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FOOD & SECURITY

PREVALENCE AND SEVERITY OF FOOD INSECURITY AMONG THE LOW-INCOME HOUSEHOLDS IN SECONDARY TOWNS: THE CASE OF NAIVASHA, KENYA

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ABSTRACT

Purpose of the Study: This study examined the prevalence and severity of household food insecurity (FI) in the low-income settlements of Naivasha town, Kenya using three food insecurity metrics to capture FI multidimensionality.

Statement of The Problem: According to the FAO, IFAD, UNICEF, WFP and WHO report of 2024, food insecurity (FI) affects 2.33 billion people globally. Research has shown that about 70% of households in Kenyan towns experience FI. There is however, no study conducted in Naivasha town.

Research Methodology: The study employed quantitative approach in a cross-sectional survey design using 390 households. FI was assed using household food insecurity access prevalence, reduced coping strategies index and perceived food utilization. Data was analyzed using descriptive statistics.

Results of the Study: The findings revealed that 85% of households experienced food insecurity, with 40% classified as severely food insecure. Prevalence estimates varied depending on the metric employed.

Conclusion and Policy Recommendation: Food insecurity prevalence differed with the metric employed, which underscores the importance of multidimensional assessment. To address the problem of FI, the study recommends initiation of school feeding programs to enhance children's diet, enhancement of food related cash transfers and assistance in kind to vulnerable households.

Keywords: *Prevalence and Severity, Food Insecurity, Low-Income Households, Secondary Towns, Naivasha*

INTRODUCTION

Food insecurity (FI) exists when people do not have secure access to enough amounts of food that are safe and nutritious to enhance active and healthy life. Two billion people worldwide were food insecure in 2019 before the outbreak of Covid 19, and the figure has risen to 2.33 billion people (FAO, IFAD, UNICEF, WFP&WHO, 2024) and occur in both rural and urban areas. Crush and Frayne (2011) observed that until the first decade of the twenty first century, the urban areas were invincible to the global food insecurity discourse, since they were discussed within the rural areas' context with the assumption that they are similar. However, recent studies have shown that urban areas are not immune to FI and have distinct dynamics and cross-scale linkages requiring considerations in understanding the dimensions of food insecurity. This rural bias in food insecurity discourse persisted to the second decade of twenty first century (Crush & Riley, 2018). Left unresearched, especially due to the biasness, the problem will continue to get worse owing to the rapid growth in urban areas.

Estimates show that urban population globally will grow by 13% between 2018 and 2050, with Sub-Saharan Africa recording the highest growth rate (Tadros et al., 2020). Eastern Africa will grow more than five times by 2050 (United Nations [UN], 2018), while UNHABITAT (2020) projects the urban population in Kenya of 14.975 million in 2020 will increase to 18.372 million by 2025. Naivasha, a secondary town in Kenya recorded a population growth of 8% between 2009 and 2019 (Kenya, 2019). This trend requires proper planning to mitigate against urban food insecurity.

Globally, secondary cities, which are cities having populations of between 100,000 and 500,000 persons (UN-Habitat, 1996 p. 13) are reported to account for a higher share of the urban population (UN-Habitat & UNICEF, 2020). The population living in the secondary cities in Sub Saharan Africa (SSA) is 54% of the total urban population (Riley & Crush, 2023). Most of the secondary towns are characterized by limited basic infrastructure, social facilities and services. The rapid population growth constrains these resources even more, particularly in the peri-urban residential locations, where most of the new entrants to the urban areas settle (United Nations, 2017). These limitations directly influence the food environment and contribute to food insecurity. Secondary cities are therefore habitat for households facing severe food insecurity than is the case in the primate cities (Riley & Crush, 2023).

Studies conducted in the global south confirm the prevalence of food insecurity among urban households. For example, in Asia, cases of urban food insecurity have been reported in Nanjing in China (Riley & Caesar, 2018), in nine towns in Bangladesh (Banna et al., 2022), five towns in India (Dharmaraju et al., 2018), Bangalore - India (Anand, Jagadeesh, Adelina & Koduganti, 2019) and in urban areas of Myanmar (Headey et al., 2022). Comparable studies by Santos, et al. (2022) and Aparecida et al. (2018) indicated the prevalence of food insecurity in Lima el Salvador- Peru and Sao Paulo- Brazil. Similarly, food insecurity has been reported in Baft city in Iran (Ekhlaspour et al., 2019). In Africa, Riley and Caesar (2018) reported cases of food insecurity in Maputo city in Mozambique. Ndlovu et al. (2021) found that up to 73% of those living in Bulawayo in Zimbabwe experienced poor dietary diversity, while Jonah and May (2018) reported food insecurity in 20 to 36% of households in urban South Africa.

Household food insecurity prevalence of up to 70% has been reported in Nairobi, the capital of Kenya (Owuor, 2018). Severe food insecurity has been reported in 22% households in Kisumu, the third largest city in Kenya (Omondi et al., 2017). Although literature search has not yielded any records for food insecurity in Naivasha town, a study conducted in the rural lake Naivasha basin where Naivasha town is located reported severe food insecurity of 9.15% in 2018 (Sassi & Zuchinni, 2018). The above studies conducted in Kenya are a pointer to the prevalence of food insecurity and severity in Kenyan urban areas.

STATEMENT OF THE PROBLEM

Most of the studies mentioned above, both globally and locally, relied on one food insecurity metric. Out of 27 reviewed studies, 21 used one metric, six used two metrics and none used three and above. The use of more than one metric is highly recommended because it gives a holistic picture of food insecurity since individual metrics are specialized in the dimension that they measure (Kennedy et al., 2011; Maxwell & Cardwell, 2008). The studies conducted in Maputo, Mozambique (Riley & Caesar, 2018), Bulawayo, Zimbabwe (Ndlovu et al., 2021), in the urban areas of South Africa (Jonah & May, 2018) and Nairobi, Kisumu and Thika all three towns in Kenya (Owuor, 2018; Omondi et al., 2017) may not be applicable to every other town, since nations, towns, and the characteristics of urban dwellers are different. There is therefore need for location-specific research using different metrics for better understanding of the prevalence and severity of food insecurity. This is justified by the existence of different ranks

and types of secondary towns, that are of different formations within the same nation and with varied characteristics that become the driving force of food insecurity. This is a step towards alleviating the problem.

The primate cities biases over secondary towns, the uniqueness of the secondary towns, and scarcity of studies embracing triangulation of metrics in the previous studies on food insecurity, are evidence of a knowledge gap. Naivasha is a corridor type secondary town based on the classification by Roberts (2014). This information for the town is missing, which is witnessed through literature review. Such data is important for policy making in secondary towns that are experiencing rapid population and built-up area growth, all over the African continent. The study employed four experience-based food insecurity metrics for a more comprehensive understanding of the food insecurity situation.

RESEARCH OBJECTIVES

This study aimed to contribute towards reducing the knowledge gap by establishing the prevalence and severity of food insecurity amongst the low-income households in secondary towns using the case of Naivasha town by employing triangulation of food insecurity metrics.

RESEARCH QUESTIONS

What is the prevalence and severity of food insecurity status of the low-income households in Naivasha town?

THEORITICAL REVIEW/ FRAMEWORK

The entitlement approach was authored by Amartya Sen in 1982. The approach presumes the capacity of people to obtain food through the legal means that are available to society, that include the ability to produce, opportunities to trade, entitlements, and other modes available for obtaining food. This approach focusses on each individual's entitlements to bundles of commodities that include food and thus looks at starvation as emanating from a failure of entitlement to a bundle that has adequate food. Sen gives entitlement relations that are acceptable in a private ownership market economy. The first one is entitlement that is based on trade where someone is entitled to possess what he/she gets by trading something he/she owns with another person that is willing. The second form of entitlement is based on production and

a person is entitled to own what he/she gets through production using the resources they possess, or resources that are hired from someone else in a mutual agreement that meets the condition of production.

In relation to this study, the market is the primary source of food in urban areas and thus affordability is key in ensuring food security (Crush & Fayne, 2010). Economic affordability of food can be inhibited by various socio-economic factors and therefore making the urban dwellers vulnerable to food insecurity. Other means of food acquisition are related to coping strategies like borrowing food and selling of available asset to acquire food translate to what Sen (1981) called legal means. Lack of such legally acceptable coping strategies can also leave households vulnerable to food insecurity.

EMPIRICAL REVIEW

Food insecurity and malnutrition continues to thrive in the global arena, meaning that the attendant negative effects will continue to grow if the issue is not addressed. The prevalence of both moderate and severe food insecurity measured using the food insecurity experience scale (FIES) has increased in all the regions of the world since 2014 except in Europe and North America. According to FAO et al. (2023), no progress was made in reducing food insecurity at the global level between the years 2019 and 2022. In 2023, 2.4 billion people representing 29.6% of the global population suffered moderate to severe food insecurity (FAO et al., 2023). Out of these 2.4 billion, 1.145 billion were in Asia, 868 million in Africa, 248 million in Latin America and the Caribbean, 6 million in Oceania and 90 million in North America and Europe. Consequently, 735 million people worldwide were reported to be undernourished.

Prevalence of food insecurity when measured using household food insecurity access scale (HFIAS) has been reported in urban areas in Kenya (Owuor, 2018; Mutisya et al., 2016; Omondi et al., 2017; Keino et al., 2014). Mutisya and colleagues in 2016 reported food insecurity prevalence of 72% in two slums settlements in Nairobi, while Owuor (2018) reported prevalence of 71% in some selected settlements in the same city. In another study conducted in Kenya, food insecurity prevalence of 86 and 95% was reported in the towns of Thika and Kisumu respectively (Omondi et al., 2017). Food insecurity prevalence has also been reported in Villa el Salvador, Lima in Peru (Santos et al., 2022). These authors reported 31 and 49.6%

of the households as suffering moderately and severely food insecure respectively. The findings by these researchers is a clear indication that food insecurity related to economic accessibility is prevalent in cities as well as in secondary towns.

Food insecurity related to both dietary diversity and the ability of households to be able to buy foods from a diverse diet is prevalent in urban areas. Cases of low dietary diversity of up to 39.1% and moderate dietary diversity of 56.3% have been reported by Banna et al., (2022). Ndlovu et al. (2021) reported cases of low dietary diversity in as many as 73% of the households in their study conducted in Bulawayo, Zimbabwe. Low dietary cases but when using the household dietary diversity score are also reported by Ochieng et al. (2017). These findings serve to demonstrate the existence of food insecurity based on dietary diversity but of varying magnitude and dependent on location.

Coping strategy index is a relatively simple measure of food insecurity that is easy to comprehend and quick to employ. Studies have demonstrated reliance on different food insecurity coping strategies which is a clear indication of the existence of food insecurity in households (Headey et al.,2022; Gupta et al., 2015; Farzana et al., 2017; Blekking et al.,2020; Borku et al., 2024). All these studies have described the various coping strategies adopted by households and the proportion of households that utilized them but failed to categorize households as either food secure or food insecure. This study categorized households as food secure/insecure using the reduced coping strategy index (RCSI) which is a subset of the Coping strategy index, by formulating a prevalence scale.

Food utilization is concerned with the proper usage of food biologically, in order to derive the benefits of the food stuff. It therefore requires the diet to provide enough energy and crucial nutrients, water, and adequate hygiene (Ihab et al., 2015). A diverse diet is one way of assuring food utilization, and it can be measured by showing whether a household has a low, moderate or high diet diversity (Kennedy et al., 2011). It is possible that even in the presence of a diverse diet, utilization can be inhibited by the unavailability of resources required to prepare and preserve the food to provide the diet. These inhibiting factors have been referred to as barriers to food utilization (Calloway et al., 2023). The same authors reported households experiencing a minimum of two such barriers to desired food utilization. Calloway et al. (2023) used a score

to quantify utilization-based food insecurity. This study has converted the score to a prevalence to clearly indicate the proportion of households experiencing food insecurity.

FOOD INSECURITY MEASUREMENT

Household food insecurity access scale

The Household Food Insecurity Access Scale (HFIAS), developed by Coates et al. (2007), uses a set of nine questions to measure the level and characteristics of food insecurity in households. It provides information on conditions and domains of food access, generates a household food insecurity score, and helps determine the prevalence of food insecurity within a population.

Reduced Food insecurity coping strategies index

The Reduced Coping Strategies Index (RCSI), described by Maxwell and Cardwell in 2008, is easy to comprehend and a quick tool that measures food insecurity by evaluating how often households use five standard coping strategies. Each strategy is assigned a severity weight, and the frequency of use is multiplied by this weight to produce an overall index score, reflecting the household's reliance on coping mechanisms.

Perceived food utilization

Perceived Food Utilization (PFU) developed by Calloway, et al. (2023) focuses on barriers to utilization of available food. This method involves the use of negatively worded questions on barriers related to food preparation and storage. Responses are scored as often true, sometimes true and never true. This study used five negatively worded questions. A total score of zero suggested perfect utilization, while a score of ten indicated significant underutilization.

CONCEPTUAL FRAMEWORK

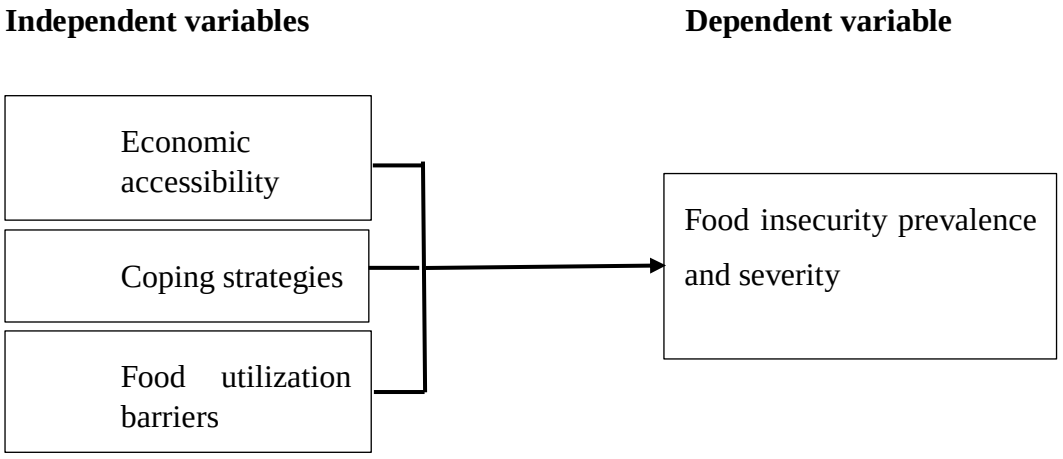

Figure 1: Conceptual Framework

RESEARCH METHODOLOGY

The study adopted a quantitative approach in a cross-sectional survey design, with primary data collected from six low-income residential locations of Naivasha town, located 92.8 kilometers northwest of Nairobi, where the main economic activities are floriculture and horticulture, which serve as major sources of employment for both locals and immigrants from other regions (Kuiper, 2019). The sample size of 390 households was determined using the formula by Krejcie and Morgan (1970) from Naivasha's total population of 117,633 (Kenya, 2019). Multistage sampling was utilized to select the sample, with the study area purposively stratified into six strata, each representing a residential location. Using Google Earth maps of each stratum, map transects demarcating the sampling frame were made, and once the sampling frame block for each settlement was established, the main longitudinal roads on the sampling frame transects were used to form sampling clusters which were numbered and five randomly selected. From the five selected clusters, 13 households per cluster were picked using a variation of random walk sampling technique adopted from Anand et al. (2019), a method suitable due to the lack of a household list for random sampling.

A pretested structured questionnaire was used to collect socio-demographic information, household food insecurity access score/prevalence, household dietary diversity, perceived food utilization and reduced coping strategy index. It was administered to household heads with a sampling interval of three households maintained until all 13 households were interviewed, leading to a sample of 65 per location, with data collection taking place from August to

September 2024. Data on food insecurity prevalence and severity was analyzed using descriptive statistics including means, frequencies and proportions, and presented through tables, covering household food insecurity access prevalence, household dietary diversity, perceived food utilization and reduced coping strategies prevalence. Ethical considerations included obtaining informed consent from participants before data collection, ensuring confidentiality, having participants sign consent forms, and securing research approval from the National Commission for Science Technology and Innovation (licence number NACOSTI/P/24/36823) and St Paul's University Institutional Scientific & Ethics Review Committee (REF: SPU/155/2024).

RESULTS AND DISCUSSIONS

The demographic and socioeconomic profile of the study population reveals critical insights into the vulnerability factors associated with food insecurity in Naivasha's low-income settlements. Results indicated that 68.5% of households were headed by men, with 67.7% in marriage and the majority (66.7%) having attained secondary level education. The primary sources of income for household heads were formal employment (53.3%), business (16.9%), and casual labor (21.3%). Asset wealth classification showed that 33.3% of households were poor, 35.4% middle-income, and 31.3% wealthy. Notably, 75.6% of the sample population were internal migrants who were not born in Naivasha town (Table 1).

Table 1: Socio-economic and demographic characteristics of the household heads

Variable	Frequency	Percent
Education		
No schooling	4.00	1.00
Primary school	67.00	17.20
Secondary school	260.00	66.70
College education	43.00	11.00
University education	16.00	4.10
Total	**390.00**	**100**
Marital status		
Single	76.00	19.50
Separated	41.00	10.50
Divorced	7.00	1.80
Widowed	2.00	0.50
Married	264.00	67.70
Total	**390.00**	**100**
Household head		
Female	123.00	31.50
Male	267.00	68.50
Total	**390.00**	**100.00**
Migrated to Naivasha		
No	95.00	24.40
Yes	295.00	75.60
Total	**390.00**	**100.00**
Sources of income		
Employment	208.00	53.30
Business	66.00	16.90
Casual labour	83.00	21.30
Employment and business	20.00	5.10
Rental houses	5.00	1.30
Others	8.00	2.40
Total	**390.00**	**100.00**
Asset wealth classification		
Poor	130.00	33.30
Middle	138.00	35.40
Wealthy	122.00	31.30
Total	**390.00**	**100.00**

Household characteristics revealed an average age of household heads at 34.64 (±7.84) years, with an average household size of 3.80 (±1.04) persons. Transportation costs to food sources averaged KES 79.92 (±56.62), while the mean time to access food was 24.77 (±22.80) minutes. The average dwelling size was 1.74 (±0.88) rooms, with mean monthly income and weekly food expenditure at KES 20,643.33 and KES 1,124.42 respectively (Table 2).

Table 2: Means and standard deviations of household socioeconomic characteristics variables

Characteristic	Mean	Std Deviation
Age	34.64	7.84
Household size	3.80	1.04
Transport cost to the food source	79.92	56.65
Time taken to the food source (minutes)	24.77	22.80
Dwelling size	1.74	0.88
Monthly income	20,643.33	17,662.27
Weekly food expenditure	1,124.42	747.01

These demographic characteristics indicate households predominantly headed by males and married couples with moderate education levels. The high proportion of internal migrants (75.6%) suggests movement to Naivasha seeking better employment opportunities, particularly in floriculture and horticulture sectors (Kuiper, 2019). The youthful average age of household heads aligns with secondary town population characteristics reported by UN-Habitat and UNICEF (2020). The monthly income falls within low-income boundaries as defined by the Kenya National Bureau of Statistics (2022), indicating an urban population predisposed to poverty and food insecurity vulnerabilities.

FOOD INSECURITY PREVALENCE AND SEVERITY

Household Food Insecurity Access Prevalence

The Household Food Insecurity Access Scale (HFIAS) analysis revealed significant food access challenges across three domains: anxiety and uncertainty, insufficient food quality, and insufficient food intake with physical consequences. In the anxiety and uncertainty domain, 79.74% of households expressed worry about food availability, with 12.31% frequently worried about food access. The insufficient food quality domain showed that 80.26% of households could not eat their preferred foods, with 78.21% eating only a few kinds of food, and 79.23% consuming foods they disliked. The most severe domain of insufficient food intake

revealed that 78.21% of households ate smaller meals, 75.90% reduced daily meal frequency, and 7.18% experienced complete food deprivation for entire days (Table 3).

Table 3: Results of the access conditions of the household food insecurity prevalence

Condition	Does not occur	Rarely (1-2 times/month)	Sometimes (3-10 times/month)	Often (10+ times/month)
Worry about food	79 (20.3)	60 (15.4)	203 (52.1)	48 (12.3)
Unable to eat preferred food	77 (19.7)	47 (12.1)	225 (57.7)	41 (10.5)
Eat just a few kind of foods	85 (21.8)	46 (11.8)	222 (56.9)	37 (9.5)
Eat food they don't really like to eat	81 (20.8)	56 (14.4)	221 (56.7)	32 (8.2)
Eat a smaller meal	85 (21.8)	79 (20.3)	202 (51.8)	24 (6.1)
Eat few meals in a day	94 (24.1)	98 (25.1)	168 (43.1)	30 (7.7)
No food of any kind in the house	236 (60.5)	54 (13.9)	84 (21.5)	16 (4.1)
Go to sleep hungry	324 (83.1)	23 (5.9)	37 (9.5)	16 (1.5)
Go a whole day and night without food	362 (92.8)	8 (2.1)	18 (4.6)	2 (0.5)

Note: Values in parentheses represent percentages

Food insecurity prevalence categorization revealed alarming levels of food access challenges, with only 14.87% of households classified as food secure. Mild food insecurity affected 5.38% of households, while moderate and severe food insecurity affected 39.74% and 40.00% respectively, resulting in an overall food insecurity prevalence of 85.13%. These findings align with previous urban food insecurity studies in Kenya, though with notable variations. The 85% prevalence exceeded rates reported in Nairobi slums (72% by Mutisya et al., 2016; 71% by Owuor, 2018) but remained lower than rates in Thika (86%) and Kisumu (95%) reported by Omondi et al. (2017). The severe food insecurity rate of 40% closely matched findings from Villa el Salvador, Lima, Peru (49.6%) by Santos et al. (2022), suggesting common urban food insecurity patterns across developing countries.

Household Dietary Diversity Patterns

Dietary diversity analysis across 12 food groups revealed significant variations in food access patterns. Staple foods including cereals (99.74%), vegetables (90.51%), and oils and fats

(96.41%) showed high consumption rates. Secondary foods like sweets (92.31%) and spices, condiments, and beverages (96.15%) were also widely consumed. Milk and dairy products were consumed by 78.97% of households. However, protein-rich foods showed concerning low consumption rates: legumes, nuts, and seeds (43.59%), fish and seafood (17.95%), eggs (10.51%), and meat (10.00%). Nutrient-dense foods including fruits (16.92%) and roots and tubers (27.44%) also showed limited consumption (Table 4).

Table 4: The dietary diversity of households

Food group	Frequency	Percent
Cereals	389.00	99.74
Roots and tubers	107.00	27.44
Vegetables	353.00	90.51
Fruits	66.00	16.92
Meat	39.00	10.00
Eggs	41.00	10.51
Fish and sea foods	70.00	17.95
Legumes, nuts and seed	170.00	43.59
Milk and dairy products	308.00	78.97
Oils and fats	376.00	96.41
Sweets	360.00	92.31
Spices, condiments and beverages	375.00	96.15

Despite access to all 12 food groups, consumption patterns indicated significant nutritional gaps. Over 80% of households failed to consume balanced diets, with less than 50% accessing adequate protein from any protein-rich food source. The low consumption of legumes, nuts, and seeds (43.59%) was particularly concerning as these could serve as affordable protein alternatives to meat, eggs, and fish. This pattern aligns with findings from other urban areas in Kenya and internationally, though consumption frequencies varied. The limited protein intake likely reflects economic constraints, as protein foods represent the most expensive food category (Hess et al., 2019).

Food Insecurity Coping Strategies

Household coping strategy analysis revealed widespread adoption of food-related behavioral modifications to manage food shortages. The most prevalent strategy was reliance on less preferred and less expensive foods (74.62% of households), followed by limiting portion sizes at meals (61.03%) and eating fewer meals per day (58.46%). Adult food restriction to prioritize

children's nutrition occurred in 29.74% of households, while 17.69% borrowed food or relied on assistance from friends and relatives (Table 5).

Table 5: Reduced coping strategies employed by the households

Coping Strategy	Frequency	Percent
Relied on less preferred and less expensive foods?	291	74.6
Borrowed food, or rely on help from a friend or relative?	69	17.7
Limited portion size at mealtimes?	238	61.0
Restricted consumption by adults in order for small children to eat?	116	29.7
Reduced number of meals eaten in a day?	228	58.5

When categorized by coping strategy intensity using a threshold mean of 8.00 obtained from the reduced coping strategy index, 70% of households employed low coping strategies (indicating food security) while 30% used high coping strategies (indicating food insecurity).

The 30% food insecurity rate based on coping strategies closely matched findings by Farzana et al. (2017) who reported 31% of households utilizing coping strategies. However, the adoption rate of specific strategies varied significantly. While reliance on less preferred foods was the primary strategy in both studies, the adoption rate in Naivasha (74.62%) substantially exceeded the 20.73% reported by Blekking et al. (2020). Similar high adoption rates have been documented in Southern Ethiopia (Borku et al., 2024) and American towns (Wright & Gupta, 2015), suggesting universal preference for less risky coping mechanisms before adopting more severe strategies like meal skipping.

Perceived Food Utilization Barriers

Food utilization analysis identified significant barriers preventing optimal food consumption beyond economic access. Time constraints for food preparation affected 65.90% of households (51.03% sometimes, 14.87% always), while fuel availability for cooking posed challenges for 68.21% of households (51.03% sometimes, 17.18% always). Cooking equipment limitations affected 62.82% of households, and storage facility inadequacy impacted 70.77% of households. Water access for food preparation was the least problematic barrier, affecting only 16.67% of households. Overall and based on a threshold mean of 6.00 obtained from the perceived food utilization score, 39% of households experienced poor perceived food

utilization (food insecurity) while 61% achieved good food utilization (food security) (Table 6).

Table 6: Analysis of the perceived food utilization by households

Reason for underutilization	Never true	Sometimes true	True
Don't have time to cook	133 (34.10)	199 (51.03)	58 (14.87)
Requires much fuel to cook which I don't have	124 (31.79)	199 (51.03)	67 (17.18)
Requires cooking equipment to cook which I don't have	145 (37.18)	178 (45.64)	67 (17.18)
Requires special storage which is not available	114 (29.23)	206 (52.82)	70 (17.95)
Lack of water to prepare the food	325 (83.33)	39 (10.00)	26 (6.67)

Note: Values in parentheses represent percentages

These utilization barriers significantly impact food consumption patterns, particularly for nutrient-dense foods requiring longer preparation times such as legumes, grains, and seeds. The high prevalence of time and fuel constraints (affecting over 65% of households) suggests that even when food is economically accessible, utilization may be compromised by infrastructure and resource limitations. This finding aligns with Calloway et al. (2023) who reported households experiencing multiple barriers to desired food utilization. Some households mitigate these challenges by eating outside their homes to avoid associated costs (Ochieng et al., 2017) or investing in storage solutions like refrigerators to reduce shopping frequency and food preparation time (Banna et al., 2022).

CONCLUSIONS

The study's objective was to establish the prevalence and severity of food insecurity amongst the low-income households in secondary towns using the case of Naivasha town by employing triangulation of food insecurity metrics. Using HFIAP, the study established that 85% of the households were food insecure. Fifteen percent suffered mild food insecurity, while both moderate and severe food insecurity was experienced by 40% of the households each. Thirty

nine percent (39%) of the households experienced perceived food utilization-based food insecurity, whereas 30% of the household recorded reduced coping strategy prevalence related food insecurity. The study also established that protein giving diet is only economically accessible to less than 50% of the households. Food insecurity is therefore experienced not only in primate cities but also in secondary towns. The difference in prevalence among the three metrics affirm the importance of triangulation of food insecurity metrics for a comprehensive understanding of food insecurity. Through utilization of the three metrics, the study established the domains of food insecurity, the conditions associated with the food insecurity and how households respond to them, and the barriers to food utilization.

RECOMMENDATIONS

The study has not only provided data for Naivasha town that was missing, but most current data that can be used to formulate policies and programs that are specific to the town and to its people. Such policies can include cash assistance, assistance in kind through provision of food and especially the missing part of the diet. School feeding programs are also important, to improve food accessibility and to provide the major part of the diet that is missing in the households to children whose health is more vulnerable to deficient diet.

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