

Assessing public knowledge of micronutrient importance and their role in disease prevention: The Jigjiga city

Ziad Ahmed¹, Ahmed Mahamud Omer², Nimo Daud Yasin¹, Muse Mohamed Ibrahim³

¹ Department of Human Nutrition, Jigjiga University, Jigjiga, Ethiopia

² Department of Public Health, Jigjiga Health Science College, Jijiga, Ethiopia

³ Department of Generic Health Extension Program, Jigjiga Health Science College, Jijiga, Ethiopia

Corresponding Author: Ziad Ahmed

Abstract

Micronutrients essential vitamins and minerals such as iron, vitamin A, zinc, iodine, and folate are fundamental to human health, supporting immune function, growth, and disease prevention. Despite their importance, awareness and intake remain suboptimal in many low-resource settings. This study aimed to assess public knowledge, dietary practices, and the perceived role of micronutrients in health maintenance and disease prevention in Jigjiga, a city in Ethiopia's Somali Region. Using a cross-sectional survey design, quantitative data were collected from 152 randomly selected households across four kebeles. Structured interviews captured information on socio-demographic profiles, awareness of micronutrient functions and sources, consumption frequency, use of supplements, and perceived health impacts. Results showed that only 45.4% of respondents were aware of micronutrients and their health benefits. Consumption of micronutrient-rich foods such as fruits, vegetables, and animal products were irregular, with 57.2% rarely or never consuming them. Nearly one-third of respondents or their family members had been diagnosed with deficiencies, and many reported symptoms linked to nutrient gaps, including fatigue, poor vision, and frequent infections. The study also found inconsistencies in preventive practices only 28.3% regularly used supplements, and a significant proportion lacked confidence in their diets' disease-preventive value. Education level, occupation, and access to reliable health information emerged as influential factors in shaping knowledge and behavior. Major sources of nutrition information included schools, media, and community health workers, though 21.1% of participants reported receiving no information at all. These findings highlight the urgent need for expanded, culturally relevant nutrition education programs and improved access to micronutrient-rich foods and supplements. Public health interventions must address existing knowledge gaps, economic constraints, and healthcare access limitations to improve community health outcomes.

Keywords: Micronutrients, dietary practices, immune function and supplement

Introduction

Micronutrients essential vitamins and minerals required in small quantities play a critical role in human growth, immune function, and disease prevention (Schmidt, 2024) [11]. Despite their importance, public awareness of these nutrients remains limited in many communities, especially in low-resource settings. Lack of knowledge about micronutrient-rich foods contributes to poor dietary choices and adverse health outcomes (Scalvedi *et al.*, 2021) [10]. Deficiencies in iron, vitamin A, iodine, and zinc commonly referred to as "hidden hunger" can lead to impaired development, weakened immunity, and higher vulnerability to disease (Ramakrishnan, 2002) [8]. Public understanding is a key factor in driving preventive health behaviors and improving nutritional status. Health interventions often fall short when the population lacks basic nutrition literacy (Mostafazadeh *et al.*, 2024) [7].

In many settings, micronutrient deficiencies remain widespread due to poor dietary diversity, limited healthcare access, and socioeconomic constraints (Horino *et al.*, 2020) [5]. Vulnerable groups such as children, pregnant women, and the elderly are at higher risk of these deficiencies. The absence of clear understanding about the causes, symptoms, and consequences of micronutrient deficiencies hinders efforts to improve public health (Darnton-Hill, 2018) [4]. Factors such as limited education, cultural food practices, and lack of access to nutrition information further

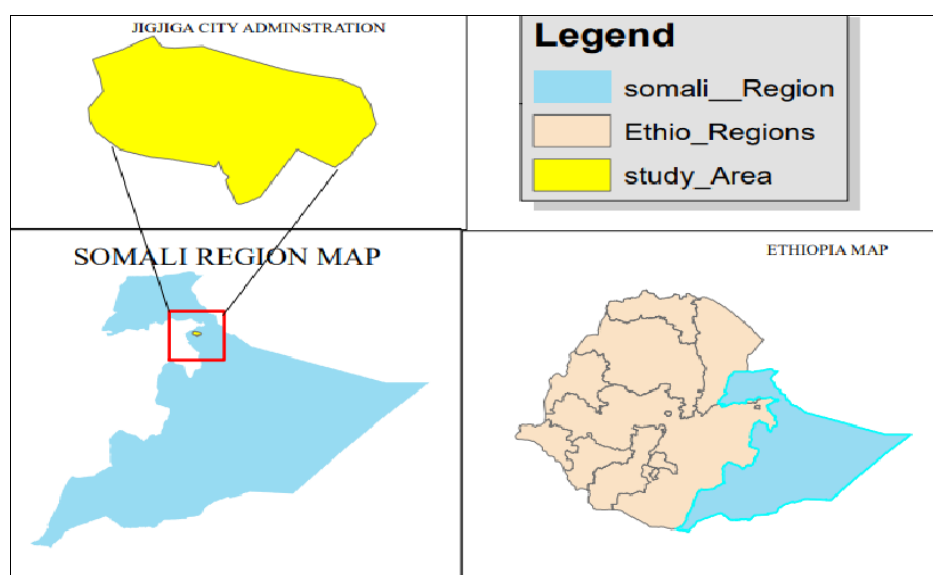
compound the problem (Monterrosa *et al.*, 2020) [6]. Without a solid foundation of public awareness, supplementation programs and food fortification initiatives may be underutilized or misunderstood. Understanding the public's knowledge, attitudes, and practices regarding micronutrients is crucial for targeted nutrition education (Ravula *et al.*, 2024) [9]. It also helps identify barriers to behavior change and areas where support is needed. Public knowledge plays a foundational role in preventing micronutrient-related diseases and promoting healthier dietary behaviors (Townsend *et al.*, 2023) [12]. Informed individuals are more likely to consume diverse diets, use fortified products, and follow proper child feeding practices (Bimpong *et al.*, 2020) [2]. However, disparities in education, health communication, and access to services can lead to uneven levels of awareness across different populations. Local beliefs, misinformation, and trust in healthcare providers all influence how nutrition information is perceived and acted upon. By assessing knowledge and understanding gaps, health stakeholders can design more effective awareness campaigns and outreach programs. Communication through schools, health posts, community leaders, and media can help embed positive nutrition habits (Allen *et al.*, 2020) [1]. When individuals recognize the connection between micronutrient intake and disease prevention, they are empowered to make informed choices. Promoting awareness thus contributes directly to community health and resilience.

This study aims to assess the level of public knowledge in Jigjiga regarding the role of micronutrients in maintaining health and preventing disease. Through surveys and community engagement, it will identify gaps in understanding and the factors influencing awareness. It will also explore how knowledge correlates with practices such as food selection, supplement use, and child nutrition. The findings can inform policymakers, health workers, and development agencies to design more responsive and context-specific nutrition programs. In regions like Jigjiga, where nutrition challenges are intertwined with poverty and access barriers, education becomes a powerful tool for change. By improving public knowledge, interventions can move beyond treatment to prevention and empowerment.

Materials and Methods

1. Description of the Study Area

The study was carried out in Jigjiga City, located in the Fafan Zone of the Somali Regional State. Jigjiga, the capital of the Somali Regional State, lies in the eastern part of Ethiopia (see Figure 1), approximately 630 kilometers from Addis Ababa and 105 kilometers from Harar. The city's estimated population is around 763,509. Positioned at an elevation between 1,660 and 1,710 meters above sea level, Jigjiga is geographically situated at approximately 9°20' North latitude and 45°56' East longitude. The city experiences a semi-arid climate, characterized by high temperatures and limited rainfall. Its average annual temperature is about 22°C, while the mean annual rainfall is roughly 543 mm (CSA, 2016).



Source:(Theme Grill, 2021)

Fig 1: Map of study area Jigjiga, Eastern Ethiopia

2. Research Design

This study utilized a community-based cross-sectional survey design, which employed a quantitative approach. This design was chosen to assess the role of micro-nutrients on human health and disease prevention within a defined time frame across different segments of the population.

3. Sample Size Determination

The sample size for the study was estimated by using the formula of sample size determination of A single population proportion formula, $[n = (Z \alpha / 2) 2p (1-p) / d^2]$, was used to estimate the sample size. ($p = 0.1$), 95% confidence interval, margin of error 5% ($d = 0.05$). Computing with the above formula and 10% of contingency for non-respondent rate gave a total sample size of 152.

Where

n = required sample size

Z = standard normal distribution value at 95% confidence level (1.96)

p = estimated proportion (0.1)

d = margin of error (0.05)

$$[n = (Z \alpha / 2) 2p (1-p) / d^2] \dots \dots \dots eq1$$

$$n = (1.96)^2 (0.1) (1-0.1) / (0.05)^2$$

$$n = 138 + 14 = 152$$

4. Sampling Technique

This study employed a simple random sampling technique to ensure that every household within the study area had an equal probability of selection. The sampling was carried out across four kebeles within Jigjiga town, namely Kebele 10, Kebele 14, Kebele 08, and Kebele 05, to achieve balanced geographical representation. The total sample size of 152 participants was proportionally distributed based on household population estimates in each kebele. Accordingly, 47 respondents were selected from Kebele 10, 35 from Kebele 14, 35 from Kebele 08, and 35 from Kebele 05. Participants were selected using a random number method. Trained data collectors then visited each selected household to conduct interviews using the standardized questionnaire. This approach minimized selection bias, ensured inclusivity, and strengthened the reliability of the study findings. The sampling process is illustrated in the diagram below.

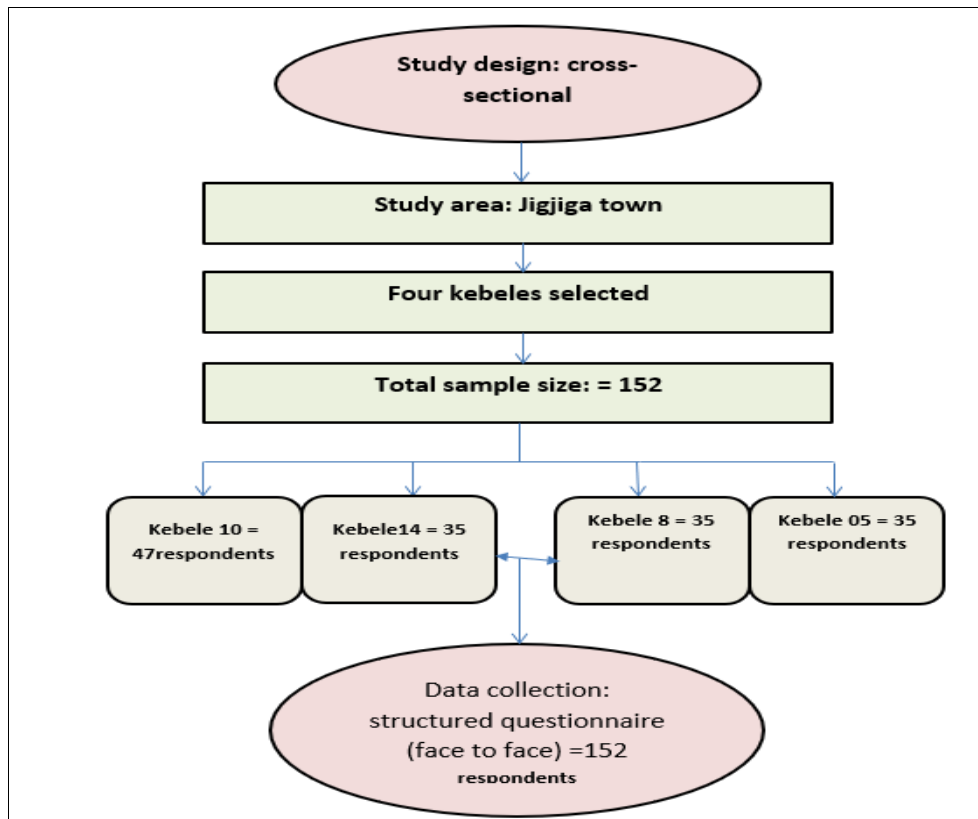


Fig 2: sample technique

5. Data Collection Techniques

Primary data were collected through structured interviews conducted at the household level. These interviews were guided by a pre-tested and standardized questionnaire comprising closed-ended questions. The tool was designed to capture socio-demographic information, awareness, and intake of micro-nutrients, health status, and preventive practices. The questionnaire was prepared in English and translated into Somali, then back-translated to ensure consistency and clarity.

6. Method of Data Analysis

The collected data were coded, cleaned, and entered into SPSS version 20.0 for statistical analysis. Descriptive statistics, including frequencies, means, and standard deviations, were used to summarize the data.

7. Definition of Variables and Hypothesis

It is necessary to identify the potential explanatory variables. Different variables are expected to affect household micro-nutrients status in the study area. The major variables expected to influence the household to be food insecure or not are explained below.

7.1 Dependent variable

- Household micro-nutrient status

7.2 The independent variables

- Sex of the participants
- Age of the participants
- Practices of Infant and Young Child Feeding
- Inflammation Status
- Morbidity and Infectious Disease
- Blood Disorder Status
- Deficiency and Iron Deficiency Anemia Status

- Vitamin A Deficiency
- zinc Deficiency

Result and Discussion

1. Socio-demographic information

1.1 Gender

In the context of assessing the role of micronutrients on human health and disease prevention, gender plays a vital role in understanding nutritional needs and health behaviors. Among the 152 respondents, 78 (51.3%) were male and 46 (48.7%) were female, indicating a fairly balanced sample. Gender differences may influence dietary patterns, micronutrient absorption, and susceptibility to deficiencies. Women particularly those of reproductive age are often at greater risk of iron, calcium, and folic acid deficiencies, which can affect maternal and child health outcomes. Similarly, men may be more prone to deficiencies linked to lifestyle choices and occupational exposure. Including both genders almost equally strengthens the study's ability to explore sex-specific trends in micronutrient knowledge, access, and supplementation. Understanding gender-based nutritional needs is essential for developing targeted health interventions and education programs.

1.2 Age

The age distribution of respondents ranged from under 25 to over 60 years, with the largest proportion 34 (22.4%) falling between 31 and 40 years. This indicates that most participants were within the productive and reproductive age groups, typically responsible for household food purchasing and dietary decisions. These age groups are particularly important in the context of micronutrient awareness, as they influence not only their own intake but also that of children and elderly family members. A significant portion 32

(21.1%) were aged 51–60, highlighting a representation of older adults who are often more vulnerable to deficiencies in vitamin D, vitamin B12, and calcium. Only 3 (2.0%) were above 60 years, suggesting a potential gap in sampling or limited elderly population in the studied Kebeles. The diverse age spread allows for comparative analysis across life stages, offering insight into how age influences micronutrient knowledge, dietary behaviors, and vulnerability to deficiency-related health outcomes.

1.3 Religion

The sample showed strong religious uniformity, with 150 (98.7%) were Muslim and only 2 (1.3%) were Orthodox Christians, indicating a high level of religious homogeneity. This distribution is consistent with the broader population of Jigjiga, which is largely composed of Somali Muslims. Religion significantly influences dietary behavior and timing of food consumption, especially during fasting periods, which can affect the body's micronutrient levels. However, the uniform religious profile among respondents limits the impact of religious dietary variations on the study's findings.

Table 1: socio-demographic information

Variable	Category	Frequency	Percent
what is your gender?	Male	78	51.3
	Female	74	48.7
	Total	152	100.0
what is your age?	18-25	27	17.8
	26-30	29	19.1
	31-40	34	22.4
	41-50	27	17.8
	51-60	32	21.1
	above 60	3	2.0
	Total	152	100.0
what is your religion?	Muslim	150	98.7
	orthodox	2	1.3
	Total	152	100.0
What is the educational level of household head?	Uneducated	34	22.4
	Elementary school	35	23.0
	Secondary school	26	17.1
	Diploma and above	57	37.5
	Total	152	100.0
Who is the owner of the house you live in?	It is our private house	74	48.7
	Gifted from government /relatives	10	6.6
	Rent from private owner	68	44.7
	Total	152	100.0
What is your occupation?	Unemployed	11	7.2
	Self employed	28	18.4
	Government worker	79	52.0
	NGO employed	34	22.4
	Total	152	100.0
what is your marital status?	Single	42	27.6
	Married	72	47.4
	Divorce	38	25.0
	Total	152	100.0

1.4 Educational Level

The data show that 37.5% of household heads had achieved diploma-level education or higher, while the remainder had lower levels: 22.4% were uneducated, 23.0% completed elementary school, and 17.1% finished secondary education. Educational status is a key factor in determining health knowledge and nutritional behavior. Those with higher education levels are more likely to understand the importance of micronutrients and adopt preventative health strategies. The presence of a substantial educated group is encouraging, suggesting potential for successful dissemination of health information. However, the presence of less-educated individuals underscores the need for inclusive education methods. Since limited literacy can restrict the effectiveness of written nutrition materials, outreach should rely on oral presentations, pictorial aids, and peer-led education.

1.5 House Ownership

Among the participants, 48.7% lived in their own privately-owned homes, 44.7% rented from private landlords, and 6.6% occupied houses provided by the government or relatives. Housing status often reflects broader socio-economic conditions, which in turn affect food access and health outcomes. Homeowners typically enjoy greater financial stability and control over household decisions, including food purchasing and healthcare choices. In contrast, renters may face income instability, which can compromise dietary quality and restrict access to micronutrient-rich foods.

1.6 Occupation

Among respondents, 52% worked in government positions, 22.4% for NGOs, while 18.4% were self-employed, and 7.2% were unemployed. Employment status is a key determinant of income level, which in turn shapes food choices and health service access. Government and NGO

staff may benefit from institutional health programs and structured environments that promote nutrition awareness. Conversely, those without stable employment may prioritize basic needs over nutritional quality. Limited financial resources can hinder regular access to micronutrient-rich foods. Furthermore, formal employees might have more access to workplace nutrition interventions. This occupational breakdown suggests the need for differentiated public health outreach based on employment type.

1.7 Marital Status

The marital status of participants was distributed as follows: 47.4% were married, 27.6% single, and 25% divorced. Marital status significantly influences household dynamics, particularly in terms of nutrition and caregiving roles. Married individuals typically manage family dietary practices and are key to influencing the nutrition of children and other dependents. In contrast, divorced and single participants may face challenges related to food affordability and household support, which can impact diet quality. Single-parent or single-adult households may also lack access to family-centered health programs. These findings highlight the need for micronutrient interventions that address the distinct needs of varied family structures.

2. About micro-nutrient Knowledge and intake

2.1 Awareness of Micro-Nutrients

Based on Table 2, 69 respondents (45.4%) reported being aware of micronutrients like iron, zinc, and vitamin A,

whereas 83 (54.6%) indicated no awareness. This reveals a considerable knowledge gap in the community regarding essential dietary components crucial for health and disease prevention. Lack of awareness can hinder individuals from making informed food choices or recognizing the symptoms of micronutrient deficiencies. Since awareness is foundational for behavior change, such as adopting nutrient-rich diets or seeking supplementation, the results highlight a critical need for targeted health education. The majority's unawareness points to shortcomings in current outreach strategies or barriers in information accessibility.

2.2 Micro-Nutrient-Rich Food Consumption

When asked about the frequency of consuming micronutrient-rich foods, only 32 respondents (21.1%) reported daily intake, while 34 (22.4%) stated they never consume such foods. An additional portion reported rare consumption, resulting in a total of 57.2% who either rarely or never include essential foods like fruits, vegetables, and animal products in their diets. This suggests inconsistent dietary practices across the Jigjiga community. The low frequency of nutrient-dense food consumption may be attributed to several factors, including limited income, poor food availability, cultural food habits, or lack of nutritional awareness. Such dietary patterns are closely associated with micronutrient deficiencies and related health issues. In resource-constrained settings, low dietary diversity remains a key public health concern.

Table 2: about micro-nutrient awareness and intake

Variable	Category	Frequency	Percent
Are you aware of what micro-nutrients are (e.g., iron, zinc, vitamin A)?	Yes	69	45.4
	No	83	54.6
	Total	152	100.0
How often do you consume foods rich in micro-nutrients (e.g., fruits, vegetables, legumes, animal products)?	Daily	32	21.1
	23times per week	29	19.1
	once aweek	31	20.1
	Rarely	26	17.1
	Never	34	22.4
	Total	152	100.0
Do you or any household member use vitamin/mineral supplements?	Yes	74	48.7
	No	78	51.3
	Total	152	100.0
Which of the following micro-nutrients sources do you think are most important for child growth and development?	Red meat and liver (source of iron)	29	19.1
	Meat, legumes, and whole grains (zinc)	22	14.5
	Carrots, mangoes, and leafy vegetables (vitamin A)	27	17.8
	Milk and dairy products (calcium)	30	19.7
	Iodized salt and seafood (iodine)	24	15.8
	Not sure	20	13.2
	Total	152	100.0
What is your main source of information about micro-nutrients and their health benefits?	Health professionals (e.g., doctors, nurses)	29	19.1
	Media (e.g., TV, radio, internet)	29	19.1
	School or educational programs	33	21.7
	Community health workers	29	19.1
	I do not receive any information	32	21.1
	Total	152	100.0
Have you ever received nutrition education or attended a session on the importance of micro-nutrients?	Yes	73	48.0
	No	79	52.0
	Total	152	100.0

2.3 Use of Vitamin/Mineral Supplements

Among the respondents, 74 (48.7%) reported using vitamin or mineral supplements, while 78 (51.3%) indicated they do not. This nearly equal distribution reflects varied attitudes or

differing levels of access to supplementation within the community. Supplements serve as a critical short-term intervention to address micronutrient deficiencies, particularly for vulnerable groups like pregnant women,

children, and older adults. However, low uptake may stem from limited availability, affordability challenges, or insufficient guidance from healthcare providers. Those who do not use supplements may lack awareness of their benefits or rely solely on dietary intake, which often falls short of recommended nutrient levels.

2.4 Most Important Micro-Nutrients Sources for Child Growth

Among the 152 participants, 30 (19.7%) believed calcium-rich milk and dairy products are most crucial for child growth, indicating awareness of their role in strengthening bones. Following closely, 29 (19.1%) cited red meat and liver as main iron sources needed for cognitive performance and energy. Foods rich in vitamin A, such as carrots, mangoes, and leafy vegetables, were chosen by 27 (17.8%), showing moderate understanding of their importance for vision and immune defense. A total of 24 respondents (15.8%) acknowledged the significance of iodized salt and seafood for iodine, vital to brain development. Zinc sources, including meat, legumes, and whole grains, were noted by 22 (14.5%), reflecting somewhat lower recognition of zinc's functions in growth and healing. However, 20 participants (13.2%) were unsure, highlighting knowledge deficits.

2.5 Main Source of Information About Micro-Nutrients and Their Health Benefits

Based on table2 when identifying their main source of information on micronutrients, 33 (21.7%) credited schools and educational programs, while 29(19.1%) each said media, health professionals, or community health workers. However, 32 (21.1%) claimed they do not receive any information. This fragmentation in information sources, combined with a significant information gap, highlights a disorganized approach to nutrition communication. While it

is positive that schools and health workers are providing education, the presence of a large uninformed group signals a need for more consistent and widespread outreach. Media, including radio and TV, could be leveraged more effectively to reach broader audiences.

2.6 Receiving Nutrition Education

As indicated, Table2. 73 (48%) had received some form of nutrition education, while 79 (52%) had not. This result again confirms the limited exposure of the Jigjiga community to structured nutritional guidance. Nutrition education plays a critical role in shaping food choices and health practices. The near-equal split suggests gaps in program coverage or delivery mechanisms. Those who missed such education might live in underserved areas, have low school attendance, or lack access to community health workers. Nutrition education should be made an integral part of both formal education and community health services. Innovative strategies, such as using local languages and visual materials, can help bridge literacy barriers.

3. About Micro-Nutrients, Health Status and preventing disease

3.1 Diagnosis with Micro-Nutrient Deficiency

According to the data in Table 3, Out of 152 respondents, 56 (36.8%) confirmed that they or a household member had been diagnosed with a micro-nutrient deficiency such as anemia, rickets, or night blindness. While 52 (34.2%) had not. Another 44 (28.9%) were not sure, which highlights possible gaps in health screening or awareness of clinical symptoms. This high rate of self-reported deficiency suggests that micronutrient-related health issues are prevalent in Jigjiga. The uncertainty among nearly a third of participants also reflects limited access to diagnostic services or poor understanding of deficiency symptoms.

Table 3: about Micro-Nutrients, Health Status and preventing disease

Variable	Category	Frequency	Percent
Have you or any household member ever been diagnosed with a micro-nutrient deficiency (e.g., anemia, rickets, night blindness)?	Yes	56	36.8
	No	52	34.2
	not sure	44	28.9
	Total	152	100.0
In the past year, have you experienced any of the following symptoms?	Fatigue or weakness	29	19.1
	Frequent infections	29	19.1
	Poor vision, especially at night	37	24.3
	Hair loss	25	16.4
	None of the above	32	21.1
	Total	152	100.0
Do you believe your current diet helps in preventing diseases?	strongly agree	39	25.7
	Agree	27	17.8
	Neutral	24	15.8
	Disagree	33	21.7
	strongly disagree	29	19.1
	Total	152	100.0
Do you think consuming foods rich in micro-nutrients can help prevent common illnesses (e.g., colds, anemia, vision Problems)?	Yes	46	30.3
	No	49	32.2
	not sure	57	37.5
	Total	152	100.0
Which of the following practices do you regularly follow to prevent nutrient-related diseases?	Eating a variety of fruits and vegetables	27	17.8
	Including animal-source foods in meals	38	25.0
	Taking vitamin/mineral supplements	43	28.3
	Attending regular health check-ups	18	11.8
	I do not follow any specific practices	26	17.1
	Total	152	100.0
Where do you usually seek advice or support on	Health centers or clinics	30	19.7

how to improve your nutrition to prevent disease?	Family and friends	35	23.0
	Online sources or social media	36	23.7
	Traditional healers	24	15.8
	I do not seek advice	27	17.8
	Total	152	100.0

3.2 Symptoms Experienced in the Past Year

When asked about symptoms they had experienced in the past year, 37 (24.3%) reported poor vision at night, 29 (19.1%) experienced fatigue or weakness, another 29 (19.1%) suffered from frequent infections, and 25 (16.4%) noticed hair loss. Only 32 (21.1%) reported experiencing none of the listed symptoms. These indicators point to potential underlying micro-nutrient deficiencies, especially of vitamin A, iron, and zinc. Night blindness is a classic symptom of vitamin A deficiency, while fatigue often relates to anemia caused by low iron. Repeated infections may be linked to zinc or other immune-related micronutrients.

3.3 Belief Current Diet Preventing Disease

When asked if they believe their current diet helps prevent diseases, 39 (25.7%) strongly agreed, while 27 (17.8%) agreed. Meanwhile, 33 (21.7%) disagreed and 29 (19.1%) strongly disagreed, suggesting a divided opinion. Additionally, 15.8% remained neutral. These mixed responses show that many individuals either lack confidence in their dietary habits or do not see the connection between food and health. This may be due to limited knowledge of nutrition or challenges in accessing balanced meals. Those who disagreed may be aware that their diet lacks diversity or nutrient-rich foods, while those who agreed may have higher exposure to health information.

3.4 Belief in Micro-Nutrients Preventing Illness

Based on Table 3, only 46 (30.3%) of the respondents believed that eating foods rich in micronutrients can help prevent common illnesses like colds, anemia, or vision problems. A larger portion, 57 (37.5%), were not sure, and 49 (32.2%) disagreed. This finding reveals a major knowledge gap regarding the preventive power of micronutrients. Despite strong scientific evidence linking adequate intake of micronutrients to disease resistance and improved immunity, community perception remains weak.

3.5 Regular Practices to Prevent Nutrient-Related Disease

In terms of regular practices to prevent nutrient-related diseases, only 43 (28.3%) of respondents reported taking supplements, while 38 (25%) included animal-source foods in meals. A smaller number consumed fruits and vegetables regularly 27 (17.8%), and only 18 (11.8%) attended health check-ups. Interestingly, 26 (17.1%) followed no specific practices. This highlights a concerning gap in preventive behavior among the community. While supplement use is somewhat common, food-based practices such as dietary diversity is less frequently observed. This may reflect economic constraints, lack of availability, or insufficient knowledge.

3.6 Sources of Nutritional Advice or Support

When asked where they seek advice on improving nutrition, 36 (23.7%) of participants mentioned online sources or social media, followed by 35 (23%) who relied on family and friends. Health centers were cited by 30 (19.7%), while 24 (15.8%) preferred traditional healers, and 27 (17.8%) did not seek advice at all. This result indicates that informal and digital channels are the dominant sources of information. The preference for family or online platforms over health centers raises concerns about the accuracy and quality of information being accessed.

4. About Age and Disease Association

4.1 Age Group Most Affected by Nutrition-Related Health Problems

The data in Table 4 When asked which age group in their household was most affected by nutrition-related health issues, 23 respondents (15.1%) said children under five, 35 (23%) said adolescents aged 10–19, and 29 (19.1%) said adults aged 20–59. Meanwhile, 24 (15.8%) identified the elderly (60+), and 41 (27%) stated that no one in their household was affected. These results show that adolescents were perceived as the most vulnerable group, which may reflect nutritional gaps during puberty and increased dietary needs that are often overlooked. The relatively low mention of children under five is concerning, given the known risks of stunting, anemia, and developmental delays at this stage.

Table 4: about Age and Disease Association

Variable	Category	Frequency	Percent
In your household, which age group is most affected by health problems related to poor nutrition?	Children under 5	23	15.1
	Adolescents (10–19 years)	35	23.0
	Adults (20–59 years)	29	19.1
	Elderly (60+ years)	24	15.8
	None	41	27.0
	Total	152	100.0
Do you think older individuals are more likely to experience micro-nutrient deficiencies?	Yes	51	33.6
	No	44	28.9
	not sure	57	37.5
	Total	152	100.0
Have you noticed any age-related health improvements with better nutrition or supplementation?	Yes	44	28.9
	No	51	33.6
	not sure	57	37.5
	Total	152	100.0
Which age group in your household receives the	Children under 5	26	17.1

most attention when it comes to nutrition and health care?	Adolescents (10–19 years)	30	19.7
	Adults (20–59 years)	27	17.8
	Elderly (60+ years)	26	17.1
	All age groups equally	19	12.5
	None	24	15.8
	Total	152	100.0
Do you believe nutritional needs vary significantly with age?	strongly agree	31	20.4
	Agree	23	15.1
	Neutral	25	16.4
	Disagree	34	22.4
	strongly disagree	39	25.7
Have you ever adjusted the diet of a family member based on their age or health condition (e.g., more fruits for children, supplements for elderly)?	Yes	48	31.6
	No	47	30.9
	not sure	57	37.5
	Total	152	100.0

4.2 Older Individuals and Micronutrient Deficiencies

A total of 51 respondents (33.6%) agreed that older individuals are more likely to experience micronutrient deficiencies, while 44 (28.9%) disagreed, and 57 (37.5%) were unsure. This shows a moderate level of awareness but also a significant level of uncertainty regarding age-related nutritional risks. Aging populations are indeed at higher risk of deficiencies, particularly in vitamin D, calcium, B12, and iron, due to reduced dietary intake, absorption inefficiency, and underlying chronic illnesses. The large number of uncertain responses indicates a need for improved public education focused on the nutritional needs of the elderly.

4.3 Age-Related Health Improvements from Better Nutrition or Supplementation

As indicated **Table 4**, only 44 (28.9%) noticed age-related health improvements due to better nutrition or supplementation, while 51 (33.6%) said no, and 57 (37.5%) were unsure. This suggests that many households have not clearly observed the impact of improved nutrition on health outcomes or may lack the knowledge to connect changes in diet to health status. The uncertainty may also be due to a lack of systematic dietary interventions or follow-up care, which makes it difficult to notice visible changes. This finding underscores the importance of educating families on how nutrition directly affects physical and mental well-being across age groups.

4.4 Age Group Receiving the Most Nutrition and Healthcare Attention

When asked which age group received the most attention in terms of nutrition and health care, responses were almost evenly distributed: 30 (19.7%) said adolescents, 27 (17.8%) said adults, 26 each (17.1%) mentioned children under five and the elderly, while 19 (12.5%) claimed all age groups were treated equally. However, 24 (15.8%) said no age group received particular attention. These results suggest that in many households, there is no focused nutrition support, or it is inconsistently applied across age groups. This may reflect limited resources, lack of knowledge, or absence of structured nutrition programming at the household level.

4.5 Belief That Nutritional Needs Vary with Age

On the question of whether nutritional needs vary significantly with age, 31 respondents (20.4%) strongly agreed, 23 (15.1%) agreed, and 25 (16.4%) were neutral. Meanwhile, 34 (22.4%) disagreed and 39 (25.7%) strongly disagreed. The large percentage of participants who

disagreed or were unsure reflects a significant misunderstanding about how nutrition changes across the lifespan. Nutritional requirements do, in fact, vary with age due to differences in metabolism, growth rate, physical activity, and health status. For example, children need more nutrients for growth, while the elderly may need more calcium and vitamin D for bone health. This lack of awareness could lead to improper feeding and preventable health complications.

4.6 Adjusting Diet Based on Age or Health Conditions

According **Table 4**, Only 48 respondents (31.6%) had adjusted a family member's diet based on age or health condition, while 47 (30.9%) had not, and 57 (37.5%) were unsure. This indicates that most families either do not personalize diets or are unaware of the importance of doing so. Dietary adjustments based on age are essential for preventing malnutrition, especially for children, pregnant women, and the elderly. The lack of adjustments may stem from insufficient knowledge, economic constraints, or a cultural tendency to prepare one common meal for all household members. Those who did make changes may have done so after experiencing health issues, which suggests a reactive rather than preventive approach.

Conclusion

The findings from this study provide critical insight into the gaps and challenges surrounding public knowledge, consumption, and practices related to micronutrient intake in Jigjiga. Despite the well-established role of micronutrients in promoting immunity, cognitive development, and disease prevention, more than half of the respondents lacked awareness about these essential nutrients. This knowledge gap was strongly reflected in dietary behaviors, where a significant portion of the population reported infrequent consumption of fruits, vegetables, and animal-source foods—core sources of vital micronutrients. Furthermore, the prevalence of symptoms such as poor vision, fatigue, and susceptibility to infections, alongside confirmed cases of micronutrient deficiencies like anemia and rickets, underscore the widespread public health implications of nutritional neglect. The study revealed fragmented and inconsistent approaches to nutrition education and health promotion. While schools, media, and health workers serve as valuable channels, nearly one in five respondents received no nutritional guidance. Additionally, the use of vitamin and mineral supplements was limited, and preventive dietary behaviors were not widely adopted. Many participants expressed uncertainty or disbelief in the

connection between micronutrient intake and disease prevention, pointing to the need for more robust, evidence-based community engagement. Socio-demographic factors such as education level, employment status, and age influenced awareness and practices, suggesting that public health strategies must be tailored to address diverse knowledge levels and barriers. Importantly, a large number of households failed to prioritize nutrition for vulnerable age groups, including children and the elderly, indicating gaps in age-specific dietary care. To address these challenges, integrated, community-centered interventions are essential.

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