



State of Food Security and Hunger in Nepal

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Author's contribution

The sole author designed, analysed, interpreted and prepared the manuscript.

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ABSTRACT

This paper aims to assess the current status and trend of food security and hunger in Nepal. Methodologically, the paper uses a descriptive research design; for this, secondary sources of data were intensively reviewed, and it draws an insightful conclusion from a variety of literature. Collected data were presented and interpreted using descriptive statistical tools such as tables, figures, percentages, and trend lines. The paper's scope is limited to the Nepalese context. Professional ethics, a minimum similarity index, and authenticity in data have been taken as ethical considerations. Around half of the households (48.2 percent) have access to food security over the course of the year in Nepal. The urban area is more secure than the rural, and the position of the Terai region is better than that of the hill and mountain regions in terms of food security status. In terms of food security and severe food insecurity, Gandaki Province performed well, while Karnali Province performed poorly. The fight against hunger has mostly stagnated internationally in recent years. The GHI score for 2022 is moderate, although at 19.1, it only slightly deviates from the 16.4 score in 2014, the 20.8 score in 2019, and the 19.5 score in 2020. Nepal's global hunger index trend is shifting from a serious to a moderate position. This paper suggests exploring future food security strategies and reducing the intensity of hunger through further research. This study would stimulate public interest in policy advocacy, which might result in widespread favorable policy initiatives for more in-depth discussions and the implementation of development strategies in developing countries like Nepal.

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1. INTRODUCTION

We get our energy from food. Multiple health issues are impacted by limited food access. Today, discussions about development increasingly focus on challenges like food security is critical for the advancement of human dignity, well-being, and independence. Food security and poverty alleviation have become popular political catchphrases in Nepal, particularly since the restoration of democracy (1990) to the present.

Malnutrition and food insecurity are not just brought on by unfair food distribution, but also by socio-economic, political, and environmental disruptions. If the distribution system, consumption pattern/behaviour, pricing of food, and accessibility channels are unjust, then there is a food crisis and hunger. In the 1970s, Japan became the first country to use the phrase "food security." Since then, the debate on food security has concentrated on achieving a clear policy on food supply at the national level [1]. The breadth of food security in the 1950s was constrained by the idea of self-sufficiency in important commodities. The concept was expanded to include having access to enough food later in the 1970s [2]. Up until 1970, Nepal could feed its population because it was a net food exporter. In contrast to this ideal scenario, the country became a food importer after the 1980s.

Adequate access to food of both quality and quantity is, indeed, a more fundamental part, and a person should have a sufficient amount of healthy food on a day-to-day basis [3], which is mandatory for human rights and dignity. FAO [4] has logically been expressed as "food security is a condition when all people at all times have access to sufficient, safe, and nutritious food to maintain a healthy and active life." Food Security Atlas Nepal (2010) defined "food security as a process that succeeds in producing and acquiring, distributing, and accessing sufficient food that satisfies the nutrition needs of every individual in a household."

Every citizen on the planet has the right to adequate nutrition if they always have physical and financial access to that food or the means to obtain it. Inclusive human rights include all dietary components that a person requires in order to have a healthy and active life. Getting food on time and sufficiently is considered a human right [5]. Missing the right to food

indicates a loss of human rights, which is why it is a leading component of human rights. The constitution of Nepal [6] declared food security in its Article (36) as a fundamental right and has focused on:

Every citizen shall have the right relating to food; shall have the right to be safe from the state of being in danger of life from the scarcity of food, and every citizen shall have the right to food sovereignty in accordance with the law.

Hunger is an unpleasant or painful bodily sense caused by insufficient consumption of dietary energy [7]. The Global Hunger Index (GHI) is a technique for fully measuring hunger at the national, regional, and international levels. It is based on the values of four chief components: undernourishment, child wasting, child stunting, and child mortality [8], and it represents the intensity of hunger on a scale of "0" to '100'. Here, '0' represents the best score (no hunger), and '100' represents the worst or most alarming state. Each country's GHI score is classified into five severity levels: i) low (9.9), ii) moderate (10.0–19.9), iii) serious (20.0–34.9), iv) alarming (35.0–49.9), and (v) extremely alarming (50.0) [8]. Currently, the Government of Nepal targets to reduce the rate of stunting from 36 percent to 24 percent by the year 2025 and to 14 percent by 2030 [9]. In Nepal, food insecurity is a key issue in development policy and economic progress.

1.1 Issues of the Study

Food security is a cross-cutting issue. It has a long and debated history in the discourse on development [10]. The need for systemic changes to beliefs, philosophies, and principles is highlighted by growing international consensus. These changes are necessary to attain food security, health, and well-being, as well as resilience to social, economic, climate, and other ecological shocks [7]. Poverty involves having a poor quality of life; it causes food insecurity, which in turn leads to hunger and malnutrition [11]. Apart from others, hunger is a leading factor in death on a local, regional, and global scale. Gandhi, the father of India and leader of humanism, has logically argued on behalf of a sustainable human society that "nature provides sufficient resources to meet our needs but not human greed" [12]. But an unequal distribution system and no access leave millions of people malnourished and struggling with hand-to-mouth problems. This is without a doubt a

major issue and challenge in the twenty-first century, where approximately eight billion people live.

When food is sufficiently accessible and available to meet the daily needs and dietary requirements of people and households, the right to food is realized [11]. Globally, there has been an increasing concern about the availability of food since COVID-19 and climate change. In the Nepalese context of the 2015 great earthquake and COVID-19 and their respective impacts, the supply chain of food is imbalanced. To overcome the issues of food insecurity and hunger, sustainable agriculture with higher productivity using environmentally friendly technologies and sufficient inputs and human resources would be the best overriding tools. Higher production and productivity are necessary to address the issues of hunger and poverty but not sufficient; for this equal distribution mechanism, access to finance, the market, incentives to real tillers, entrepreneurship, and institutional reform, of course, can sustain the world's population and assure that nobody will ever suffer from poverty, hunger, or malnutrition in the coming days.

Indeed, Nepal is an agro-based economy. Thirty-four districts are suffering from a food crisis, out of seventy-seven districts [13]. Food security is a fundamental constitutional right for every citizen and an inseparable part of human rights. The sustainable development goals (SDGs) include "ending hunger, improving food security and nutrition, and promoting sustainable agriculture" as one of their goals. Globally, growth in agricultural output is one of the most effective ways to address the problems of poverty and hunger. The justification for this argument is that the Department for International Development (DFID) estimated in 2003 that a 1% increase in agricultural productivity would contribute to a 0.6-2% reduction in poverty [14]. Against this backdrop, this paper mainly focuses on the present situation and trend of food insecurity and hunger in Nepal. What is the current state of food security? And what are the current trends in hunger in Nepal? These are the two research questions for this paper. Thus, focusing on the Nepalese context and highlighting solely food security and the trend of hunger is also the limitation of this paper. Whatever the case may be, this paper will serve as a yardstick for planners, policymakers, and agro-entrepreneurs in the development policies, plans, and investment schemes that address the global agenda of sustainable development goals.

1.2 Theoretical Foundation

Prior empirical studies show that traditional subsistence agriculture practices in many developing economies have been substantially transformed into commercial and advanced forms by using modern equipment, documents, machinery, inputs, ideas, skills, and methods, for this, technology transfer in the agriculture sector is the theoretical foundation of this paper. Using modern equipment through the transfer process ultimately accelerates agriculture production and productivity and helps reduce poverty, hunger, and malnutrition. Mughal and Fontan Sers [15] argued that increased cereal production and yield play a significant role in reducing the intensity of undernourishment, a component of hunger and food insecurity. No poverty and zero hunger are the first and second goals of the sustainable development agenda (2015-2030), and to achieve these two goals, food production is becoming a major challenge on all scales, from local to global. At this juncture, technology transfer in the agriculture sector is getting top priority in the 21st century. As a result, the use of new science and technology, adequate inputs, irrigation, human labor, and sufficient farmer incentives (Schultz, 1964) ultimately accelerate agriculture's production and productivity in a sustainable manner.

The theory of change and the agricultural transformation model are highly appreciated in an agro-based economy. It is concerned with the input-process-output scheme. Thus, the greatest knowledge of how engagement and learning might enable change, as well as how progress toward outcomes might be monitored, is represented by the theory of change [16]. The theory of change deals with the role of government, development stakeholders, and individual households with respect to poverty, food security, and malnutrition [17]. Technology transfer plays a leading role in accelerating agricultural productivity in those areas where people are suffering from poverty, hunger, and malnutrition. Indeed, transferring ideas, skills, knowledge, devices, advice, tools, methods, and machines associated with agriculture is the best way to address the issues of poverty and hunger. Mgendi & Xiang [18] argued that the movement of soft and hard skills is essential for improving farm productivity. The innovation and use of environment-friendly agro-related technologies are inevitable not only in the places where they are invented but also equally spread throughout the world via multiple channels,

methods, and techniques. People's behavior and habit may help to reduce the food crisis in reality.

1.3 Objective

The purpose of this study is to assess the current status and trends of food insecurity and the Global Hunger Index (GHI) in Nepal and compare them to those of the country's seven provinces, three ecological zones, and two residential areas.

2. METHODS AND MATERIALS

Methodologically, this paper is prepared by reviewing scientific papers as a secondary data technique, which were extracted via Google Scholars, PubMed, Scopus, Research 4 Life, and ProQuest as a search engine. Apart from articles, the Constitution of Nepal (2015), a series of global hunger index reports (2000, 2007, 2014, and 2018–2022), the Nepal Demographic and Health Survey (2016), the multi-sectoral nutrition plan (2018–2022), and the 15th five-year plan of Nepal (2019–2023–2024) were intensively reviewed. Collected data were presented and interpreted using descriptive statistical tools and techniques such as tables, figures, percentages, and trend lines. The paper's scope is limited to the Nepalese context. While using secondary sources, accuracy, validity, and reliability were considered more seriously. Professional ethics, a minimum similarity index, and authenticity in data have been taken as ethical considerations.

3. RESULTS

3.1 Current Situation of Food Security in Nepal

Food is the basis of life for every living organism. Quality food and its easy availability are the best way to a better life. Not having sufficient calorie intake due to the unavailability, deficiency, accessibility, and utilization pattern of food is a critical condition of food insecurity. These statistics differ by geographical region and social group. The Government of Nepal targets to reduce the rate of stunting from 36 percent to 24 percent by the year 2025 and to 14 percent by 2030 [9]. About 8.1% of the population is deprived of the minimum daily calorie intake and is at risk in terms of food security. Food security is essential for sustainability and prosperity. The existing situation of food security and hunger in Nepal, including ecological zones, residential areas (rural and urban), and provinces, is presented in Table 1 (see Table 1).

Table 1 reveals the overall food security and hunger situation of Nepal, including residential areas (rural and urban), ecological zones (mountain, hill, and terai), and seven provinces in detail, focusing on the pattern of availability of food security categories such as "food secure," "mildly food secure," "moderately food insecure," and "severely food insecure." Comparatively, urban areas are more secure (54 percent) than rural areas (38.8 percent). In terms of severely insecure neighborhoods, urban has 8.8 percent, whereas rural has 11.7 percent. It is concluded that, in terms of categories of food security, urban households are more likely to be food secure than rural households. The data shows that the access and position of urban areas are relatively better than rural areas, even if rural areas are dominated by agriculture activities (see Table 1).

Similar positions have been found in three ecological zones. In terms of food security, the Terai region ranks first (51%), followed by the Hill (46.7%) and Mountain (38.1%) regions. In terms of severely insecure, the position of the Terai region is somehow good (9.2 percent), followed by 10.0 percent in the hills and 13.8 percent in the mountains, respectively. In terms of food security, the Terai region ranks higher than the Hill and Mountain regions: mildly secure, moderately insecure, and severely insecure (see Table 1).

A large proportion of households in Karnali Province fall into the moderately food insecure category (42.2 percent), and the same province suffers from the highest proportion of severely food insecure households (17.5 percent). Out of seven provinces, the Gandaki province has the strongest position in terms of food security (56.0 percent), followed by Bagmati (55.0 percent), Province No. 1 (52.6 percent), Lumbini (48.4 percent), Madhesh (43.1 percent), Sudurpashchim (37.7 percent), and Karnali (22.5 percent). In terms of food security and severe food insecurity, the Gandaki province performed well, while the Karnali province performed poorly (see Table 1).

According to the NDHS [19], almost half of the households (48.2 percent) have access to food security over the year in Nepal, and the remaining food insecure households (51.8 percent) have been categorized into having insufficient access to food. For instance, 19.7 percent of households are mildly food secure, 22.2 percent are moderately food insecure, and

9.9 percent are severely food insecure in Nepal. At the national level, over the years, the percentage of households that are food secure has essentially remained consistent (49 percent in 2011 against 48.2 percent in 2016). While the percentage of severely food insecure families somewhat decreased from 16 percent to 10 percent, the percentage of households with mild food insecurity climbed from 12 percent in 2011 to 19.7 percent in 2016 (see Table 1).

The Global Hunger Index [20] clearly shows how bad the world's hunger situation is. The fight against hunger has mostly stagnated internationally in recent years. Each country's GHI score is classified into five severity levels: i) low (9.9), ii) moderate (10.0–19.9), iii) serious (20.0–34.9), iv) alarming (35.0–49.9), and v)

extremely alarming (50.0). Nepal was ranked 76th out of 117 countries in 2000, with a GHI score of 37. After a seven-year interval, in 2007, the rank of Nepal was 90th out of 118 countries, securing a 24.30 score, and in 2018, the GHI rank was 72nd out of 119 countries, with a 21.2 score. Nepal's GHI rank in 2021 was 76th out of 116 countries, with a 19.1 score considered a moderate level of hunger. Currently, in 2022, the rank of Nepal is 81st out of 121 countries with a 19.1 score. The GHI score for 2022 is moderate, although at 19.1, it only slightly deviates from the 16.4 score in 2014, the 20.8 score in 2019, the 19.5 score in 2020, and the 19.1 score in 2021 and 2022 [8]. Nepal's global hunger index trend is shifting from serious to moderate (see Table 2).

Table 1. Current food security status in Nepal percentage

Bases	Food Secure	Mildly food Insecure	Moderately Food Insecure	Severely Food Insecure	Total
Residence					
Urban	54.0	17.3	19.9	8.8	100
Rural	38.8	23.5	26.0	11.7	100
Ecological Zones					
Mountain	38.4	18.8	28.9	13.8	100
Hill	46.8	18.8	24.4	10.0	100
Terai	51.0	20.7	19.1	9.2	100
Provinces					
Province No. 1	52.6	20.3	18.0	9.2	100
Madhesh	43.1	26.4	19.8	10.7	100
Bagmati	55.0	16.4	20.0	8.5	100
Gandaki	56.0	16.9	21.1	6.0	100
Lumbini	48.4	19.2	22.2	10.2	100
Karnali	22.5	17.8	42.2	17.5	100
Sudurpashchim	37.7	18.0	31.2	13.0	100
Nepal	48.2	19.7	22.2	9.9	100

Source: Ministry of Health, Nepal Demographic and Health Survey, 2016



Fig. 1. Nepal political provincial division

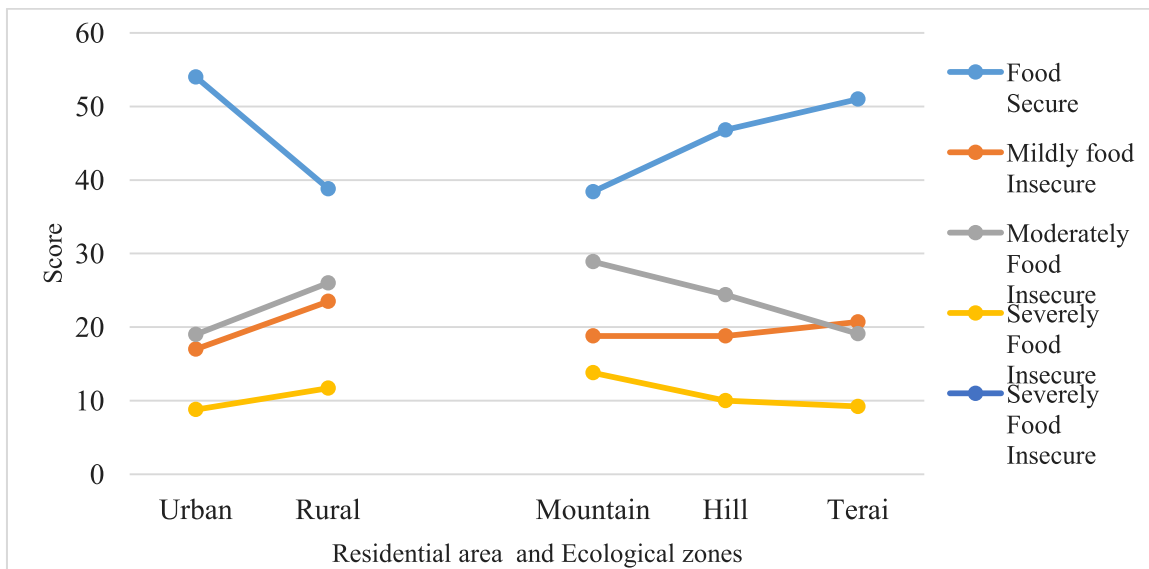


Fig. 2. Current food security status in residential area and ecological zones in Nepal

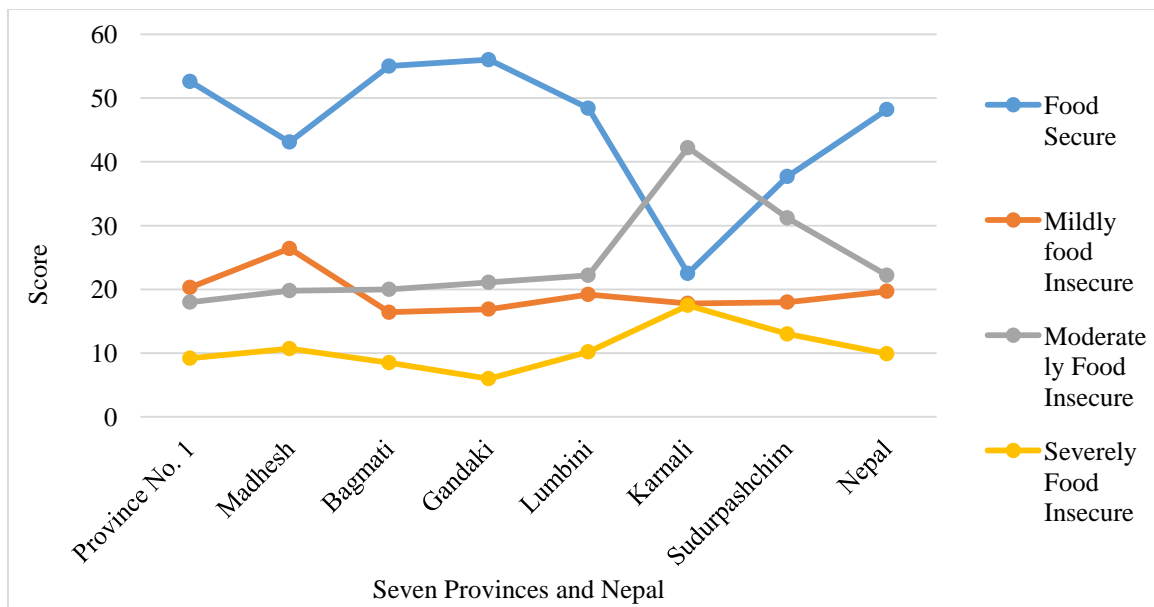


Fig. 3. Province wise food security status in Nepal

Table 2. Global hunger index score trend of Nepal

Year	Rank	Overall scores	No .of Countries
2000	76	37	117
2007	90	24.30	118
2014	44	16.4	76
2018	72	21.2	119
2019	73	20.8	117
2020	73	19.5	107
2021	76	19.1	116
2022	81	19.1	121

Source: Global hunger index report of various years

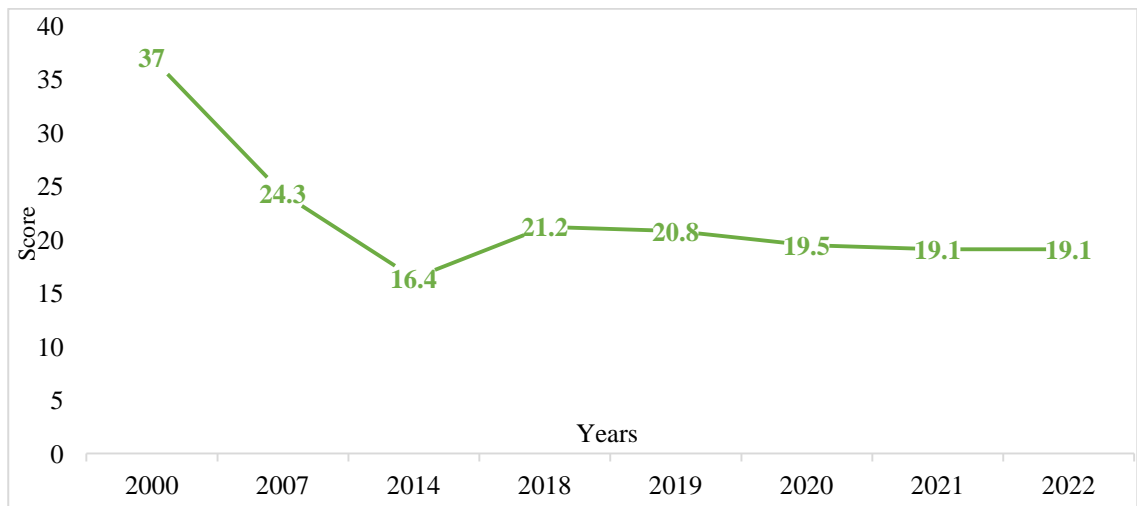


Fig. 4. Global hunger index score trend of Nepal

Table 3. Trend of indicators value of Nepal Percentage

Year	Undernourished	Child Stunting	Child Wasting	Child Mortality Rate Under Five Year
2000	23.5	56.1	11.3	7.9
2007	14.9	49.1	12.7	5.3
2014	6.1	37.1	11.3	3.7
2022	5.5	31.5	12.0	2.8

Source: Global hunger index report, 2000/2007/2014 and 2022

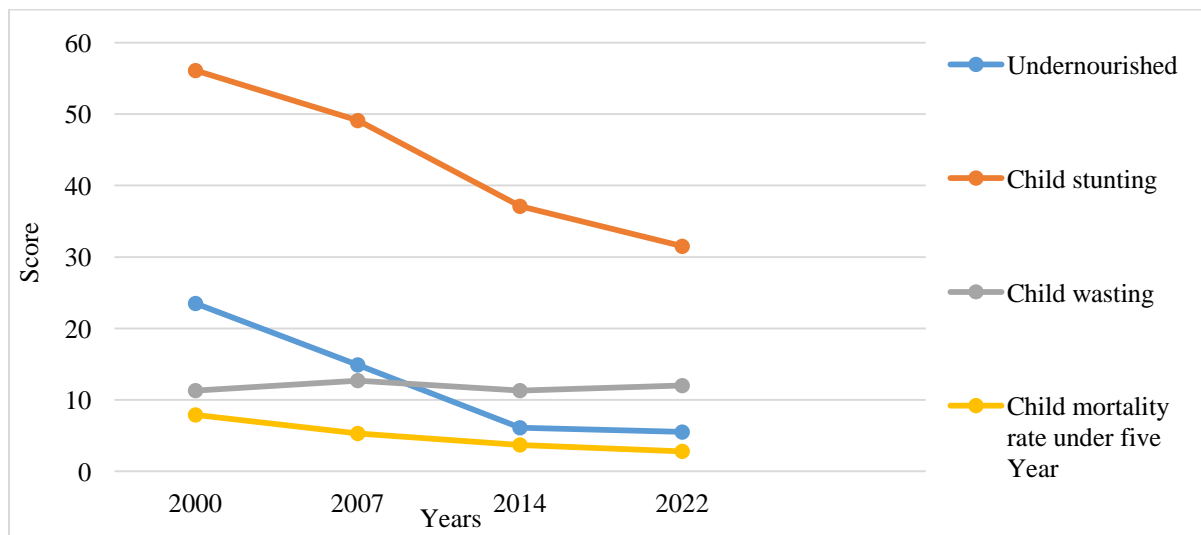


Fig. 5. Trend of indicator values of Nepal

3.2 Current Situation of Hunger in Nepal

Hunger is a key issue in development policy and economic progress. Hunger results in poverty and leads to malnutrition, conflict, violence, and death. The number of undernourished people in the world has been on the rise since 2014 [21].

This paper mainly focused on the trend of hunger in Nepal over the years (see Table 2).

Approximately 36% of children in Nepal suffer from stunting, 10% from wasting, and almost 53% from anemia. Forty-one percent of women of reproductive age suffer from anemia, and 17%

suffer from long-term energy deficiencies [19]. The current trend of indicator values for Nepal is shown in the following table (see Table 3).

In terms of the proportion of undernourished in the population, Nepal showed a decline from 23.5 percent in 2000 to 5.5 percent in 2022. Nepal increased its prevalence of wasting children under the age of five from 11.3 percent in 2000 to 12.0 percent in 2022. From 2000 to 2022, all indicators show that Nepal has made significant progress in reducing hunger (see Table 3).

Nepal has mandated the progressive reduction of food insecurity, hunger, and malnutrition. This is a significant step in the context of the ensuing "food sovereignty" of its people [22]. More than 820 million people in the world are still hungry today [21], underscoring the immense challenge of achieving the Zero Hunger target by 2030 from local to global scale.

4. DISCUSSION

Food security and hunger are a global challenge for peace and humanity today. GHI evaluates the prevalence of some general effects of hunger, such as undernutrition and proxy indicators associated with mortality [23]. About 770 million individuals worldwide experienced extreme food insecurity, which had a prevalence of 10.2 percent in 2017 [24]. In the Nepalese context, Bastaki et al., [2] conclude that food security situations, to some extent, reflect the general state of the respective Bajhang and Morang districts of Nepal. However, the overall food security and hunger index in Nepal over the years have gradually moved in a positive direction; for instance, the global hunger index (GHI) score in 2022 is 19.1, a moderate level. When compared to previous years, the GHI score was 28.0 in 2000, 24.3 in 2007, and 16.4 in 2014 [8]. Food security and hunger are becoming major issues in the global context. In Nepal, the state of food security, hunger, poverty, malnutrition, and unemployment-all socio-economic variables-were inversely affected due to the 2017 great earthquake and COVID-19. Currently, the war between Ukraine and Russia is turning a crisis into a tragedy by impacting global food, fertilizer, and fuel supply and prices.

A number of overlapping chronic and severe crises are currently plaguing the world, exposing flaws in the global food system and undermining efforts to alleviate hunger [8]. In 2020, globally, it is estimated that around 22 percent of children under five years of age were stunted, 5.7 percent

were overweight, and 6.7 percent were wasted [25]. For humanity, these are indeed serious issues. In the United States of America (USA), the global hegemony power country, millions of seniors went without enough food in 2019 due to the financial crisis [3]. They conclude that the District of Columbia in the USA has the highest state-level food insecurity rate at 13.5 percent, and the lowest is 2.9 percent in Minnesota. Six South Asian nations are included in the GHI index, with Sri Lanka ranking (64th), followed by Nepal (81st) and Bangladesh (84th). Both Nepal and Sri Lanka are classified as having a "moderate" level of severity. Afghanistan (109th), India (107th), and Pakistan (99th) are in worse condition compared to Nepal in South Asia [8]. This study concludes that, among the south Asian countries, Nepal is one of the countries affected the least by hunger. In contrast, India continues to experience alarming hunger and acute malnutrition among children under five, despite the country's remarkable economic growth over the past two decades [26]. Approximately 14.8 percent of the people in India were undernourished [27] and experienced poverty and hunger [7]. Mughal & Fontana Sers [15] conclude that for a lower proportion of the undernourished population, there exists a two-way functional relation between higher production and better yield. Reviving economic growth is a leading force which helps to overcome the problems of poverty, hunger and malnutrition in many developing economies [28]. This paper suggests that effective policy and development interventions must address the problems of food insecurity and hunger for a better future. Access to adequate food is critical to reducing overall household poverty [11] and hunger in reality.

5. CONCLUSION

The aim of this paper is to examine the current trend and situation of food insecurity and hunger in Nepal. Food security is a multi-dimensional issue and requires multi-sectoral efforts. Today, in development and policy discourse, the issues of food security and hunger are increasing at an alarming rate. Having enough and timely food is a fundamental human right. In Nepal, food insecurity is a key issue in development policy and economic progress. The Government of Nepal targets reducing the rate of stunting from 36 percent to 24 percent by the year 2025 and to 14 percent by 2030. In Nepal, food insecurity is a key issue in development policy and economic progress. Around half of the households (48.2

percent) have access to food security over the course of the year in Nepal. In terms of food security, urban areas are more secure than rural areas, and the Terai region performs better than the Hill and Mountain regions. In terms of food security and severe food insecurity, the Gandaki province performed well, while the Karnali province performed poorly. GHI score for 2022 is moderate, although at 19.1, it only slightly deviates from the 16.4 score in 2014, the 20.8 score in 2019, and the 19.5 score in 2020. Nepal's global hunger index trend is shifting from serious to moderate.

6. RECOMMENDATIONS

Examining the current status of food insecurity and hunger, it is recommended to the government of Nepal and development partners to dedicate themselves to reducing the existing problems of poverty, food insecurity, hunger, and malnutrition, which would be a strong base for future development patterns and help to achieve sustainable development goals from a local to global scale [11]. Furthermore, an urgent and plan-wise effort is inevitable to guarantee food sufficiency, availability, access, and utilization patterns that reduce child mortality and improve child nutrition all over the country and more deliberately in food crisis areas in order to address the hunger crisis in Nepal [29]. Considering this subjective reality, policymakers, planners, and development stakeholders must choose a comprehensive strategy to ensure that the nation has enough food. This paper suggested that subsequent researchers would have a good chance to explore effective measures to accelerate food security in the Nepalese context.

COMPETING INTERESTS

Author has declared that no competing interests exist.

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