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Knowledge and Practices Regarding Diet Balance Among Adolescent Students at Zaid Al-Shawkani School, Aden, Yemen. A cross-Sectional Survey

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ABSTRACT

Background: Nutrition has a vital role in human health and well-being, influencing both physical development and cognitive abilities essential for academic success. Research indicates that improved nutrition is associated with enhanced academic performance, including elevated test scores and graduation rates. This study aims to evaluate adolescents' understanding and practices about balanced nutrition at Zaid Al-Shawkani School .

Methodology: A descriptive cross-sectional survey was executed utilizing a self-reported questionnaire. We employed a non-probability convenience sampling method to choose 100 adolescent students. We obtained participants' verbal consent and analyzed the data with SPSS.

Results: The survey revealed that 63.3% of students were aware of balanced meals, although only 54.4% implemented them. Sixty percent of responders indicated possessing a modest household income. Moreover, 79% of fathers of the pupils possessed an education, in contrast to just 43% of mothers .

Conclusion: Although possessing a moderate comprehension of balanced meals, around fifty percent of the pupils implement these dietary practices. A significant number of students are oblivious to the direct impact that nutrition exerts on cognitive abilities and conduct. We support the implementation of targeted educational programs to enhance knowledge regarding the influence of diet on cognitive performance and overall behavior.

Keywords: Diet Balance , Adolescent , School, Knowledge , Practice, Aden , Yemen.

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INTRODUCTION

Adolescents signify a vital developmental phase, characterized by rapid growth and increased nutritional requirements [1]. During this period, adolescents undergo significant physiological and psychological transformations, heightening their requirement for essential nutrients, including vitamins and minerals [1]. The adolescent growth spurt, a phase of accelerated development necessitating elevated nutrient intake for optimal growth and overall health, mostly accounts for this heightened nutritional need. Nutritional challenges are particularly common among adolescents. Inadequate dietary practices and nutritional deficiencies during this critical period can lead to several long-term health complications, such as osteoporosis, obesity, cardiovascular disease, and delays in physical development [3]. Moreover, the incidence of eating disorders, including anorexia nervosa, bulimia nervosa, and binge eating, is rising among adolescents [4]. Putting too much emphasis on how you look can sometimes lead to these disorders, which are bad for teens' health and raise the risk of serious conditions like heart and kidney problems [5].

Adolescents necessitate a balanced diet to foster healthy development, cognitive performance, and emotional well-being. An adequate diet can diminish the risk of chronic diseases, enhance academic performance, and foster emotional resilience [6]. Moreover, a healthy diet is associated with enhanced memory, cognitive functions, and academic achievement, ultimately contributing to the overall development and quality of life of adolescents [6].

Globally, over a billion teenagers face specific challenges related to food and health. This group comprises neither just children nor adults, displaying distinct nutritional needs to support their rapid growth and development. However, problems such as anemia, obesity, and vitamin deficiencies are more prevalent in this cohort, making nutritional considerations crucial for adolescent health interventions [8].

In Yemen, restricted access to nutritious food, changing lifestyle patterns, and inadequate knowledge of healthy eating practices exacerbate these challenges, highlighting the urgent need for extensive health education [9]. Adolescents are especially vulnerable to nutritional deficiencies due to their increased nutrient requirements and common dietary habits in this group [10]. Furthermore, the pressures and lifestyle changes characteristic of adolescence—such as exercise, academic responsibilities, and social factors—significantly impact food choices and nutritional needs [11]. Thus, understanding adolescents' perceptions and behaviors about dietary balance is crucial for alleviating nutritional deficits and promoting lifelong health.

In Yemen, there exists a notable paucity of research about the dietary habits and nutritional awareness of adolescents. Heightened nutritional requirements critical for growth and development necessitate urgent health education initiatives focused on balanced meals. Schools have a vital role in shaping dietary habits; nevertheless, many school environments fail to provide healthful food options and promote poor dietary practices. This study seeks to fill this gap by providing data that can guide the development of programs and policies aimed at enhancing dietary balance and nutritional education among adolescents. The primary objective of this study is to assess adolescents' understanding and practices about a balanced diet. The study aims to determine the levels of awareness and behavioral patterns about food balance among students at Zaid Al-Shawkani School in Aden, Yemen. The findings will serve as a foundation for formulating health education efforts that promote balanced dietary habits among adolescents.

METHODOLOGY

Study design and study duration

This was a cross-sectional survey done at Zaid Al-Shawkani School, a moderately socio-economic learning facility situated in Aden, Yemen. Data was gathered from students of Ziad Al-Shawkani in the period between January and March 2024. The school is situated in a highly populated region, rendering it an optimal environment for investigating the nutritional knowledge and habits of teenage pupils in a conventional community context.

Study Population

The study targeted adolescent students enrolled at Zaid Al-Shawkani School. The inclusion criteria focused on students present during the study period who were willing to participate.

Sampling Method

Non-probability convenience sampling was employed for this study. This approach allowed for the selection of students available and willing to participate in the survey, providing insights into the dietary knowledge and practices of adolescents within the school.

Variables and Measurements

The study evaluated various demographic and academic characteristics, such as age, gender, grade level, and parental education. Key variables included students' knowledge and practices related to a balanced diet, measured through a questionnaire that categorized knowledge and practice levels into three groups: poor, moderate, and good. The responses helped assess participants' awareness and behaviors toward diet balance.

Data Collection Procedure

Data were collected through an anonymous, self-administered questionnaire derived from previous studies [12] and modified by the researchers with guidance from existing studies. The questionnaire consisted of close-ended questions, covering socio-demographic characteristics, knowledge about balanced diets, and dietary practices. The responses were categorized into knowledge and practice scores, which were subsequently analyzed to provide insights into the overall awareness and behavior patterns of the students.

Questionnaire

Part 1: Demographic Information

This section collects basic demographic information to help analyze data across various groups.

- **Sex:** Male/Female/Other
- **Age:** (above 12 years)
- **Grade Level in School:** (e.g., Grade 6, Grade 7, Grade 8)
- **Family Income:** (e.g., High, intermediate, low)
- **Parental Educational Level:** (e.g., educated, uneducated)

Part 2: Knowledge of Balanced Diet

This section assesses respondents' understanding of balanced diet concepts. Responses are categorized as Good, Moderate, or Low knowledge.

Sample Questions:

1. During your studies, did you receive lessons about the benefits of food?
   - Yes/No
2. Are you aware of the importance of food balance and regularity?
   - Yes/No
3. Do you have an interest in health and awareness programs?
   - Yes/No
4. Do you think the relationship between food and health is important?
   - Yes/No

5. Can what you eat affect your chances of developing heart disease?
   - Yes/No
6. Do you think that your dietary pattern helps improve your concentration and academic performance?
   - Yes/No

Part 3: Practice of Balanced Diet

This section evaluates respondents' actual dietary practices. Responses indicate whether participants Practice or Do Not Practice the behavior.

Sample Questions:

1. Do you drink at least eight glasses of water every day?
   - Yes/No
2. Do you ignore breakfast three times or more in a week?
   - Yes/No
3. Do you ignore lunch three times or more in a week?
   - Yes/No
4. Do you ignore dinner three times or more in a week?
   - Yes/No
5. Do you consume at least five servings of fruits and vegetables daily?
   - Yes/No
6. Do you frequently eat processed or fast food?
   - Yes/No

Instructions:

- Respondents should answer all questions honestly.
- Responses will be kept confidential and used only for research purposes.
- For any questions or clarifications, contact the survey administrator.

Ethical Considerations

The Faculty of Health and Medical Sciences at the University of Science and Technology in Aden, Yemen, approved the study. The ethical clearance number was MEC AD044. We requested consent from the school administration and received verbal agreement from the participants. The data gathering process followed confidentiality and participant anonymity guidelines. The new introduction and methodology give a clear and academic foundation for your study, outlining the aims, significance, and techniques of data gathering and analysis in brief detail.

RESULTS

Table 1 indicates that most students were aged between 13 and 15, with a notable percentage in the 7th grade (45%) and 8th grade (40%). This indicates that the study concentrated on adolescents, a critical developmental phase for establishing long-term dietary habits. The study indicates that a marginally greater percentage of females (54%) participated compared to males (46%). Within the research. The study indicated that 79% of fathers and only 43% of mothers possessed an education. This disparity may affect nutritional awareness and practices within the family, as educated parents are more likely to encourage healthier dietary habits. The majority of students originated from moderate-income families (60%), while a smaller proportion came from high-income (20%) and low-income families (20%). Income levels of families likely influence access to nutritious foods and health-related resources.

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Table 1: Demographic Information of Participants n= 100

Category	Males (%)	Females (%)
Gender	Males	46.0
	Females	54%
Age	**13-15 years**	10%
	Less than 13	78%
	More than 15	12%
Grades	6th grade	15%
	7th grade	45%
	8th grade	40%
Mothers' student level education	Educated	57%
	Uneducated	43%
Fathers' student level education	Educated	79%
	Uneducated	21%
Family income	High	4.3%
	Intermediate	60%
	Low	35.7%

Table 2 indicates that a significant majority of students (63.3%) possessed a strong understanding of balanced meals, whereas 27% exhibited moderate knowledge and 10% demonstrated low knowledge. This demonstrates a solid understanding of nutritional principles; yet, there is potential for enhancement. Over half of the students (54.4%) indicated adherence to a balanced diet, whereas 45.6% did not. Notwithstanding their adequate understanding, almost fifty percent of the students failed to integrate it into their daily dietary practices. Table 2 illustrates the correlation between socioeconomic variables, namely family income and parental education levels, and knowledge and behaviors. Students from educated households, especially those with educated fathers, and from middle-income families had superior comprehension and dietary habits.

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Table 2: Table: Knowledge, Practices, Family Income, and Parental Education n=100

Category	Subcategory	Frequency	Percentage
Knowledge of Balanced Diet	Good Knowledge	63	63.3%
	Moderate Knowledge	27	27.0%
	Low Knowledge	10	10.0%
Practice of Balanced Diet	Practicing Balanced Diet	54	54.4%
	Not Practicing	46	45.6%
Family Income Level	Low	20	20.0%
	Moderate	60	60.0%
	High	20	20.0%
Parental Education Levels	Father Educated	79	79%
	Father Uneducated	21	21%
	Mother Educated	43	43%
	Mother Uneducated	57	57%

Table 3 shows that the majority of students understand the advantages of food, the significance of dietary balance, and the link between food and health. However, understanding of the relationship between nutrition and heart disease was far lower, with just 32.9% acknowledging its importance. Furthermore, a substantial percentage of students (91.4%) reported interest in health and awareness initiatives, showing a willingness to learn more about nutrition. Furthermore, 78.6% of students thought their food choices had an impact on their focus and academic performance, indicating that they recognise the need of good nutrition for cognitive function. Finally, around 77% of students recognised that missing meals has an impact on their daily performance, while 71.4% recognised that being overweight may lead to health concerns, indicating a high degree of health awareness.

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Table 3: Knowledge Frequencies Among Students at Zaid Al-Shawkani School, Aden, Yemen n=100

Question/Statement	Frequency (N)	Percent of Cases (%)
During your studies, did you receive lessons about the benefits of food?	65	92.9%
Are you aware of the importance of food balance and regularity?	66	94.3%
Do you have an interest in health and awareness programs?	64	91.4%
Do you think the relationship between food and health is important?	66	94.3%
Can what you eat affect your chances of developing heart disease?	23	32.9%
Do you think that your dietary pattern helps improve your concentration and academic performance?	55	78.6%
Does skipping meals affect your ability to do well during the day?	54	77.1%
Are people who are overweight more susceptible to health problems?	50	71.4%

Table 4 indicates a significant percentage of students participating in healthy behaviours, including taking a minimum of eight glasses of water daily (71.4%), favouring vegetables and fruits over sweets (80%), and routinely ingesting high-fiber meals (62.9%). A significant proportion of students indicated meal omission, with 45.7% neglecting breakfast, 44.3% foregoing lunch, and 41.4% missing supper at least thrice weekly. This behaviour indicates that, despite awareness of balanced diets, irregular eating patterns are prevalent. The survey indicated that a considerable proportion of students were striving to increase their consumption of protein-rich meals (68.6%) and reduce their intake of fatty foods (54.3%). Nevertheless, just 27.1% consumed sweets and desserts every day, suggesting a degree of moderation in hazardous dietary practices.

Table 4: Practice Frequencies Among Students at Zaid Al-Shawkani School, Aden, Yemen, n=100

Question/Practice Statement	Frequency (N)	Percent of
Do you drink at least eight glasses of water every day?	50	71.4%
Do you ignore breakfast three times or more in a week?	32	45.7%
Do you ignore lunch three times or more in a week?	31	44.3%
Do you ignore dinner three times or more in a week?	29	41.4%
Do you prefer vegetables and fruits over dessert?	56	80.0%
Do you eat foods that are high in fiber three times or more a week?	44	62.9%
Do you eat dairy products like milk and cheese three times or more a week?	34	48.6%
Do you try to eat less fatty food?	38	54.3%
Do you make sure to include protein in your meals, such as chicken, eggs, fish, or tuna?	48	68.6%
Do you eat sweets, chocolate, cake, biscuits, or muffins every day?	19	27.1%

DISCUSSION

The study assessed the level of awareness about balanced diets (BD) and the actual application of these dietary habits among teens at Zaid Al-Shawkani School. The findings show that the majority of students have a strong understanding of balanced diet ideas, indicating a reasonable level of nutritional awareness. Nonetheless, less than half of them reported actively engaging in balanced eating behaviors. This gap implies that, while many students are aware of dietary requirements, they do not regularly incorporate this information into their daily routines. According to supplementary demographic data, the majority of pupils come from middle-income families, which may limit their access to healthy food options and dietary patterns. Significantly, while a large majority of children's fathers were educated, only 43% of mothers had a formal education. The gap in parental education, particularly female education, may impede teenagers' capacity to properly follow balanced dietary practices, as mothers are typically the primary influencers of family nutrition and eating habits. The findings demonstrate that children have a fair understanding of balanced meals, with knowledge scores above practice levels. This phenomenon, in which students acknowledge the need for a balanced diet but struggle to follow it on a regular basis, is consistent with the findings of various studies.

Bassi et al. [13] explored similar results in India among sixth-grade students, finding that, while students understood healthy eating, external forces such as cultural expectations and household food habits hampered their consistent adherence to balanced meals. This alignment suggests that teens' nutrition-related actions may require not just knowledge but also favorable conditions to encourage the development of positive habits. Ganann et al. [14] conducted research in Canada on school-based interventions to increase fruit and

vegetable intake. According to this study, organized nutritional programs in schools can improve students' comprehension and consistency with their eating habits. In contrast to our study, which showed modest practice levels, the Canadian study found a considerable improvement in children's dietary habits, which was attributed to ongoing reinforcement through school interventions. The disparate results suggest that organized educational programs may help to match nutritional awareness with real-world behaviors, emphasizing the importance of practical knowledge applications in settings like Zaid Al-Shawkani School. Socioeconomic position and parental education have a substantial influence on teenagers' nutritional knowledge and habits. Approximately 60% of kids come from middle-class families, indicating a significant disparity in parental education levels, with 79% of dads and only 43% of moms having a high school diploma. This gap may influence the children's nutritional intake, since parental education frequently impacts dietary awareness and decisions in the family. Economic restrictions and limited maternal education in Yemen may limit access to a variety of healthful meals, exacerbating the found knowledge-practice gap. These findings show that, while teens have a basic understanding of balanced meals, there is a need for practical, school-based interventions to improve eating habits. Community support and increased availability of healthful food alternatives may also be important considerations. Implementing effective tactics from other countries, such as combining nutritional understanding with low-cost, nutritious food alternatives, might be advantageous. Programs that combine academic knowledge with practical application and community support may help Yemeni adolescents develop healthier eating habits and achieve better nutritional results.

CONCLUSION

The study found that students had a fundamental grasp of balanced meals, but many did not use this information consistently. Positive habits included a preference for fresh fruits, vegetables, and dairy, with fewer pupils reporting daily consumption of sweets or snacks. However, fewer than half followed suggested measures such as consuming eight glasses of water every day or sticking to a regular meal plan. Given these deficits, it is recommended that health education be included in school curricula, with a focus on the importance of diet in cognitive and physical development. Furthermore, involving parents in instructional sessions may promote a supportive family atmosphere for healthier eating habits.

Recommendations

1. **Include health education in school curricula** to close the knowledge-practice gap in nutrition.
2. **Encourage availability of healthy food options** within schools, while discouraging the sale of unhealthy snacks.
3. Promote a **diverse diet** that includes fruits, vegetables, and whole grains.
4. Advocate for **moderation in fat and oil intake**.
5. Emphasize **adequate hydration** through regular water consumption.
6. Support a balanced diet with a combination of staple foods, legumes, fresh produce, and animal-source foods.
7. Encourage the selection of **whole grains** (e.g., brown rice, oats) for their nutritional benefits.
8. Opt for **lean meats** and minimize visible fats in meals.
9. Promote **healthier cooking methods** (e.g., steaming, boiling) and recommend nutritious snacks like raw vegetables, nuts, and fruits over those high in sugars and fats.

Reference

[1] Sawyer SM, Azzopardi PS, Wickremarathne D, Patton GC. The age of adolescence. The Lancet Child & Adolescent Health. 2018 Mar 1;2(3):223-8.
[2] Balkan S. Nutrition in Adolescence. 2024. 10.69860/nobel.9786053359494.1.
[3] Fabiano V, Albani E, Cammi GM, Zuccotti GV. Nutrition in developmental age: few rules to stay healthy. Minerva Pediatrica. 2020 Apr 9;72(3):182-95.
[4] Schmidt U, Adan R, Böhm I, Campbell IC, Dingemans A, Ehrlich S, et al. Eating disorders: the big issue. The Lancet Psychiatry. 2016 Apr 1;3(4):313-5.
[5] Ghosh D, Khan IA, Yadav S, Bandyopadhyay S. The impact of early childhood nutrition on long-term health outcomes: a prospective cohort study. J Popul Ther Clin Pharmacol. 2024;31(3):317-24. https://doi.org/10.53555/jptcp.v31i3.4789.
[6] Hanson TL, Austin G, Lee-Bayha J. Student health risks, resilience, and academic performance. Los Alamitos, CA: WestEd; 2003 Apr 11.
[7] Partridge SR. Current dietary advice and challenges for adolescents. Br Med Bull. 2020 Sep;135(1):28-37.
[8] Goyal PA, Talwar I. Nutritional status and anemia among Scheduled Caste adolescent girls of district Yamunanagar, Haryana, India. J Soc Behav Community Health. 2024 Nov 10;8(2):1394-406.
[9] Al Jawaldeh A, Meyer AL. Reshaping food systems to improve nutrition and health in the Eastern Mediterranean region. Cambridge: Open Book Publishers; 2023.
[10] Delisle H, Chandra-Mouli V, de Benoist B. Should adolescents be specifically targeted for nutrition in developing countries? To address which problems, and how. Bull World Health Organ. 2001;79(10):1-26.
[11] Hardy-Johnson P, Dhuria P, Strommer S, Weller S, Barker M, Fall CH. Exploring the diet and physical activity behaviours of adolescents living in India and sub-Saharan Africa: a qualitative evidence synthesis. Public Health Nutr. 2021 Nov;24(16):5288-98.
[12] Reji K, Jacob L, Kuriakose LK, Augustine M, George M, PR A. Balanced diet: knowledge and practice of adolescents. Indian J Public Health Res Dev. 2020 Jan 31;11:114-8.
[13] Bassi S, Bahl D, Shah VG, Kandasamy A, Harrell MB, Sharma SV, et al. Project PaThWay: protocol for a school-based health promotion intervention for prevention of non-communicable diseases (NCDs) behavioral risk factors. F1000Research. 2021 Oct 18;10:1062.
[14] Ganann R, Fitzpatrick-Lewis D, Ciliska D, Peirson LJ, Warren RL, Fieldhouse P, et al. Enhancing nutritional environments through access to fruit and vegetables in schools and homes among children and youth: a systematic review. BMC Res Notes. 2014 Dec;7:1-3.