support from the resources remains important across all career stages (Sadiq et al., 2021). Overall, Table 8 shows a very strong and significant link among resources, facilities, and women's workforce participation ($\chi^2 = 83.871$, $p = .000$; $\gamma = 0.739$). Resource and facility support is a strong predictor of women's participation across different career stages, with the greatest effects observed for early and mid-career women (Ahmed and Jabeen, 2020; WHO, 2019).

Table 9 Association between Regional Barriers and Workforce Participation – Income-Controlled Analysis

Income Group	Statistics	Level of Significance for Entire Table
25k–50k	χ^2 = 36.855 P = .000 $\gamma = 0.672$	χ^2 = 64.481 P = .000 $\gamma = 0.691$
50k–100k	χ^2 = 20.317 P = .008 $\gamma = 0.541$	

>100k	χ^2	=	7.309	
	P	=	.049	
	γ	=	0.428	

From the data in Table 9 those who are between the range of 25k–50k the results are highly significant ($\chi^2 = 36.855$, $p = .000$). The gamma value is 0.672 which is positive and strong. This means if access to resources like day care center, safe transport, and healthcare department friendly environment strongly increases the participation of women in low-income families. Earlier studies also found that resource availability is crucial for women in low-income groups (Akhtar and Shafique, 2019). For women earning 50k–100k, the results are significant ($\chi^2 = 20.317$, $p = .008$). The gamma value is 0.541. This value is moderately strong and positive. It means workplace facilities, training, and career growth opportunities encourage women in mid-income groups to stay in jobs. Previous research confirmed that women in this income range benefit from institutional support that helps balance family and work (Aslam, Bari, and Malik, 2019). For women earning above 100k, the data shows the results are significant ($\chi^2 = 7.309$, $p = .049$). The gamma value is 0.428. This value is moderate and positive. It shows that even though high-income women already have more financial resources, institutional support still improves their participation. Other studies also noted that professional women value supportive infrastructure despite higher income (Iqbal et al., 2020). Overall, Table 9 results shows a strong and significant link ($\chi^2 = 64.481$, $p = .000$; $\gamma = 0.691$). Resources and facilities support women to continue their job. This link is available across all income groups but the effect is very strong on low and mid-income women (Akhtar and Shafique, 2019; Aslam, Bari, and Malik, 2019; Iqbal et al., 2020).

Conclusion

This study shows that regional barriers reduce women's participation in healthcare in Mansehra and Abbottabad. The main barriers are lack of transport during duty hours, unsafe travel, and long distances to the workplace. Univariate results show strong agreement that transport unavailability, travel insecurity, and costs are major obstacles. Bivariate tests confirm significant negative links for factors like unsafe travel and no transport. Some items show weak or no links. Multivariate cross-tabulation shows these effects still remain there even after controlling for age, marital status, residence, job experience, and income. The strongest negative effects appear for younger women and those in remote or hilly areas. The findings suggest that to keep women in workforce participation it is necessary to provide them safe and reliable transport facility especially during the duty hours. Safe traveling routes, affordable transport, and accommodation near the residence. These measures can support women's participation and retention in healthcare across Hazara Division.

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