RESEARCH PAPER

BRIDGING GEOGRAPHICAL AND SOCIAL BARRIERS: THE ROLE OF COMMUNITY HEALTH WORKERS IN IMPROVING TRIBAL WOMEN'S HEALTH IN UTTARAKHAND, INDIA

[1]Dr. Shipra Damir, [2]Dr.Vanshika, [3]Dr. Jyoti Juyal pant, [4]Dr. Raj ji Jai Srivastva
[1]Assistant Professor, Head of Department - Hospital Administration & Public Health
Sri Dev Suman Uttarakhand University, Badshahithol, Tehri, Garhwal, Uttarakhand
Minerva Institute of Management and Technology, Sudhowala, Dehradun
Orcid Id - 0009-0009-6275-5525
Email Id - **shipradamir@minervainstitute.in**
[2]Assistant Professor, Hospital Administration Department
Dev Bhoomi Uttarakhand University, Dehradun
Orcid Id: 0009-0009-1207-9717
Email Id: **dbmcps.vanshika@dbuu.ac.in**
[3]Assistant Professor, Head of the Department, Allied and Healthcare
Hemwati Nandan Bahuguna medical university, Dehradun,Uttarakhand
- Sushila Institute of Medical Sciences
Orcid id 0009-0000-3772-5409
Email Id - **Juyaljyotibiochem@gmail.com**
[4]Student, Sri Dev Suman Uttarakhand University, Badshahithol, Tehri, Garhwal, Uttarakhand
Minerva Institute of Management and Technology, Sudhowala, Dehradun
Orcid id- 0009-0006-3175-9791
Mail id- drrajshrivastva@gmail.com

Corresponding Author : Dr. Shipra Damir
Email Id : shipradamir@minervainstitute.in

ABSTRACT
Achieving equitable healthcare remains a major challenge for tribal populations living in the remote and ecologically fragile regions of India. In Uttarakhand, rugged mountains, dispersed settlements, and difficult climatic conditions continue to limit healthcare access, particularly for tribal women, despite improvements in public health infrastructure and government welfare programmes. The state's major Scheduled Tribe communities including the Bhotiya (Shauka), Jaunsari, Tharu, Buksa (Bhoksa), Raji (Van Rawat), Marchha, and Tolchha inhabit diverse ecological zones ranging from high Himalayan villages to forested hills and the Terai plains. Although these communities possess rich cultural traditions and indigenous knowledge, they continue to face challenges such as geographical isolation, poor transport and communication, seasonal migration, poverty, food insecurity, low educational attainment, and limited access to quality healthcare.

These conditions help perpetuate ongoing health disparities among tribal women, as shown by high rates of anaemia, undernutrition, reproductive health issues, micronutrient deficiencies, communicable diseases, and a growing burden of non-communicable diseases. The restricted use of antenatal services, postponed hospital deliveries, and poor access to emergency obstetric care additionally heighten risks to maternal and child health. Community Health Workers (CHWs) have become an essential bridge connecting tribal communities with the formal healthcare system. ASHAs, ANMs, AWWs, CHOs, MPHWs, and VHSNCs assist with pregnancy registration, maternal and child health services, immunization, nutrition counselling, family planning, adolescent health, disease monitoring, mental health awareness, and referrals. Their knowledge of local languages and cultural practices helps them foster community trust and enhance the adoption of modern healthcare, all while honoring indigenous traditions.

This paper analyses the health status of tribal women in Uttarakhand using the framework of social determinants of health and assesses the role of Community Health Workers in enhancing maternal, child, and reproductive health. It also examines the geographical, socio-economic , cultural, environmental, and institutional factors that affect health outcomes, evaluates major government initiatives, showcases relevant community-based case studies, and provides policy recommendations aimed at enhancing community-focused primary healthcare. The study concludes that addressing health disparities in the Himalayan region demands a coordinated strategy that integrates culturally appropriate healthcare, robust frontline systems, nutrition-focused interventions, digital tools, and meaningful community involvement to promote equal access to care.

Keywords: Tribal Women, Uttarakhand, Community Health Workers, ASHA, ANM, Anganwadi Worker, Community Health Officer, Primary Healthcare, Maternal Health, Health Equity, Nutrition, Tribal Health, Himalayan Region, Public Health.

How to cite this article: 1Dr. Shipra Damir 2Dr.Vanshika 3Dr. Jyoti Juyal pant. BRIDGING GEOGRAPHICAL AND SOCIAL BARRIERS: THE ROLE OF COMMUNITY HEALTH WORKERS IN IMPROVING TRIBAL WOMEN'S HEALTH IN UTTARAKHAND, INDIA. Int J Drug Deliv Technol. 2026;16(78s):1366-1372. DOI: 10.25258/ijddt.16.78s.149.

1. INTRODUCTION

Good health is broadly acknowledged as a basic human right and serves as the basis for social well-being , inclusive development, and sustainable economic growth. The health of women especially those from indigenous and socially marginalized groups is a key measure of a nation's dedication to equity and inclusive public health. In many regions around the globe, indigenous women face worse health outcomes compared to other groups because of persistent social exclusion, remote living conditions, economic hardship, gender-based discrimination, and limited access to healthcare. India is likewise not exempt. Despite substantial efforts by national and state health programs to enhance healthcare access for Scheduled Tribe (ST) populations, major disparities persist. Tribal women continue to be among the country's most vulnerable populations due to the impact of economic hardship, poor nutrition, gender inequality, cultural restrictions, and inadequate access to quality healthcare.

Uttarakhand offers a unique setting for examining tribal health, as its geographical and ecological features significantly impact access to healthcare. Often called the "Land of the Himalayas," the state is celebrated for its abundant biodiversity, vast forest areas, snow-capped mountains, and rich cultural variety. However, these natural features also pose significant obstacles to providing health services. The rugged landscape, deep gorges, sparsely distributed settlements, regular snowfall, frequent landslides, and poor transportation links often delay access to medical care. In poor weather, many villages become physically cut off, which especially hinders access to essential healthcare for pregnant women, young children, elderly people, and emergency patients. As per the Census of India (2011), Scheduled Tribes make up nearly 2.9 percent of Uttarakhand's total population. Though small in number, these communities are culturally varied and spread across some of the state's most remote areas. The main tribal groups are the Bhotiya (Shauka), Marchha, Tolchha, Jaunsari, Tharu, Buksa (Bhoksa), and Raji (Van Rawat), each with unique languages, cultural practices, ways of earning a living, and adaptations to their environment.

The Bhotiya, Marchha, and Tolchha communities primarily live in the high-altitude districts of Pithoragarh, Chamoli, and Uttarkashi, where their traditional livelihoods rely on transhumant pastoralism, wool production, gathering medicinal plants, and seasonal trade across mountainous areas. The Jaunsari tribe is primarily located in the Jaunsar-Bawar region of Dehradun district and is known for its distinctive socio-cultural systems and farming methods. The Tharu and Buksa communities mainly live in the Terai regions of Udham Singh Nagar and Nainital, where farming, animal husbandry, and forest-related activities remain key to supporting household incomes. The Raji community, classified as a Particularly Vulnerable Tribal Group (PVTG), lives in dispersed settlements across the forested regions of Pithoragarh and Champawat districts and still suffers from significant socio-economic challenges, low literacy rates, and limited access to basic public services such as healthcare.

Although maternal and child health services have improved steadily over the past few decades, significant disparities continue to exist between tribal and non-tribal communities. Women residing in remote tribal communities still face significant rates of anaemia, long-term under-nutrition, deficiencies in essential micronutrients, reproductive tract infections, and inadequate dietary variety. In many villages, it is still common for women to delay pregnancy registration, receive inadequate antenatal care, and have limited access to skilled birth attendants. Reliance on subsistence farming, seasonal movement, reduced intake of traditional nutrient-dense foods, insufficient sanitation, and weak infrastructure also lead to worse health outcomes. Alongside these long-standing issues, tribal communities are now seeing a growing prevalence of non-communicable diseases including hypertension, diabetes, musculoskeletal disorders, and mental health conditions mirroring the continuing epidemiological shift in the Himalayan region.

In this difficult setting, Community Health Workers have become an essential part of the public health system. By conducting routine home visits, providing health education, detecting risk factors early, offering nutrition advice, delivering maternal and child health services, monitoring diseases, and promptly referring complex cases, frontline health workers have greatly improved healthcare access for tribal communities. Their strong ties with local communities allow them to overcome cultural and geographical divides, encourage health-seeking actions, and boost community involvement in primary healthcare. Therefore, Community Health Workers are essential in enhancing the health and well-being of tribal women and promoting fair and accessible healthcare services in Uttarakhand's remote tribal areas.

The health disparities faced by tribal women go well beyond illness and medical treatment. Their health outcomes are influenced by a complex mix of social, economic, environmental, and cultural factors such as poverty, lack of educational access, gender inequality, food insecurity, risky employment conditions, exposure to ecological risks, and unequal access to vital public services. In the Himalayan

region, these challenges are made worse by rugged terrain, scattered communities, and unreliable infrastructure. Access to healthcare depends not only on how far a person is from a health facility, but also on travel time, rugged mountain terrain, seasonal road closures, bad weather, and high-altitude environments. Even if health facilities are nearby, getting there may involve hours of walking, which makes routine prenatal visits, child vaccinations, and emergency childbirth care challenging. Therefore, enhancing healthcare in tribal mountain areas requires tailored approaches that consider geographic limitations, cultural variety, and the specific needs of local communities.

To tackle these ongoing disparities, the Government of India has launched a range of national health programs designed to bolster primary healthcare and enhance the well-being of marginalized groups. Initiatives like the National Health Mission (NHM), Ayushman Bharat, Health and Wellness Centres (HWCs), Janani Suraksha Yojana (JSY), Janani Shishu Suraksha Karyakram (JSSK), POSHAN Abhiyaan, Anaemia Mukt Bharat, Mission Indradhanush, Pradhan Mantri Matru Vandana Yojana (PMMVY), and the newly introduced PM-JANMAN scheme for Particularly Vulnerable Tribal Groups aim to boost maternal and child health, improve nutrition, broaden access to preventive care, and lower out-of-pocket costs for medical treatment. However, the effectiveness of these interventions in remote tribal areas largely hinges on successful implementation at the grassroots level, where frontline health workers are crucial in linking communities with public health services.

Within this framework, Community Health Workers (CHWs) serve as the foundation of primary healthcare delivery in Uttarakhand's tribal areas. Accredited Social Health Activists (ASHAs), Auxiliary Nurse Midwives (ANMs), Anganwadi Workers (AWWs), Community Health Officers (CHOs), Multi-Purpose Health Workers (MPHWs), and Village Health, Sanitation and Nutrition Committees (VHSNCs) together provide health services to remote villages, reaching beyond hospitals and primary health centers. Their duties include conducting household health surveys, registering and tracking pregnancies, providing antenatal and postnatal care, administering immunizations, assessing child growth, offering nutrition education, delivering family planning counselling, monitoring communicable diseases, promoting adolescent health, raising awareness about sanitation, screening for non-communicable diseases, and referring high-risk patients.

As these workers are part of or closely connected to local communities, they have valuable knowledge of indigenous languages, customs, and social practices, which helps them build trust, clear up misunderstandings, and promote greater use of institutional health services. In addition to providing healthcare, Community Health Workers also act as vital social and cultural bridges. Tribal communities often integrate traditional healing practices, herbal medicine, and indigenous knowledge with formal healthcare services. Instead of replacing these traditions, CHWs help foster meaningful interaction between traditional beliefs and contemporary medical practices.

By fostering culturally sensitive health communication and honoring local customs, they enhance community acceptance of maternal healthcare, immunization, nutrition programs, and other preventive health measures, leading to more inclusive and effective healthcare delivery. In this context, the current study investigates the health status of tribal women in Uttarakhand and assesses the role of Community Health Workers in mitigating health inequities among geographically remote and socio-economically marginalized groups. The specific objectives are to:

(i) analyse the socio-demographic characteristics and health profiles of major tribal communities in Uttarakhand;

(ii) assess the geographical, socio-economic, cultural, environmental, and health system factors affecting the health of tribal women;

(iii) evaluate the impact of Community Health Workers on improving maternal, reproductive, and child health outcomes;

(iv) review the role of key government health programs in enhancing tribal healthcare.

(v) present case studies that illustrate community-based health interventions and their impact on public health practice; and

(vi) propose policy measures to develop primary healthcare systems in the Himalayan region that are equitable, culturally appropriate, and community-focused.

The case studies in this paper are drawn from published literature, government reports, and documented program experiences, serving as illustrative examples rather than stemming from original field research. Their aim is to show how community-driven interventions have tackled health issues in tribal areas and to emphasize the wider public health insights and policy lessons that can guide the development and delivery of culturally appropriate healthcare in remote locations.

2.CASE STUDIES

Case Study 1: Early Detection of a High-Risk Pregnancy in a Remote Bhotiya Community

Background

The Munsiyari Block in Pithoragarh district is a high-altitude area in the Himalayas, primarily inhabited by the Bhotiya tribe. The region's rough landscape, regular snowfall, and inadequate transportation systems frequently limit access to healthcare services. In winter, villages can be isolated for long stretches, leading many pregnant women to delay routine prenatal care since traveling

to the nearest health center takes several hours. Intervention During a planned home visit, an Accredited Social Health Activist (ASHA) noticed that a 25-year -old pregnant woman in her third trimester was suffering from significant swelling, continuous headaches, and high blood pressure. Noting these symptoms as possible signs of pre-eclampsia, the ASHA promptly alerted the Auxiliary Nurse Midwife (ANM), who verified the woman's high-risk condition. Frontline health workers collaborated with the 108 Emergency Ambulance Service and the closest Community Health Centre to organize immediate transport. Meanwhile, ASHA counselled the family to help them overcome their reluctance about institutional treatment.

Outcome

The woman was provided timely obstetric care at the health facility and gave birth to a healthy baby without significant complications. The ASHA provided postnatal follow-up to ensure ongoing maternal care, exclusive breastfeeding, and timely completion of the infant's immunization schedule.

Public Health Interpretation

This example highlights the essential role of Community Health Workers in detecting pregnancy-related complications early, before they escalate to life-threatening levels. Frequent home visits, strong community trust, timely referrals, and reliable emergency transport together lead to better outcomes for mothers and newborns in remote Himalayan areas. Ongoing training for frontline workers and dependable referral networks are still crucial for lowering maternal health risks in remote tribal regions.

Case Study 2: Addressing Maternal Anaemia through Community-Based Nutrition Education among Jaunsari Women

Background

Maternal anaemia is a prevalent public health issue in the Jaunsar-Bawar region of Dehradun district. Insufficient variety in diet, lack of understanding about nutritional needs during pregnancy, and specific cultural food-related customs all contribute to suboptimal maternal nutrition.

Intervention

At a Village Health, Sanitation and Nutrition Day, Anganwadi Workers, ASHAs, and ANMs screened pregnant women and detected multiple instances of low haemoglobin levels. Instead of depending solely on iron supplements, health workers held practical nutrition sessions that emphasized the advantages of locally accessible foods, including finger millet (mandua), barnyard millet (jhangora), rajma, lentils, sesame seeds, and green leafy vegetables. Alongside these community demonstrations, Iron-Folic Acid supplementation, deworming treatment, and personalized dietary counselling were provided. Outcome Six-month follow-up assessments showed that many participants had higher haemoglobin levels. Women showed higher awareness of balanced diets during pregnancy, and attendance at antenatal clinics rose steadily.

Public Health Interpretation

The intervention shows that nutrition programs work better when they include traditional food systems that local communities are already familiar with. By integrating indigenous nutrient-rich foods with standard public health measures, Community Health Workers improve program acceptance and long-term dietary sustainability, while also bolstering maternal nutrition and local farming practices.

Case Study 3: Promoting Institutional Deliveries among Tharu Families through Community Participation

Background

Despite the rise in institutional births throughout Uttarakhand, many Tharu families in the Terai region still favor home deliveries due to cultural traditions, financial constraints, and a lack of awareness about obstetric emergencies.

Intervention

An ASHA working in a Tharu village noticed that many pregnant women postponed registering their pregnancies and were hesitant to give birth at healthcare facilities. By conducting repeated home counselling sessions, engaging with women's self-help groups, organizing Village Health and Nutrition Days, and involving husbands and elderly family members in discussions, she emphasized the value of skilled birth attendance and informed families about the benefits offered under the Janani Suraksha Yojana (JSY). Advance arrangements were also made for transportation of women approaching delivery.

Outcome

Within a year, institutional deliveries rose significantly, along with greater rates of early pregnancy registration, use of antenatal care, and postnatal follow-up. Public trust in government health services also rose.

Public Health Interpretation

The case underscores the critical role of behaviour change communication in maternal health initiatives. In addition to providing health services, Community Health Workers act as trusted community advocates who shape family decisions and promote healthy behaviours by engaging in culturally sensitive ways.

Case Study 4: Improving Healthcare Access for the Raji Community through Mobile Medical Services

Background

The Raji, classified as a Particularly Vulnerable Tribal Group (PVTG), reside in dispersed forest communities throughout the districts of Champawat and Pithoragarh. Their scattered communities, inadequate transportation, and remote locations frequently limit consistent access to necessary healthcare services.

Interventions

To enhance service delivery, the district health administration launched Mobile Medical Units staffed by local ASHAs and ANMs. Outreach camps provided antenatal care, immunizations, screening for anaemia, blood pressure and diabetes, child growth monitoring, and health education. Community Health Workers engaged residents prior to each visit and kept detailed follow-up records to ensure ongoing care.

Outcome

The outreach program led to a substantial rise in the use of healthcare services. Pregnant women received the recommended antenatal care, childhood immunization rates rose, and patients needing specialized services were quickly referred to more advanced facilities. Public trust in the community health system also rose.

Public Health Interpretation

This example shows that integrating mobile healthcare services with robust community-based follow-up can significantly lower the geographic obstacles to accessing care. These integrated outreach models are especially useful for connecting with tribal communities that reside in isolated mountain regions.

Case Study 5: Strengthening Adolescent Health and Menstrual Hygiene in Tribal Mountain Communities

Background

Adolescent girls in remote tribal villages often face poor menstrual hygiene due to low awareness, cultural taboos, insufficient sanitation infrastructure, and limited access to affordable sanitary products. These challenges impact both reproductive health and school attendance.

Intervention

As part of the Rashtriya Kishor Swasthya Karyakram (RKSK), ASHAs, Anganwadi workers, and school teachers collaborated to conduct adolescent health education sessions in a tribal village within the Bageshwar district. The programme covered topics such as menstrual hygiene, nutrition, preventing anaemia, reproductive health, emotional well-being and life skills. Sanitary pads were provided, and girls were given advice on hygienic menstrual care and proper nutrition.

Result

After the intervention, awareness of menstrual hygiene improved, school absences during menstruation decreased, and more adolescents joined health clubs. Parents also grew more open to talking about reproductive health topics at home.

Public Health Interpretation

This case highlights the wider developmental role of Community Health Workers in supporting adolescent girls. Education on menstrual hygiene not only enhances reproductive health but also supports uninterrupted schooling, promotes gender equality, and fosters healthier motherhood in the future

3. CONCLUSIONS OF THE CASE STUDIES

Synthesis of the Case Studies Collectively, these examples show that Community Health Workers have a wide-ranging role that goes far beyond standard service provision. They serve as health educators, respected community figures, cultural connectors, and drivers of behavioural change. In various tribal communities across Uttarakhand such as the Bhotiya, Jaunsari, Tharu, and Rajifrontline health workers have played a key role in connecting remote populations with formal healthcare services, overcoming difficult geographic and cultural barriers. Several key takeaways arise from these case studies. Identifying high-risk cases early and referring them promptly enhances survival rates for both mothers and newborns. Health education that honours local traditions enhances acceptance of antenatal care, hospital births, immunizations, and family planning services. Interventions focused on locally available foods tend to be more acceptable and sustainable than generic dietary recommendations. Mobile outreach services and Village Health, Sanitation and Nutrition Days help lessen health disparities caused by geographic isolation, while adolescent health programs promote healthier habits that support better reproductive outcomes throughout life.

From a policy standpoint, these examples highlight the importance of enhancing Community Health Workers by providing ongoing training, incentives tied to performance especially in challenging terrains, digital tools to aid decision-making, streamlined referral systems, and deeper partnerships with Panchayati Raj Institutions and local communities. Therefore, consistently investing in frontline health workers is essential for promoting equitable primary healthcare, achieving universal health coverage, and enhancing health outcomes for tribal communities in the Himalayan region.

RECOMMENDATIONS

Enhancing the health of tribal women in Uttarakhand demands a comprehensive approach that tackles healthcare access alongside wider social factors influencing health. True sustainable progress requires culturally suitable interventions, enhanced primary healthcare services, active community involvement, and synchronized efforts across various sectors. In light of this review’s findings, the following recommendations are put forward.

Enhance the Community Health Workforce

Community Health Workers such as Accredited Social Health Activists (ASHAs), Auxiliary Nurse Midwives (ANMs), Anganwadi Workers (AWWs), Community Health Officers (CHOs), and Multi-Purpose Health Workers (MPHWs)must be provided with ongoing professional growth opportunities through consistent training, mentoring, and supportive supervision. Capacity-building programs should include maternal and child health, reproductive health, nutrition, adolescent

health, mental health, management of non-communicable diseases, digital health tools, emergency referrals, disaster response, and culturally appropriate communication. Hiring more women from tribal communities would enhance language alignment, build community confidence, and boost local involvement in health initiatives.

Enhance Healthcare Infrastructure and Service Delivery

It is crucial to expand healthcare infrastructure in remote tribal areas to guarantee fair access to health services. This can be accomplished by setting up more Health and Wellness Centres, improving Primary Health Centres and Community Health Centres, and increasing the coverage of mobile medical units. Specialist outreach clinics in fields like obstetrics and gynaecology, paediatrics, internal medicine, and mental health should be regularly scheduled in remote or hard-to-reach areas. Enhancing emergency transport services especially during monsoon and winter, when road access is compromised is equally vital to ensure timely referrals and emergency obstetric care.

Expand Digital Health and Tele-medicine

Digital health technologies can substantially reduce the barriers created by difficult terrain and scattered settlements. Tele-medicine services should be integrated into the primary healthcare network by improving internet connectivity, providing digital diagnostic equipment, maintaining electronic health records, and introducing mobile health applications. Training Community Health Workers to use these technologies would facilitate specialist consultations, follow-up care, disease monitoring, and community health education.

Enhance Maternal and Reproductive Healthcare

Lowering maternal illness and death demands a stronger system of maternal care throughout all stages. Early pregnancy registration, consistent antenatal and postnatal care, facility-based deliveries, detection of high-risk pregnancies, family planning advice, menstrual hygiene education, and reproductive health promotion should all be prioritized. The existing financial support programs such as Janani Suraksha Yojana (JSY), Janani Shishu Suraksha Karyakram (JSSK), and Pradhan Mantri Matru Vandana Yojana (PMMVY)must be properly executed to guarantee that eligible tribal women receive their full benefits without unnecessary bureaucratic delays.

Enhance Nutrition and Food Security

Nutrition programs should be rooted in traditional eating habits and promote the growing and eating of locally sourced, nutrient-rich foods like finger millet (mandua), barnyard millet (jhangora), legumes, seasonal fruits, leafy greens, and other native crops. Nutrition education should be incorporated into maternal and child healthcare services via programs like POSHAN Abhiyaan and Anaemia Mukt Bharat. Routine anaemia screening, iron and folic acid supplementation, deworming, growth monitoring, and encouraging household kitchen gardens can further enhance nutritional security for tribal households.

Promote Adolescent Health and Menstrual Hygiene

Support Adolescent Health and Menstrual Hygiene Adolescent health initiatives must take a holistic approach, integrating nutrition, education on reproductive and sexual health, menstrual hygiene practices, mental health support, life skills training, and efforts to prevent substance abuse. Schools, Anganwadi Centres, and Village Health, Sanitation and Nutrition Committees should work together to run awareness campaigns and make sure adolescent girls have access to affordable menstrual hygiene products and safe sanitation facilities.

Incorporate Mental Health into Primary Healthcare

Mental health services must be made a core part of primary healthcare in tribal regions. Community Health Workers require training to recognize early indicators of depression, anxiety, psychological distress, substance misuse, and domestic violence. Community counselling services, peer support groups, awareness campaigns, and efficient referral systems need to be created to lessen stigma and enhance access to suitable mental health care.

Enhance Prevention and Control of Non-Communicable Diseases

The growing prevalence of chronic illnesses among tribal women necessitates consistent community-based screening for hypertension, diabetes, cardiovascular conditions, and prevalent cancers including breast, cervical, and oral cancer. Community Health Workers should support healthy lifestyles by promoting balanced nutrition, consistent physical activity, abstaining from tobacco and alcohol, and helping diagnosed individuals stick to long-term treatment plans.

Improve Water, Sanitation, and Hygiene (WASH)

Better access to safe drinking water, sanitation, and hygiene is essential for reducing the transmission of infectious diseases and improving overall health. Collaborations with programs such as the Jal Jeevan Mission and Swachh Bharat Mission should be strengthened to more effectively deliver sanitation and water access to tribal villages. Community Health Workers should also routinely conduct awareness programs on personal hygiene, food safety, menstrual hygiene, and preventing waterborne diseases.

Encourage Community Participation

Health programs tend to be more successful and sustainable when local communities are involved in both designing and implementing the initiatives. Village Health, Sanitation and Nutrition Committees (VHSNCs), Van Panchayats, women's Self-Help Groups, youth organizations, and traditional tribal institutions should be involved in health planning,

program monitoring, and awareness campaigns. Community ownership fosters accountability and supports the development of interventions that are culturally suitable and responsive to local needs.

Encourage Collaboration Across Sectors

The well-being of tribal women is influenced by multiple areas beyond healthcare. Effective coordination is required among the Departments of Health and Family Welfare, Women and Child Development, Tribal Welfare, Education, Rural Development, Agriculture, Drinking Water and Sanitation, Panchayati Raj Institutions, and civil society organizations to comprehensively address education, nutrition, livelihoods, sanitation, and gender inequality.

Improve Health Literacy

Health communication strategies must be adapted to the linguistic and cultural context of tribal communities. Educational resources developed in local languages and dialects such as Jaunsari, Bhotiya, Tharu, and Rajican enhance comprehension and engagement. Community meetings, folk media, visual communication tools, and local festivals serve as effective channels for spreading information on maternal health, nutrition, immunization, family planning, infectious diseases, and illnesses linked to lifestyle.

Enhance Monitoring, Research, and Health Information Systems

Effective policymaking grounded in evidence depends on accurate and segmented data regarding the health of tribal women. Regular surveys, operational research, and program evaluations should assess maternal health, nutrition, adolescent health, reproductive health, mental health, and non-communicable diseases. Enhancing digital health information systems will boost monitoring, enable prompt decision-making, and aid in the effective assessment of health programs.

Build Climate-Resilient Healthcare Systems

Develop Healthcare Systems Resilient to Climate Shocks Considering Uttarakhand's vulnerability to landslides, flash floods, cloudbursts, earthquakes, and heavy snowfall, healthcare infrastructure must be built to operate reliably during crises. Tribal health planning should incorporate disaster-resilient health infrastructure, emergency response teams, mobile medical services, strategically located medical supplies, and community preparedness programs as essential elements. Community Health Workers need specialized training to maintain continuity of maternal, newborn, and essential healthcare services during disasters.

Promote Women's Empowerment and Sustainable Livelihoods

Sustained health improvements for tribal women rely on boosting their socio-economic status. Expanding access to education, vocational training, financial services, Self-Help Groups, livelihood programs, and social protection can enhance women's ability to make decisions and achieve economic independence. Women with greater empowerment are more likely to access healthcare promptly, embrace healthy behaviours, enhance family nutrition, and engage meaningfully in community development.

3.FINAL RECOMMENDATION

To bring about significant and sustainable improvements in the health of tribal women in Uttarakhand, an integrated, equity-focused, and rights-based strategy is essential. Future health policies should be built on strengthening primary healthcare services, empowering Community Health Workers, upgrading healthcare infrastructure, improving nutrition and health literacy, expanding digital health solutions, encouraging community involvement, and promoting collaboration across sectors. Investing in culturally appropriate healthcare systems, disaster readiness, ongoing workforce training, and evidence-based planning will not only help reduce long-standing health inequalities but also speed up progress toward Universal Health Coverage (UHC) and the Sustainable Development Goals (SDGs) in the Himalayan tribal areas.

REFERENCES

- Agarwal, S., Sripad, P., Johnson, C., Kirk, K., Bellows, B., Ana, J., & Moran, A. C. (2019). A conceptual framework for measuring community health workforce performance within primary health care systems. *Human Resources for Health, 17*(1), 86. https://doi.org/10.1186/s12960-019-0422-0
- Bhutta, Z. A., Lassi, Z. S., Pariyo, G., & Huicho, L. (2010). Global experience of community health workers for delivery of health-related Millennium Development Goals: A systematic review, country case studies, and recommendations for integration into national health systems. World Health Organization.
- Census of India. (2011). *Primary Census Abstract for Scheduled Tribes*. Office of the Registrar General and Census Commissioner, Government of India. https://censusindia.gov.in
- Government of India. (2021). *National Family Health Survey (NFHS-5), 2019–21: India Fact Sheet—Uttarakhand*. International Institute for Population Sciences (IIPS) and ICF. https://www.nfhs.in
- Government of India. (2023). *National Health Mission: Framework for Implementation*. Ministry of Health and Family Welfare. https://nhm.gov.in
- Government of India. (2023). *Ayushman Bharat–Health and Wellness Centres:*

Operational Guidelines. Ministry of Health and Family Welfare.

- Government of India. (2023). *Janani Suraksha Yojana: Guidelines for Implementation*. Ministry of Health and Family Welfare.
- Government of India. (2023). *Janani Shishu Suraksha Karyakram (JSSK): Operational Guidelines*. Ministry of Health and Family Welfare.
- Government of India. (2023). *Anaemia Mukt Bharat: Intensified National Iron Plus Initiative Strategy*. Ministry of Health and Family Welfare.
- Government of India. (2023). *Mission Indradhanush Operational Guidelines*. Ministry of Health and Family Welfare.
- Government of India. (2023). *Pradhan Mantri Matru Vandana Yojana (PMMVY): Scheme Guidelines*. Ministry of Women and Child Development.
- Government of India. (2023). *Rashtriya Kishor Swasthya Karyakram (RKSK): Strategy Handbook*. Ministry of Health and Family Welfare.
- Government of India. (2024). *PM JANMAN: Pradhan Mantri Janjati Adivasi Nyaya Maha Abhiyan*. Ministry of Tribal Affairs.
- International Institute for Population Sciences (IIPS), & ICF. (2021). *National Family Health Survey (NFHS-5), India Report 2019–21*. Mumbai: IIPS.
- Kok, M. C., Dieleman, M., Taegtmeyer, M., Broerse, J. E. W., Kane, S. S., Ormel, H., Tijm, M. M., & de Koning, K. A. M. (2015). Which intervention design factors influence performance of community health workers in low- and middle-income countries? A systematic review. *Health Policy and Planning, 30*(9), 1207–1227. https://doi.org/10.1093/heapol/czu126
- Lehmann, U., & Sanders, D. (2007). *Community Health Workers: What Do We Know About Them?* World Health Organization.
- Ministry of Tribal Affairs. (2023). *Annual Report 2022–23*. Government of India.
- National Health Systems Resource Centre. (2022). *Community Processes: Best Practices under National Health Mission*. New Delhi: NHSRC.
- NITI Aayog. (2021). *Healthy States, Progressive India*. Government of India.
- Perry, H. B., Zulliger, R., & Rogers, M. M. (2014). Community health workers in low-, middle-, and high-income countries: An overview of their history, recent evolution, and current effectiveness. *Annual Review of Public Health, 35*, 399–421. https://doi.org/10.1146/annurev-publhealth-032013-182354
- Scott, K., Beckham, S. W., Gross, M., Pariyo, G., Rao, K. D., Cometto, G., & Perry, H. B. (2018). What do we know about community-based health worker programmes? A systematic review of existing reviews. *BMJ Global Health, 3*(3), e000649. https://doi.org/10.1136/bmjgh-2017-000649
- Singh, P., & Sachs, J. D. (2013). One million community health workers in sub-Saharan Africa by 2015. *The Lancet, 382*(9889), 363–365.
- United Nations Development Programme. (2022). *Human Development Report 2021/2022*. UNDP.
- World Health Organization. (2018). *WHO Guideline on Health Policy and System Support to Optimize Community Health Worker Programmes*. Geneva: World Health Organization.
- World Health Organization. (2021). *Global Strategy on Human Resources for Health: Workforce 2030*. Geneva: World Health Organization.
- World Health Organization. (2023). *Primary Health Care: Transforming Vision into Action*. Geneva: World Health Organization.
- World Health Organization. (2024). *World Health Statistics 2024: Monitoring Health for the SDGs*. Geneva: World Health Organization.