Dissertation Training

at

International Institute of Health Management Research

New Delhi

Global Hunger Index Factors in India and Neighbouring Nations

by

Mansi Chauhan

Enroll. No. PG/22/051

Under the guidance of

Dr. Rupsa Banerjee

PGDM (Hospital & Health Management)

2022-24

International Institute of Health Management Research
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Azadi Ka Amrit Mahotsav

नए सवेरा की ओर
Towards a new dawn

G20 भारत 2023 INDIA
वसुधैव कुटुम्बकम्
ONE EARTH • ONE FAMILY • ONE FUTURE

MINISTRY OF WOMEN AND CHILD DEVELOPMENT
GOVERNMENT OF INDIA

INTERNSHIP PROGRAMME CERTIFICATE

FOR THE YEAR ~~2024-25~~.....

This is to certify that Mansi Chauhan ~~D/o~~, W/o Yashendra Singh has successfully completed her Internship in the Ministry of Women & Child Development, Government of India during the period from 04.03.2024 to 30.04.2024.

Dhrijesh

DHRIJESH KUMAR TIWARI
Statistical Adviser

TO WHOMSOEVER IT MAY CONCERN

This is to certify that Mansi Chauhan, a student of PGDM (Hospital & Health Management) from the International Institute of Health Management Research, New Delhi has undergone a dissertation at IIHMR Delhi from 04/03/2024 to 04/06/2024.

The Candidate has successfully carried out the study designated to him during internship training and his/her approach to the study has been sincere, scientific, and analytical.

The dissertation fulfills the course requirements.

I wish her all success in all /her future endeavors.

Dr. Sumesh Kumar Mentor
Associate Dean, Academic and Student Affairs
IIHMR, New Delhi

Mentor
IIHMR, New Delhi

Certificate of Approval

The following dissertation titled "A comprehensive Narrative Review of Global Hunger Index factors in India with comparative Performance Analysis of Neighboring Nations" at "_____" is hereby approved as a certified study in management carried out and presented in a manner satisfactorily to warrant its acceptance as a prerequisite for the award of **PGDM (Hospital & Health Management)** for which it has been submitted. It is understood that by this approval the undersigned do not necessarily endorse or approve any statement made, opinion expressed, or conclusion drawn therein but approve the dissertation only for the purpose it is submitted.

Dissertation Examination Committee for evaluation of dissertation.

Name	Signature
Dr. SHIVAM K APOOR	
Anuradha	
Dr. Mukesh Ravi Ranshan	

Certificate from Dissertation Advisory Committee

This is to certify that **Ms.Mansi Chauhan,** a graduate student of the **PGDM (Hospital & Health Management)** has worked under our guidance and supervision. She is submitting this dissertation titled **"Global Hunger Index Factors in India and Neighbouring Nations"** at IIHMR Delhi in partial fulfilment of the requirements for the award of the **PGDM (Hospital & Health Management).**

This dissertation has the requisite standard and to the best of our knowledge, no part of it has been reproduced from any other dissertation, monograph, report, or book.

Institute Mentor Name- Dr. Rupsa Banerjee

Designation: ~~Associate~~ Assistant Professor

Organization: IIHMR, New Delhi

Organization Mentor:

Designation: Assitant Professor

Organization: IIHMR, New Delhi

INTERNATIONAL INSTITUTE OF HEALTH MANAGEMENT RESEARCH, NEW DELHI

CERTIFICATE BY SCHOLAR

This is to certify that the dissertation titled "**Global Hunger Index Factors in India and Neighbouring Nations**" was submitted by **Mansi Chauhan**. Enrollment No. PG/22/051 under the supervision of **Dr. Rupsa Banerjee** for the award of PGDM (Hospital & Health Management) of the Institute carried out during the period from 04/03/2024 to 04/06/2024 embodies my original work and has not formed the basis for the award of any degree, diploma associate ship, fellowship, or titles in this or any other Institute or other similar institution of higher learning.

Mansi Chauhan

Signature

FEEDBACK FORM

Name of the Student: Mansi Chauhan

Name of the Organisation in Which Dissertation Has Been Completed: IIHMR Delhi

Area of Dissertation: Delhi

Attendance: 100/100

Objectives achieved: Completed Narrative review and comparative analysis.

Deliverables: Studied complex yet important topic of India's GIHI Rank

Strengths: Eye for detail, consistent

Suggestions for Improvement: None

Suggestions for Institute (course curriculum, industry interaction, placement, alumni):

Signature of the Officer-in-Charge/ Organisation Mentor (Dissertation)

Date: 27/07/2024

Place: Dwarka, Delhi

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ACKNOWLEDGMENT

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Her insights and advice have been crucial in navigating the complexities of this research.

This work, which began on 4, March,2024 and concluded on 04, June,2024, would not have been possible without the collaborative efforts and dedication of Dr. Banerjee. I am deeply appreciative of her contributions and the profound impact she has had on my academic journey.

Lastly, I extend my heartfelt thanks to the entire team involved in this project. This collective effort has been pivotal in advancing our understanding and preparedness in health, nutrition, and GHI for India.

Sincerely

Mansi Chauhan
IIHMR (2022-2024)

ABSTRACT

Background- Hunger and malnutrition perpetuate an intergenerational cycle, where children from economically disadvantaged families are born with low birth weights, are more susceptible to illnesses, and experience developmental delays due to adverse living conditions. Major contributors to high Global Hunger Index (GHI) scores include poverty, armed conflicts, restricted freedoms, gender inequality, and ineffective health and nutrition initiatives.

Objective- This study analyzes the factors contributing to India's high GHI score and compares them with those of neighbouring countries to identify effective interventions and policies that can improve India’s hunger and nutrition outcomes.

Methods- The study utilizes data from the Food and Agriculture Organization (FAO), World Health Organization (WHO), and various other reputable sources to compute the GHI scores. The GHI score is calculated by averaging the proportions of the population experiencing undernourishment, children under five who are underweight, and the child mortality rate, resulting in a scale from 0 (no hunger) to 100 (extreme hunger).

Results- India ranks 111th out of 125 countries in the 2023 Global Hunger Index with a score of 28.7, categorized as 'serious'. The country has the highest rate of child wasting at 18.7%, over 35% of children suffering from stunting, and 16.6% of the population undernourished. Despite rapid economic growth, these figures reflect significant malnutrition and hunger issues.

Conclusion- The findings underscore the complex interplay of socioeconomic, health, and environmental factors contributing to hunger and malnutrition in India. By learning from the experiences of neighbouring countries such as Pakistan, Bangladesh, Nepal, and Sri Lanka, and implementing targeted policy interventions, India can improve its GHI score and achieve better nutritional outcomes for its population.

BACKGROUND

Hunger and malnutrition create a cycle that tends to persist across generations. Offspring of economically disadvantaged families often enter the world with low birth weights and heightened susceptibility to illnesses, experiencing developmental setbacks due to adverse living conditions. The key contributors to a high global hunger index include factors such as poverty, armed conflicts, restricted freedoms, gender inequality, and ineffective implementation of health and nutrition initiatives. The World Health Organization (WHO) regards the global hunger index as a tool for assessing progress towards Sustainable Development Goals related to hunger, facilitating international comparisons among nations (1). The Global Hunger Index (GHI) is an annually published peer-reviewed report by Concern Worldwide and Welthungerhilfe. The report's authors primarily focus on the United Nations' Sustainable Development Goal 2 (SDG 2), aiming to attain 'Zero Hunger' by 2030 (2). A nation's GHI score is determined by averaging the proportions of the population experiencing undernourishment, children under the age of five who are underweight, and the child mortality rate. This computation produces a scale ranging from zero to 100, where zero represents the optimal score (indicating no hunger) and 100 reflects the poorest score. However, in practice, neither extreme is typically reached. (3).

Data sources and reference year for the global hunger index component indicators, 2023 (2)

Indicator	**Data Sources**	**2023 GHI scores (125 countries)**
Prevalence of undernourishment	FAO 2023	2020–2022[a]
Child stunting and wasting	WHO 2023; UNICEF et al. 2023a; UNICEF 2023a; MEASURE DHS 2023	2018–2022[e]
Child mortality	UN IGME 2023a	2021

Despite experiencing rapid economic growth, India was ranked 111th out of 125 countries in the Global Hunger Index released on October 12, 2023, marking a decline of four positions compared to the previous year. The report categorizes India among the 40 countries with a 'serious' level of global hunger, with an overall GHI score of 28.7. Notably, India has the highest rate of child 'wasting', indicating acute undernutrition, at 18.7%. Additionally, over 35% of children in India suffer from stunting. The country's undernourishment levels are classified as 'medium' risk, affecting around 16.6% of the population. However, India's under-5 mortality rate is considered 'low risk', with approximately 3.1% of children dying before reaching the age of five. These findings are consistent with previous reports such as the SOFI-2023 report, which highlighted that 74.1% of the Indian population cannot afford a healthy diet, and approximately 233.9 million people in India are classified as 'undernourished'. Undernourishment, as defined by the SOFI report, refers to the condition where an individual's regular food intake fails to meet the necessary dietary energy requirements for maintaining a normal, active, and healthy life (4). The rank

for the neighboring countries having low pace economic growth in GHI is as follows: (5)

Pakistan- 102

Bangladesh- 81

Nepal- 69

Sri Lanka- 60

This data provides a lot to think about in terms of the factors influencing this kind of situation in India. Also, a comparison between India and the countries mentioned above can be a source of coming to a solid conclusion as to what and how these countries are implementing their actions which India is lacking. This study will try to understand the scenario in detail to understand that even after implementing various schemes to eliminate hunger like India's Zero Hunger Program, National Nutrition Mission, National Food Security Mission, Eat Right India Movement, and Mid-Day Meal Program, India is slipping In GHI rank since 2000.

OBJECTIVE

Primary Objective: To study the factors associated with India's current rank in the GHI (Global Hunger Index)

Secondary Objective: Compare India's performance with the low-paced economically growing neighboring countries.

METHODOLOGY

Study Design: Narrative Review

Source of Data: Academic databases such as PubMed, Scopus, Web of Science, and Google Scholar will be used to identify relevant peer-reviewed articles. Keywords and Boolean operators will be used to refine the search process. Reports from reputable

international NGOs such as WHO, UNICEF, etc., through their respective websites or databases, will be utilized. Information from credible sources available in the public domain, including government websites, institutional repositories, policy documents, and reputable online platforms will be used.

Search Terms: Words like Global Hunger Index factors, Hunger elimination in India, India GHI ranking determinants, Factors influencing India's GHI position, India hunger statistics, India, and neighboring countries' food security, etc would be searched in the database.

Study Variables: The dependent variable is India's Global Hunger Index (GHI) rank and the independent variables are Socioeconomic factors (e.g., poverty rate, income inequality), Food availability and accessibility, Agricultural productivity, and food production, Government policies and programs related to food security, Gender inequalities index, environmental factors e.g., climate change, natural disasters, and demographic factors e.g., population growth, urbanization.

Data Analysis/Synthesis Plan:

1. **Data Extraction:** The first step is to get an overview of all identified studies by making an article matrix where each study's aim, study design, variables examined, key findings, and conclusions, are described in brief. Also, another matrix for other information gathered with the headers like report overview, factors discussed, country name, data drawn, and overall conclusion.
2. **Data Synthesis:**
    - Organizing extracted data into themes or categories based on the objectives.
    - Identifying common patterns, trends, and relationships among the factors influencing India's GHI rank and comparisons with neighboring countries.
3. **Comparison with Neighboring Countries:**

- Collating data on GHI ranks and relevant variables from neighboring countries (e.g., Bangladesh, Pakistan, Nepal, Sri Lanka).
- Comparing India's performance with these countries in terms of GHI ranks and associated factors.
- Observing similarities, differences, and potential lessons learned from neighboring countries' experiences.

4. **Interpretation and Discussion:**
    - Interpreting the synthesized findings in light of the study objectives.
    - Exploring the implications of identified factors for India's GHI rank and potential policy interventions.
5. **Conclusion and Recommendations:**
    - Summarizing key findings and conclusions drawn from the data analysis and synthesis.
    - Provide recommendations as per the findings.

FACTORS IMPACTING THE GLOBAL HUNGER INDEX

The Global Hunger Index (GHI) delves into the multifaceted issue of hunger, examining both caloric deficiencies and micronutrient gaps (referred to as “hidden hunger”). Hidden hunger arises when the quality of food fails to meet people’s nutritional needs, leaving them without essential vitamins and minerals crucial for growth and development. The GHI assesses these deficiencies through four key indicators: prevalence of undernourishment, child stunting, child wasting, and child mortality. Contributing factors include household food insecurity, inadequate maternal health and childcare practices, and limited access to health services, safe water, and sanitation. (6) The World Bank defines nutritional security as the combination of food security with a hygienic environment, adequate healthcare, and proper care practices. High-risk fertility behavior in mothers significantly increases the likelihood of stunting and underweight

conditions among children under 5 years old. Our research emphasizes the importance of avoiding high-risk fertility, including early or late childbearing patterns, a high number of total live births, and short birth spacing, to mitigate the risk of chronic undernutrition in young children. (7)

INDIA'S NUTRITIONAL CHALLENGES: A CLOSER LOOK

Over time, Global Hunger Index (GHI) scores serve as indicators of various underlying factors, including inequality, poverty, governance, and demographic conditions. Additionally, they reflect the impact of shocks and crises such as economic downturns, climate extremes, and conflict.

Despite a slight increase in India's per capita dietary energy supply, several factors counterbalance this progress. These include rising caloric losses at the retail distribution level, higher dietary energy requirements for the population, and increased variation in caloric intake across different segments of the population. Consequently, India's prevalence of undernourishment has seen incremental growth between 2016–2018 and 2020–2022. (6)

Low Birth Weight Impact

Infants born with low birth weight (LBW) are at a higher risk for several childhood malnutrition issues, including stunting, wasting, and being underweight, with odds ratios of 1.46, 1.33, and 1.76 respectively. Male children are generally more prone to undernourishment compared to females. Additionally, the risk of malnutrition increases with lower levels of maternal education and household wealth. Key indicators of childhood malnutrition also include younger or smaller-statured mothers and urban residents. Birth order can impact malnutrition risks, with an increased likelihood of stunting and underweight but a reduced risk of wasting for children born later in the sequence. The western regions exhibit a higher prevalence of stunting and underweight. Furthermore, mothers who receive Integrated Child Development Services (ICDS)

supplements during pregnancy are more likely to have undernourished children. In India, Punjab exhibits the highest prevalence of low birth weight (LBW), followed by Delhi, Madhya Pradesh, Uttar Pradesh, and Haryana. Stunting, wasting, and underweight are significant issues in the country, affecting 33%, 19%, and 31% of children, respectively. LBW plays a major role in contributing to these childhood malnutrition problems. Several factors influence malnutrition, including the child's age, the mother's height, wealth status, education, breastfeeding practices, and access to sanitation facilities. Additionally, maternal exposure to air pollution is known to restrict foetal growth, further linking LBW to environmental factors such as air pollution. In India, regional variations in low birth weight (LBW) prevalence are influenced by maternal and child health care indicators, with Uttar Pradesh and Madhya Pradesh showing the lowest levels of care, while Punjab and Haryana benefit from better antenatal care, with one in three mothers receiving comprehensive services. Despite improvements in antenatal and postnatal care, some women still avoid institutional deliveries and check-ups, which affects LBW rates. India's LBW prevalence is higher compared to Bhutan and Sri Lanka. Interventions such as Kangaroo Mother Care (KMC) enhance outcomes for LBW and premature babies by promoting skin-to-skin contact, and exclusive breastfeeding offers protection against short-term and severe diseases. Interestingly, Anganwadi supplements during pregnancy have been found to negatively correlate with child undernutrition, suggesting that nutrition education programs could be more effective in improving awareness and utilization of resources. LBW significantly impacts child health, contributing to 14.8% of stunting, 10.42% of wasting, and 9.6% of underweight cases. (8)

Impact of climate change on food security, specifically focusing on rice production in the Cauvery Delta Zone of India

Climate change poses significant challenges to rice productivity, particularly in the Cauvery delta region, where temperature fluctuations and changes in rainfall patterns can disrupt crop yields. A study focusing on this area projected a substantial decline in rice productivity as a direct result of climate change. Between 2021 and 2040, the study forecasts a 35% decrease in rice productivity, highlighting the severity of the impact within the next two decades. Looking further ahead, from 2041 to 2050, the anticipated reduction in rice productivity is expected to moderate slightly to 16%, although the overall trend of decline underscores the urgent need for adaptive measures and sustainable agricultural practices to mitigate these effects.

Despite the challenges posed by climate change and its anticipated impact on rice productivity in the Cauvery delta region, there remains a positive supply-demand imbalance favouring surplus rice production. Estimates suggest a surplus of 0.39 million tonnes from 2021 to 2030, 0.23 million tonnes from 2031 to 2040, and 0.35 million tonnes from 2041 to 2050. However, it's crucial to note that neighbouring regions also depend on rice from the Cauvery Delta. Therefore, while there is a surplus within the region, it may not fully meet the overall demand of the state, highlighting the complex dynamics of agricultural production and distribution amidst evolving environmental challenges. Climate change poses challenges, especially when neighbouring regions depend on this rice production hotspot. (9)

Water and Sanitation in India

Access to potable water remains a critical issue in India, with approximately 6% of the population lacking access to safe drinking water. This disparity underscores persistent challenges in ensuring universal access to clean water. Furthermore, a significant majority, about 54%, lack access to properly managed household sanitation facilities, highlighting the pressing need for improved sanitation infrastructure nationwide. India's score concerning clean water availability dropped from 88 in 2019 to 83 in 2020,

indicating setbacks in maintaining and enhancing water quality and accessibility. Despite some progress, addressing these disparities in water and sanitation infrastructure is crucial for ensuring the overall well-being and food security of India's population.(10)

Some key highlights about other countries are as follows-

Bangladesh

Despite notable strides in poverty reduction in recent decades, with rates dropping from 48.9% in 2000 to 21.8% in 2018, climate change remains a persistent threat. Rising sea levels, increased frequency of floods, temperature fluctuations, prolonged droughts, and unpredictable rainfall patterns continue to pose significant challenges to global food security. These climate-related disruptions not only jeopardize agricultural productivity but also threaten livelihoods and exacerbate existing vulnerabilities, underscoring the urgent need for adaptive strategies and international cooperation to mitigate the impacts of climate change on food systems and ensure sustainable development for all.

Pakistan

The Government of Pakistan has taken proactive steps to address malnutrition through the Pakistan Nutrition Initiatives (PANI) program, which involves an investment of PKR 8.5 billion. This initiative aims to combat the pervasive issue of malnutrition by implementing targeted interventions across various sectors. Meanwhile, Nepal has achieved significant progress in reducing stunting rates, marking one of the fastest declines globally over the past two decades. From 57.2% in 2001, the prevalence of stunting decreased to 35.8% by 2016, demonstrating effective strategies and concerted efforts towards improving nutritional outcomes and child health in the country. (11)

Chinese investments via the CPEC (China-Pakistan Economic Corridor) are significantly reshaping several sectors of Pakistan's economy. These initiatives are notably advantageous in:

- Boosting food security through enhanced agricultural productivity and decreased wastage.
- Strengthening the energy sector to support industrial and agricultural operations.
- Building infrastructure that improves market connectivity and alleviates poverty.
- Tackling water management challenges critical for sustainable agricultural practices.

These investments not only address current challenges but also lay the groundwork for sustained, long-term development in Pakistan, fostering improvements across its socio-economic fabric. (12)

Nepal

Nepal has set ambitious targets to address inequality and improve nutritional outcomes by 2030. The country aims to reduce stunting by 15%, decrease wasting to less than 4%, and bring down underweight prevalence to 10%. Achieving these goals is central to Nepal's commitment to enhancing the well-being of its population, particularly focusing on maternal, adolescent, and child nutrition through its Multisectoral Nutrition Plan (MSNP). This comprehensive approach underscores Nepal's dedication to combating malnutrition at various stages of life, emphasizing integrated efforts across sectors to ensure sustainable improvements in health and nutrition outcomes nationwide.(11)

India

GoI has implemented several schemes and programs to advance towards achieving the SDG Zero Hunger target. These initiatives include:

- The National Food Security Act, 2013, which ensures food security for the population.
- Integrated Child Development Services, focusing on maternal and child nutrition.
- Nutrition meal programs in primary schools to enhance children's nutritional intake.
- Antyodaya Anna Yojana and the Public Distribution System, ensuring food access for vulnerable populations.
- POSHAN Maah Abhiyan, a campaign to promote nutrition.

- The National Mission on Sustainable Agriculture, aimed at sustainable farming practices.

- Agroforestry programs to increase plantation.

- Paramparagat Krishi Vikas Yojana (PKVY) promoting organic farming.

- Pradhan Mantri Fasal Bima Yojana for crop insurance.

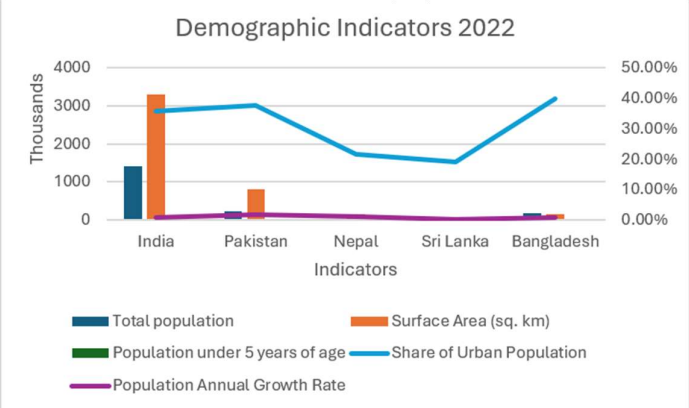
- Pandit Deendayal Unnat Krishi Shiksha Yojana and other educational initiatives in agriculture.

- Massive irrigation, soil conservation, and water harvesting programs to enhance agricultural productivity and sustainability.(13)

RESULTS

Since the GHI report discusses the impact of some major factors i.e., inequality (Gender and income), poverty, governance, demographic conditions, climate vulnerability, and food insecurity on a country's rank, hence it will be logical to criticize the countries on these parameters.

Demographic conditions 2022 (population unit multiplier- 1000)
Source- UNICEF data warehouse(14)



the Gender Inequality Index (GII)

India:

Rank: India stands at **108th** out of 193 countries on the GII 2022.

Score: The GII score for India is **0.437**.

India's progress reflects efforts to address gender disparities across various dimensions.

Pakistan:

Rank: Pakistan ranks **135th** out of 193 countries on the GII 2022.

Score: The GII score for Pakistan is **0.490** (as of 2021).

Note: Pakistan faces challenges related to gender-based violence and representation.

Nepal:

Rank: Nepal improved from **144th** to **143rd** position in the GII.

HDI Impact: Despite the improvement, Nepal's HDI value slightly declined from 0.604 to 0.602 due to pandemic-related turbulence.

Nepal stands at **113th** position in the global Gender Inequality Index.

Bangladesh:

Rank: Bangladesh ranks **127th** on the GII 2022.

Score: The GII score for Bangladesh is not explicitly mentioned, but it reflects progress in gender equality.

Sri Lanka:

Rank: Sri Lanka ranks **90th** on the GII.

Sri Lanka faces challenges related to economic growth, poverty, and gender equality.

Note: Sri Lanka's situation is complex, with progress in some areas but persistent disparities in others.

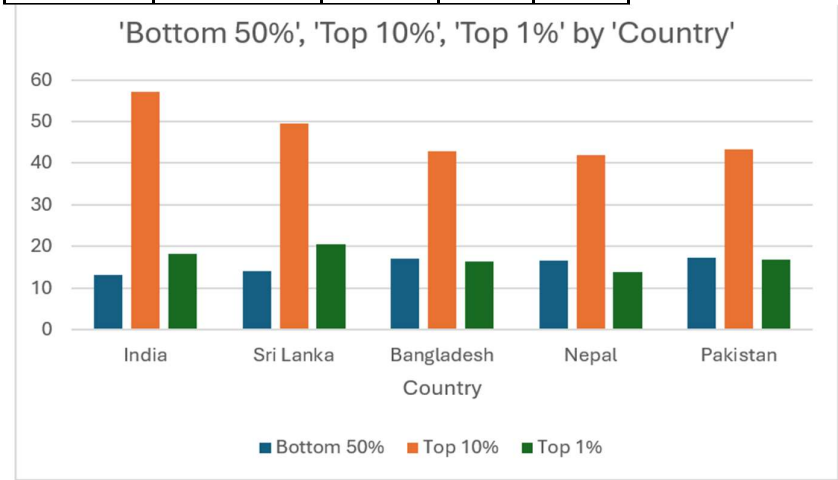
Remember that the GII assesses gender-based disadvantage across dimensions like reproductive health, empowerment, and the labor market. Lower GII values indicate better gender equality. (15)

Income Inequality

source: World Inequality database 2022(16)
reference table1

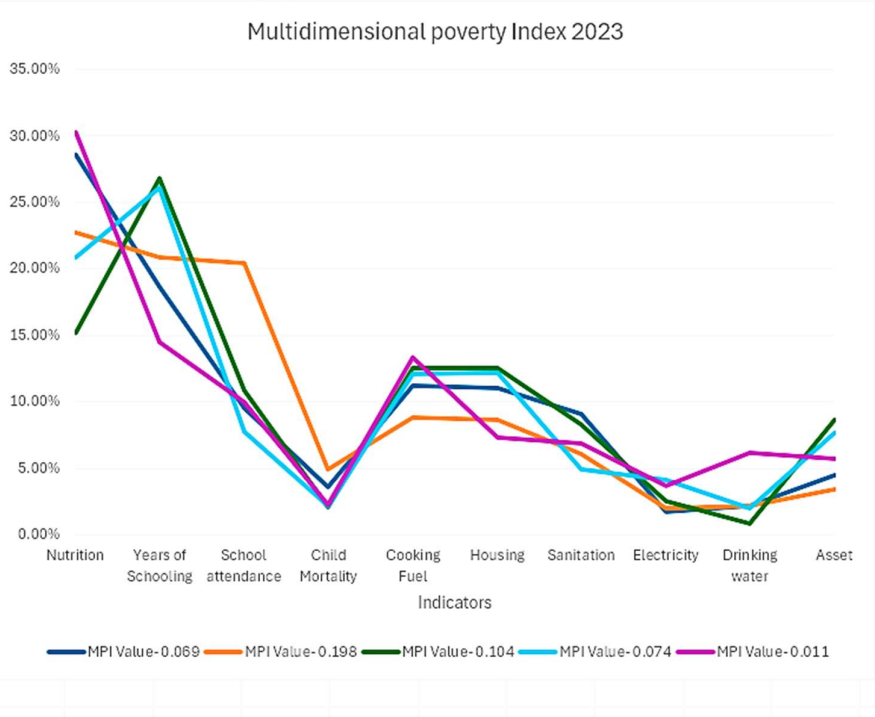
Inequality Ranking	Country	Bottom 50%	Top 10%	Top 1%
69	India	13.13	57.13	18.15
79	Sri Lanka	14.11	49.43	20.64

122	Bangladesh	17.06	42.85	16.33
116	Nepal	16.67	41.92	13.89
123	Pakistan	17.27	43.26	16.82



Multidimensional poverty index 2023

Source- UNDP Data(17)



Reference table2

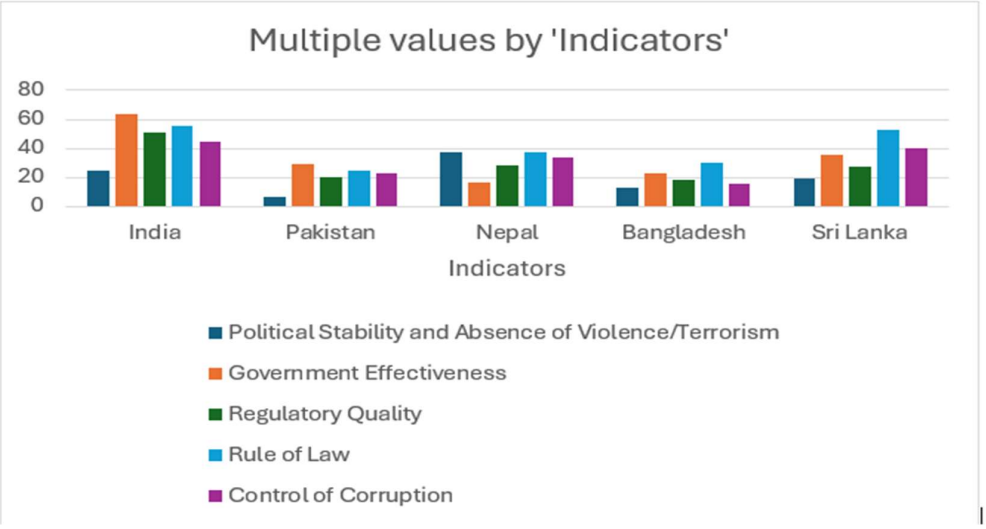
Indicators	India MPI Value-0.069	Pakistan MPI Value-0.198	Bangladesh MPI Value-0.104	Nepal MPI Value-0.074	Sri Lanka MPI Value-0.011
Nutrition	28.60%	22.70%	15.20%	20.90%	30.30%

Years of Schooling	18.70%	20.90%	26.80%	26.10%	14.50%
School attendance	9.50%	20.40%	10.90%	7.80%	10.00%
Child Mortality	3.60%	4.90%	2.10%	2.20%	2.30%
Cooking Fuel	11.20%	8.80%	12.50%	12.10%	13.30%
Housing	11.00%	8.60%	12.50%	12.20%	7.30%
Sanitation	9.10%	6.10%	8.30%	4.90%	6.90%
Electricity	1.70%	2.00%	2.50%	4.10%	3.70%
Drinking water	2.20%	2.20%	0.80%	2.00%	6.20%
Asset	4.50%	3.40%	8.60%	7.70%	5.70%

Worldwide Governance Indicators 2022

Source- WorldBank.org(18)

NOTE: This chart shows the percentile rank of the country on each government indicator. Percentile rank indicates the percentage of countries worldwide that rate below the selected country. Higher values indicate better governance ratings.



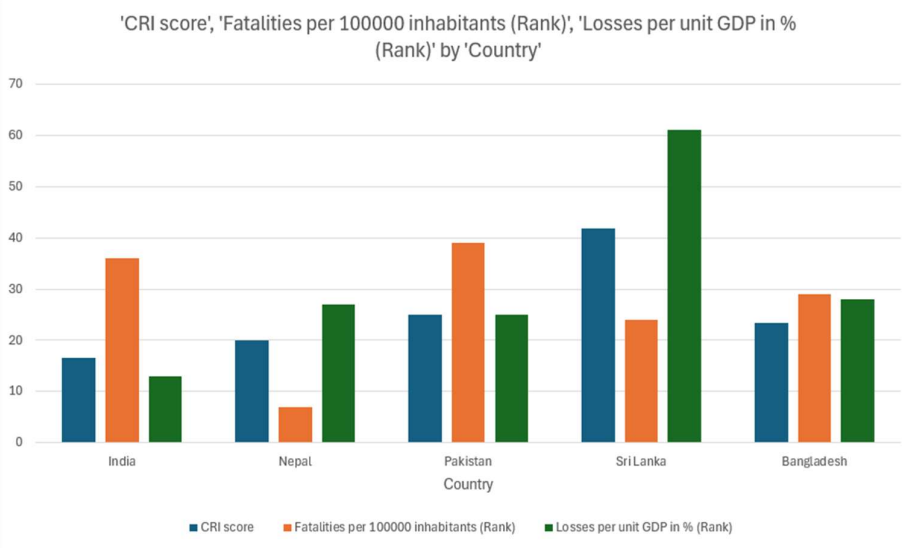
Reference Table 3

Indicators	India	Pakistan	Nepal	Bangladesh	Sri Lanka
Voice and Accountability	49.28	25.12	44.93	28.02	40.1
Political Stability and Absence of Violence/Terrorism	24.53	6.6	37.74	13.21	18.87

Government Effectiveness	63.21	29.25	16.04	23.11	35.85
Regulatory Quality	50.94	20.28	27.83	17.92	27.36
Rule of Law	55.19	25	37.74	29.72	52.36
Control of Corruption	44.34	22.64	33.96	15.57	40.09

Climate risk index 2019

Source-Global Climate Risk Index 2021(19)

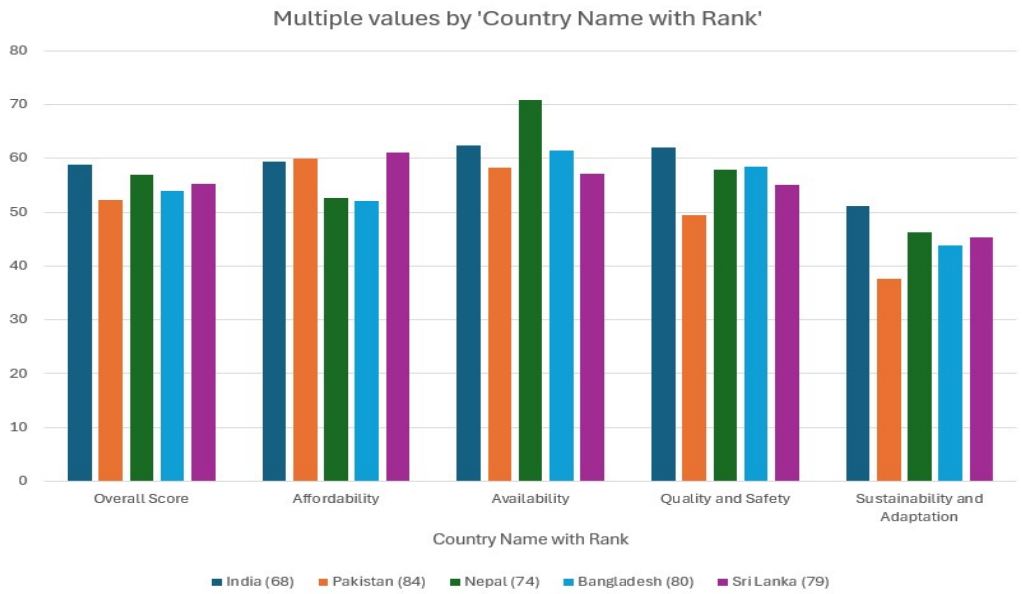


Reference Table 4

CRI Rank	Country	CRI score	Fatalities in 2019 (Rank)	Fatalities per 100000 inhabitants (Rank)	Losses in million US$ (PPP) (Rank)	Losses per unit GDP in % (Rank)
7	India	16.67	1	36	1	13
12	Nepal	20	10	7	42	27
15	Pakistan	25	8	39	14	25
30	Sri Lanka	41.83	33	24	48	61
13	Bangladesh	23.5	7	29	20	28

Global Food Security Index 2022

Source- Global Food Security Index (20)

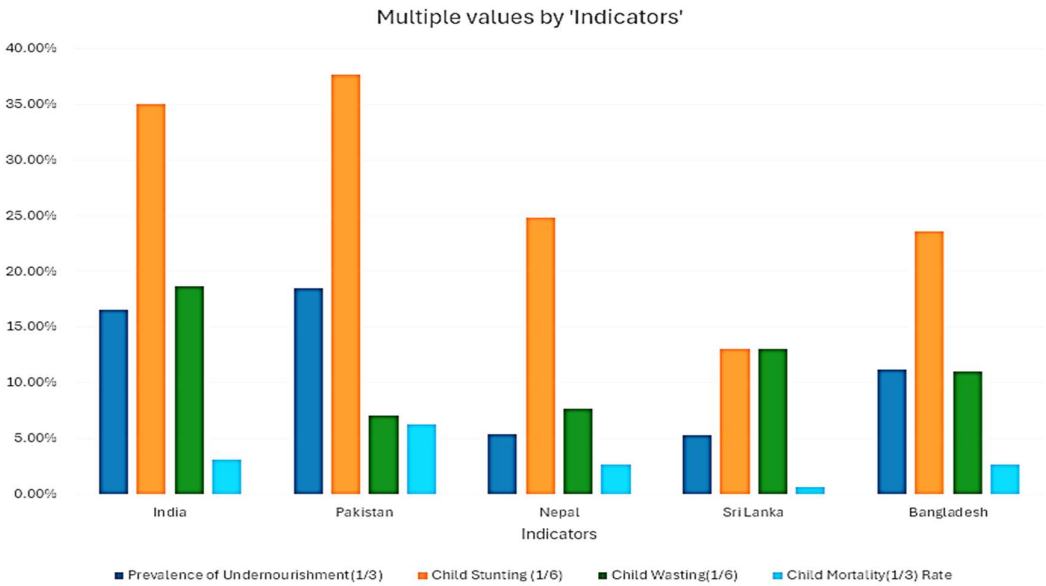


Reference Table 5

Country Name with Rank	Overall Score	Affordability	Availability	Quality and Safety	Sustainability and Adaptation
India (68)	58.9	59.3	62.3	62.1	51.2
Pakistan (84)	52.2	59.9	58.3	49.4	37.7
Nepal (74)	56.9	52.7	70.9	57.8	46.2
Bangladesh (80)	54.0	52.1	61.5	58.4	43.9
Sri Lanka (79)	55.2	61.0	57.2	55.0	45.3

GHI Indicators comparative analysis

Source- GHI report 2023



Reference Table 6

	India	Pakistan	Nepal	Sri Lanka	Bangladesh
Prevalence of Undernourishment(1/3)	16.60%	18.50%	5.40%	5.30%	11.20%
Child Stunting (1/6)	35%	37.60%	24.80%	13.10%	23.60%
Child Wasting(1/6)	18.70%	7.10%	7.70%	13.10%	11.00%
Child Mortality(1/3) Rate	3.10%	6.30%	2.70%	0.70%	2.70%

DISCUSSION AND RECOMMENDATION

Various factors, including demographics and socioeconomic conditions, contribute to the rising prevalence of undernutrition. Regional food preferences and disparities in healthcare availability play a role. Additionally, inadequate sanitation and lack of clean water contribute to soil-transmitted diseases like diarrhea, exacerbating undernutrition. Geographical variations in child malnutrition are evident across Indian states, with central regions experiencing particularly high rates. (10)

The results of this study reveal significant insights into the factors influencing the Global Hunger Index (GHI) in India and its neighboring countries. The GHI measures caloric deficiencies and micronutrient gaps, which are crucial indicators of hidden hunger. In India, the prevalence of undernourishment, child stunting, child wasting, and child mortality are critical components of the GHI, and these have been examined to understand the broader context of hunger and malnutrition.

Factors Contributing to Undernutrition

1. Socioeconomic Conditions: Poverty remains a significant driver of undernutrition in India. The disparity in income and access to resources contributes to unequal food distribution and consumption patterns. Households with lower income levels struggle to afford nutritious food, leading to higher rates of undernourishment.

2. Healthcare Access and Quality: The availability and quality of healthcare services vary significantly across regions. States with better healthcare infrastructure tend to have lower rates of undernutrition. Inadequate maternal health services, poor childcare practices, and limited access to health services exacerbate the problem of child malnutrition.

3. Sanitation and Clean Water: Inadequate sanitation facilities and lack of access to clean water contribute to the spread of diseases such as diarrhoea, which in turn exacerbates undernutrition. Soil-transmitted diseases are prevalent in regions with poor sanitation, leading to higher rates of child malnutrition.

4. Regional Disparities: There are significant geographical variations in child malnutrition across Indian states. Central regions of India experience higher rates of undernutrition compared to other regions. This variation can be attributed to differences in regional food preferences, economic activities, and local policies.

5. Low Birth Weight: Infants born with low birth weight are at a higher risk of malnutrition, stunting, wasting, and being underweight. Factors contributing to low birth weight include high-risk fertility behaviors, maternal malnutrition, and environmental factors such as air pollution.

Comparative Analysis with Neighboring Countries

Comparing India's GHI with neighboring countries like Pakistan, Nepal, Bangladesh, and Sri Lanka provides insights into regional differences and common challenges. India's GHI rank and the prevalence of undernourishment are influenced by similar socioeconomic and health factors observed in these countries.

- Pakistan: Faces challenges similar to India with high rates of undernourishment due to poverty, inadequate healthcare, and poor sanitation.

- Nepal: Although it has a lower GHI rank than India, it struggles with food availability and access issues, particularly in rural areas.

- Bangladesh: Has made significant progress in reducing child malnutrition through targeted nutrition programs and improving healthcare access.

- Sri Lanka: Despite having a better GHI rank, it faces challenges in sustaining food security due to political instability and economic issues.

Policy Implications- The study highlights the need for comprehensive and multi-faceted policy interventions to address the underlying factors of hunger and malnutrition in India. Key policy recommendations include:

1. Enhancing Social Safety Nets: Strengthening social protection programs to support vulnerable populations, ensuring they have access to nutritious food.

2. Improving Healthcare Services: Expanding and improving healthcare services, particularly maternal and child health services, to reduce rates of child malnutrition.

3. Sanitation and Clean Water Initiatives: Investing in sanitation infrastructure and ensuring access to clean water to prevent diseases that exacerbate malnutrition.

4. Targeted Nutrition Programs: Implementing and scaling up nutrition-specific interventions aimed at reducing low birth weight and improving child nutrition outcomes.

5. Addressing Regional Disparities: Developing region-specific strategies to tackle the unique challenges faced by different states in India.

CONCLUSION

The findings of this study emphasize the complex interplay of socioeconomic, health, and environmental factors contributing to hunger and malnutrition in India. By learning from the experiences of neighboring countries and implementing targeted policy

interventions, India can make significant strides towards improving its GHI and achieving better nutritional outcomes for its population.

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