Exploring Health Resilience Practices in Lumbini, Karnali, and Sudurpaschim Provinces

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Abstract

Individual and communal identities, impacting businesses, professions, cultures, traditions, as well as political and economic factors, have a two-way relationship with the structure of societies. Society also determines the health and well-being of its members. A large proportion of this region's population has migrated to India to earn basic livelihoods, which has led to inherited health consequences. This study examines multiple data sources from the three provinces with the highest poverty rates in Nepal—Sudurpaschim, Karnali, and Lumbini—utilizing a variety of data sources. We searched for literature on Google using the search terms Lumbini, Karnali, Sudurpaschim, health policies, strategic priorities, and Province Government Plans. We also searched online media reports. To enrich the research with real-world perspectives, the study incorporated insights from the members of development project staff working directly within these provinces. The following eight conditions are among the top ten across all three

provinces and account for almost 50% of all outpatient (OPD) visits: Lower Respiratory Tract Infection; Musculoskeletal Pain; Falls/Injuries/Fractures; Gastritis; Headache; Presumed Non-Infectious Diarrhoea; Other Surgical Problems; and Upper Respiratory Tract Infection. With rising life expectancy, the issue of older people's health is emerging as a challenge for Nepal's healthcare system. The situation is exacerbated by these provinces' vulnerability to natural disasters, climate change effects, and issues related to human-animal conflict and property damage. In the context where these provinces face a shortage of health workforce, the use of a digital approach could be helpful. Utilizing digital technology has positive impacts on human health outcomes by improving digital health literacy, we concluded that mobilizing community groups to identify problems, collaboratively prioritizing them to develop solutions, and co-creating a digital literacy system can amplify outreach to improve health outcomes for people in Nepal's three poorest provinces.

Keywords: migration, culture of safety, health resilience, Lumbini, Karnali, Sudurpaschim

Introduction

Humans are social animals, interconnected and influenced by community relationships (Wenger, 2009). Society shapes individual and communal identities: impacting businesses, professions, cultures, traditions, as well as political and economic factors (Granovetter, 2017). Advancements in computer and internet technology in the past three decades have challenged traditional social values. This has not happened overnight, academics warned of this paradigm shift 30 years ago (Tapscott& Caston, 2021). Anthropology studies human behavior, culture, and society holistically and comparatively, exploring the diversity of human experiences to understand the essence of being human (Marcus & Fischer, 1999). Anthropology explains human evolution from natural beings to cultural creatures on the planet through the theory of evolution and diffusionism; these theories also explain human interaction with others (Lewens, 2017).

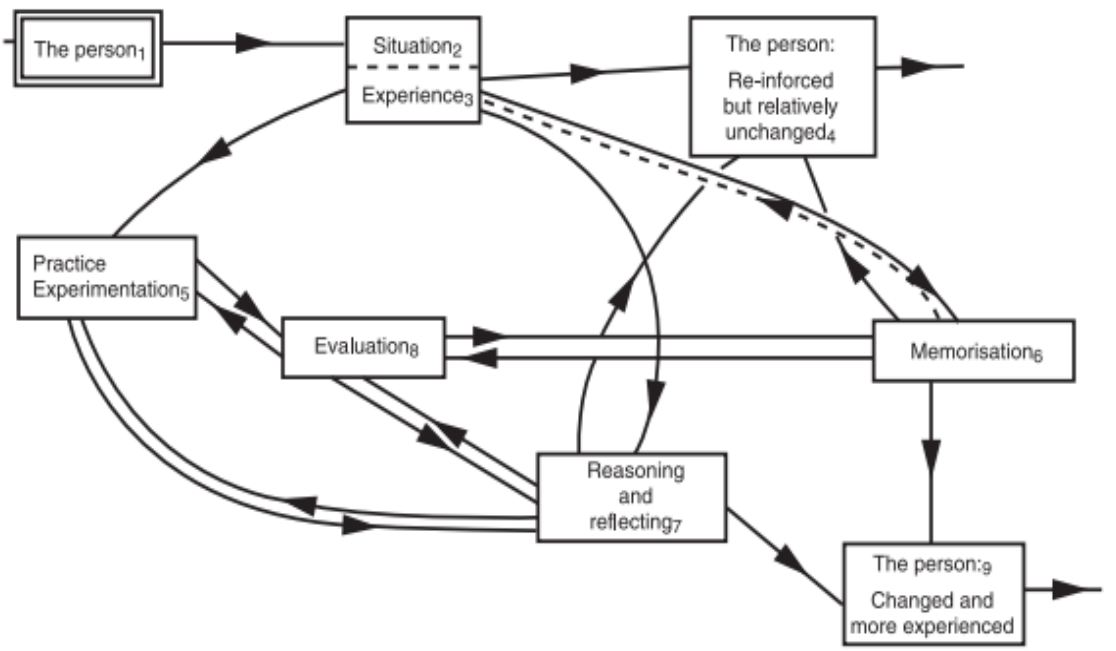
Individuals have varying abilities to express or conceal emotions, reflecting the complexity of human nature. Societal norms strongly influence behavior, shaped by upbringing and cultural education from family and relatives. Children imitate family members, and behaviors learned in childhood are reinforced through practice (Whiting,

1980). Influenced by Social Learning Theory, the interaction with one's environment influences the ability to protect oneself and others, fostering the creation of safe environments through risk mitigation. This also can be related to risk perception theory. However, the formal learning cycle described by David Kolb (1984) suggests that learning is a continuous process involving concrete experience, reflective observation, abstract conceptualization, and active experimentation, with each stage feeding into the next.

Mobility or transportation facilitates the exchange of technology and knowledge, enabling people to gain diverse perspectives and skills. Many Nepalis travel abroad for various purposes, promoting the exchange of art, knowledge, skills, and attitudes or jobs. These experiences contribute to personal growth, and economic and social empowerment, but also pose challenges to local customs and culture (Wilkinson, 1998). Peter Jarvis (2009) has explained the complex relationships between various social elements in shaping the learning process (See Figure 1).

Figure 1

Jarvis Model of Learning (Jarvis, 1987)



According to the sociological perspective on safety culture, its creation and maintenance can be considered as an organizational tool or solution to maintain or improve safety performance in complex and safety-sensitive systems (Haukelid, 2008; Zhang et al., 2020). Reason (1998) describes the best way to induce and maintain an intelligent and respectful state of vigilance is to create data through safety information systems that collect, analyze, and communicate information about hazards, errors, and incidents.

According to the social-ecological model for social sciences, a person's health literacy is influenced by five external factors: immediate surroundings (family, friends, neighborhood), interactions between these environments, larger institutions (workplace), societal values, and the impact of time (McCormack, Thomas& Lewis et al., 2017). This paper will relate social contexts with these five factors to identify community challenges, develop collaborative solutions and priorities, and co-create a digital literacy system aiming to improve health outcomes for people in Nepal's three poorest provinces.

Methods

This study examines multiple data sources from the three provinces with the highest poverty rates in Nepal—Sudurpaschim, Karnali, and Lumbini—utilizing a variety of data sources. We searched for literature on Google using the search terms Lumbini, Karnali, Sudurpaschim, health policies, strategic priorities, and Province Government Plans government health policies, development plans, and Government reports pertinent to the target regions. We also searched online media reports. This paper presents a comprehensive analysis of Lumbini, Karnali, and Sudurpaschim provinces by drawing on multiple data sources. This also involved a focused examination of academic publications, We also searched online media reports. We used the search terms in Devanagari scripts.

This paper focuses on marginalized groups in Nepal, and we describe them in this section. The Madhesi, a large ethnic group, and Muslims, a religious minority, both experience significant discrimination. Dalits face severe social and economic exclusion. The Gandharb Badi community, involved in traditional arts, is also marginalized. Additionally, the paper addresses broader poor communities facing economic hardship. Specific Indigenous groups include the Sonaha in Bheemdatta, Kanchanpur, and Rajapur,

Bardiya; the Raji in GhatgauChaukene and Rajaur; the Kuchhbandhiya, Maganta, and Chidimar in Banke; the Tharu Kumal in Dang; and the Tharu, particularly Freed Kamaiya/Kamlahari.

To enrich the research with real-world perspectives, the study incorporated insights from development project staff working directly within these provinces. Their firsthand experiences and observations provided valuable contextual understanding. Moreover, the subjective experiences of colleagues of two co-authors (CSB and ABA) were leveraged to offer grounded descriptions of conditions in various geographic locations. By combining these diverse data sources, the research aimed to create a robust and multifaceted understanding of the health and development landscape in Lumbini, Karnali, and Sudurpaschim. This methodological approach allowed for a triangulation of evidence, strengthening the validity and reliability of the findings.

Result and Discussion

Key Problems in the Region

Poverty

Sudurpaschim, Karnali, and Lumbini provinces are the most poverty-stricken provinces in Nepal. According to the most recent statistics published by the National Statistics Office (2024), the headcount poverty incident rate is highest in Sudurpaschim (34.16 percent), followed by Karnali (26.69 percent), Lumbini (24.35 percent) and Madhesh (22.53 percent). Sudurpashim Province has nine districts and is geographically divided into Terai, Hills, and Himalayan regions. In Karnali province, 10 districts are hilly and Himalayan, while Lumbini province consists of Terai and hilly regions, and it has 12 districts. These three provinces make up over 9.5 million populations (National Statistics Office, 2023).

Socio-economic Disparity

There is minimal disparity in economic and social conditions between the populations of Sudurpaschim, Karnali, and Lumbini provinces. Healthcare access is better in the Terai districts compared to the hilly and Himalayan regions, where residents face challenges in accessing healthcare services (Caoet. al., 2021). Due to limited arable land and irrigation facilities, people in the hilly and Himalayan districts can sustain themselves for 3 to 6 months with their agricultural produce, relying on seasonal rainfall

for farming (Karki, Burton & Mackey, 2020). The organization (https://www.sahakarmisamaj.org) to which the authors (ABA and CSB) are affiliated has actively shared experiences and knowledge directly with local communities, addressing various social issues in these provinces.

Agriculture

In these three provinces, traditional agricultural practices in these regions typically encompass animal husbandry and forage production. Livestock, such as cows and goats, are reared while forage is cultivated, often in challenging terrains characterized by hilly topography and interspersed with arboreal growth (Sahakarmi Samaj, 2022). This practice has resulted in many citizens losing their lives while collecting grass and firewood, leading to physical injuries and, in some cases, spinal injuries. Similarly, fatalities have occurred when individuals, particularly women and children, have been buried under mud mounds while fetching mud for house construction.

Housing

Poor enforcement of building codes has resulted in the construction of low-quality dwellings (Nepal Law Commission, 2018) leaving people in hilly areas vulnerable to landslides during monsoons. Landslides caused by poorly engineered road construction using heavy equipment have also led to significant loss of human life and property (DFID, 2003). Early marriage is associated with a heightened risk of maternal and child mortality due to delayed access to delivery services. The absence of consistent prenatal care exacerbates these challenges (Sekine & Carter, 2019).

Tradition

The lives of residents in these areas are at considerable risk due to a prevailing reliance on shamans or faith healers and associated superstitious practices, which date back to the historical traditions of Nepal (Bista, 1990; Subedi, 2018). This often delays or precludes access to appropriate healthcare, endangering the lives of many, particularly the most vulnerable; with such situations also observed in remote areas in other parts of Nepal (Ellis, 2019). Life in the hilly and Himalayan districts in the Sudurpaschim, Karnali, and Lumbini provinces is fraught with danger due to a high number of road injuries caused by treacherous topography and poorly constructed, unpaved roads. The lack of quality healthcare services further jeopardizes the well-being of individuals, especially those suffering from conditions like diarrhea, injuries, complications during childbirth, and delayed emergency cases.

Health

Table 1 describes the causes of illnesses for which the people of the three Provinces visited health facilities in one particular year. Over 80 percent of the total people visiting the Outpatient Department (OPD) have the top thirty complaints and the top 10 were Upper Respiratory Tract Infection, Headache, Gastritis, Falls/Injuries/Fractures, Lower Respiratory Tract Infection, Non-Infectious Diarrhoea, Backache or Musculoskeletal Pain, Typhoid Fever, Abdominal pain and Scabies. Out of the top thirty causes in Table 1, 28 are common across the three provinces.

Table 1

Causes for OPD Visits in Health Facilities Across the Provinces of Karnali, Sudurpaschim, and Lumbini, 2077/78

Morbidity Rank (1-30) Karnali	**Morbidity Rank (1-30) Sudurpaschim**	**Morbidity Rank (1-30) Lumbini**
Upper Respiratory Tract Infection (URTI)	Surgical Problems-Not mentioned elsewhere	Surgical Problems-Not mentioned elsewhere
Surgical Problems-Not mentioned elsewhere	Gastritis (APD)	Upper Respiratory Tract Infection (URTI)
Headache	Upper Respiratory Tract Infection (URTI)	Gastritis (APD)
Gastritis (APD)	Headache	Headache
Falls/Injuries/Fractures	Falls/Injuries/Fractures	Falls/Injuries/Fractures
ARI/Lower Respiratory Tract Infection (LRTI)	ARI/Lower Respiratory Tract Infection (LRTI)	Fungal Infection (Lichen Planus)
Presumed Non-Infectious Diarrhoea	Presumed Non-Infectious Diarrhoea	ARI/Lower Respiratory Tract Infection (LRTI)
Backache (Musculoskeletal Pain)	Backache (Musculoskeletal Pain)	Backache (Musculoskeletal Pain)
Typhoid (Enteric Fever)	Fungal Infection (Lichen Planus)	Hypertension
Abdominal pain	Abdominal pain	Presumed Non-Infectious Diarrhoea
Scabies	Fever of unknown origin(PUO)	Scabies
Intestinal Worms	Bronchial Asthma	Dermatitis/Eczema

Morbidity Rank (1-30) Karnali	**Morbidity Rank (1-30) Sudurpaschim**	**Morbidity Rank (1-30) Lumbini**
Acute Tonsilitis	Toothache	Conjunctivitis
Fungal Infection (Lichen Planus)	Urinary Tract Infection (UTI)	Fever of unknown origin (PUO)
Rhinitis	Dermatitis/Eczema	Rhinitis
Acute Gastro-Enteritis (AGE)	Scabies	Arthritis-Osteo Arthrosis
Bronchial Asthma	Rhinitis	Abdominal pain
Dermatitis/Eczema	Viral Influenza	Acute Suppurative Otitis Media
Urinary Tract Infection (UTI)	Typhoid (Enteric Fever)	Typhoid (Enteric Fever)
Chronic Respiratory diseases (COPD)	Conjunctivitis	Acute Tonsilitis
Amoebic Dysentery/Amoebiasis	Amoebic Dysentery/Amoebiasis	Skin Diseases-Boils
Toothache	Chronic Respiratory diseases (COPD)	Diabetes Mellitus (DM)
Abscess	Hypertension	Intestinal Worms
Conjunctivitis	Acute Tonsilitis	Abscess
Fever of unknown origin (PUO)	Skin Diseases-Boils	Urinary Tract Infection (UTI)
Acute Suppurative Otitis Media	Intestinal Worms	Bronchial Asthma
Boils	Acute Suppurative Otitis Media	Chronic Respiratory diseases (COPD)
Dental Caries	Acute Gastro-Enteritis (AGE)	Acute Gastro-Enteritis (AGE)
Arthritis-Osteo Arthrosis	Abscess	Amoebic Dysentery/Amoebiasis
Hypertension	Arthritis-Osteo Arthrosis	Toothache
Top 30 causes: 1,580,333cases	**Top 30 causes: 2,004,831 cases**	**Top 30 causes: 3,390,649 cases**
Total (220 causes): 1,873,905 cases	**Total (225 causes): 2,389,475 cases**	**Total (229 causes): 4,215,465 cases**

Source: IHIMS, Department of Health Services, Ministry of Health and Population, 2077-78 (vs)

These figures not only reflect the health conditions treated in hospitals but also illuminate the broader socioeconomic factors influencing the population's health including the management of essential medicine supplies (Tamanget. al., 2021). The absence of essential education, healthcare, and employment opportunities has pushed most residents in these areas below the poverty line, resulting in a precarious standard of living (Kapali, 2023; Prasain, 2024). Families in these regions often have to travel to larger towns like Dhangadhi, Surkhet, Nepalgunj, or even Kathmandu or India for medical treatment, incurring significant extra costs and facing transportation challenges. This leads to people taking loans or selling their property, further exacerbating their financial struggles (Bhatt, 2024).

Fatalism

Various sources indicate that many Nepalis tend to overlook health and safety risks, especially in communities with lower economic and educational development (Bista, 1991). Factors such as neglect of personal hygiene, inadequate nutrition, and lack of physical exercise contribute to the ongoing risks to human life in these regions. Many young people become ill or lose their lives in risky jobs in Gulf countries or India (Bhatt, 2023a), adding to the challenges faced by the population (Sharma, Pradhan& Adhikari, 2022). The fatalistic mindset prevalent among marginalized communities in these provinces further diminishes hope for a better life (Bista, 1993). The lack of a robust education system, specialized healthcare services, safe transportation options, access to information, and knowledge of government procedures all contribute to the discomfort and insecurity experienced by the people. Inefficient distribution of resources and services by the government exacerbates the challenges faced by the population, making their lives even more difficult (National Planning Commission, 2024).

Situation of Safety and Health

The Constitution of Nepal 2072 recognizes a safe environment as a fundamental human right, yet state agencies have not established a framework for its implementation. Many of the citizens are losing their lives prematurely due to a lack of attention to basic safety precautions. The absence of a Safety component in the education system and a general lack of awareness of the importance of safety contribute to increased burden from preventable issues. To cultivate a culture of safety among citizens, there is a need for

awareness education at the civil level. Initiating a nationwide debate on when and how to promote life safety is crucial for establishing a culture of safety.

Nepal faces several local issues affecting its future population. Readily available alcohol, tobacco, and junk food contribute to health problems; these two products facilitate social determinants of noncommunicable diseases (Sharma, Matheson& Lambrick et. al. 2020). The resulting plastic waste, including bottles, wrappers, and bags, is rampant, particularly in rural areas. This plastic pollution harms the environment and poses significant challenges for waste management, impacting the overall well-being of the population. In addition, the following incidents experienced by citizens also portray a range of issues and determinants of health.

Incident 1: *Between 6 to 12 October 2022, at least 55 people died or missing after heavy monsoon floods and landslides lashed various districts of Karnali Province. According to the Kathmandu Post report, 10 people in Jumla, 8 in Mugu, 5 in Kalikot, 4 in Humla, 3 in Jajarkot, 2 each in Dolpa and Salyan, and 1 in Dailekh lost their lives in separate incidents of water-induced disasters and 20 were missing.*

Incident 2: *On 20th May 2017, a member of Ward No. 7 of Panchapuri Municipality was traveling from Panchapuri to Birendranagar, the headquarters of Surkhet, on a motorcycle when he was hit by a jeep, resulting in an amputation of his right leg. Despite significant expenses on medical treatment, he now lives with an artificial leg, facing challenges and disabilities for the rest of his life.*

Incident 3: *In Ward No. 3 of Punarbas Municipality (Kanchanpur), a young girl tragically lost her life after being swept away by floodwaters in the Doda River on the night of June 5th, 2024.*

Incident 4: *In Krishnapur Municipality of Kanchanpur District, a 7-month-old baby boy drowned in floodwaters after falling from his cot inside a house in Domilla on June 5th, 2024.*

Incident 5: *A Community Educator residing in Jagannath village, Bajura district, broke six bones in his chest, sustaining injuries after falling on the road following his participation in a planning selection meeting at the ward office in June 2024. He received initial treatment at a local health post before being transferred to Nepalgunj Medical College for further medical care, which will take at least 6 months for him to become independently capable of self-sufficiency.*

Incident 6: *A domestic aircraft bound for Pokhara for maintenance crashed immediately after take-off from Tribhuvan International Airport in Kathmandu on July 24, 2024.*

Notably, all nineteen passengers were airline personnel, including the Chief of Safety, with some accompanied by family members. Although a detailed investigation report is due, there are sufficient grounds to suspect lapses in the safety protocol.

The future of Nepal is at stake if this situation persists. Neglecting basic safety measures in daily activities such as home, water & fire risks, unsafe transportation, and effects of climate change can lead to tragic consequences (Rao, 2007). It is essential to prioritize discussions on life protection and seek solutions to prevent avoidable loss of life. This article highlights representative cases to advocate for social transformation and raise awareness on personal health and safety. By examining incidents of injuries, morbidities or fatalities caused by negligence, we aim to spark a dialogue on the importance of prioritizing life safety.

These incidents encompass a range of tragic occurrences, including falls from trees, landslides, road crashes, burns, snake bites, earthquakes, floods, and complications during childbirth, often resulting in untimely deaths due to delayed access to medical care. These incidents can also occur at any time during household chores, traveling, farming, or festivals. There may be reasons such as drug abuse, excessive alcohol consumption, or exposure to indoor air pollution among other factors. While the exact number of premature deaths due to suicide remains unknown, thousands of lives have been lost, leaving many others injured and disabled, leading to a life of discomfort (Table 1). The main reason for the increasing number of deaths each year is not only the lack of treatment but also the lack of awareness and failure to assess the risks associated with one's behaviors in terms of promoting the use of safety measures at personal, family, and public levels (Patton et al., 2006; Dhimal et al., 2022).

Moreover, Nepal has started to see the impact of natural disasters. In the monsoon of 2024, over 144 people lost their lives, and 147 were injured in floods and landslides. A recent police report from 2024 revealed that 32,878 individuals had committed suicide in the past five years (Nepal Disaster Risk Reduction Portal, 2024). Domestic violence, human trafficking, and challenges faced by migrant workers are also contributing to the loss of lives. Additionally, communicable diseases and lack of access to treatment for chronic illnesses are claiming lives in Nepal. The increase in criminal activities further adds to the insecurity of human life. Animal-related incidents like snakebites, and attacks of elephants, tigers, and domestic animals also pose a considerable risk (Kumar et al., 2021). It is evident from these incidents that urgent

action is needed to address the growing threats to safety. Initiating discussions and campaigns to promote a culture of safety for human life is crucial to prevent further tragedies.

Critical Issues Affecting Specific Population Groups

Senior Citizens' Issues

Increasing life expectancy, and declining fertility rate have brought demographic shifts contributing to a rise in the old-age population. The government has been providing old age allowances to anyone above the age of 70 years since 2011 to support senior citizens. A study from Chitwan found that over 75 percent of older age people utilized the allowance amount for medical and health expenses (Dhungana, Sapkota & Bista 2020). However, the situation may be different in the mountainous and hilly regions of Nepal. Mobility needs and other barriers to access facilities add challenges for older people. Lack of companions at home exacerbates the situation when it comes to health care support (Chalise & Brightman, 2006). Consequences of urbanization have also highlighted critical challenges for older adults, including social isolation, inadequate healthcare, and financial instability (Acharya et. al., 2023).

Effects of aging, poor dietary and lifestyle habits, exposure to biomass emissions, limited access to gerontological services, and traditional fatalistic beliefs might have resulted in poor health outcomes for older people in the three provinces. This underscores an urgent need to utilize the experiences of Nepal's senior citizens to inform effective aging policies. There is a need for policies and programs that prioritize the physical, psychological, and financial well-being of older adults, and that strengthen family support systems. Involving senior citizens in identifying their health and social needs will also enhance their dignity.

Poverty, Health, and Injuries

Government efforts to address malnutrition through programs like the Multi-sectoral Nutrition Plan are underway, but challenges persist (National Planning Commission, 2024). The need for sustained and targeted interventions is crucial to improve the nutritional status of vulnerable populations, especially in disaster-prone areas. Addressing the root causes of poverty and food insecurity is essential for long-term solutions(Kandel, Bavorova, Ullah & Pradhan, 2024). While there are signs of progress in some areas, the situation remains alarming, and concerted efforts are required to meet national and global malnutrition targets.

Another example: a study examined 460 injured patients presented to a hospital in Karnali, with males outnumbering females by nearly two to one. The average age was 26.5 years, ranging from infants to the elderly. Unintentional injuries were the most common cause of trauma, accounting for over 84 percent of cases. Falls were the leading cause, followed by road traffic injuries and physical assaults. Notably, falls and road injuries were the primary injury types among children (Sharma, Panta &Amgain, 2020). By improving health awareness, risk perceptions, and healthier dietary habits supported by local or national strategies and tailoring them to specific needs, it is possible to significantly reduce the occurrence and impact of injuries and improve overall health and well-being (Marshall, 2020).

Shortage of Trained Healthcare Workforce

The rural regions of Nepal, particularly the western districts of Lumbini, Karnali, and Sudurpaschim, face a critical shortage of trained healthcare professionals. The dearth of healthcare resources in rural Nepal necessitates frequent referrals to urban centers for advanced care, thereby exacerbating disparities in access to healthcare and imposing substantial financial burdens on rural populations (MoHP, 2022).

Despite the National Health Policy (2076 vs) ambitious goal of universal health coverage, the current health workers (doctors, nurses, and midwives) to population ratio of 34 falls significantly short of the World Health Organization's (WHO) 2030 target of 45 health workers per 10,000 population (WHO 2016; Dumka et al., 2024). This disparity is exacerbated by the pronounced geographical maldistribution of healthcare providers (MoHP, 2022), with a stark contrast between the Kathmandu Valley and rural areas. While the former boasts a doctor-to-population ratio of approximately 850, rural regions grapple with a ratio of 150,000 to one (Shankar, 2017).

Several factors contribute to the persistent retention challenges in rural healthcare settings. These include inadequate infrastructure, limited opportunities for professional development and career advancement, suboptimal working conditions, low salaries, and a lack of social recognition compared to urban areas. Moreover, the absence of quality education for children and employment prospects for spouses further discourages healthcare workers from settling in rural communities (Ailuogwemhe et al., 2005).

Migration and Health

India is the primary destination for workers who migrate from Nepal's Karnali and Sudurpaschim Pradesh regions. This pattern of migration has persisted across

generations (Bhatt, 2023b). Many residents of Sudurpaschim Province migrate to the Tarai region permanently before undertaking seasonal work in India. While India is the primary destination for most, those with greater financial means often seek employment in Malaysia or the Gulf countries. The relative ease of finding low-skilled jobs and the lower costs associated with migrating to India compared to other countries are key factors driving this pattern (Bhatt, 2023c).

While remittances from Nepalese workers abroad have significantly contributed to the economy, the health and welfare of these migrants are often compromised. Migrant workers face a multitude of challenges, including poor working conditions, low wages, fraudulent recruitment, and lack of social protection (Adhikari& Khatri, 2024). These issues are exacerbated by the lack of effective government policies and international cooperation. The health implications for migrant workers are substantial. Exposure to hazardous working environments, inadequate healthcare access, and psychological stress can lead to various health problems (Paudyal, Wasti, Neupane et. al., 2023). Additionally, the absence of proper pre-departure health checks and post-return care can further exacerbate health issues. To address these challenges, Nepal needs to strengthen its labor migration policies, improve worker protection measures, and invest in pre-departure training and healthcare services. International cooperation is also essential for ensuring the rights and welfare of Nepalese migrant workers. By prioritizing the health and well-being of its migrant workforce, Nepal can maximize the benefits of remittance inflows while mitigating the associated risks (Devkota, 2015).

Effects of Disasters and Climate Change on Health

Disasters, particularly earthquakes, landslides, and floods, are exacerbating malnutrition in Nepal's Karnali and Sudurpashim provinces. The most vulnerable populations, including Dalits and those living in poverty, are disproportionately affected. Despite government spending on nutrition, the situation remains critical. Children, especially those from displaced families, are suffering from malnutrition at alarming rates. Lack of access to food, coupled with poor health conditions and limited nutrition knowledge, contribute to the crisis. The frequent occurrence of landslides and droughts in these regions further compounds the problem, with entire communities at risk. These observations emphasize the urgent need for targeted interventions to address the underlying causes of malnutrition in disaster-affected areas.

Climate change has created a favorable environment for the transmission of diseases, leading to increased prevalence, occurrence, and severity of illnesses such as malaria, kala-azar, and Japanese encephalitis. According to the Vulnerability and Adaptation Assessment of Climate Sensitive Diseases and Health Risks Report, 2022, eleven districts in Lumbini, Karnali, and Sudurpashim provinces are at elevated risk of climate-induced diseases, including vector-borne diseases, waterborne diseases, foodborne diseases, respiratory illnesses, mental health issues, and malnutrition. On the other hand, climate change effects are considered to amplify human-wildlife conflict globally (Abrahms, Carter, Clark-Wolf et. al., 2023) because climate change effects alter trans-Himalayan region ecosystems, wildlife, plants, and local livelihood (Aryal, Brunton&Raubenheimer, 2014). The Disaster Risk Reduction portal (http://drrportal.gov.np/) of the Ministry of Home Affairs has recorded 539 incidents of human-animal conflict in 51 months between 2018-June-03 to 2024-August-03 (Table 2).

Table 2

Distribution of the Incidents of Animal-Human Conflicts Between 2018 and 2024

Province	Incidents (2018-Jun-03 to 2024-Aug-03)	Deaths	Injuries
Sudurpaschim	228	21	247
Lumbini	263	50	169
Karnali	47	5	66
Total	**539 (31% of total incidents recorded in Nepal in the period)**	**76**	**482**

Source: Disaster Risk Reduction Portal, MOHA 2024

The top five districts of Bardiya (188 incidents); Kanchanpur (52 incidents); Achham (46 incidents); Doti (33 incidents) and Baitadi (25 incidents) comprised 71 percent of all incidents recorded for the three provinces. In recent years, human-tiger conflict has also risen in areas adjacent to buffer zones and the boundaries of National Parks or Wildlife Reserves. Researchers have suggested four preventive measures to prevent human-wildlife conflict: 1) resettlement of human communities and ban on resource use; 2) removal of problem tigers or animals; 3) provide strong predator-proof sheds for domestic livestock; and 4) mass conservation education (Bhattarai, Wright, Morgan et al., 2019).

Utilising Digital Technology for Health

Nepal faces significant challenges in delivering healthcare, particularly in rural areas. Geographical barriers, poverty, and a lack of infrastructure hinder access to essential medical services (Adhikari, Mishra & Schwarz, 2022). Although increased access to mobiles and the internet in Nepal has brought opportunities to utilize digital platforms to promote health literacy, there are challenges to the smooth implementation of Digital Health Literacy interventions. Parajuli and colleagues found several challenges, namely – technical and skilled workforce, geographical, policy-related, and funding for IT development resulting into a lack of connectivity and a digital divide (Parajuli, Bohara, KC et. al., 2022). This is also reflected in actual access to the internet among the population subgroups. According to the Nepal Living Standards Survey 2022/23, the percentages of households with internet access in all three provinces of Karnali (14%), Sudurpaschim (20%), and Lumbini (37%) are below the national average of 40% (National Statistics Office, 2024). These three provinces see the largest digital divide i.e. the poor-to-nonpoor ratio is 1:7. These challenges exacerbated the government's goal of universal health coverage using modern approaches.

Despite challenges, digital health outreach is seen as a potential solution because Digital health platforms include telemonitoring, tele- and video-consultations, mHealth, electronic health records, and the use of mobile applications and computer devices (Erku, Khatri, Endalamaw et. al., 2023). Successful use of digital technology in health will help improve health service coverage to the intended audience. By leveraging technology, it can improve healthcare accessibility and quality, health literacy, and health data collection for further decision-making processes (McCormack, Thomas, Lewis & Rudd, 2017).

Telehealth can connect rural populations with urban medical experts, enabling remote consultations, specialized care, and training for local healthcare providers; but the demand for these services is not yet met (Ghimire, 2023). Additionally, digital health can enhance health education, promote healthy behaviors, and facilitate personalized care plans. Therefore, further development and implementation are necessary to fully realize the potential of digital health in improving the nation's healthcare system. There is an increased Relevance of Digital Technology:

- Improved access by overcoming geographical barriers to reach remote populations.

- Enhanced healthcare delivery by enabling remote consultations, specialized care, and training.
- Better health outcomes through facilitating personalized care plans and improved health literacy/e-Learning.
- Efficient resource utilization to optimize healthcare service delivery and management.
- Data-driven decision-making supported by evidence-based healthcare policies and programs.
- mHealth service for information, reminders for medication, and lifestyle advice.
- Remote Support.

Facilitating Social Transformation for Safety Culture and Health Resilience

Health resilience is enhanced in communities and societies by strengthening health systems, meeting the needs of vulnerable populations, and promoting a sense of connectedness within society. These actions also promote the systems operating day-to-day affairs and address the underlying social determinants of health. This is practically achieved when a wide range of stakeholders are mobilized, particularly those working closely in the communities for health, wellness, or societal well-being (Wulff et al., 2025).

Sahakarmi Samaj has been applying the Facilitation for Empowerment and Social Transformation (FEST) approach to empower communities. FEST involves guiding individuals to reflect on their circumstances, create action plans, and engage in a cycle of action and reflection to increase awareness of risks and hazards in their surroundings (Malla, 2021). This approach also emphasizes government accountability and amplifies community voices.FEST promotes community engagement and collaboration to develop and implement safety measures, focusing on education and training to enhance resilience and reduce vulnerability to risks. It seeks government support to improve community infrastructure, implement policies, and establish systems. Additionally, FEST encourages individuals to create emergency plans and response strategies to minimize the impact of injuries and disasters. By fostering a culture of safety and preparedness, the approach helps build a more resilient community through education and collaboration with government and local groups.

Raising awareness and educating citizens about safety measures and risks can significantly reduce problems. Through community discussions and interactions between

government and citizens, joint mitigation planning and implementation are enhanced, leading to improved safety measures and gradual enhancement of infrastructures by communities and government. Collaborative efforts with the government can address remaining challenges, creating a safer and more secure environment similar to developed cities and countries.

Although these initiatives successfully increase public and local government awareness, they may not be adequate to foster a culture of resilience and healthy living in poverty grappled provinces. Lack of health literacy, deep-rooted socioeconomic disparities, limited infrastructure, and cultural factors hinder the adoption of healthy lifestyles. A broader, systemic approach is required to address these underlying issues, rather than solely relying on awareness initiatives. Urgent and sustained efforts are required to cultivate a culture of safety at the individual level. By empowering individuals with the knowledge and skills to adopt safer behaviors, we can build a resilient population better equipped to withstand threats to human health.

Conclusion

A comprehensive approach encompassing information sharing, robust civil security, improved physical infrastructures, effective disaster management, accessible healthcare, adequate human resources for health, health education, and promotion of healthy living is essential to creating a safe and resilient society. In the provinces of Sudurpaschim, Karnali, and Lumbini, community initiatives have proven effective in bringing sustainable change and supporting policy implementation at local and provincial levels. They serve as a platform for grassroots advocacy, influencing policy shifts when necessary. Disseminating research findings on societal challenges can spur government action and policy adoption. Grassroots advocacy can catalyze planned infrastructure development and climate adaptation strategies to mitigate negative impacts. Prioritizing health and safety through awareness campaigns is essential for protecting lives. Leveraging digital technology can amplify these efforts.

Culturally, the populations in these three provinces have a strong sense of belonging; mobilizing existing community groups and networks is crucial to building resilience. Communities can take ownership of their well-being by involving these groups in identifying and prioritizing local health issues, including those influenced by

socioeconomic, environmental, political, and climate change factors. Implementing climate adaptation education, promoting healthy lifestyles, and prioritizing safety and injury prevention are essential components of this approach. Integrating life skills education into formal and informal learning settings and community-based awareness campaigns can further strengthen resilience at the grassroots level.

References

Abrahms, B., Carter, N. H., Clark-Wolf, T. J., Gaynor, K. M., Johansson, E., McInturff, A., ... & West, L. (2023). Climate change as a global amplifier of human-wildlife conflict. *Nature Climate Change*, *13*(3), 224-234. https://doi.org/10.1038/s41558-023-01608-5

Acharya, T., Dhungana, G. K., Traille, K., & Dhakal, H. (2023). Senior citizens in Nepal: policy gaps and recommendations. *Gerontology and Geriatric Medicine*, *9*, 23337214231179902.

Adhikari, B., Mishra, S. R., & Schwarz, R. (2022). Transforming Nepal's primary health care delivery system in global health era: addressing historical and current implementation challenges. *Globalization and health*, *18*(1), 8. https://doi.org/10.1186/s12992-022-00798-5

Adhikari, S., & Khatri, B. (2024). Labour migration market and policy failure: A comparative study of the Philippines and Nepal. *Journal of International Development*, *36*(2), 1407-1425.https://doi.org/10.1002/jid.3865

Ailuogwemhe, J., Rajbhandari, R., Iliaki, E., Villar, M., & Dieterich, M. (2005). Tackling shortages of health care workers in rural Nepal: "Train to Retain." *Harvard School of Public Health, Student Project, ID*, *262*.

Aryal, A., Brunton, D., &Raubenheimer, D. (2014). Impact of climate change on human-wildlife-ecosystem interactions in the Trans-Himalaya region of Nepal. *Theoretical and Applied Climatology*, *115*, 517-529.

Bhatt, D.C. (2024). Socio-cultural dynamics of cross-border labour migration between Nepal and India. *KMC Journal*, *6*(1), 331-355. https://doi.org/10.3126/kmcj.v6i1.62366

Bhatt, D.C. (2023a). Working environment and benefit differences in Indo-Nepal labour migration. *Far Western Review, 1*(2), 49-62. https://doi.org/10.3126/fwr.v1i2.62110

Bhatt, D.C. (2023b). Embarking on a journey: A comparative study of selecting ideal migration destination among Nepalese and Indian labour migrants. *Journal of Engineering Technology and Planning, 4*(1), 60-71. http://dx.doi.org/10.3126/joetp.v4i1.58442

Bhatt, D.C. (2023c). Why do labour migrants cross their border? A comparative analysis between Nepal and India. *Journal of Tikapur Multiple Campus, 6*(1) 143-159. http://dx.doi.org/10.3126/jotmc.v6i01.56373

Bhattarai, B. R., Wright, W., Morgan, D., Cook, S., & Baral, H. S. (2019). Managing human-tiger conflict: lessons from Bardia and Chitwan National Parks, Nepal. *European Journal of Wildlife Research*, *65*(3), 34.

Bista, D. B. (1991). *Fatalism and development: Nepal's struggle for modernization*. Orient Blackswan.

Cao, W. R., Shakya, P., Karmacharya, B., Xu, D. R., Hao, Y. T., & Lai, Y. S. (2021). Equity of geographical access to public health facilities in Nepal. *BMJ Global Health*, *6*(10), e006786.

Chalise, H. N. (2023). Aging trend and situation in Nepal. *Advances in Aging Research*, *12*(3), 39-48.

Devkota, J. (2015). *Migration and development: Impact of migrants' remittance on poverty, inequality and entrepreneurship in Nepal.* Doctoral dissertation, Nagoya University (Japan).

DFID. (2003) *Landslide Risk Assessment in the Rural Sector Guidelines on best practice*. UK Department for International Development (DFID). London

Dhimal, M., Poudyal, A., Bista, B., Dahal, S., Pant, P. R., &Gyanwali, P. (2022). Prevalence and factors associated with self-reported injuries in Nepal: a secondary analysis of the nationally representative cross-sectional STEPS Survey, 2019. *BMJ Open*, *12*(8), e060561.

Dhungana, G. P., Sapkota, M., & Bista, B. (2020). Older people's satisfaction with and utilisation patterns of the Old Age Allowance in Nepal. *Australasian Journal on Ageing*, *39*(2), e178-e184.

Dumka, N., Gurung, A., Hannah, E., Goel, S., & Kotwal, A. (2024). Understanding key factors for strengthening Nepal's healthcare needs: health systems perspectives. *Journal of Global Health Reports*, *8*, e2024010.

Ellis, C. (2019). *Factors affecting the use of midwifery services in remote Nepal.* PhD Thesis. Simon Fraser University, BC, Canada. https://summit.sfu.ca/item/18935

Erku, D., Khatri, R., Endalamaw, A., Wolka, E., Nigatu, F., Zewdie, A., & Assefa, Y. (2023). Digital health interventions to improve access to and quality of primary health care services: a scoping review. *International Journal of Environmental Research and Public Health*, *20*(19), 6854.

Ghimire, S. (2023). Tele-stroke services in areas of rural Nepal: A dire need. *Journal of Karnali Academy of Health Sciences*, *6*(1).

Granovetter, M. (2017). *Society and economy: Framework and principles*. Harvard University Press.

Haukelid, K. (2008). Theories of (safety) culture revisited—An anthropological approach. *Safety Science*, *46*(3), 413-426.

Jarvis, P. (1987) *Adult Learning in the Social Context.* London: Croom Helm.

Jarvis, P. (2009). Chapter 2 Learning to be a person in society: learning to be me. In (Edited by Knud Illeris) *Contemporary theories of learning: Learning theorists … in their own words*. Routledge. Taylor and Francies. USA and Canada.

Kandel, G. P., Bavorova, M., Ullah, A., & Pradhan, P. (2024). Food security and sustainability through adaptation to climate change: Lessons learned from Nepal. *International Journal of Disaster Risk Reduction*, *101*, 104279.

Kapali, D. (2023). Poverty in Nepal and Multidimensionality. *Farsight Nepal News*. 31 May 2023. (online) https://farsightnepal.com/news/163

Karki, S., Burton, P., & Mackey, B. (2020). Climate change adaptation by subsistence and smallholder farmers: Insights from three agro-ecological regions of Nepal. *Cogent Social Sciences*, *6*(1), 1720555.

Kolb, D. (1984) *Experiential learning: Experience as the source of learning and development*. Englewood Cliffs, NJ: Prentice-Hall.

Lewens, T. (2017). Human nature, human culture: the case of cultural evolution. *Interface focus*, *7*(5), 20170018.

Malla, P. (2021). Practices of community development in Nepal: A comparative narrative review. *ISSRA Journal of Arts, Humanities and Social Studies*, *1*(01), 23-28.

Marcus, G. E., & Fischer, M. M. (1999). *Anthropology as cultural critique: An experimental moment in the human sciences*. University of Chicago Press.

Marshall, T. M. (2020). Risk perception and safety culture: Tools for improving the implementation of disaster risk reduction strategies. *International Journal of Disaster Risk Reduction*, *47*, 101557.

McCormack, L., Thomas, V., Lewis, M. A., & Rudd, R. (2017). Improving low health literacy and patient engagement: a social-ecological approach. *Patient Education and Counseling*, *100*(1), 8-13.

MoHP. (2022). Strengthening the hub and satellite hospital network - sharing learnings to plan forward. Ministry of Health and Population. Kathmandu. July 2022. https://heoc.mohp.gov.np/uploads/publications/file/6493f8e061525.pdf

MoHP. (2021).National strategy on Nepal's human resources for health 2077/78 to 2086/87). Ministry of Health and Population, Kathmandu, Nepal.https://drive.google.com/file/d/1L3kJa2qb6hsgHYCxToKDtDGTWxXEniDQ/view

National Statistics Office (2024). *The fourth Nepal living standard survey (2022-20233).* Kathmandu. Nepal

National Statistics Office (2023). *National population and housing census 2021 results*. Kathmandu Nepal. Available from https://censusnepal.cbs.gov.np/results

Nepal Disaster Risk Reduction Portal (2024). *Nepal Disaster Risk Reduction Portal*. Ministry of Home Affairs. Kathmandu. http://drrportal.gov.np/

Nepal Law Commission. (2018). *The right to housing act 2075*. Kathmandu

Nepal police webpage (nd). *Safety and security tips*. Nepal Policehttps://www.nepalpolice.gov.np/safety-and-security/safety-and-security-tips/)

Parajuli, R., Bohara, D., Kc, M., Shanmuganathan, S., Mistry, S. K., & Yadav, U. N. (2022). Challenges and opportunities for implementing digital health interventions in Nepal: A rapid review. *Frontiers in Digital Health*, *4*, 861019.

Patton GC, Bond L, Carlin JB, Thomas L, Butler H, et al. (2006). Promoting social inclusion in schools: a group-randomized trial of effects on student health risk behavior and well-being. *American Journal of Public Health 96*, 1582–87

Paudyal, P., Wasti, S. P., Neupane, P., Kulasabanathan, K., Silwal, R. C., Pathak, R. S., ... & Cassell, J. (2023). Health and wellbeing of Nepalese migrant workers in Gulf

Cooperation Council (GCC) countries: A mixed-methods study. *Journal of Migration and Health*, *7*, 100178.

Pradeep Kumar, S., S Manwar, A., Rakesh Vadakkethil, R., Chitta Ranjan, M., Manas Ranjan, S., Bishnu Prasad, P., ... & Susant Kumar, P. (2021). Pattern of injuries due to wild animal attack among patients presenting to the emergency department: A retrospective observational study. *Chinese Journal of Traumatology*, *24*(06), 383-388.

Prasain, K. (2024). Nepal sees less than expected decline in poverty. *The Kathmandu Post*. 13 Feb 2024. (online) https://kathmandupost.com/money/2024/02/13/nepal-sees-less-than-expected-decline-in-poverty

Rao, S. (2007). Safety culture and accident analysis—a socio-management approach based on organizational safety social capital. *Journal of hazardous materials*, *142*(3), 730-740.

Reason, J. (1998). Achieving a safe culture: theory and practice. *Work & Stress*, *12*(3), 293-306.

Sahakarmi Samaj (2022). Annual Project Report: Community Organizing for Sustainable and Empowerment-based Livelihood Improvement (COSELI 2021-2025). Sahakarmi Samaj, Kohalpur, Nepal

Sekine, K., & Carter, D. J. (2019). The effect of child marriage on the utilization of maternal health care in Nepal: A cross-sectional analysis of Demographic and Health Survey 2016. *PLOS One*, *14*(9), e0222643.

Shankar, P. R. (2017). Brain drain and practice locations of Nepalese medical students. *Janaki Medical College Journal of Medical Science*, *5*(2), 1-4.

Sharma, A., Pradhan, J., & Adhikari, R. (2022). Lifestyle Pattern among Nepalese Migrant Workers in Gulf Countries and Malaysia. *International Journal of Nursing Education*, *14*(2).

Sharma, D., Panta, P. P., &Amgain, K. (2020). An epidemiological study of injuries in Karnali, Nepal. *Journal of Emergencies, Trauma, and Shock*, *13*(1), 30-34.

Sharma, S. R., Matheson, A., Lambrick, D., Faulkner, J., Lounsbury, D. W., Vaidya, A., & Page, R. (2020). The role of tobacco and alcohol use in the interaction of social determinants of non-communicable diseases in Nepal: a systems perspective. *BMC Public Health*, *20*, 1-13.

Subedi, M. (2018). *State, society, and health in Nepal*. Taylor & Francis.

Tamang, P., Simkhada, P., Bissell, P., van Teijlingen, E., Khatri, R., & Stephenson, J. (2021). Health facility preparedness of maternal and neonatal health services: a survey in Jumla, Nepal. *BMC health services research*, *21*, 1-10.

Tapscott, D., & Caston, A. (2021). Paradigm shift: The new promise of information technology. *Economic Development Journal of Canada*, 62–66. Retrieved from https://ecdev.journals.yorku.ca/index.php/default/article/view/178

Wenger, E. (2009). Chapter 15 A social theory of learning. In (Edited by Knud Illeris) *Contemporary Theories of Learning: Learning theorists … in their own words*. Routledge. Taylor and Francies. USA and Canada.

WHO. (2016). Global strategy on human resources for health: workforce 2030. World Health Organization. Geneva.https://iris.who.int/bitstream/handle/10665/250368/9789241511131-eng.pdf

Whiting, B. B. (1980). Culture and social behavior: A model for the development of social behavior. *Ethos*, *8*(2), 95-116.

Wilkinson, A. (1998). Empowerment: theory and practice. *Personnel Review*, *27*(1), 40-56.

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