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Gendered impacts of male out-migration: Workload, livelihood shifts, and empowerment dynamics among rural women in Uttarakhand, India

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Abstract

This research paper examines the gendered impacts of male out-migration on rural women in Uttarakhand, India, focusing on shifts in workload, livelihood patterns, and empowerment dynamics. The study reveals that male out-migration, driven by limited economic opportunities in rural areas, has led to a significant increase in women's responsibilities, encompassing agricultural labour, household management, and livestock care. Despite their expanded roles, women face persistent challenges such as limited access to resources, entrenched patriarchal norms, and minimal decision-making autonomy. Quantitative analysis of national and state-level data (2011-2021) highlights a rising workload for women in migrant households, with daily work hours increasing from 6.5 to 7.1, alongside a decline in agricultural participation. Qualitative insights underscore the dual-edged nature of empowerment, where women gain financial control but remain excluded from major household decisions. The study employs the Sustainable Livelihoods Framework (SLF) to analyze these dynamics and proposes policy interventions to address structural barriers, including land rights, childcare support, and skill development. Findings emphasize the need for gender-sensitive policies to transform women's increased responsibilities into meaningful empowerment, ensuring sustainable rural development in Uttarakhand.

Keywords: Uttarakhand, India, male out-migration, rural women, workload, livelihood shifts, empowerment

Introduction

Rural Uttarakhand, a mountainous region in northern India, is characterized by its rich cultural heritage, natural beauty, and predominantly agrarian economy. The area has, however, been facing significant socio-economic challenges, one of the most prominent being out-migration. The hills of Uttarakhand have experienced a steady outflow of men, mainly from rural areas, who migrate to urban centres in search of better employment opportunities. This pattern of male out-migration, driven by the lack of economic prospects in rural areas, has profound implications on the socio-economic fabric of the region, especially for women who remain behind.

Traditionally, rural women in Uttarakhand have played a central role in the household, engaging in domestic tasks and agricultural labour. With the increasing trend of male out-migration, these roles have expanded considerably, resulting in a heavier workload for women. Women are now responsible for managing their homes and agricultural activities, livestock care, and, in many cases, earning a livelihood. This growing burden raises critical questions about the implications of out-migration on rural women's work patterns, livelihoods, and empowerment within their households and communities.

Migration from rural to urban areas is not a new phenomenon in India. Historically, the migration of men from rural regions to cities has been driven by factors such as unemployment, poverty, land scarcity, and the lack of educational and healthcare facilities in the rural hinterlands. In Uttarakhand the harsh climatic conditions, limited agricultural productivity, and a lack of industrial development have further exacerbated these conditions, pushing many of the male population to seek employment in cities, towns, and even abroad. This migration leaves women in rural areas to shoulder the responsibilities of managing households and farms, which traditionally would have been shared with male members.

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However, out-migration also opens up new avenues for empowerment among rural women. In some instances, the absence of men can lead to increased autonomy for women in decision-making, as they take charge of household finances, agricultural management, and community participation. However, the extent to which this increased responsibility translates into empowerment remains a contested issue, as women often face numerous challenges, including lack of access to resources, limited mobility, and entrenched patriarchal norms.

Review of Literature

In the context of rural Uttarakhand, the impact of out-migration on women's workload and livelihoods is a pressing concern that requires an in-depth examination. In their study, Rajendra P Mamgain and DN Reddy comprehensively analyzed the migration trends in Uttarakhand's hill districts.

The research titled "Out-migration from the Hill Region of Uttarakhand: Magnitude, Challenges, and Policy Options" highlights the alarming rate of out-migration, which has led to demographic imbalances and the emergence of "ghost villages." The research has effectively used both primary and secondary data to explore the socio-economic drivers of migration, such as lack of employment opportunities, low agricultural productivity, and inadequate infrastructure. They also discuss the impact of migration on the local economy, particularly the failure of remittances to generate significant multiplier effects.

The research is well-structured, with clear sections on demographic changes, migration dynamics, and policy implications. It offers valuable insights into the hill region's challenges, including the overburdening of women and the weakening of social institutions. However, the paper could benefit from a more detailed discussion of potential solutions and the role of technology in addressing these issues. Another research is carried out by Gunjan Bhandari and BV Chinnappa Reddy analyses the impact of out-migration on agriculture and women's workload in Uttarakhand's hilly regions, revealing that while remittances improve household income, they do not contribute to agricultural growth. Based on data from 150 households in Pithoragarh, the study finds that migrant households neither invest in productive farm assets nor expand farming activities, leading to higher percentages of fallow land and lower livestock numbers. Instead, remittances are primarily spent on consumption, education, and savings.

Additionally, male out-migration significantly increases women's workload, as they must manage household and economic responsibilities, often shifting away from farm work to other tasks like financial management and marketing. The Chow test results confirm that remittances do not enhance agricultural productivity, as staple crops like wheat and paddy remain unprofitable due to low investment and a lack of economies of scale. These findings highlight the need for policy interventions to sustain agriculture in hilly regions by encouraging farm investments and providing support systems for women. The study contributes valuable insights into migration's economic and social consequences, emphasizing the importance of gender-sensitive policies and sustainable rural development initiatives.

Prakriti Sharma has provided a comprehensive analysis of the socio-economic and cultural changes experienced by

women in rural Uttarakhand due to male out-migration. The titled "Evolving Role of Women in the Context of Male Out-Migration: A Study in a Hill District of Uttarakhand", "the study conducted in the Almora district focuses on the impact of male migration on women left behind, particularly in terms of their livelihoods, decision-making roles, and overall well-being. The research is grounded in the Sustainable Livelihoods Framework, which helps contextualize these women's vulnerabilities and coping strategies.

The research begins by setting the stage with an introduction to male out-migration in Uttarakhand, which is driven by declining agricultural productivity, lack of livelihood diversification, and better opportunities in urban areas. This migration has led to significant changes in rural production systems and socio-cultural structures, with women taking on increased responsibilities in both productive and reproductive roles. The study aims to explore these changes and assess the role of livelihood interventions, particularly the Integrated Livelihood Support Project (ILSP) by IFAD, in mitigating the vulnerabilities faced by these women. The study is conducted in three villages, two of which are beneficiaries of ILSP, allowing for a comparative analysis. The findings reveal that women are overburdened with reproductive and productive roles, often engaging in agriculture and informal labour due to the absence of male family members. Despite their increased workload, women have limited control over land and resources, with only 11% having property rights. This lack of control restricts their access to credit and decision-making power, although they manage household expenditures without male members.

The research highlights the role of livelihood interventions like ILSP and MGNREGS in providing some relief to these women. ILSP, for instance, has helped link women to markets and form producer groups, leading to a marginal increase in income and food security. However, the intervention has not fully addressed the underlying issues of property rights, access to credit, and the heavy workload of women. The study also points out the limitations of these interventions, such as the lack of adequate processes and incomplete visualization of the context, which hinder their effectiveness.

The study concludes with recommendations for future interventions, emphasizing the need for skill-building exercises, incentivizing education, and ensuring women's effective rights to land and assets. It calls for a more holistic approach considering the broader context and asset distribution rather than focusing solely on outcomes. The study underscores the importance of empowering women to make voluntary choices about their livelihoods, which could lead to sustainable development in the region.

The study "Impact of Male Out-Migration on Women Left Behind: A Study of Two Villages in Uttar Pradesh" by Ruchi Singh examines the dual effects of male migration on women in rural India. Conducted in two villages in Uttar Pradesh, the study highlights both the positive and negative consequences of male out-migration, focusing on socio-economic, psychological, and political dimensions. Male migration is driven by factors like poverty, unemployment, and lack of non-farm jobs, leaving women to manage households and agriculture in their absence.

The study reveals that male migration increases household income through remittances, enhancing women's financial autonomy and decision-making power, particularly in

nuclear families. However, this empowerment is often limited, as women still lack control over major financial decisions, and remittances are frequently sent to male family members. On the negative side, women face increased workloads, managing both household chores and agricultural activities, leading to the feminization of agriculture, especially in lower-caste households. Emotional challenges, such as loneliness, insecurity, and fear of abandonment, further exacerbate their struggles.

Women also face difficulties accessing government schemes like MNREGA, with limited awareness and support from local authorities. While some women report increased political participation, many remain marginalized in accessing civic entitlements. The study concludes that while migration offers financial benefits, it imposes significant emotional and physical burdens on women. Moreover, the research on "Male Worker Migration and Women Empowerment: The Case of Bihar, India" by K M Singh, R K P Singh, and Anjani Kumar examines the socio-economic impacts of male labour migration on agricultural productivity, livelihoods, and women's empowerment in Bihar. Based on a 2005-06 survey of 400 households (200 migrant and 200 non-migrant) from eight villages in Madhubani and East Champaran districts, the study reveals that migrant households utilize human labour and irrigation more efficiently, leading to higher rice productivity. It is attributed to the rational use of resources and the adoption of modern agricultural technologies introduced by returning migrants. Remittances, which constitute 45% of migrant households' income, are primarily used for food, housing, education, and health care, significantly improving living standards. Additionally, some remittances are saved or invested, highlighting migration as a risk-coping strategy for poorer households.

The study also emphasizes the changing role of women in migrant households, who transition from unpaid labourers to managers of household and agricultural activities. Women in these households are more involved in farming, livestock management, and financial decision-making. However, this empowerment comes with increased workloads, particularly in agricultural tasks, as women and children often compensate for the absence of male labour. Despite these challenges, women in migrant households exhibit higher empowerment indices compared to non-migrant households, especially in nuclear families and lower-caste households. The study identifies several challenges women face, including difficulties in hiring labour, managing finances, and dealing with social stigmas. It calls for targeted interventions to support women in managing their increased responsibilities and suggests training programs to enhance their knowledge in financial, technological, and marketing management. The research titled "Migration, Labor, and Women's Empowerment: Evidence from an Agricultural Value Chain in Bangladesh" by Alan de Brauw, Berber Kramer, and Mike Murphy examines the impact of rural-urban migration on female labour participation and empowerment in Bangladesh's jute-producing households. Using a detailed panel dataset from smallholder farmers, the study explores how labour shortages caused by migration and perceived labour scarcity influence the gender division of labour and women's empowerment outcomes. The findings reveal that households experiencing migration increase the share of labour performed by female household members but reduce the use of female-hired labour. It

suggests that women work more when male members migrate, which does not translate into improved opportunities for female wage labourers. The migrant's gender (male or female) does not significantly alter this outcome, indicating that male and female labour are not perfect substitutes in this context.

The study also finds that migration increases wages for male labourers but not female labourers, widening the gender wage gap. Women's empowerment, measured using the project-level Women's Empowerment in Agriculture Index (Pro-WEAI), improves only when another female household member migrates, likely due to reduced intra-household competition. Male migration, however, does not result in similar empowerment gains for women despite their increased workload. The persistence of strong gender norms is evident, as women remain confined to post-harvest activities performed at home while men dominate field tasks. These norms limit women's ability to take on traditionally male roles, even in labour shortages.

The study highlights the need for gender-disaggregated data in agricultural research and underscores the importance of addressing underlying gender norms to promote women's empowerment. It also suggests that labour-saving technologies could alleviate the burden on female household members and create more equitable opportunities. Dr. Vijay Srivastava and Dr. Ankita Srivastava investigate the role of microfinance in empowering women in rural Uttarakhand, India. The study (Determinants of Women's Empowerment in Uttarakhand) identifies key determinants of women's empowerment and explores their relationship with microfinance. The authors emphasize the importance of rural development and the significant contribution of working women to national income and family livelihoods. However, women face socio-cultural, legal, and educational barriers that hinder their empowerment, making them more vulnerable to poverty.

The research focuses on Uttarakhand, a rapidly growing state, and examines how microfinance can empower women in this region. The literature summarizes previous studies on microfinance, showing its positive impact on women's economic and social status, including increased income, savings, and decision-making power. However, some studies note that microfinance does not always lead to significant financial improvement, especially when loans are used for consumption rather than productive purposes. The study uses exploratory factor analysis to identify determinants of women empowerment, collecting data from 500 women in self-help groups (SHGs) across four districts in Uttarakhand. The analysis groups 22 variables into eight factors: Empowerment, Self-dependent, Consciousness, Confidence, Awareness, Socio-personal, Knowledge, and Finances.

The findings reveal that education significantly influences women's empowerment with higher education levels leading to greater empowerment. Loans used for productive purposes, such as starting or expanding businesses, directly impact income generation and poverty alleviation. Women who use loans productively are likelier to rise above poverty and experience greater empowerment.

The phenomenon of out-migration and its effects on women in rural areas has been widely studied in various contexts across India, revealing both challenges and opportunities. Rao and Rana (2018) state that "the migration of men from rural areas often results in a 'feminization of agriculture',

where women take on more substantial roles in farming activities, which were previously male-dominated." This shift is evident in the hill regions of Uttarakhand, where women now manage household chores and the full spectrum of agricultural activities from sowing to harvesting along with livestock care. The additional workload, however, does not always come with increased decision-making power or control over income, reflecting a nuanced balance between increased responsibility and persistent gender inequalities. It is incredibly challenging for rural women, who often lack access to credit, technical knowledge, and markets, which further hinders their ability to improve productivity or incomes. Highlight how out-migration from rural areas "can also lead to the disempowerment of women by reinforcing their roles as caregivers while simultaneously increasing their economic vulnerability." While men may send remittances back home, the absence of a regular male presence means that women are left with limited support systems to cope with crises, such as crop failure, illness, or natural disasters. Moreover, the burden of care increases as women must look after children and older adults and, in many cases, manage the emotional strain of an absent spouse. Despite these challenges, some studies have found that women's evolving role in rural economies has the potential to promote empowerment. For instance, suggest that "in certain cases, women who can access local self-help groups or cooperatives may find pathways to empowerment through collective action, skills training, and improved access to resources." Thus, while the impacts of out-migration are multi-faceted, there is potential for positive transformation, provided the necessary institutional and community support mechanisms are in place.

These findings underscore the complexity of understanding how out-migration shapes the lives of rural women in Uttarakhand. It is essential to explore how these broader socio-economic trends intersect with local traditions, norms, and practices to either limit or enhance the prospects for women's empowerment. Therefore, this research aims to provide a detailed investigation into the nuanced experiences of rural women in Uttarakhand, assessing how out-migration has affected their workloads, livelihoods, and pathways to empowerment.

Research Problem

Male out-migration from rural Uttarakhand has created a significant shift in the social and economic dynamics of the region, particularly affecting rural women who remain behind. These women are increasingly responsible for managing households, agriculture, and community roles, leading to an overwhelming increase in their workload.

Despite this increased burden, women's socio-economic status and empowerment within the household and community remain uncertain. The problem is compounded by several factors, including limited access to resources, inadequate institutional support, and entrenched gender norms that may restrict women's autonomy and decision-making power. As a result, rural women face physical and economic pressures and the challenge of navigating complex social structures without substantial support systems.

Core Objectives

To analyze the impact of male out-migration on rural women's workload and livelihoods in Uttarakhand

This objective examines how the migration of men from rural areas has affected the division of labour, agricultural responsibilities, and income-generating activities for women left behind. It will explore changes in their daily workload, economic activities, and strategies to sustain their households and communities without male labour.

To assess the role of male out-migration in influencing women's empowerment and decision-making power

This objective aims to investigate whether the increased responsibilities shouldered by rural women as a result of male out-migration translate into greater autonomy and empowerment within their households and communities. It will evaluate the extent to which these women experience changes in decision-making power, control over resources, and participation in social and economic activities and identify the factors that either facilitate or hinder this empowerment.

Research Methodology

This study adopts a qualitative and quantitative approach to analyze the gendered impacts of male out-migration on rural women in Uttarakhand, India, focusing on workload shifts, livelihood changes, and empowerment dynamics.

Secondary data from national surveys (NFHS, NSSO), census reports, and migration studies were analyzed to establish broader trends. Quantitative methods, including descriptive statistics and chi-square/t-tests, were used to compare workload and empowerment indicators between 2011 and 2021. Qualitative insights complemented this by exploring women's lived experiences and institutional barriers. The study employs the Sustainable Livelihoods Framework (SLF) to assess how migration reshapes women's roles in rural households. Policy recommendations are derived through triangulation of findings, ensuring a robust analysis of migration's socio-economic effects.

Table 1: Male out-migration in rural Uttarakhand (2002-2016)

Year	Total Male Migrants (Rural)	% of the Rural Male Population	Primary Reason: Work (%)
2001	488,000	11.7	74.5
2007-08	640,000	15.3	79.8
2011	1,025,000	24.9	84.6
2015-16	1,350,000	30.1	87.9

Source: Census of India 2011-D-2 and D-3 Migration Tables, NSSO 64th Round-Uttarakhand Migration Report 2016

The latest official data on male out-migration from rural Uttarakhand reveals a clear and concerning upward trend between 2001 and 2016. In 2001, approximately 488,000 rural men (11.7% of the rural male population) had migrated out, with about 74.5% citing work as the primary reason. By

2011, these numbers had more than doubled to 1,025,000 migrants (24.9% of rural males), with work-related migration jumping to 84.6%. The most recent official data from the 2016 Uttarakhand Migration Report shows this trend accelerating further, with 1,350,000 rural male

migrants (30.1% of the population) and 87.9% leaving specifically for employment. This consistent rise suggests a deepening crisis in rural Uttarakhand economic opportunities and living conditions, pushing more men to seek livelihoods elsewhere. The data highlights work as the overwhelming driver of migration, accounting for nearly 90% of cases by 2016. This mass exodus, particularly from hill districts like Pauri and Almora, reflects the collapse of traditional agrarian livelihoods and the lack of local industries.

Impact on rural women's workload and livelihoods

The mass out-migration of men from rural Uttarakhand has significantly increased women's workload, forcing them to take on traditional caregiving roles and additional agricultural labour. With men leaving for urban jobs, women now manage entire farms, livestock, and forest-based livelihoods traditionally handled by men. Studies, such as those by Mehta (2019) in the *Journal of Migration Affairs* and Uttarakhand Migration Reports (2016), document how women in districts like Almora and Pauri spend 12-14 hours daily on farming, fodder collection and household chores, leading to severe physical strain. The decline in male labour has also pushed women into low-paying, informal work, such as wage labour in nearby towns or handicraft production, often without fair compensation (NSSO, 2015-16). Additionally, the feminization of

agriculture has not been matched by land ownership rights less than 10% of women own land (Census 2011), limiting their access to credit and government schemes.

Influence on women's empowerment and decision-making power

While male out-migration has forced women into greater economic roles, its impact on empowerment is dual-edged. On the one hand, research by Sati & Bisht (2020) in Mountain Research and Development found that women in migrant households often gain control over daily finances and farm decisions, leading to increased confidence and social participation. However, this shift is not systematic empowerment major decisions (land sales, children's education, migration choices) remain male-dominated, as remittances reinforce patriarchal control (Uttarakhand Women's Commission, 2018). Paradoxically, while women manage households alone, their political participation remains low panchayat reservations see high proxy representation by male relatives (Institute of Social Development, 2022). The absence of men has also led to higher emotional stress, with studies noting rising depression rates among rural women due to isolation and overwork (AIIMS Dehradun, 2021). Without structural support (land rights, childcare, mechanized farming), women's "empowerment" remains a survival mechanism rather than a transformative agency.

Table 2: Male out-migration impact on women's workload

Workload Factor	Uttarakhand (2011-12)	India (2011-12)	Uttarakhand (2019-21)	India (2019-21)
Women in Agriculture (%)	72%	65%	63.2%	55%
Avg. Daily Work Hours	6.5 (migrant HHs)	5.8	7.1	6.3
Unpaid Care Work (Hours/Day)	4.2	3.9	4.5	4.1

Source: NSSO 68th Round-Employment and Unemployment Survey (2011-12); Economic Survey 2023 (India) and PLFS 2021, PLFS 2019-20, NFHS-5 (2019-21)

The table highlights key trends in women's workload in Uttarakhand compared to India between 2011-12 and 2019-21. While the proportion of women engaged in agriculture declined in both regions (Uttarakhand: 72% to 63.2%; India: 65% to 55%), suggesting a shift away from farm-based livelihoods, women's daily work hours increased particularly in migrant households (6.5 to 7.1 hours in Uttarakhand vs 5.8 to 6.3 nationally). It indicates that reduced agricultural involvement did not necessarily lighten workloads, possibly due to a transition to informal non-farm work with longer hours. Unpaid care work also rose marginally in Uttarakhand (4.2 to 4.5 hours/day), remaining

higher than India's average (3.9 to 4.1 hours), underscoring the persistent gendered division of domestic labour. These trends align with findings from the International Labour Organization (ILO, 2018), which notes that rural women in hill states often face "time poverty" due to compounding paid and unpaid work, especially in male-outmigration scenarios. Similarly, a NITI Aayog (2020) ^[17] report on Himalayan economies highlights that declining farm work does not automatically reduce women's labour burden, as alternative livelihoods (e.g., tourism, MNREGA) often entail longer and more erratic hours.

Table 3: Women's Empowerment Indicators

Indicator	Uttarakhand (2015-16)	India (2015-16)	Uttarakhand (2019-21)	India (2019-21)
Bank Account Ownership (%)	65%	53%	78.5%	78.6%
Participation in Household Decisions (%)	68%	63%	76.3%	74.5%
Freedom to Visit Market alone (%)	58%	50%	68.9%	67.3%

Source: NFHS-4 (2015-16) & NFHS-5 (2019-21)-State Reports for Uttarakhand and All-India Summary, IIPS and MoHFW

The data reveals Uttarakhand disproportionate workload burden compared to national averages, likely exacerbated by male out-migration and limited childcare infrastructure. The rise in unpaid care work contradicts global patterns where economic development typically reduces such burdens, suggesting structural gaps in Uttarakhand support systems. The higher daily work hours in migrant households (7.1 vs. 6.3 nationally) reflect the "left-behind effect", where women

absorb additional productive and reproductive roles a phenomenon documented in Rao *et al.* (2019) ^[12] study on Uttarakhand migration-impacted villages. Meanwhile, the slower decline in agricultural participation compared to India (8.8 vs. 10 percentage points) may indicate fewer viable livelihood alternatives, as observed in Desai & Banerji's (2020) analysis of National Sample Survey data, which found hill states lagging in non-farm job creation for

women. Together, these trends call for targeted policies addressing time poverty, such as expanded childcare services and labour-saving technologies in households affected by migration.

The data presents key women's empowerment indicators for Uttarakhand and India across two periods (2015-16 and 2019-21), showing notable progress. Bank account ownership in Uttarakhand surged from 65% to 78.5%, slightly surpassing the national average (78.6%) by 2019-21, reflecting the success of financial inclusion initiatives like the Pradhan Mantri Jan Dhan Yojana. Women's participation in household decisions improved significantly in Uttarakhand (68% to 76.3%), consistently outperforming the national average (63% to 74.5%), suggesting a stronger intra-household agency. Freedom to visit markets alone rose by 10.9 percentage points in Uttarakhand (58% to 68.9%), mirroring broader national trends (50% to 67.3%), indicating gradual shifts in mobility norms. These trends align with findings from the National Family Health Survey-5 (2019-21), highlighting that Himalayan states exhibit faster empowerment gains due to better education access and lower fertility rates. Similarly, a World Bank (2022) report correlates financial inclusion with decision-making

autonomy, noting that account ownership thresholds above 75% (as achieved by 2019-21) trigger multiplier effects in women's economic participation.

The data reveals Uttarakhand consistent outperformance of national averages across all indicators, likely driven by its unique socio-demographic profile. The 13.5-percentage-point jump in bank account ownership (2015-16 to 2019-21) suggests targeted policy effectiveness, though the near-parity with India by 2019-21 indicates convergence. The 8.3-point rise in household decision-making participation underscores improving gender dynamics, possibly linked to declining dependency ratios, as observed in a study on hill states by NITI Aayog (2021) ^[18]. The market mobility gap (Uttarakhand 68.9% vs. India 67.3%) remains narrower than other indicators, reflecting persistent cultural constraints despite infrastructure improvements. It resonates with Oxfam India's (2020) spatial analysis showing that mountainous regions face unique mobility challenges due to terrain, even as digital access reduces physical travel needs. The synchronized progress across metrics supports the hypothesis that economic and social empowerment are mutually reinforcing, as demonstrated in a UNDP (2021) longitudinal study on Himalayan communities.

Table 4: Remittance dependence-rural households

Parameter	Uttarakhand (2013)	India (2013)	Uttarakhand (2020)	India (2020)
HHs Receiving Remittances (%)	22%	15%	28%	18%
Avg. Remittance (₹/Year)	₹48,000	₹35,000	₹72,000	₹55,000

Source: NSSO 70th Round (2013), RBI Bulletin Reports (2020) and NABARD Rural Financial Inclusion Survey

The table highlights the increasing reliance on remittances in rural Uttarakhand compared to the national average over two periods (2013 and 2020). In 2013, 22% of rural households in Uttarakhand received remittances, significantly higher than India's average (15%), indicating greater out-migration from the state. By 2020, this figure rose to 28% in Uttarakhand, while India saw a smaller increase (18%), reinforcing the state's deeper dependence on migrant earnings. The average remittance amount in Uttarakhand (₹48,000 in 2013, rising to ₹72,000 in 2020) consistently exceeded national figures (₹35,000 to ₹55,000), suggesting that migrants from the state earn and send back more than the typical Indian migrant worker. This trend aligns with findings from the Reserve Bank of India's (2017) report on interstate migration, which notes that Uttarakhand rural economy is heavily sustained by remittances due to limited local employment opportunities, particularly in hill districts.

Additionally, a World Bank (2021) study on South Asian migration patterns found that states with high out-migration, like Uttarakhand, experience significant household income boosts from remittances but face economic vulnerability

risks when migration flows are disrupted. The data also reveals that while remittance dependence grows in Uttarakhand and India, the gap between the state and national averages widened between 2013 and 2020. It suggests that Uttarakhand rural economy is becoming increasingly tied to migration-driven income, possibly due to stagnant agricultural growth and a lack of industrial development. The near 50% increase in average remittance amounts in Uttarakhand (₹48,000 to ₹72,000) over seven years indicates rising wages for migrant workers, possibly in sectors like construction, hospitality, and armed forces—key employment avenues for Uttarakhand migrants. A study by the Institute for Human Development (2019) on rural livelihoods found that remittances in Himalayan states often replace traditional farm incomes, reducing agricultural activity. Another IMF (2020) working paper on remittance economies highlights that while such inflows improve household consumption, they can delay structural economic reforms by masking unemployment issues. This dual effect seems evident in Uttarakhand, where remittances support rural households but may not translate into sustainable local development.

Table 5.1: Male Out-Migration: Uttarakhand vs India (Chi-square test for proportions)

Test Name	Variable Compared	Uttarakhand (2011)	India (2011)	Chi-Square (χ^2)	P-Value	Result
Chi-square test for proportions	% of male work-related migration	33.6% (420,000)	30% (45 million)	12.4	< 0.001	A significant difference (Reject H_0)

The chi-square test comparing male work-related out-migration rates between Uttarakhand and India revealed a statistically significant difference ($\chi^2=12.4$, $p<0.001$), leading us to reject the null hypothesis (H_0). With 33.6% of Uttarakhand male migrants leaving for work compared to India's national average of 30%, this higher proportion

reflects Uttarakhand acute reliance on labour migration, likely driven by limited local economic opportunities in its hill districts. The significant p-value ($p<0.001$) underscores that this disparity is not random but structurally rooted, suggesting that Uttarakhand rural economy particularly in agriculture-dependent areas may be disproportionately

affected by male out-migration compared to the national trend. It aligns with existing research highlighting Uttarakhand "ghost village" phenomenon, where male migration intensifies women's agricultural and household

burdens. The findings emphasize the need for state-specific policies to address migration-driven labour shortages and gendered livelihood shifts.

Table 5.2: Change in women's workload (Paired T-Test: 2011-12 vs. 2019-21)

Region	2011-12 (Mean \pm SD)	2019-21 (Mean \pm SD)	T-Statistic (P-Value)	Inference
Uttarakhand	6.5 \pm 1.2 hours/day	7.1 \pm 1.4 hours/day	T=4.3, ($p<0.001$)	Reject $H_0 \rightarrow$ Workload increased
India	5.8 \pm 1.1 hours/day	6.3 \pm 1.3 hours/day	T=3.8, ($p<0.001$)	Reject $H_0 \rightarrow$ Workload increased

The paired t-test analysis reveals a statistically significant increase in rural women's daily workload in Uttarakhand and India between 2011-12 and 2019-21. In Uttarakhand, women's average work hours rose from 6.5 (± 1.2) to 7.1 (± 1.4) hours/day ($t=4.3$, $p<0.001$), while India saw an increase from 5.8 (± 1.1) to 6.3 (± 1.3) hours/day ($t=3.8$, $p<0.001$). The p-values < 0.001 for both regions led to rejecting the null hypothesis (H_0), confirming that the workload increase was not due to random variation. Notably, Uttarakhand women already had a higher baseline

workload in 2011-12 (6.5 vs. India's 5.8 hours) and experienced a steeper rise (+0.6 hours vs. India's +0.5 hours), suggesting that male out-migration's impact on women's labour burden is more pronounced in Uttarakhand. It aligns with the state's heavy reliance on seasonal migration and gendered agricultural roles, leaving women to manage farm and household duties. The findings underscore the need for targeted policies (e.g., labour-sharing mechanisms and childcare support) to alleviate this growing disparity.

Table 5.3: Women's Empowerment (Percentage Change Analysis: NFHS-4 vs. NFHS-5)

Indicator	Uttarakhand (2015-16)	Uttarakhand (2019-21)	% Change (Uttarakhand)	India (2015-16)	India (2019-21)	% Change (India)
Bank Account Ownership	65.0%	78.5%	+20.8%	53.0%	78.6%	+48.3%
Household Decision-Making	68.0%	76.3%	+12.2%	63.0%	74.5%	+18.3%

The NFHS-4 (2015-16) to NFHS-5 (2019-21) data reveals significant improvements in women's empowerment indicators for Uttarakhand and India, though with distinct trends. Bank account ownership surged by +20.8% in Uttarakhand (65% to 78.5%) and +48.3% nationally (53% to 78.6%), indicating India's faster progress likely due to schemes like PMJDY bridging initial gaps. Household decision-making also improved, but Uttarakhand rise (+12.2%, 68% to 76.3%) lagged behind India's +18.3% (63% to 74.5%), suggesting slower shifts in patriarchal norms despite higher baseline participation. While Uttarakhand began with stronger empowerment metrics, India's steeper growth highlights broader policy impacts, though both regions now converge near ~78% financial inclusion, signalling nationwide gains in an economic agency.

Conclusion

The study highlights the profound and multifaceted impact of male out-migration on rural women in Uttarakhand, India. As men migrate in search of better economic opportunities, women are left to shoulder an expanded range of responsibilities, including agricultural labour, livestock management, and household chores. This increased workload, often exceeding 12-14 hours per day, has led to physical strain, emotional stress, and time poverty, with limited institutional support to alleviate these burdens. While male out-migration has forced women into greater economic roles, its effect on empowerment remains complex. On one hand, women in migrant households experience enhanced financial autonomy, participation in minor household decisions, and improved access to bank accounts reflecting progress in economic inclusion. On the other hand, major decisions regarding land, education, and migration remain male-dominated, indicating that patriarchal structures persist despite women's increased

responsibilities. Furthermore, political participation remains low, with many women in Panchayats serving as proxies for male relatives.

The findings underscore the need for targeted policy interventions to address structural barriers. Strengthening land rights for women, expanding access to credit, introducing labour-saving agricultural technologies, and improving childcare infrastructure are critical steps toward reducing women's workload. Additionally, skill development programs and awareness campaigns on government schemes (such as MGNREGA and ILSP) can enhance women's economic agency.

Ultimately, while male out-migration has reshaped rural livelihoods in Uttarakhand, true empowerment for women requires more than just increased responsibilities it demands systemic changes that enable autonomy, decision-making power, and equitable access to resources. Addressing these gaps will not only improve the lives of rural women but also contribute to the sustainable development of Uttarakhand rural economy. Future research should explore intersectional factors such as caste and class to better understand varying degrees of vulnerability and resilience among women in migration-affected households.

Policy Recommendations

- **Land and Resource Ownership:** Ensure women's legal rights to land and productive assets.
- **Labor-Saving Technologies:** Promote mechanization and tools to reduce agricultural burdens.
- **Financial Inclusion:** Expand microfinance and self-help group (SHG) initiatives.
- **Social Support Systems:** Strengthen childcare services and mental health programs.
- **Gender-Sensitive Policies:** Integrate women's needs into rural development and migration policies.

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