1. Approximately 200 million people.
2. It introduces uncertainty in the severity and distribution of food insecurity.
3. Household Food Insecurity Access Scale (HFIAS), Household Food Security Survey Module (HFSSM), and Food Insecurity Experience Scale (FIES).
4. The review was conducted in March 2020, and 53 articles were included.
5. It ranges from 8.7 to 99%, depending on the measurement tool and the population under investigation.
6. To address the size and diversity of the Indian population and collect better data on food insecurity.
7. Availability, access, utilization, stability, agency, and sustainability.
8. It requires adequate resources for acquiring appropriate foods for a nutritious diet.
9. It exists when all members lack access to enough food for an active, healthy life.
10. Over 70%, and data is limited due to the focus on urban settings.
11. Poverty, lack of clean drinking water, and poor sanitation.
12. Associations have been found between household food insecurity and child stunting, wasting, and being underweight.
13. 200 million people, with poverty, lack of clean water, and poor sanitation as common contributing factors.
14. Food availability, access, and utilization.
15. Risks such as climatic fluctuations, conflict, job loss, and epidemic disease can disrupt any one of these factors.
16. Associations with child stunting, wasting, and being underweight.
17. When all members have access to enough food for an active, healthy life.
18. Limited data and research on the subject.
19. Investigating peer-reviewed literature on food insecurity in India.
20. Excluded articles either did not collect new data or were previously conducted reviews in the region.
21. Terms based on the FAO definition, including "food access," "food insecurity," and "household."
22. Nine databases were searched in March 2020.
23. It ranged from 8.7% to 99%, depending on the measurement tool and population.
24. To address the size and diversity of the Indian population and improve data collection on food insecurity.
25. Availability, access, utilization, stability, agency, and sustainability.
26. Through the development and implementation of an Indian-specific food security measure.
27. Poverty, lack of clean drinking water, and poor sanitation.
28. The focus has been primarily on urban settings.
29. To identify the breadth of research on food insecurity in India and the instruments used.
30. 53 articles were reviewed.
31. To collect better data on food insecurity, considering India's widespread malnutrition and high prevalence of food insecurity.
32. Variations in methods and reliance on cross-sectional studies, leading to uncertainty in data.
33. When all members have access to enough food for an active, healthy life.
34. Associations found between household food insecurity and child stunting, wasting, and being underweight highlight its urgency as a public health priority.
35. 51% to 77% in urban settings, and over 70% of the population resides rurally.
36. It ensures that all members have access to enough food for their nutritional well-being.
37. Limited data due to over 70% of the population residing rurally.
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73. Variations in methods and reliance on cross-sectional studies, leading to uncertainty in data.
74. When all members have access to enough food for an active, healthy life.
75. 1018 articles were identified, and 395 were duplicates.
76. 616 articles were read for titles and abstracts, 108 were excluded after the full-text review, and 53 were included in the review.
77. 90% of the articles were cross-sectional studies.
78. Eight articles employed a mixed methods approach.
79. Studies were excluded if they did not refer to food insecurity in India. Research covered 17 states and five union territories.
80. Household Food Insecurity Access Scale (HFIAS), Household Food Security Survey Module (HFSSM), and Food Insecurity Experience Scale (FIES).
81. Prevalence ranged from 8.7% to 99%.
82. It is designed for cross-cultural use and scored from 0 to 27, with higher scores indicating greater food insecurity.
83. It categorizes levels as high food security, marginal food insecurity, low food insecurity, and very low food insecurity.
84. It's a self-reported scale developed by the Food and Agriculture Organization of the United Nations (FAO).
85. It categorizes households into food security, household food insecurity, individual food insecurity, and child hunger.
86. It's a state-specific survey with nine questions focusing on infants and children under two and their mothers.
87. It includes one question about household daily access to food but assumes financial access equates to physical access.
88. They provide a partial, indirect measure, and the relationship between food and caloric quantity is unpredictable.
89. They provided partial, usually indirect, measures of food insecurity.
90. 59% of studies using proxy measures provided no indication of food security levels.
91. Most studies (30) focused on food insecurity at the household level, while 14 specifically focused on young children.
92. Rates ranged from 8.7% to 80.3%, with most studies reporting rates between 40% and 60%.
93. Findings suggested problematic practices leading to impaired growth in children and teenagers.
94. West Bengal had the most studies (9), and research covered 17 states and five union territories.
95. Four nationwide studies were found, providing good coverage across India, focusing on food security.
96. Participants ranged from 10 in the smallest study to over 100,000 in population-level studies.
97. Direct measurement, with 85% of articles aiming to determine the prevalence of food insecurity.
98. Two studies employed the CNNS.
99. Eight studies employed a mixed methods approach, providing a combination of qualitative and quantitative data.
100. 77.2% in a population of 250 women.
101. One study specifically focused on teenagers.
102. Three studies employed the FIES.
103. It measures food anxiety and includes ten items.
104. Thirteen studies employed the HFSSM.
105. It measures whether households have enough food or money to meet basic food needs.
106. Four studies employed the NSS as a proxy measure, measuring household daily access to food.
107. It reflects the measurement of food availability or acquisition rather than food insecurity per se.
108. Seventeen studies employed proxy measures, and 10 provided no indication of food security levels.
109. Investigating the spatial and temporal quality of food security indicators derived from household surveys.
110. Three indicators: Food Consumption Score (FCS), Household Dietary Diversity Score (HDDS), and Coping Strategies Index (rCSI).
111. They are a cost-effective means to capture food access and are central to food security analysis.
112. Burkina Faso is the case, and the survey has been conducted yearly since 2009.
113. They are consistent with major regional food shocks and correlate with variations from other data sources.
114. It recorded a prevalence of undernourishment of 21.3% between 2015 and 2017.
115. Due to interrelated climatic, socioeconomic, and political reasons.
116. Childhood wasting (7.6%), childhood stunting (27.3%), and adult obesity (4.5%).
117. They use data from households, markets, and agrometeorology to detect and warn about potential crises.
118. Cost-effectiveness, timely information delivery, nutritional relevance, and temporal/spatial validity.
119. More cost-effective and less detailed but still valid proxies for food security situations.
120. It involves undernutrition, micronutrient deficiency, and obesity, contributing to critical rates in West Africa.
121. Despite biases, they can be used to detect food crises on a sub-national scale and over different years.
122. Using three indicators—HDDS, FCS, and rCSI—constructed from household survey data.
123. Agricultural dependence, characterized by a semiarid climate in the north and a subhumid climate in the south.
124. Climate change intensifies severe climatic events, while conflicts decrease food production and distribution networks.
125. Guaranteed physical and economic access to sufficient, safe, and nutritious food; dimensions include availability, access, stability, and utilization.
126. To capture the complexity of food insecurity as a result of various interacting factors.
127. Elevated rates of childhood wasting, childhood stunting, and adult obesity.
128. The FAO, World Food Program, and World Bank produce indicators from household survey data.
129. Developed due to diversity in food security indicators; involve combining multiple indicators to avoid incomplete pictures.
130. Analyzing the spatiotemporal concordances of indicators at the regional scale over the 2009–2017 period.
131. Soudano-Sahelian country with a long dry season; climate influences rainfed agriculture and food production.
132. They are cost-effective, providing valid proxies for food consumption and access.
133. They can be employed to detect food crises on a sub-national scale over different years.
134. They gauge the capacity of household indicators to measure food security trends over time.
135. They provide cost-effective indicators at the household level, capturing the food access dimension.
136. Temporal: Over the 2009–2017 period; spatial: At the regional level in Burkina Faso.
137. It raises new research questions regarding the spatiotemporal quality of household survey indicators.
138. It's one of the most affected countries, reflecting the worsening food situation in West Africa.
139. Indicators are aggregated to generate maps, informing the targets of food security interventions.
140. Dissatisfaction persists, and monitoring systems utilize collaborations, household and market data, and Earth observation data.
141. It provides crop forecasts and agricultural production estimates, aiding decision-makers and food organizations.
142. Annually since 1982, covering the growing period in August and harvest period in October.
143. To calculate food security indicators after harvest, aiding national and regional food security systems.
144. Nationally representative, covering the 2009 to 2017 period with data from 41,751 farm households.
145. Analyzed biases include non-observance biases (coverage, sampling, non-consent, non-response) and measurement bias due to errors during collection.
146. It provides the only available nationally representative data exploring spatial and temporal dimensions of food security.
147. Food Consumption Score (FCS), Household Dietary Diversity Score (HDDS), and reduced Coping Strategies Index (rCSI); validated proxies for food access.
148. It estimates nutrient intake over 7 days, with thresholds: acceptable (> 42), limit (28–42), and low (< 28).
149. It captures the number of food groups consumed in the last 24 hours, based on 12 food groups according to FAO guidelines.
150. Vegetation index (MODIS satellite images), rainfall data (CHIRPS), and food prices (monthly maize prices from SONAGESS).
151. Aggregated monthly and by province, transformed into normalized deviations relative to all provinces and months presented.
152. To examine consistency between different data sources and validate food security indicators.
153. An average of 4,640 farm households per year, totaling 41,751 over the 2009 to 2017 period.
154. Households engaged in temporary crop cultivation, fruit growing, or animal husbandry.
155. Initially increasing until 2013, followed by a sharp drop until 2017, indicating a decline in food security.
156. Information is available from 2014 onwards, and a 4-year period is considered too short for meaningful temporal analysis.
157. Repeated floods in 2009 and 2010, severe drought in 2011 leading to famine, and a deteriorating security situation since 2014.
158. Both indicators show variations corresponding to floods, drought, and conflicts, reflecting changes in food security levels.
159. Favorable climate led to increases until 2011, followed by decreases due to rain deficit years and worsening security situations.
160. By correlating well with reported events, such as floods, drought, and conflicts, demonstrating sensitivity to changes in food security.
161. Violent conflicts in these areas severely impact rural households' ability to feed themselves.
162. Biases include non-consent, non-response, and measurement errors, affecting the reliability of survey data.
163. Both indicators show an initial increase until 2013, followed by a sharp decline until 2017, indicating a significant decrease in food security.
164. To address the complexity of food security and avoid incomplete pictures by utilizing diverse indicators.
165. It provides essential data for decision-makers, offering crop forecasts, production estimates, and household food consumption information.
166. Normalization allows for comparison by centering and reducing data relative to all provinces and months, facilitating meaningful insights.
167. It is the only available nationally representative data exploring spatial and temporal aspects, making it crucial for analysis.
168. Increasing concerns about privacy since the early 2000s have led to a decline in data quality due to non-observance biases.
169. They play a key role in food security warning systems, aiding in decision-making and providing crucial information.
170. Domestic demand for edible oils is 24.61 million tonnes, while production is 11.16 million tonnes in 2020-21.
171. Lower profitability against competing crops and relative factors led to a decline; the government adopted a multi-pronged strategy.
172. Food security is when all people have physical and economic access to sufficient food; global events disrupted access for the poor, especially daily-wage laborers.
173. Farmers struggled to access markets, leading to food waste, and hoarding by the middle class disrupted the value chain.
174. Food inflation impacts economic access, and low-income earners are most affected, spending a high proportion of their income on food.
175. A 1% increase in food inflation leads to an increase in infant and child mortalities; impacts are lesser in countries with higher agriculture contributions.
176. The government has allocated about 5.2% of its total budget for 2022-23 to the food subsidy program.
177. FCI is responsible for the purchase, storage, movement, distribution, and sale of food grains and other foodstuffs.
178. NFSA marks a shift from a welfare to a rights-based approach, covering 75% of the rural population and 50% of the urban population.
179. Antyodaya Anna Yojana and Priority Households receive foodgrains; special provisions cater to children aged 6 months to 14 years.
180. PMGKAY provides 5 kg of free food grains per month, while PM POSHAN Scheme focuses on providing hot cooked meals in schools.
181. Reducing food waste is vital; approximately 40% of the food produced in India is wasted annually.
182. Elevated levels of food wastage contribute to environmental issues, challenging sustainable consumption and production.
183. An estimated 17% of all food available at the consumer level, with households contributing 11%, food services 5%, and retail outlets 2%.
184. West Asian and sub-Saharan African countries have higher per capita food wastage; excess waste leads to potent greenhouse gases in landfills.
185. Adopting a "Waste not philosophy" is crucial to provide access to food for the have-nots and work toward a zero-waste goal.
186. Wasting indicates recent and severe weight loss; causes include poor access to healthcare, inadequate feeding practices, poor food security, and lack of a sanitary environment.
187. Wasting increases the risk of death; the "vicious cycle" occurs as poor diet increases infection risk, and infection worsens wasting.
188. The target is to reduce childhood wasting to less than 5%; India had 19% wasted children in 2019-20.
189. Maharashtra has the highest (25.6%), and 9 states, including Nagaland, witnessed an increase in wasted children from 2015-16 to 2019-20.
190. Severe wasting is when weight for height is below 3 standard deviations; it increased from 7.5% to 7.7% from 2015-16 to 2019-20.
191. Lakshadweep, Jammu and Kashmir, and Ladakh saw the highest increase; it's a concern as severe wasting indicates extremely low weight relative to height.
192. Underweight reflects inadequate food availability; it reduced from 35.8% to 32.1% at the all-India level.
193. Bihar, Gujarat, Jharkhand, Dadra & Nagar Haveli, and Daman & Diu have the highest prevalence; it has direct consequences for mortality, mobility, productivity, and economic growth.
194. Undernutrition is associated with low socioeconomic status; chronic undernutrition in mothers results in preterm and low birth weight babies.
195. Causes include iron deficiency and vitamin B-12 deficiency; the problem is more severe in rural India compared to urban areas.
196. Anaemia is more prevalent in women due to menstrual iron losses and high iron demands during pregnancies; it impacts maternal and child health.
197. Gujarat, Madhya Pradesh, Rajasthan, Punjab, and Haryana have more than 70% anaemic children; it poses severe health risks.
198. Delhi, Jammu and Kashmir, Ladakh, and Puducherry have seen an increase in the percentage of anaemic children.
199. Shortage of fresh vegetables and fruits contribute to high anaemia prevalence; it's especially severe with 92.5% children being anaemic in Ladakh.
200. Nine states, including West Bengal, Tripura, and Gujarat, had more than 60% anaemic women; most states saw an increase in the percentage of anaemic women.
201. Anaemia is less severe in men; West Bengal, Tripura, and Assam have more than 30% anaemic men.
202. Both men (75.6%) and women (92.8%) in Ladakh have a high prevalence of anaemia; factors like dietary habits and regional conditions may contribute.
203. Obesity is on the rise in most states and union territories, particularly concerning in children.
204. Obesity increased from 2.1% (NFHS-4) to 3.4% (NFHS-5); only Goa and Tamil Nadu reported a decrease.
205. Obesity increased by 4% in both men and women, reaching 22.9% for men and 24% for women in NFHS-5.
206. WHR, combined with BMI, predicts the risk of diabetes, stroke, and heart attacks; more men (48%) than women (40%) have a higher WHR.
207. Jammu and Kashmir (88%) reported the highest, while Madhya Pradesh reported the lowest (40%).
208. Stability refers to the constant food supply at the household level; it minimizes risks from external factors like natural disasters and price volatility.
209. Both events disrupted supply chains, leading to availability, pricing, and quality issues, impacting the stability of food security.
210. Lockdown measures led to declines in demand, causing food dumping, quality issues, and challenges in getting food to markets.
211. COVID-19 worsened nutritional insecurities, disrupting government interventions like Anganwadi services, nutrition rehabilitation, and school programs.
212. Poor households shifted spending from fresh fruits to less nutrient-rich staple foods, and there was a shift towards consumption of more processed foods.
213. The conflict disrupted food and fertilizer supply; Russia and Ukraine produce nearly 30% of the world's traded wheat.
214. The FAO predicts an 8% to 22% increase beyond current high baseline levels if the conflict continues.
215. NFHS-5 shows an increase in obesity among children, with all states reporting a rise except Goa and Tamil Nadu.
216. Obesity has increased by 4% in both men and women, reaching 22.9% for men and 24% for women in NFHS-5.
217. WHR, combined with BMI, predicts the risk of diabetes, stroke, and heart attacks by identifying the percentage of body fat.
218. 48% of men and 40% of women have substantially increased WHR, with regional variations.
219. Jammu and Kashmir reported the highest proportion at 88%.
220. Stability ensures that the food supply at the household level remains constant, minimizing risks from external factors.
221. Lockdowns led to disruptions, affecting food availability, pricing, and quality, with reports of food being dumped.
222. Services at Anganwadi centers, nutrition rehabilitation centers, and school nutrition programs were disrupted.
223. Poor households shifted spending from fresh fruits to less nutrient-rich staple foods, and there was a rise in processed food consumption.
224. Millets are low water-intensive crops that can grow on shallow, low-fertile soils, providing a risk mitigation strategy against droughts.
225. Millets have a low overall water requirement, absorb more carbon dioxide, and are environmentally friendly, aiding in climate change mitigation.
226. Per capita consumption of millets has drastically fallen from 32.9 kg to 4.2 kg.
227. Millets, with slow-digestible starch (SDS), can help address diseases like obesity, diabetes, and cardiovascular diseases.
228. Rajasthan has the maximum area, while Telangana has the highest yield for millet cultivation.
229. The area under millet cultivation has been decreasing due to a shift towards crops like wheat and a lack of focus on millets.
230. Close to 70% of millet production is concentrated in Rajasthan, Karnataka, Maharashtra, Madhya Pradesh, Uttar Pradesh, and Tamil Nadu.
231. Strategies should manage both supply and demand issues through awareness campaigns, value chain improvement, and inclusion in government schemes.
232. Urban consumers should be a primary target, and social media can play a pivotal role in creating awareness and promoting millet-based products.
233. Measures include enhancing millet production, varietal improvement, incentivizing millet growers, and organizing them into Farmer Producer Organizations (FPOs).
234. Fiscal incentives, including tax concessions, are recommended to support millet-related activities along the value chains.