

RESEARCH ARTICLE

EXPLORING PERCEPTIONS AND RELATIONSHIPS OF POVERTY AND FOOD INSECURITY AT THE HOUSEHOLD LEVEL IN GHANA

Frank Yeboah Adusei^a and Mavis Afriyie Adusei^b^aDepartment of Agricultural Leadership and Community Education, Virginia Polytechnic Institute and State University, VA, USA^bChicks and Chickens Services Limited, Ghana^{*}Corresponding Author Email: fyadusei@vt.edu

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ABSTRACT

The study aims to identify commonalities and differences in these perceptions and to test the hypothesis of a significant relationship between poverty status and food security at the household level in the district. The study utilized primary data collected through a questionnaire survey of farm households and secondary data from relevant literature sources. The results of the study indicate that poverty and food insecurity in the Bosome Freho district are influenced by a complex interplay of factors. Three distinct causes of poverty were identified: structural, individualistic, and fatalistic. Structural causes, deeply rooted in economic, social, and political structures, were associated with the most severe form of food insecurity. Individualistic causes, related to individual behavior and circumstances, were classified as mildly food insecure and could be addressed through education and training. Fatalistic causes, such as natural disasters and political instability, were categorized as moderately food insecure and required emergency assistance. The findings underscore the importance of addressing the root causes of poverty and food insecurity through a multi-faceted approach. This includes systemic changes to address structural factors, individual and community-level interventions to tackle individualistic causes, and emergency assistance to deal with temporary crises caused by fatalistic factors. The study highlights the need for policy changes, social programs, and education to address structural inequalities and promote long-term food security in the district.

KEYWORDS

Food insecurity, poverty, individualistic, fatalistic, structuralist

1. INTRODUCTION

A significant issue affecting food security in the Bosome Freho district is poverty. Food security is severely hampered by poverty, which limits people's access to food. The Ghana Statistical Service estimates that about 23.4% of residents in the area are regarded to be poor (GSS, 2020). Due to this situation, many people struggle to buy food, especially during times of economic downturn or shock, such as a pandemic or flooding.

Since the World Food Conference in 1974, the idea of "food security" and our understanding of poverty have changed, and the discussion of food insecurity has moved to the level of the individual household (Maxwell, 1996). The focus of poverty, and more especially food security, was anticipated to move from one region of a country to another in the 1990s by a number of studies (Ravallion, 2002; De Haan, 1997; UNICEF, 1994). Numerous studies have shown that the number of poverty experienced by households in rural and urban settings may be a major factor influencing food security at the household level. Accordingly, the availability of food and the amount of money spent on it in underdeveloped areas depend on whether or not the households there have access to sufficient income to buy food (Adato and Basset, 2012; Hoyos and Meveden, 2009; Migotto, Gero and Kathleen). The primary developmental objective of all governments worldwide has been to eliminate extreme hunger and poverty while assuring access to necessities like clean water, food, and medical care (World Bank, 2007). This is done in order to end poverty and to ensure sustainable economic growth. In this way, a household's level of food security also reflects how poor that household is. This suggests that

in order to design solutions for certain communities, a greater understanding of the poverty status of that households may be required in order to properly grasp the food security status. People may have diverse perspectives on poverty and its causes in this regard. Understanding the reasons of poverty from the perspective of the poor should help us better appreciate their efforts or lack thereof to solve their food insecurity.

Understanding how households view the underlying causes of poverty and food insecurity is key to our study. Individualistic, structural, and fatalistic causes for poverty are some of the well-documented perceptions in the literature (Bullock, 1999; Feagin, 1972). Accordingly, there are three primary categories of causes of poverty: fatalistic, structuralist, and individualistic (Feagin, 1975). Individualistic views place the blame for poverty on the poor people's own shortcomings (such as ability, effort, and morals). According to structuralist theories, societal problems like inequality in opportunities, prejudice, and exploitation of the poor have their roots in social and economic institutions. Fatalistic beliefs attribute reasons like luck, disease, and chance that are beyond human and environmental control (fate).

Food availability may not be the essential requirement for food security, according to research, particularly if households lack the resources for money or productivity needed to buy food (Adato and Basset, 2012; Migotto, Gero and Kathleen, 2006). This means that eliminating food insecurity in low-income households could require a different strategy. The beliefs of what causes poverty are at the core of this problem. The Millennium Development Goals (MDG) were established by the World

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Bank in the 1990s, and by 2015, the amount of poverty worldwide must have fallen by half. But since 1990, more people in Sub-Saharan Africa have been living below the poverty level of \$1 US per day (Foeken and Owuor, 2008). A major issue for policymakers in sub-Saharan Africa is food security (Drimie and Casale, 2009). This means that developing countries' planners and policy makers may face new difficulties as a result of food insecurity.

Numerous studies have offered crucial insights into how households suffer food insecurity. These experiences include worrying about food shortages, believing that food is of poor quality and quantity, reporting dietary changes and their effects, and feeling uneasy about using socially undesirable methods to obtain food (Radimer et al., 1990).

1.1 Justification for The Study

Importance of the study area: The study area is a rural agricultural district where majority of people depend on farming for livelihood. Thus, it is important to study prevalence of food security and factors that contribute to poverty.

Policy relevance: understanding the relationship between food security and perception of poverty can inform policies (aiming at improving food security and reducing poverty)

Knowledge gap: there is limited information on the prevalence of food insecurity among farm households and extent to which agricultural practices contribute to their vulnerability.

Practical implication: findings can be used to guide development strategies to enhance agricultural practices, improve food security and reduce poverty of farm households

Below are the research question and the hypothesis this study intends to focus.

1.2 Research Questions

How do households in the Bosome Freho district perceive the root causes of poverty and food insecurity?

Hypotheses:

Ho: There is no significant relationship between poverty status and food security at the household level in the Bosome Freho district.

Ha: There is a significant relationship between poverty status and food security at the household level in the Bosome Freho district.

Objectives

1. To explore the perceptions of households in the Bosome Freho district on the root causes of poverty and food insecurity, with a focus on identifying any commonalities or differences in their perceptions.
2. To test the hypothesis that there is no significant relationship between poverty status and food security at the household level in the Bosome Freho district, by conducting statistical analyses on relevant data and assessing the strength and direction of any relationship found.

2. METHODOLOGY AND DATA COLLECTION

This study was conducted in the Bosome Freho District, which is one of the 261 Districts in Ghana (located in Ashanti region). The district lies precisely within moist deciduous forest (agro-ecological zone). It has a population of 12,923 households, representing 81.6% which are into agriculture and 19.4% are non-agricultural households (GSS, 2014). In spite of the natural and human resources potentials, the district records high food insecurity (BFDA, 2014). The figure 1 below shows the district map.

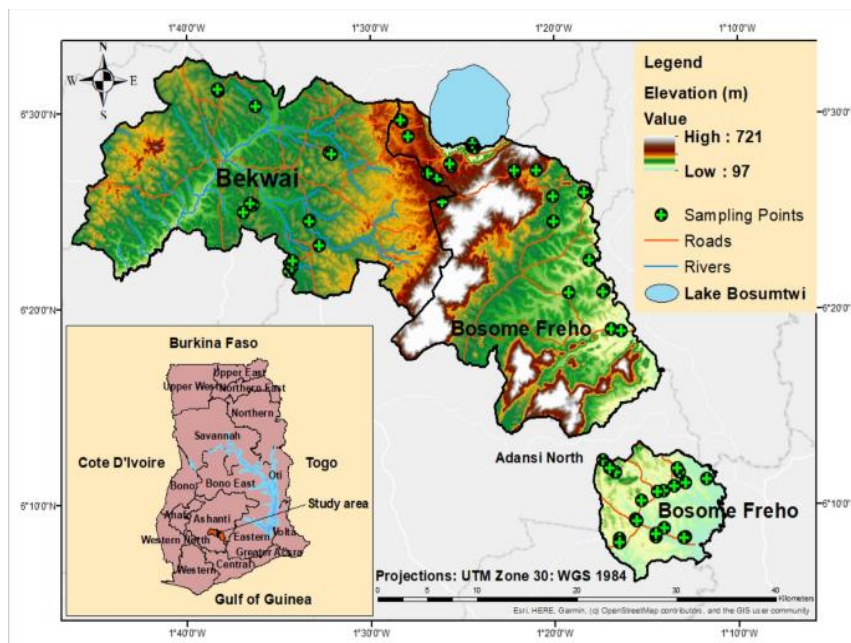


Figure 1: Map of Bosome Freho Credit: Eris HERE, Garmin

3. SAMPLE

In this study, there are two types of data. To gather primary data, a simple random sample technique was utilized to gather information from farm households utilizing a questionnaire survey created by the District's Department of Agriculture. A simple random sample is a population subset that has been chosen at random. With this sampling technique, every person in the population has the exact same probability of getting chosen. Since it only includes one random selection and requires little prior population knowledge, this method is the easiest of all the probability sampling techniques. To draw statistical conclusions about a population, simple random sampling is used. The greatest way to lessen the impact of potential confounding variables is by randomization, which helps to assure good internal validity (Thomas, 2022). For a fuller understanding of the topic at hand, secondary data from pertinent literature sources was used, including published articles and government records. Fifty people in all were chosen to participate in the study.

4. INSTRUMENTS FOR MEASURING AND DATA ANALYSIS

The Household Food Insecurity Access Scale (HFIAS) was employed to assess the prevalence of household food insecurity (Coates et al., 2007). Since it was gathered without consideration for scale, the primary data (from the Bosome Freho district) for this project was altered to comply with HFIAS standards. Food insecurity was measured using a nine-item scale created by USAID's FANTA programme. The assessment tool progresses from questions about food supply anxiety through questions about meal quality, questions about how much food is consumed, and finally questions about going to bed hungry or spending all day and night without eating (Deitchler et al., 2010). The nine questions on the Household Food Insecurity Access Scale (HFIAS) questionnaire asked respondents to indicate how frequently they had experienced the situation in the previous four weeks: rarely (once or twice), occasionally (three to ten times), or frequently (more than ten times). In order to divide households into these four groups, four types of indicators were

calculated: food security (denoting 1), mildly food insecurity (denoting 2), moderate food insecurity (denoting 3), and severely food insecurity (denoting 4). Then, for the sake of this study, households were divided into two groups: those with access to enough food and those without it (categorized as having mild, moderate, or severe food insecurity).

Three groups on the causes of poverty—structural, individualistic, and fatalistic were created using exploratory factor analysis on JASP software to measure how household heads see the perceive poverty. The three factors were extracted from 13 statements about individual's perceptions of the causes of poverty. The reliability of the instrument to measure the perceptions was tested. Finally, Kaiser-Meyer-Olkin test, Bartlett's test, Chi square tests and Mardia's Test of Multivariate Normality were conducted to ascertain the statistically significant differences between the groups, with regard to their perceptions of poverty.

Assumption tests

Table 1: Kaiser-Meyer-Olkin test

	MSA
Overall MSA	0.796
Lack of ability to manage money	0.842
Waste money on inappropriate items	0.868
Do not actively seek improvement	0.791
Exploited by rich people	0.813
Society lacks social justice	0.779
Distribution of wealth uneven	0.837
Lack of opportunities	0.669
Live in place of no opportunity	0.837
Bad fate	0.743
Lack luck	0.885
Encountered misfortunes	0.716
Not motivated	0.785
Born inferior	0.618

The above table presents the results of the Kaiser-Meyer-Olkin test, which is a measure of sampling adequacy used to assess the suitability of data for factor analysis. The test evaluates whether the variables in the dataset are correlated enough to be able to identify underlying factors.

The test results range from 0 to 1, with values closer to 1 indicating a higher degree of correlation among the variables and therefore more suitable for factor analysis. In this case, the overall MSA score of 0.796 indicates that the data set has a good level of correlation among the variables, making it suitable for factor analysis.

The table also shows the individual MSA scores for each variable. Higher scores indicate a higher degree of correlation with the other variables in the dataset, which suggests that the variable is likely to be an important factor contributing to poverty.

For example, the variables "Lack of ability to manage money", "Waste money on inappropriate items", and "Distribution of wealth uneven" all have MSA scores above 0.8, indicating strong correlations with other variables and a high likelihood of being significant factors contributing to poverty. Conversely, the variable "Born inferior" has a low MSA score of 0.618, suggesting that it may not be a significant factor contributing to poverty.

Table 2: Bartlett's test

X ²	Df	p
481.044	78.000	< .001

Table 5: Factor Loadings

	Factor 1	Factor 2	Factor 3	Uniqueness
Lack luck	0.911			0.134
Society lacks social justice	0.775			0.311
Lack of ability to manage money	0.721			0.394
Distribution of wealth uneven	0.609			0.326
Exploited by rich people	0.467	0.457		0.366
Bad fate		0.911		0.198
Do not actively seek improvement		0.785		0.311
Live in place of no opportunity		0.554		0.456
Waste money on inappropriate items		0.508		0.511
Not motivated		0.495		0.501

The table above shows the results of Bartlett's test, which is a statistical test used to determine whether a set of variables in a dataset are likely to be interdependent or correlated. The test generates a chi-square statistic (X^2) and a p-value to evaluate the null hypothesis that the variables in the dataset are independent. A low p-value indicates that the null hypothesis can be rejected, meaning that the variables are likely to be correlated or interdependent. In this case, the test statistic is 481.044 with 78 degrees of freedom (df), and the p-value is less than 0.001, which is an extremely low p-value. This indicates that there is a significant correlation among the variables in the dataset, and the null hypothesis of independence can be rejected. Therefore, it can be concluded that the variables in the dataset are likely to be interdependent or correlated, and further analysis such as factor analysis may be appropriate.

Table 3: Chi-squared Test

	Value	df	P
Model	114.311	42	< .001

The table above shows the results of a chi-squared test, which is a statistical test used to determine the significance of the relationship between two categorical variables. The test generates a chi-squared statistic and a p-value to evaluate the null hypothesis that there is no significant relationship between the two variables. A low p-value indicates that the null hypothesis can be rejected, meaning that there is a significant relationship between the two variables. In this case, the chi-squared test statistic is 114.311 with 42 degrees of freedom (df), and the p-value is less than 0.001, which is an extremely low p-value. This indicates that there is a significant relationship between the two categorical variables being tested, and the null hypothesis of no significant relationship can be rejected.

Table 4: Mardia's Test of Multivariate Normality

	Value	Statistic	Df	p
Skewness	48.060	400.497	455	0.969
Small Sample Skewness	48.060	428.125	455	0.812
Kurtosis	180.592	-2.579		0.010

Note. The statistic for skewness is assumed to be Chi² distributed and the statistic for kurtosis standard normal.

The table above shows the results of Mardia's Test of Multivariate Normality, which is a statistical test used to assess whether a set of variables follows a multivariate normal distribution. The multivariate normal distribution is an important assumption for many statistical techniques, and violations of this assumption can lead to biased results.

The test provides three statistics: skewness, small sample skewness, and kurtosis. Skewness measures the extent to which the distribution of the variables deviates from symmetry, while kurtosis measures the extent to which the distribution deviates from a normal distribution in terms of peakedness and tail heaviness.

The table shows that the skewness statistic is 48.060, with a p-value of 0.969. This indicates that the skewness of the variables is not significantly different from that of a multivariate normal distribution, and therefore, the assumption of multivariate normality is met with respect to skewness. The small sample skewness statistic is also 48.060, but with a slightly different p-value of 0.812. This statistic is used when the sample size is small, and the p-value suggests that the assumption of multivariate normality is still met with respect to small sample skewness. The kurtosis statistic is 180.592, with a p-value of 0.010. This indicates that the distribution of the variables is significantly different from that of a multivariate normal distribution in terms of kurtosis. In other words, the distribution is more peaked and has heavier tails than a normal distribution.

Table 5: Factor Loadings

	Factor 1	Factor 2	Factor 3	Uniqueness
Encountered misfortunes			0.922	0.073
Lack of opportunities			0.856	0.255
Born inferior				0.876

Note. Applied rotation method is oblimin.

The table represents the factor loadings of 13 items on three factors derived through an oblimin rotation method. The factors are not labeled, so the researcher needs to interpret the factors based on the item content and factor loadings. The uniqueness column represents the proportion of variance in each item that is not explained by the three factors. Higher values indicate that the item has unique characteristics not captured by the three factors. The factor loadings measure the strength of the relationship between each item and the underlying factor. A high loading (close to 1) indicates that the item is strongly related to that factor, whereas a low loading (close to 0) indicates weak or no relationship.

Factor 1 has high loadings for items related to external factors, such as lack of luck, society lacking social justice, lack of ability to manage money, and distribution of wealth uneven. This factor may be interpreted as an external attribution factor, reflecting the belief that external factors beyond individual control (e.g., luck, social justice, economic policies) contribute to one's poverty. These factors are structural causes of poverty and could be classified as severely food insecure. The structural causes of poverty are those that are deeply ingrained in the economic, social, and political structures of a society. They are systemic and persistent, often spanning generations, and are difficult to address through individual efforts alone. In the context of food insecurity, structural causes of poverty can have a significant impact on whether or not individuals and communities have access to sufficient, nutritious food. For example, poverty can limit access to education and job opportunities, which can lead to lower incomes and limited resources for purchasing food.

Discriminatory policies and social structures, such as racism and sexism, can also contribute to food insecurity by limiting access to resources for marginalized groups. In addition, structural factors can impact food production and distribution, particularly in developing countries. For example, unequal land distribution and limited access to agricultural inputs and markets can prevent small farmers from producing enough food to meet their own needs, let alone sell for income. This can contribute to chronic food insecurity, as well as undernutrition and malnutrition.

Factor 2 has high loadings for items related to personal responsibility, such as waste money on inappropriate items, not motivated, and do not actively seek improvement. This factor may be interpreted as an individualistic attribution factor, reflecting the belief that one's own actions and attitudes determine their success or failure. This category could be classified as mildly food insecure. Individualistic causes of poverty refer to factors that are related to the behavior, choices, and circumstances of individual people, such as low levels of education, lack of skills, poor health, or lack of access to resources.

These factors can contribute to a person's inability to secure a stable income and meet their basic needs, including food. Individualistic causes of poverty could be classified as severely food insecure if the behavior and choices of an individual lead to a lack of access to adequate food. For example, if an individual spends money on inappropriate items and does not prioritize purchasing nutritious food, they may experience severe food insecurity. Similarly, if an individual lacks motivation and does not actively seek improvement, they may struggle to secure a stable income or access resources to purchase food, which can also lead to severe food insecurity.

Factor 3 has high loadings for items related to misfortunes and lack of opportunities, such as encountered misfortunes, lack of opportunities, and born inferior. This factor may be interpreted as a fatalistic attribution factor, reflecting the belief that one's fate is predetermined by uncontrollable factors such as genes or circumstances. These could be classified as moderately food insecure. Fatalistic causes of poverty refer to factors that are outside of an individual's control, such as natural disasters, economic downturns, and political instability. These factors can contribute to a person's inability to secure a stable income and meet their basic needs, including food. While fatalistic causes of poverty can lead to severe food insecurity in some cases, they are more likely to result in moderate food insecurity. This is because fatalistic causes of poverty are often temporary and can be addressed through emergency assistance, such as food aid and other forms of humanitarian aid. The figure 2 below shows the path diagram of the factor loadings.

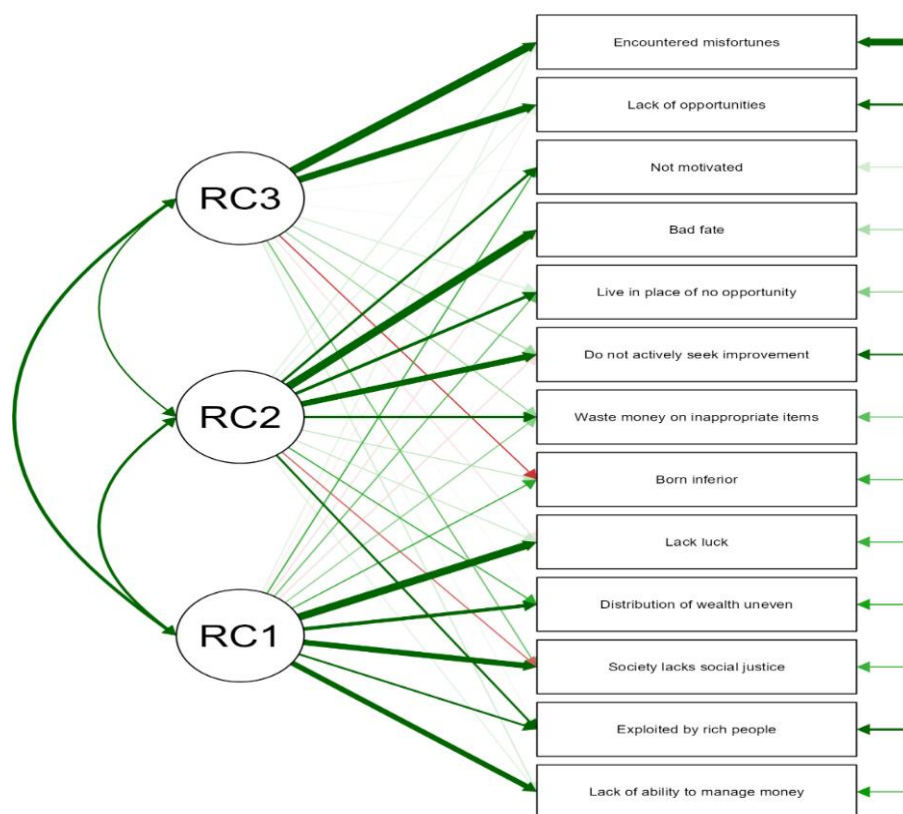
**Figure 2: Path Diagram**

Table 6: Descriptive statistics

						Shapiro-Wilk	
	N	Missing	Mean	Median	SD	W	P
Lack of ability to manage money	50	0	7.40	7.00	1.29	0.940	0.014
Waste money on inappropriate items	50	0	7.44	7.50	1.01	0.918	0.002
Do not actively seek improvement	50	0	6.86	7.00	1.47	0.923	0.003
Exploited by rich people	50	0	6.88	7.00	1.62	0.944	0.020
Society lacks social justice	50	0	7.32	7.00	1.36	0.936	0.009
Distribution of wealth uneven	50	0	7.02	7.00	1.60	0.929	0.005
Lack of opportunities	50	0	7.22	7.00	1.67	0.948	0.028
Live in place of no opportunity	50	0	7.38	7.50	1.12	0.899	<.001
Bad fate	50	0	6.86	7.00	1.58	0.920	0.002
Lack luck	50	0	7.30	7.50	1.39	0.934	0.008
Encountered misfortunes	50	0	7.24	7.00	1.68	0.933	0.007
Not motivated	50	0	7.34	7.00	1.17	0.908	<.001
Born inferior	50	0	5.38	5.00	1.51	0.914	0.001

The table reports descriptive statistics and Shapiro-Wilk normality test results for 13 variables related to perception about poverty. The variables were measured on a Likert-type scale, with higher scores indicating stronger agreement with the respective statements (food secure (denoting 1), mildly food insecure (denoting 2), moderately food insecure (denoting 3), and severely food insecure (denoting 4). The variables represent beliefs about the causes of poverty or personal factors that may contribute to it. For each variable, the table provides the sample size (N), the number of missing values, the mean, median, and standard deviation (SD) of the variable, as well as the results of the Shapiro-Wilk test for normality. The Shapiro-Wilk test is a statistical test used to assess whether a given sample of data comes from a normally distributed population. The test provides a W statistic and a p-value, where a p-value less than 0.05 indicates that the data is significantly non-normal.

Interpreting the table, it is seen that all of the variables have a sample size of 50, with no missing values. The mean values range from 5.38 for "Born inferior" to 7.44 for "Waste money on inappropriate items." The median values are mostly centered around 7, suggesting that the sample tends to agree moderately or strongly with most of the statements. The standard deviation values range from 1.01 for "Waste money on inappropriate items" to 1.68 for "Encountered misfortunes," suggesting that there is some variability in people's perceptions of their poverty.

In terms of the Shapiro-Wilk test, all the variables have a p-value of less than 0.05, indicating that they are not normally distributed. However, the assumptions checks proves that the dataset is statistically significant. It's worth noting that the sample size is relatively small, so the results of the Shapiro-Wilk test should be interpreted with caution.

5. CONCLUSION

The study indicates that poverty and food insecurity in the Bosome Freho district are influenced by a complex interplay of factors. The three factors identified in the study highlight the importance of distinguishing between structural, individualistic, and fatalistic causes of poverty. The findings suggest that the most severe form of food insecurity is associated with structural causes of poverty, which are deeply ingrained in the economic, social, and political structures of a society. These factors are beyond the control of individuals, and addressing them requires systemic change. On the other hand, individualistic causes of poverty could be classified as mildly food insecure, as these factors are related to the behavior, choices, and circumstances of individuals. While these factors can contribute to a person's inability to secure a stable income and meet their basic needs, they are often temporary and can be addressed through education, training, and other interventions. Therefore, addressing individualistic causes of poverty requires a combination of individual and systemic efforts.

Fatalistic causes of poverty could be classified as moderately food insecure, as these factors are outside of an individual's control, such as natural disasters, economic downturns, and political instability. While these factors can have a significant impact on a person's ability to meet their basic needs, they are often temporary and can be addressed through emergency assistance. The study underscores the importance of addressing the root causes of poverty and food insecurity, including

structural factors such as unequal distribution of wealth, discriminatory policies, and social structures. Addressing these factors requires a multi-faceted approach that includes policy changes, social programs, and education. It also highlights the need for emergency assistance to address temporary crises and help individuals meet their basic needs in times of hardship.

The findings of this research paper have practical significance in the context of addressing poverty and food insecurity. By identifying the different factors that contribute to poverty and food insecurity, policymakers, organizations and other stakeholders can tailor their interventions to address the specific needs of different groups. For example, interventions that focus on improving access to education, and training opportunities may be more effective for addressing individualistic causes of poverty, while those that focus on addressing discriminatory policies and social structures may be more effective for addressing structural causes of poverty. Similarly, interventions that provide emergency assistance may be more effective for addressing fatalistic causes of poverty. By understanding the different factors that contribute to poverty and food insecurity, stakeholders can develop more targeted and effective interventions to ensure that all individuals and communities have access to sufficient, nutritious food.

The limitations of this research study indicate several areas for future research to address. Firstly, to increase the generalizability of the findings, future studies should consider expanding the research to cover multiple districts or regions with different socio-economic and environmental conditions. This would provide a more comprehensive understanding of the factors contributing to poverty and food insecurity across different contexts. Secondly, a larger sample size would enhance the representativeness of the study and provide more robust results. Future studies should consider increasing the sample size to improve the generalizability of the findings.

Conflict of Interest: None declared

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