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The Unseen Strains: An Investigation into the Hidden Cross Links of Household Food Insecurity Access Severity and Unveiling its Role as a Breast Cancer Risk among the Pathan Women

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ABSTRACT

Background: In Pakistan, 1 in 8 women is diagnosed with breast cancer, with many facing food insecurity that affects their risk, recurrence, and treatment. This study assesses household food insecurity among newly diagnosed Pathan breast cancer patients and its potential role as a risk factor. **Objectives:** The study aimed to find an association between breast cancer risk and household food insecurity access (HFIA) screening. The specific objectives were to (1) determine the prevalence HFIA among the newly diagnosed breast cancer patients. (2) quantify the indicators of Household food insecurity Access among the sample. (3) to assess the dietary intake patterns of the patients and the predictability of HFIA scores as predictors of breast cancer risk. **Methodology:** The current retrospective analytical cross-sectional study consisted of a consent-based consecutive random sample of 125 newly diagnosed breast cancer women patients who were investigated for their household food insecurity access through a standardized scale, and their food intake patterns were determined through a semi-quantitative food frequency questionnaire based on 11 food groups and 176 indigenous food items. **Results:** The current study found a surprising 100% of the respondents replying "Yes" on for all the scale items though variations in the frequency were there. The household food insecurity access-related "conditions" indicated that 31.2% of the households "ran out of food" during the recall period. In household food insecurity access-related "domains," 72% of the households experienced many specific domains on the scale. The mean household insecurity access scale score was found to be 18.37 ± 9.13, and the Average HFIAS Score was 3.94 ± 23.04, indicating a gross moderate to severe food insecurity among the study population. The categorical distribution of the households on the scale showed many families were affirmative in the "sometimes" and "often" categories. The percent distribution showed 30.5% families mildly insecure, 41.8% moderately food insecure, 15.7% severely food insecure, and only 12% in the food secure category. The dietary intake patterns showed that many nutrient-dense foods were rarely consumed, while the consumption of seasonal vegetables and cereals was weekly. Wheat, sugars, and ghee were reported to be highly consumed food items. The socio-demographic characteristics such as age, education, total family income, and family size have shown to be the strongest predictors of household food insecurity access. **Conclusion:** This study reveals widespread food insecurity among Pakistani breast cancer patients, exacerbated by illiteracy, poverty, and malnutrition. Broader research and targeted strategies are needed to address this issue.

INTRODUCTION

Food insecurity is when people experience limited or uncertain physical and economic access to safe, sufficient, and nutritious food to meet their dietary needs or food preferences for a productive, healthy, and active life [1]. It has two broad components: insufficient access to a nutritionally adequate and safe food supply at the household level and inadequate utilization of these foods by household members [2]. Households with insufficient access to food often face additional challenges related to food insecurity, including poor health and declining productivity, which can create a vicious cycle where

households are unable to produce enough food, even in good years, due to chronic health issues and an inability to work to their full potential [3]. Globally, about 2 billion people (26.4%) of the world's population experience moderate or severe food insecurity. Among these, 1.04 billion (52%) are in Asia, 676 million (34%) are in Africa, and 188 million (9%) are in Latin America. The lack of regular access to nutritious and sufficient food puts these individuals at a greater risk of malnutrition and poor health [4, 5]. Households facing food insecurity do not succumb to despair; instead, they employ various strategies to reduce, mitigate, and cope with the risks and shocks affecting them. However, the coping strategies employed are often either severe and nutritionally negative (such as low-nutrient foods, skipping meals, consuming smaller portions, or borrowing money) or nutritionally positive (those that increase access to resources and nutritious foods) [6]. Similar studies justify those coping strategies like selling household assets, withdrawing children from school, consuming seed stock, and selling firewood or charcoal are common responses, which could have long-term negative effects on the food security status of households and society as a whole [7].

Globally, food insecurity has become a significant public health issue, with a marked increase over the last decade [8, 9]. Hunger and malnutrition are pressing global problems, as 828 million individuals face food insecurity in 2022 [10]. Food insecurity is a multi-faceted issue that encompasses regional factors, clusters, and household characteristics [11,12]. The Food Insecurity Experience Scale (FIES) method measures food insecurity at the household level in Pakistan [13]. Over the last three decades, food insecurity has risen alarmingly in developing countries [14, 15]. Approximately 37% of the population faces food insecurity, with 13% of households being food insecure in Pakistan [16, 17]. The country is experiencing an upward trend in food insecurity due to political instability, economic crises, shocks, and flooding. Pakistan ranks eleventh worst among 118 countries on the Global Hunger Index, with numerous indicators across various sectors of the economy contributing to food insecurity [18, 19].

Research examining food insecurity in cancer patient populations has emerged in recent years, highlighting the importance of implementing food insecurity screening programs for this demographic. These studies investigate the relationship between food insecurity and cancer incidence, prevalence, outcomes, and distress using cross-sectional samples. Population-based studies suggest that cancer risk is higher among individuals living in food-insecure households compared to those in food-secure households. Data from the National Health Interview Survey has enabled the USDA to generate population-based estimates of the prevalence of multiple chronic illnesses, including cancer, at various levels of food insecurity. The USDA found that the prevalence of cancer increases with the severity of food insecurity, with 3.9% of low-income households overall reporting cancer compared to 5.8% of households categorized as having "very low" food security [20-23]. The association between food insecurity and a cancer diagnosis persists even after adjusting for other socioeconomic factors [24]. This pattern resembles the epidemiology of other chronic diseases and their connections to food insecurity. Food insecurity is linked to suboptimal health behaviors and healthcare utilization [25], with patients experiencing food insecurity showing higher rates of chronic diseases [26, 27] and increased mortality [28]. Interventions aimed at addressing food insecurity may allow patients to concentrate on their health, leading to improved health outcomes [29]. Food insecurity is associated with heightened stress and the consumption of nutrient-poor diets, which may contribute to factors increasing breast cancer risk. Households struggling with food insecurity are more likely to be female-headed, low-income, and part of racial or ethnic minority groups [30]. Several studies indicate that cancer survivors often delay or forego medical care to secure food for themselves or their families. In the context of breast cancer treatment, interventions addressing food insecurity can enhance adherence [31]. However, there is a lack of literature exploring food insecurity within the context of breast cancer screening adherence [32]. To assess the potential need for food insecurity interventions, our study evaluated the association between household food insecurity and its potential sociodemographic predictors among eligible participants.

METHODOLOGY

Study Design

This retrospective cross-sectional study analyzed the impact of socio-demographic and household Food insecurity status on the dietary intake patterns among the newly diagnosed breast cancer patients in the Peshawar district. The overall aim of the study was to analyze the food security status at the household level as a potential risk of breast cancer. The specific objectives were:

- To assess the sociodemographic factors that contribute to the ecological base of the disease
- To analyze household food insecurity as a measure of access to food quality
- To determine the dietary intake patterns based on food insecurity access of breast cancer patients

Sample

Based on written consents a sample of 125 newly diagnosed non-invasive "in situ" breast cancer patients at TNM II and TNM III were recruited in the study through a consecutive sampling technique.

Inclusion Criteria

Newly diagnosed breast cancer patients aged >18 and <65 was included in the study from the Surgical department of Khyber Teaching Hospital and Oncology Department of the Hayatabad Medical Complex from December 2023 to January 2024 and October 2024 to January 2025.

Exclusion Criteria

Breast Cancer patients with metastatic BRC, diabetic and those with chronic illnesses**,** unwilling participants**,** and patients with a near history of infections were excluded.

Ethical Considerations

The study followed the Helsinki Declaration guidelines and was approved by the Institutional Ethical Approval Committee of the College of Home Economics, University of Peshawar (No. 487/H.ECO).

Mode of Data Collection

A Self-constructed questionnaire and standardized semi-quantitative FFQ were developed to attain the required data.

Demographic Data

The demographic section included: marital status, occupation of the patient or spouse or parents, no. of children, residential area, family income, family system, source of income and medical and meditational history of patients.

Assessment of Household Food Insecurity

The Household Food Insecurity Access Scale (HFIAS), which is an adaptation of the approach used to estimate the prevalence of food insecurity based on the idea that the experience of food insecurity (access) causes predictable reactions and responses that can be captured and quantified through a survey and summarized in a scale was used in the current study [33].

Household Food Insecurity Access Scale (HFIAS) Questionnaire

The HFIAS questionnaire consists of nine occurrence questions that represent a generally increasing level of severity of food insecurity (access), and nine "frequency-of-occurrence" questions that are asked as a follow-up to each occurrence question to determine how often the condition occurred. The frequency-of-occurrence question is skipped if the respondent reports that the condition described in the corresponding occurrence question was not experienced in the previous four weeks (30 days). Some of the nine occurrence questions inquire about the respondents' *perceptions* of food vulnerability or stress (e.g., did you worry that your household would not have enough food?) and others ask about the respondents' *behavioral responses* to insecurity (e.g., did you or any household member have to eat fewer meals in a day because there was not enough food?). The questions address the situation of all household members and do not distinguish adults from children or adolescents.[vi] All of the occurrence questions ask whether the respondent or other household members either felt a certain way or performed a particular behavior over the previous four weeks. The procedure of the Food and Nutrition Technical Assistance (FANTA) Project (2004) was followed in household food insecurity status [33].

Indicators of Household Food Insecurity Access

The HFIAS module yields information on food insecurity (access) at the household level. Four types of indicators can be calculated to help understand the characteristics of and changes in household food insecurity (access) in the surveyed population. These indicators provide summary information on:

Household Food Insecurity Access-related "Conditions "

These indicators provide specific, disaggregated information about the behaviors and perceptions of the surveyed households. The indicators present the percent of households that responded affirmatively to each question, regardless of the frequency of the experience. Thus, they measure the percent of households experiencing the condition at any level of severity as per the criteria.

Household Food Insecurity Access-related "Domains"

These indicators provide summary information on the prevalence of households experiencing one or more behaviors in each of the three domains reflected in the HFIAS—Anxiety and uncertainty, Insufficient Quality, and Insufficient food intake and its physical consequences

Household Food Insecurity Access "Scale Score"

The HFIAS score is a continuous measure of the degree of food insecurity (access) in the household in the past four weeks (30 days). First, an HFIAS score variable is calculated for each household by summing the codes for each frequency-of-occurrence question. Before summing the frequency-of-occurrence codes, the data was coded for frequency-of-occurrence as 0 for all cases where the answer to the corresponding occurrence question was "no" (i.e., if Q1=0 then Q1a=0, if Q2=0 then Q2a =0, etc.). The maximum score for a household was 27 (the household response to all nine frequency-of-occurrence questions was "often", coded with response code of 3); the minimum score is 0 (the household responded "no" to all occurrence questions, frequency-of-occurrence questions were skipped by the interviewer, and subsequently coded as 0 by the data analyst.) The higher the score, the more food insecurity (access) the household experienced. The lower the score, the less food insecurity (access) a household experienced.

Household Food Insecurity Access "Prevalence"

The Household Food Insecurity Access Prevalence (HFIAP) Status indicator can be used to report household food insecurity (access) prevalence and make

geographic targeting decisions. The HFIAP indicator categorizes households into four levels of household food insecurity (access): food secure, and mild, moderately, and severely food insecure. Households are categorized as increasingly food insecure as they respond affirmatively to more severe conditions and/or experience those conditions more frequently [33].

Dietary Assessment

Food Frequency Questionnaire: In order to analyze family and individual dietary intake patterns and determine general dietary pattens of these families, the foods were divided 10 food groups and 176 indigenous food items and were compared through a Semi-Quantitative Food Frequency Questionnaire (FFQ) on which food items' intakes were recorded on daily, weekly, and monthly basis.

Statistical Analysis

Data were analyzed using SPSS with descriptive statistics (mean, standard deviation) and inferential tests (regression statistics) to assess relationships between.

RESULTS

Household Food Insecurity Access Scale (HFIAS) Measurement

The household insecurity measures on the access scale (Table 1) showed that 70/125 families worried about the provision of enough food at home, out of which 22 fell in the category three. The number of households for compromised food intakes was 95, out of which 55 households often experienced it. On question 3, about 100 respondents replied "Yes", and 52 of those households often had to eat monotonous foods due to lack of resources. About 102 families had to eat foods that they would not like to eat but had to do lack of resources, and 52 of those faced this often. In about 91housholds family members had to eat smaller portions. The number of households from question 9a though were comparatively less, but the proportion of households in "sometimes" and "often" were frequent, indicating an overall insecure and scarcity pattern. Household food insecurity, especially regarding access, poses a significant challenge in developing nations, often connected to issues such as poverty, economic fluctuation, and climate change, which affect food availability and access for at-risk populations. Food insecurity continues to be a public health concern; it is prevalent in developing countries, where millions endure food scarcity and related mortality due to food insecurity [34]. While a diverse and balanced diet is crucial for decreasing malnutrition rates, food insecurity threatens dietary quality. The most prevalent form of food insecurity arises when food is not available for consumption due to insufficient resources, leading to both physical and psychological repercussions of hunger. The elements that influence food security at various levels—global, national, regional, sub-regional, provincial, district, village, household, and individual—have been thoroughly studied [35].

Table 1

Household Food Insecurity Access Scale (HFIAS) Measurement

No	Question	Response Options				
		Yes	No	Rarely	Sometimes	Often
1.	In the past four weeks, did you worry that your household would not have enough food?	70	55			
1.a	How often did this happen?			21	27	22
2.	In the past four weeks, were you or any household member not able to eat the kinds of foods you preferred because of a lack of resources?	90	35			
2.a	How often did this happen?			12.6	24.3	49.5
3.	In the past four weeks, did you or any household member have to eat a limited variety of foods due to a lack of resources?	95	10			
3.a	How often did this happen?			15	52	49
4.	In the past four weeks, did you or any household member have to eat some foods that you really did not want to eat because of a lack of resources to obtain other types of food?	80	43			
4.a	How often did this happen?			14	38	36
5.	In the past four weeks, did you or any household member have to eat a smaller meal than you felt you needed because there was not enough food?	69	56			
5.a	How often did this happen?			10	19	42
6.	In the past four weeks, did you or any other household member have to eat fewer meals in a day because there was not enough food?	54	71			
6.a	How often did this happen?			7	23	24
7.	In the past four weeks, was there ever no food to eat of any kind in your household because of lack of resources to get food?	37	88			
7.a	How often did this happen?			11	21	5
8.	In the past four weeks, did you or any household member go to sleep at night hungry because there was not enough food?	29	98			
8.a	How often did this happen?			4	11	14
9.	In the past four weeks, did you or any household member go a whole day and night without eating anything because there was not enough food?	42	83			
9.a	How often did this happen?			11	23	8

Household Food Insecurity Access Indicators

Household Food Insecurity Access-related "*Conditions*"

Data regarding the household insecurity access- related conditions (Table 20 indicated 31.2% of the households faced "ran out of food" during the recall period while 15.2% of the households "ran out of food" in the "often" category, indicating a persistent food insecurity condition in many households. Understanding the factors contributing to food insecurity necessitates examining the elements that define the key aspects of food security. It is vital to assess the determinants of both food availability and access, the two main components of household food insecurity that have been extensively researched. Food availability is influenced by factors determined by demand, while supply-side factors contribute to food access. Consequently, elements that cause fluctuations in both food demand and supply will also impact food availability and access, ultimately leading to food insecurity [36].

Table 2

Household Food Insecurity Access-related "Conditions" In the Sample

Households experiencing conditions at any time during the recall period.	Percent of households that responded "yes" to a specific occurrence question. For example: "Percent of households that ran out of food." 39 ========X 100 =31.2 125
Households experiencing conditions at a given frequency	Percent of households that responded "often" to a specific frequency-of-occurrence question. For example: "Percent of households that ran out of food often." 19 ========X 100 =15.2 125

Household Food Insecurity Access-related "Domains"

The data regarding household food insecurity access related "domains" indicated 72% of the households experienced many specific domains; however, in this study, we are reporting the domain of question 2, which is related to the "not being able to eat foods they would prefer due to lack of resources". This is only one aspect (72%) of the scale that is quite alarming as many families and their members in the current study could not eat a variety of food or a food of their choice during the reporting period. Food insecurity within households is influenced by various factors such as poverty, low income, education level, household size, employment status, age, the gender of the household head, and food prices. Gaining insights into the characteristics and causes of household food insecurity is essential for formulating policies that tackle the issues related to hunger and food access at the household level [37]. Elevated food prices have a significant impact on household food security, agricultural production, and supply on a national scale. The sudden spike in food prices in 2008 heightened the risk of food insecurity, leaving many individuals without adequate nutritional access. Smaller households tend to have a lesser negative effect on food security compared to larger ones. Households with fewer members experience reduced financial pressure on food expenses relative to food production [38, 39]. This study's primary contribution is its thorough investigation of household food (in)security. The incidence of serious food-related problems appears to be lower in areas with less food access insecurity since in the current study data was analyzed as a sum of rural and urban access.

Table 3

Household Food Insecurity Access-related "Domains" within the Sample

Households experiencing any of the conditions at any level of severity in each domain	Percent of households that responded "yes" to any of the conditions in a specific domain. No of households to Q2= 90 ========== X 100 = 72 Total No of H responding = 125

Household Food Insecurity Access Scale Score and Household Food Insecurity Access "Prevalence"

The household food insecurity access scale score and the mean HFIAS prevalence (Table 4), calculated per formula, indicated that the mean HFIAs of the current study were 18.37±9.13with a mean HFIAS score of 3.94±23.04 indicating borderline severely Insecure food access among the study population.

Table 4

Household Food Insecurity Access Scale Score and Household Food Insecurity Access "Prevalence" across the sample

HFIAS Score (0-27)	Sum frequency-of-occurrence question response code (Q1a + Q2a + Q3a + Q4a + Q5a + Q6a + Q7a + Q8a + Q9a) 495/27= 18.37±9.13
Avg HFIAS Score	Sum of HFIAS Scores in the sample = 495 ========== = 3.94±23.04 Number of HFIAS Scores in the sample 125

Categorical Distribution and Percent Household Insecurity Access in the Sample

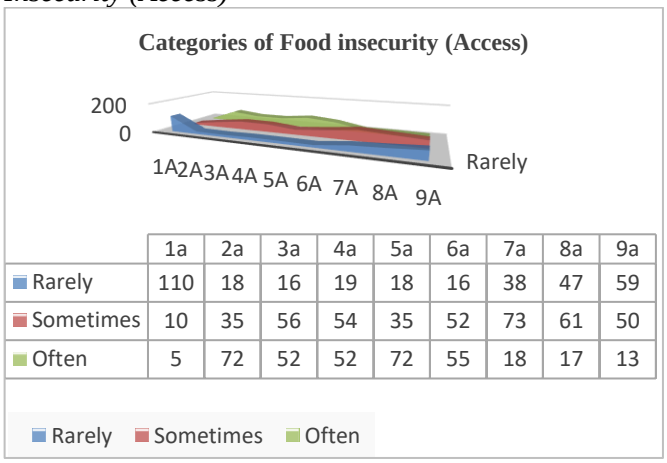
The categorical distribution of the households for food insecurity access indicated (Figure 1) on all the scale items the responses were affirmative with varying degrees of but most of the households fell within the "sometimes" and "often" categories.

The percent distribution of the households' insecurity access (Figure 2) indicated that 12% of the families fell in the food secure category. About 30.5% of households were in the mildly food insecure access state, and 41.8% of households fell in the category 3, which is the moderately food insecure access group. In the current

study, 15.7% % of the households were in category 4, indicating these to be in the severe food access category. A lack of experience of eating diverse diets is often associated with the availability of food, leading to feelings of anxiety and uncertainty. The findings reveal that heightened levels of food-insecure access in the two domains considered correlated with a lack of resources and increased physical health issues resulting from insufficient food intake. The frequency of food insecurity among rural households shows variability across various national and regional levels [40]. The current study indicates that only 15.7% of the households achieve food security. Panezai and co-researchers also corroborated these results, asserting that 72% of marginal families and 81% of landless farmers in rural and coastal Bangladesh face food insecurity [41]. These outcomes are similar since both investigations centered on food insecurity access among both the rural and urban populations, albeit in different socio-economic backgrounds of the patients. A larger household size has been correlated inversely with household food security because the larger family sizes and limited incomes make the families compromise on the quality and quantity of the food. Similar studies have indicated that families who are either unable to boost food production or availability without corresponding increases in household income face food insecurity at a greater magnitude. Concurrently, both food prices and production costs in Pakistan are on the rise in rural and urban settings alike. Consequently, families with fixed incomes must allocate the available food among their members. Furthermore, managing food resources for all household members becomes increasingly challenging when an additional family member is added without any increase in income in addition larger households tend to consume more food, thus requiring higher food expenditures and competing for limited resources, which increases their likelihood of experiencing food insecurity compared to smaller or more nuclear households [42, 43].

Figure 1

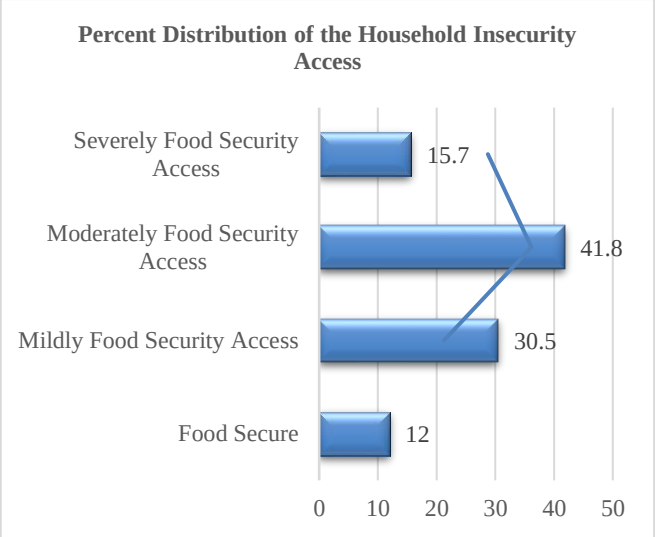
Categorical Distribution of the sample for Food Insecurity (Access)



	1a	2a	3a	4a	5a	6a	7a	8a	9a
Rarely	110	18	16	19	18	16	38	47	59
Sometimes	10	35	56	54	35	52	73	61	50
Often	5	72	52	52	72	55	18	17	13

Figure 2

Percent Household Insecurity Access among the respondents



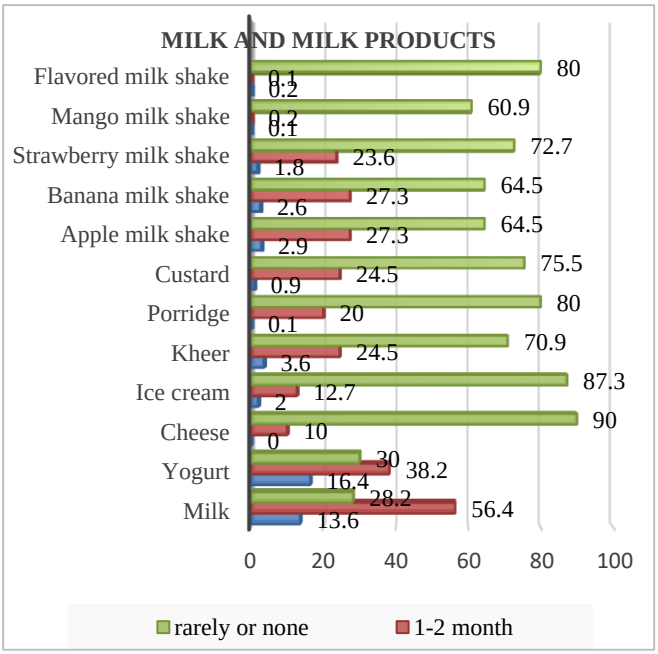
Dietary Intake Patterns among the Households of the Patients

Milk and Milk Product Intake of the Sample

The graph illustrates the consumption frequency of various milk and milk-based products, showing that most items are rarely or never consumed by the majority, as indicated by the dominant gray bars. Basic dairy products like milk and yogurt have a relatively higher intake, with a noticeable percentage consuming them once per week. However, items such as cheese, ice cream, kheer, custard, and different flavored milkshakes are consumed infrequently, with minimal regular consumption (2–3 times per week). This suggests that while essential dairy products are part of the diet, milk-based desserts and shakes are not commonly consumed.

Figure 3

Milk & Milk Products Intakes of the sample

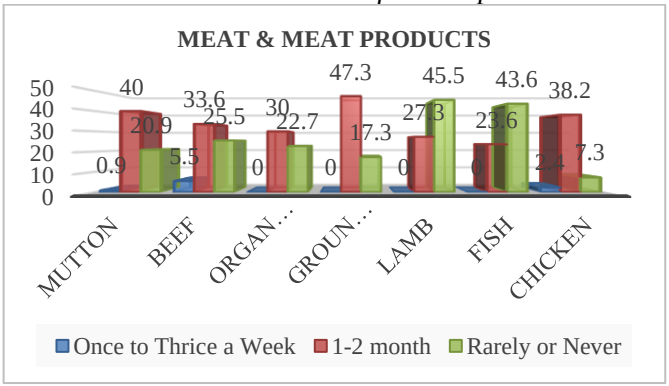


Meat and Poultry Products of the Respondents

The graph presents the frequency of consumption for different meat and egg items, categorized into "once to thrice per week," " once to twice a month," and "rarely or never." Eggs have the highest weekly consumption, with 32.7% eating them once per week and very few (5.5%) rarely consuming them. Chicken, lamb, and fish have the highest "rarely or never" percentages (45.5% and 43.6%, respectively), suggesting they are the least preferred. Organ meat also has limited popularity, with 22.7% rarely consuming it. This data suggests that beef and eggs intakes weekly was a sort of consumed in some families while the rest of meats and organ meats are never or less frequently consumed.

Figure 4

Meat & Meat Products Intake of the Respondents

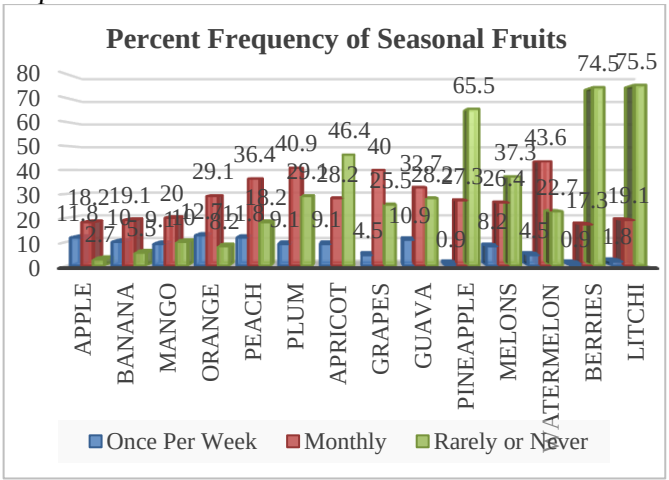


Intake of Seasonal Fruits Among Patients

The data regarding the seasonal fruit intake of the respondents (Figure 5) showed the intake of some seasonal fruits like apples, banana, mangoes, oranges, peach, apricots once per week was consumed by 11 % to 9.1% while over 65% of people rarely or never eating the delicacy fruits like pineapples, berries, litchees which are not commonly grown or are expensive in the season even. This suggests a preference for common and seasonal fruits, while exotic or less available options are consumed less frequently.

Figure 5

Percent Frequency of the Seasonal Fruits among the respondents

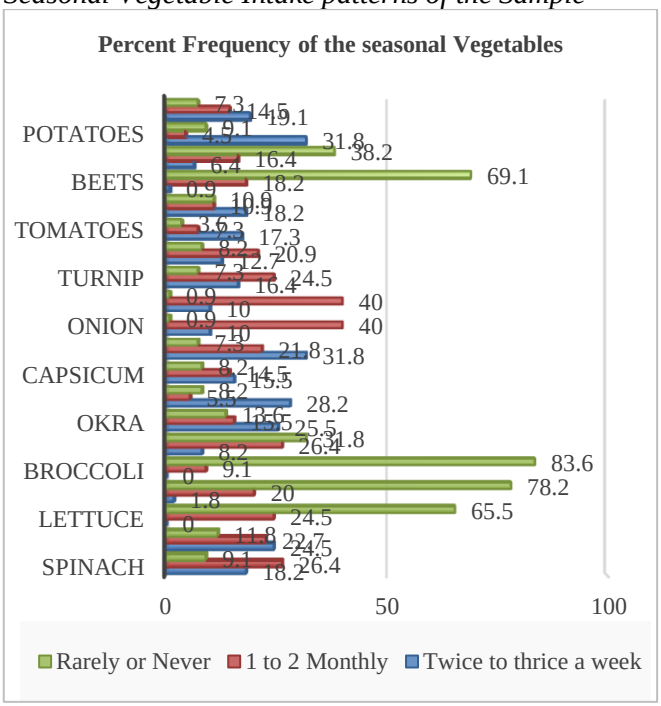


Seasonal Vegetable Intake Patterns of the Respondents

The seasonal intake patterns of the respondents (Figure 6) indicated that intake of the vegetables on twice to thrice a week basis was good including Spinach (18.2%), cucumber (28.2%), potatoes (31.5%), cabbage (25.5%), capsicum (28.5%), cauliflower (31.8%), okra (25.5%) and brinjal (19.1) were the most frequently consumed vegetables. Onion, tomatoes, and garlic being an added ingredient to the cooked vegetables was highest. The intake of fresh/salad vegetables was less common through the period of the study being lettuce (65.5%), celery (78.2%), broccoli (83.6%), and beets (69.1%), carrots (38.2 %) being the least consumed This suggests that while locally available vegetables are frequently consumed, certain greens are much less preferred.

Figure 6

Seasonal Vegetable Intake patterns of the Sample

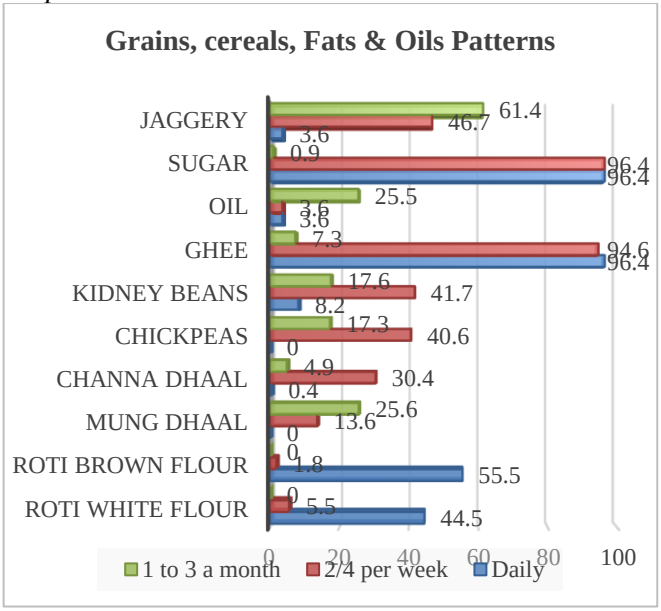


Grains, Cereals, Fat & Sugars Intake Patterns of The Sample

The grains, cereals, fats, and oil intake patterns (Figure 7) showed wheat both white refined (44.5 %) and whole wheat (55.4%) was a staple grain of this region with good proportions of the households consuming different cereals like mung beans (25.6%), chick peas (40.6), and kidney beans (41.7%) on a two to four times a week indicative of cereals and beans being the major sources of better-quality proteins in the diets. However, 96.4% of the households consumed hydrogenated fats (ghee) and white sugars on daily and two to three times a day. The ghee being the major cooking fat and sugar being the major constituent of the indigenous milk tea (chai) indicative of the poor choices that might be attributed to their lower market price of their use being the energy source for all the family members.

Figure 7

Grains, Cereals, fats & Oil intake Patterns of the Respondents



Socio-Demographic Characteristics & Household Food Insecurity Access Association

The predictability of three socio-demographic characteristics as a predictors of food insecurity access (Table 5) showed that patients' age at 95% CL (ß =-0.357 and p value 0.000) was a stronger predictor of the insecurity indicating that the patients of younger age and age greater than 50 usually less productive and are usually dependent on the major bread earner of the family. Similarly educational background (ß =-.0.182and p value 0.000), total family income (ß -0.51 and P level of 0.000), and family size (Number of family members) with a beta score .0.225 and significance 0.000 indicated that socio-demographic and household hold ecological environment are the strongest probable predictors along with many confounding factors towards the severe food insecurity access among the study population.

Table 5

Regression Statistics of the Socio-demographic Characteristics & Household Food Insecurity Access Scores

Coefficients				
Socio-demographic Parameters	Unstandardized Coefficients		Standardized Coefficients	t Sig.
	B	Std. Error	Beta	
HFIAS				
Patient Age	0.140	0.035	.0.357	3.9710.000
Education	0.237	0.092	.0.182	1.4620.000
Total Family Income	28.5	0.607	-0.51	1.5260.000
Family size	.499	2.08	.0.225	2.3950.000

While the specific mechanisms through which food insecurity increases the likelihood of developing cancer are not yet fully understood, our present knowledge of cancer disparities provides valuable insights into the contributing factors that may create such a link. Disparities throughout the cancer care process are influenced, at least in part, by social and economic conditions. For instance, individuals with low socioeconomic status often experience disrupted or irregular access to medical care, which can lead to insufficient cancer screening and preventive measures [44]. Furthermore, low socioeconomic status frequently correlates with unhealthy lifestyle choices. Additionally, people residing in low-income areas may encounter heightened exposure to environmental carcinogens, such as those released by vehicle emissions, smelting operations, foundries, chemical manufacturing, and coal mining [45]. These unhealthy living environments can further be exacerbated by poor dietary choices. Lastly, mental health issues, such as anxiety and depression, which are commonly found in households facing food insecurity, may hinder the adoption of health-promoting habits [46, 47].

In particular, when examining the development of cancer, it is essential to recognize the impact of malnutrition as a consequence of food insecurity. Food insecurity is often prevalent in low-income areas that lack sufficient availability of affordable, nutritious food options [48]. When healthier food options are present in these communities, their quality may frequently be subpar. Households struggling with food insecurity may opt for foods containing refined grains and added sugars, salts, and fats for various reasons: these items tend to be less expensive than healthier choices and possess longer shelf lives [49], which helps mitigate the cost of food spoilage. In essence, energy-dense (and typically nutrient-poor) foods are both affordable and satisfying, thus reinforcing the notion that healthy foods are considered luxury items. Epidemiological research has shown that dietary habits low in nutrient-rich foods (like fruits and vegetables) and high in low-cost processed foods contribute to the incidence of different cancers [50]. For instance, diets high in animal fats raise the risk of breast, colon, pancreatic, and prostate cancers, while those rich in fruits, vegetables, and whole grains may offer protective effects. Therefore, unhealthy eating patterns linked to food insecurity can significantly influence cancer development. Additionally, severely limited food budgets in food-insecure households may complicate the symptoms of cachexia and anorexia that cancer patients often experience

CONCLUSION

Food insecurity occurs within the context of socioeconomic disadvantage. The first step toward addressing food insecurity and its associated distress among patients with cancer is its identification among these individuals. Although to the best of the author's knowledge, the literature regarding food insecurity in the population of patients with cancer is limited, the practice

of nutritional oncology and epidemiology emphasizes whole patient care, the reduction of disparities, and improvement in outcomes, all of which support the implementation of clinical screening for food insecurity. This limited scope study is a pioneer work in Pakistan. It needs to be expanded clinically to operationalize food insecurity screening among the breast cancer patients to generalize these results to the whole of population and mitigate the problem through nutrition education, dietary improvements, and empowering females especially the Pathan women of the region to help reduce the pervasive household food insecurity and get them out of the apathy of ignorance, hunger, malnutrition and diseases.

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