

Factors associated with Afghan household food security pre- and post-Taliban regime

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Factors associated with Afghan household food security pre- and post-Taliban regime

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Abstract

To determine multifaceted determinants of household vulnerability to food insecurity in Afghanistan before and after the Taliban takeover, we randomly selected 555 households from 13 provinces, conducted in-person surveys, and applied the Household Food Insecurity Assess Scale (HFIAS) and Structural Equation Modeling (SEM). We collected data from January to April 2022. We observed an increase in both prevalence and severity of food insecurity among Afghan households after the Taliban takeover. Approximately, 98% and 70% of interviewed households were food insecure after and before the Taliban takeover, respectively. Similarly, households were more likely to be severely food insecure (81%) than before (40%). Our results showed that policy and political conditions contributed substantially to the food insecurity of Afghan households after the Taliban takeover. We recommend that the Taliban forces facilitate the presence of humanitarian organizations and NGOs to improve low-income households' food security, especially for women and children. We also recommend that international organizations enhance their attempts to negotiate with the Taliban to ensure freedom for women.

Keywords

Afghanistan · Food insecurity · Taliban takeover · Household vulnerability

Key messages

- Afghan households are likely to be food insecure after the Taliban takeover.
- Policy and political conditions are important contributors to food insecurity during Taliban dominance.
- Lack of freedom of Afghan women has identified as a very disturbing issue in the vulnerability to food insecurity.

Introduction

Recent political changes after the Taliban's return to power in Afghanistan in 2022 brought social and health issues to attention globally. The Taliban's abrupt takeover led to the international isolation of Afghanistan, substantially impacting the Afghan people, as the country has been overly dependent on international humanitarian aid in the last two decades. Many Afghans have experienced extreme poverty, but with Taliban takeover, government services have been limited, foreign aid has been reduced, the supply chain has been interrupted, and extreme weather has exacerbated poverty in Afghanistan and, as a result, food insecurity [1]. Currently, there is widespread concern, both internationally and nationally, about the food security status of the Afghan people. The 2022 Global Hunger Index ranks Afghanistan 109th, out of the 121 countries analyzed, characterizing the country's hunger level as 'serious' [2]. Many factors contribute to the pervasive nature of food insecurity in the country, including decades of war, foreign occupations, destruction of infrastructure, agriculture, industry, and consequent economic challenges such as unemployment, low wages, population displacement due to violence and security, as well as poor food availability stemming from lack of investment in agriculture, and rural development, impacts of climate change, such as flooding and droughts, and the pandemic of COVID-19 [3,4,5].

Since the Taliban takeover, adverse conditions underpinning food insecurity are worsening. A United Nations (UN) World Food Programme (WFP) in October 2022 estimated that 93% of Afghans were not getting enough food to eat over the previous month, a 13% increase from before the Taliban took over [6]. Given the substantial health disparities associated with food insecurity, there is an urgent need to understand the food security status and specific vulnerabilities in Afghanistan, to advise those targeting aid initiatives, implementing interventions, and to make policy recommendations to help meet the immediate needs of the people, and strengthen long-term local capacity [5]. Our detailed reviews showed that earlier studies under the leadership of the WFP, the IPC, or the GHI did not categorize or varied factors affecting food security after the Taliban's takeover [7]. Understanding the multifaceted dimensions of household vulnerability to food insecurity helps researchers, key stakeholders, and international organizations to develop a targeted solution for food insecurity. It can inform recommendations for modifying current policies aimed at improving the food security status of the population and for planning strategies to improve the well-being of low-income households.

This study provides a snapshot assessment of changes in the food security status of the Afghan people with the overarching goal to compare the food security status of Afghan households in Afghanistan before and after the Taliban takeover while considering geographic and socioeconomic factors. We aimed to examine a broad range of vulnerability factors related to food security, including economics, policy, social changes, physical security, and nutrition (see Supplementary Material Fig. S1). We used a cross-sectional approach to examine food security of 555 Afghan families using the Household Food Insecurity Access Scale (HFIAS) tool. We evaluated food security status of Afghan households and compared two distinct periods with respect to nine dimensions of vulnerability to food insecurity and assessed the association of the vulnerability dimensions and the food security status of Afghan families using a Structural Equation Model (SEM). To our knowledge, this is the first study to explore the change in vulnerability of food insecurity of Afghan households.

Data and methods

Study location

Afghanistan has 34 provinces (wilāyat) and about 400 districts (cities) (Fig. 1). We conducted the study among families living in different provinces of Afghanistan, where our interviewers could safely engage in data collection. These include Central provinces (Kabul, Bamyan, Parwan, Panjshir, Daykundi, Kapisa, and Wardak), North provinces (Baghlan), South provinces (Paktia, Ghazni, Logar), Northeast provinces (Takhar), and Northwest provinces (Ghor). We could not access the West and Southwest provinces of this country due to intense military conflicts at the time of data collection.

Lorestan University of Medical Science in Iran granted ethical approval (Approval number: IR.LUMS.REC.1401.237) in collaboration with our co-investigator in Ghazni University in Ghazni, Afghanistan.

Sampling technique

We selected a representative sample using the probability sampling method. We used a multistage stratified sampling by selecting provinces based on their low level of military conflict. Then, we selected locations from this group based on availability of interviewers to collect the data. We determined the sample size by G-power

software version 3.1.9.4 with level of significance 0.05 and statistical power 0.95 [8], and randomly selected 555 Afghan families to participate in the data collection process. We initiated data collection immediately after the Taliban takeover and continued from January through April 2022. To obtain information about the period before Taliban takeover, during the interview, we asked the household heads (breadwinners) to recall and express their experience in the present and past 6 months (before Taliban had entered Afghanistan). Demographic information of the sample is shown in Supplementary Material Table S1.

Data collection

To check the accuracy of data collection, we carried out pre-test sampling using 40 questionnaires in the study location. We translated all questions from English into Pashto and

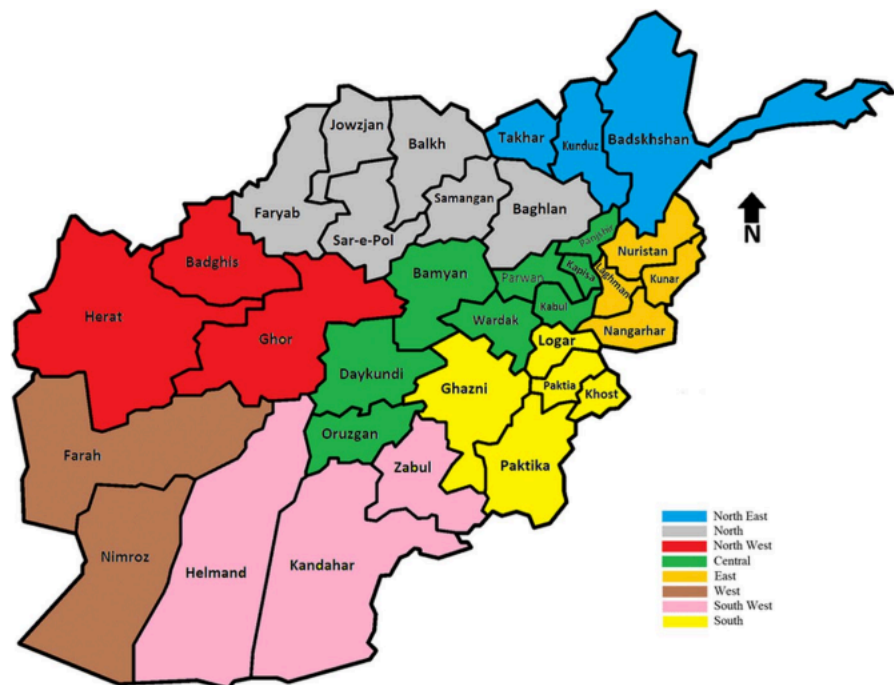


Fig. 1 Map of Afghanistan and the selected study sites

Dari, and back translated to ensure consistency. Before starting data collection, we trained 10 Afghan interviewers (students in health economics, agricultural economics, and public health), including seven students in Afghanistan and four Afghan students in Iran who returned to their country. We taught them how to communicate with Afghan families and how to fill out the questionnaire. An Afghan student leader managed communication with all team members. Interviewers administered the questionnaire face-to-face during in home visits.

Food security assessment

To assess the food security status of households, we used the questionnaire that included three sections: socioeconomic demographics, a food security assessment (using the HFIAS tool), and the original questions (based on the literature in the field of vulnerability) for calculating households' vulnerability [5, 9,10,11,12,13]. We assessed food security using a standard tool with a set of nine questions [4, 14,15,16]. This tool prompts participants to answer whether they have "never, rarely, sometimes, or often" experienced what interviewers present as scenarios to illustrate the question. To assess food security status at the household level, we calculated a food security score ranging from 0 through 27, based on the respondent's answers [5, 9]. We then categorized households into one of four levels: food secure, marginally, moderately, or severely food insecure, based on the calculated score. A score of 27 corresponds to the highest level of household food insecurity—severely food insecure [5]. For each household, we calculated the score for two time periods: before and after Taliban takeover.

Vulnerability assessment, validity, and reliability

To measure household vulnerability, we designed an original questionnaire in a multistage process. First, we extracted items for calculating a household's vulnerability from the literature [5]. Then, we categorized these into nine subcategories: economic (11 items), culture (5 items), social (12 items), physical (4 items), food habits (4 items), psychological (5 items), information (5 items), education (7 items), and policy and political (9 items). We constituted each item based on a Likert scale (5 = extreme vulnerability, 1 = very low level of vulnerability). We calculated the score of each dimension in two steps: first, we summed the answers of each household heads to all items of each dimension, then we calculated the average of the total score of all households. We then compared mean score using paired t test.

To assess measurement quality, we assessed the validity and reliability of the questionnaire. We asked experts to assess the validity of the questionnaire and appropriateness of all questions to measure vulnerability based on their backgrounds in public health, health economics, agricultural economics, and agricultural extension. We assessed the reliability of the research instrument using Cronbach's alpha coefficient. After reviewing these criteria, the items within some of the subcategories were adjusted [5]. The combined reliability (CR) of all items in the constructed model was greater than 0.60, and the Cronbach's alpha coefficients of all subcategories were more than 0.70. This demonstrates a high level of the model reliability. Also, the average extracted variance (AVE) of all sub-groups of the suggested model was more than 0.50. Thus, the reliability and validity of all latent model variables are confirmed as highly accurate (Supplementary Material Table S2). The standardized factor loading value (λ) of all indicators (more than 0.5) was significant at ($P < 0.01$). This means the

model has sufficient evidence to support the uni-dimensionality of all indicators. Hence, we correctly selected indicators for measuring structural equation model. Generally, the results confirmed that the average of the extracted variance for the research structures ($0.707 < AVE < 0.907$) was more significant than their correlation ($0.237 < r < 0.703$), indicating the diagnostic validity of the structural model is confirmed.

We applied indicators to check the fit of the structural model with cultural, economic, education, food, information, policy and political, physical, psychological, and social determinants, and food insecurity variables (Supplementary Material Table S3). The analysis demonstrated that the structural model of the study was suitable, with the theoretical model supported by the data.

Statistical analysis

We employed statistical analysis techniques in three steps: data cleaning and processing (using IBM SPSS24 software), estimation of descriptive statistics (including minimums, maximums, means, frequencies, and standard deviations), and modeling. To compare sampling means, we determined critical values and their probabilities using paired *t* tests. Finally, we used Structural Equation Modeling (SEM) to identify the determinants of household vulnerability to food insecurity using SmartPLS4 software [5]. Initially, we used first-order Confirmatory Factor Analysis (CFA) to test for precision of the indicators designated to determine latent variables [17]. Then, we measured the factors affecting food insecurity during the takeover in three steps to check the accuracy of the measurement model: reliability and validity of the estimated model, uni-dimensionality, and diagnostic analysis.

Results

The sociodemographic characteristics of interviewed Afghan households are shown in Supplementary Material Table S1. The average age of the household heads was 47 years, and 94% of them were men. Average size of Afghan household was four members. About 26% of the household heads were unemployed, 23% of them had seasonal jobs, 21% of them were smokers, and 13% reported no non-communicable diseases. About 61% of household heads were literate with at least the ability to read and write; 32% of Afghan mothers were literate in their own language. About 70% of participating households identified themselves as Suni, while others followed the Shia religion. Of the total sample, about 32%, 35%, and 19% of the heads belonged to Hazaras, Tajik, and Pashtun ethnicity, respectively. About 76% of the heads of households had no personal savings due to arduous economic conditions after the Taliban takeover. The median income of Afghan households was about 10,000 Afghani (\$112 USD) per month during the Taliban's governance. On average, respondents had lived for about 30 years in their current dwelling. The average distance of the respondent from a city center was 10.7 km.

Food security status

Households were predominantly severely food insecure at both time points: 70% of Afghan households experienced food insecurity before the Taliban takeover, and this increased to 98% after the Taliban takeover (Table 1). There was a significant difference between all food security

categories before and after the Taliban takeover. After, the Taliban takeover, however, the households were more likely to be severely food insecure than prior to it (40% and 81% in the period before and after takeover, respectively), indicating an alarming trend of increasing severity of food insecurity.

Vulnerability assessment

We compared the mean scores for nine dimensions of vulnerability and found the increased household vulnerability in all scores after the Taliban takeover compared to before the takeover (Table 2). The most significant increases occurred in the physical and economic dimensions with 93% and 65% change, respectively. These two subcategories play a key role in enhancing the vulnerability of Afghan households.

Table 1 Households' food insecurity in Afghanistan before and after the Taliban takeover

Food security status	Number (%)		P-value*
	Before Taliban	After Taliban	
Food secure	171 (30.8)	10 (1.8)	0.001
Marginal food insecure	48 (8.6)	6 (1.1)	0.001
Moderate food insecure	109 (19.6)	87 (15.7)	0.001
Severe food insecure	227 (40.9)	452 (81.4)	0.001

*Paired-sample *t* test

Table 2 Descriptive statistics for nine vulnerability dimension scores of Afghan households before and after the Taliban takeover

Dimension	Before Taliban takeover		After Taliban takeover		Wilcoxon		Change in vulnerability	Percent change (%)
	Mean	Std.	Mean	Std.	Z	P-value		
Culture	12.48	4.15	17.19	4.57	-15.10	0.001	Increase	38
Economic	26.49	7.91	43.84	6.86	-19.87	0.001	Increase	65
Education	17.23	5.14	27.40	5.87	-18.71	0.001	Increase	59
Food	10.48	3.13	14.53	3.24	-16.43	0.001	Increase	38
Information	14.03	4.44	17.21	4.26	-11.93	0.001	Increase	22
Policy and political	22.82	6.12	33.47	6.14	-17.93	0.001	Increase	46
Physical	9.15	3.60	14.73	4.60	-17.25	0.001	Increase	93
Psychological	11.92	4.15	18.75	4.31	-18.92	0.001	Increase	57
Social	31.06	9.54	44.04	8.27	-17.60	0.001	Increase	41
Total	155.70	40.92	231.12	38.60	-19.26	0.001	Increase	

Structural equation modeling (SEM)

Based on the results of SEM, we demonstrated the association of vulnerability factors with the food insecurity status of Afghan households after the Taliban takeover condition. The results of the path analysis, depicted with the correlation of each item (question) of food insecurity level with distinct dimensions of the household's vulnerability, including cultural, economic, education, food, information, policy and political, physical, psychological, and social using standardized factor loadings are shown in Fig. 2. Similarly, we demonstrated all relationships in a path model, using *t*-value statistics with the *t*-values of all determinants of path model being significant, and therefore, the relationships are considered accurate and reliable (see Supplementary Material Fig. S3).

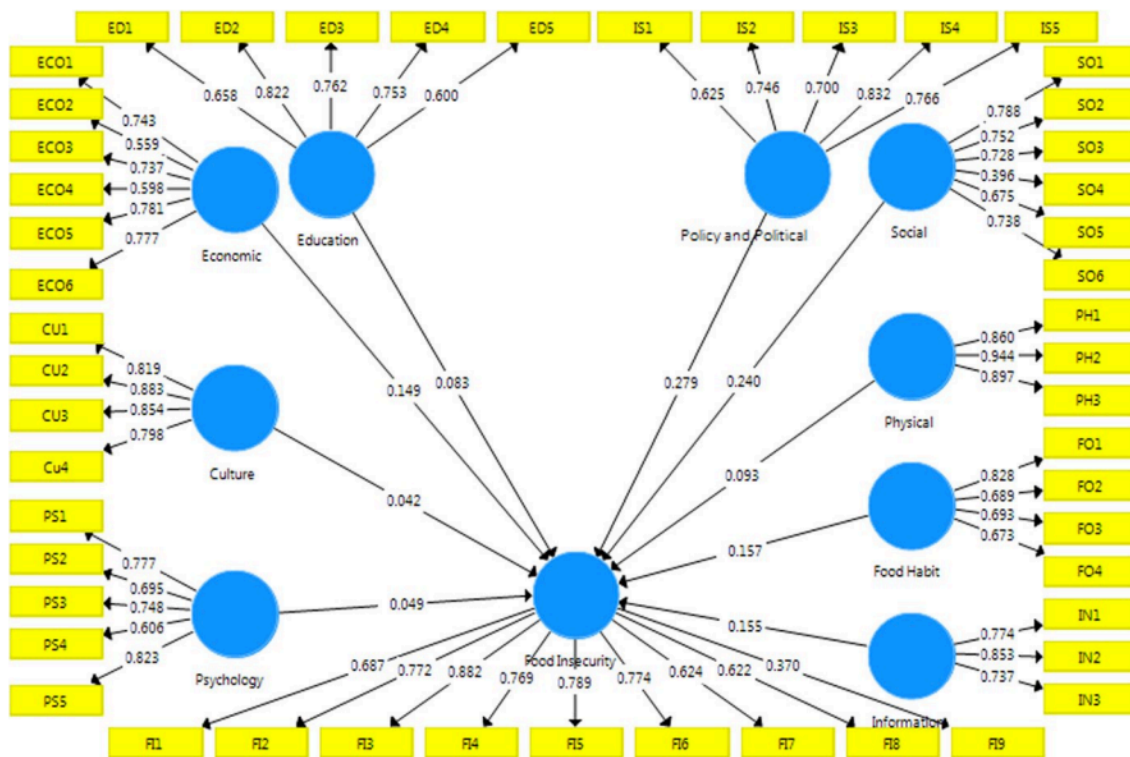


Fig. 2 Structural equation modeling of determinants of household vulnerability to food insecurity After Taliban takeover (the path model with standardized factor loadings)

For the *economic dimension* of Afghan households' vulnerability, the inability to repay bank loans and to pay home rent, along with high food prices, and becoming unemployed had the highest correlation. Factors of the perceived existence of misaligned values and customs and the loss of traditions and customs had the most significant correlation with the *cultural dimension* of household vulnerability. Anxiety and worry caused by encountering local military forces and lack of mental and spiritual peace had the greatest level of correlation with the *psychological dimension* of households' vulnerability. Disappointing news on social networks was a notable factor in the *information dimension* of households' vulnerability. Lack

of required sanitary items (masks, gloves, washing gels) and entrusting important government responsibilities to inexperienced people without sufficient knowledge had the greatest correlation with *physical*, and *policy* and *political dimensions* of households' vulnerability, respectively. Regarding factors impacting food habits, participants identified lack of food and a decrease in food diversity as prominent factors.

The association of the vulnerability determinants with household food insecurity status after the Taliban takeover in Afghanistan is presented in Table 3. Except cultural, educational, and psychological aspects, all other factors were significantly associated with food insecurity after the Taliban takeover. The factors supported and explained 91% of the food insecurity variability.

Table 3 Association of constructs with food insecurity

Hypothesis	<i>t</i> statistics(IO/STDEVI)	P value	Result	<i>R</i> ²
Culture → Food insecurity	0.796	0.213	Reject	0.91
Economic → Food insecurity	1.789	0.037	Accept	
Education → Food insecurity	1.089	0.138	Reject	
Food → Food insecurity	2.126	0.017	Accept	
Information → Food insecurity	2.367	0.009	Accept	
Policy and Political → Food insecurity	3.576	0.000	Accept	
Physical → Food insecurity	1.910	0.028	Accept	
Psychology → Food insecurity	0.437	0.331	Reject	
Social → Food insecurity	2.475	0.007	Accept	

Discussion

To our knowledge, this is the first study to present the determinants of household vulnerability to food insecurity in Afghanistan before and after the Taliban takeover. We found approximately 70% of the total sample had experienced food insecurity, including 40.9% and 19.6% in the severe and moderate categories, respectively, in the period before the Taliban takeover. Since the Taliban took control, approximately 98% of Afghan households were food insecure, including 81.4% and 15.6% in severe and moderate domains, respectively. These findings indicate that the Taliban rule has severely affected citizens' food security. While the proportion of families in the moderately food insecure category is similar both before and after the Taliban takeover, the main concern is the growth of severely food insecure households. Food aid and emergency food support are desperately needed to prevent widespread malnutrition and deaths in Afghanistan, as also reported by the UN World Food Programme.

We identified multifaceted dimensions, specifically political conditions, including the absence of influential and helpful NGOs, and disconnection from the international world, as substantial contributors to the food insecurity of Afghan households after the Taliban takeover.

Afghan people who have remained in Afghanistan since the Taliban takeover do not have sufficient access to international aid and assistance [18].

Deteriorating social conditions were the second most influential determinant of increased food insecurity since the Taliban takeover. This variable included the lack of freedom for women, the existence of social insecurity, low social cohesion and inclusiveness, low level of trust in local military forces, and providing for the necessities of life through unconventional social methods (such as selling children or kidneys) [19]. Prior to the Taliban takeover, health inequalities for women in Afghanistan had started to improve. However, gender-based violence remains a pervasive problem [20]. Lack of freedom to Afghan women has become a very disturbing and problematic issue leading to increased vulnerability [20]. Women play a key role in society, and when their freedom is restricted, they can experience increased anxiety, reduced quality of life, and ultimately reduced capacity to engage in basic activities such as providing for their families. When women's access to health care and education is restricted by patriarchal structures and norms, women's access to food and nutrition is also impacted negatively. Women's role in society is affected by inequalities, disparities in food access, and limited decision-making power [21,22,23]. Moreover, providing for necessities of life through socially inappropriate acts (selling children and kidneys) [24] indicates increasing social vulnerability to food insecurity among Afghan households since the Taliban takeover. Some Afghan families have sold their children and their kidney to acquire money to improve their economic conditions [19]. All these unconventional social acts are associated with high food insecurity [5]. The next dimension of vulnerability, poor food habits (such as decrease in food diversity, Lack of familiarity with the correct principles of nutrition), is positively related to high food insecurity after the Taliban takeover. Dietary diversity is an indicator of food security and nutrition adequacy [25,26,27] Poor dietary diversity is a common indicator of nutrition insecurity [28]. After the Taliban takeover, most households had less access to an adequate and balanced food basket to maintain their routine diet. Also, the price of food increased, resulting in decreased food access, availability, and diversity. All these conditions have resulted in decreased food security among Afghan households after the takeover. Some studies report that food diversity plays a key role in assuring food security [29, 30].

The worsening economic conditions of Afghan households were significantly associated with increased food insecurity after the Taliban takeover. Improving the economic situation will provide an opportunity for households to buy their preferred foods and support improved dietary diversity, both of which are essential to improve food security. The inability to repay bank installments and pay home rent were important economic dimensions. Due to sanctions and international restrictions on Afghanistan income sources, especially on behalf of the United States, the value of the Afghan currency has fallen sharply. Most Afghan breadwinners have lost their jobs, expended their savings, and did not have sufficient money for their basic needs [9, 15]. Some studies indicate that a family's economic situation is the main determinant of a household's food security, especially among refugees [5, 31,32,33,34].

Study limitations

The data collection process was extremely challenging during the Taliban takeover. Although we tried to collect data from all provinces in Afghanistan, it was impossible to access the West and Southwest provinces due to the strong control of the Taliban. Given the cross-sectional

nature of the study, we were limited in providing a gender-based analysis related to food insecurity within households. Some areas did not have specific characteristics (such as house plaque) to select the needed sample randomly. Although we tried to randomly select our sample, we estimate about a 10–15% error rate during random data collection due to challenging conditions during the Taliban takeover time. For cases where we were unable to locate and interview the randomly selected individual, even after multiple communication attempts, we then requested to complete interviews with the randomly selected individual's neighbors. With this mitigation strategy, we are confident it did not impact the study results.

Policy implications

It has been over 2 years after the Taliban returned to power (August 2021) in Afghanistan and there is a high level of severe food insecurity among Afghan households. While our data indicate a rather dramatic change in food security after the Taliban takeover and increased vulnerability factors, we also acknowledge the preceding decades of interventions in Afghanistan by external forces, the impacts of war and the abrupt departures of occupying powers. Although the present study shows a dramatic worsening of the situation after Taliban takeover, this may not mean that the Taliban is directly responsible. If the Taliban's promise of improving the situation in Afghanistan was being fulfilled, we would expect to see a significant decrease in the rate of food insecurity (which was 70%) after their occupation. Future research needs to examine the impacts of armed conflict on food insecurity and how the international community can improve the food insecurity situation. Determining the current status of Afghan households' food security and the different pathways that support vulnerability to the food insecurity can help philanthropic foundations, humanitarian organizations, and NGOs to target their support for poor households to increase their resilience to food insecurity.

Conclusions

Our study shows that food insecurity in Afghanistan is more widespread and serious than previously thought. Due to the broad range of vulnerability factors (economic, political, social, physical security, information, and nutritional factors) driving the increase in food insecurity, a multifaceted approach is needed to address food insecurity in Afghanistan. We recognize that political, social, poor food habits, and economic conditions are the main factors affecting food insecurity after Taliban takeover. For economic conditions, all obstacles which prevent humanitarian organizations from continuing their operations on the ground should be resolved, such as bank closures, cash shortages, and suspensions of money transfers which led to hyperinflation of the Afghan currency. For political conditions, we recommend that international organizations enhance their attempts to negotiate with the Taliban to support constructive interactions between people and governmental rulers. Solving the problems related to social conditions, including the practice of providing for the necessities of life through unconventional social methods, requires international financial support and the release of Afghanistan's blocked financial resources. To solve the problems related to poor food habits, international health organizations, with the collaboration of local institutions and NGOs should focus on customized health promotion programs taking into account the local circumstances and educational needs of low-income households to increase their food diversity with the

intent to improve their nutrition health status. These programs should be based on basic nutrition principles and the current food available and accessible in Afghanistan or foods donated by international institutions and NGOs.

Data availability

Not applicable.

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