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A Study on Nutritional Awareness and Body Mass Index (BMI) among Young Athletes in Odisha

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ABSTRACT: The study explores the nutritional status and awareness about nutritional knowledge of young athletes in Odisha, focusing on athletes aged 13-19 years from two districts: Baragarh and Khordha. As young individuals increasingly pursue sports for both professional and health purposes, it becomes important for them understand their nutritional needs. The study investigates the health status, athletic profiles, and nutritional knowledge of these athletes, so they can be oriented for better health practices. A sample of 100 athletes was surveyed using a structured questionnaire, gathering data on their health, sports participation, and nutrition awareness. Findings revealed that while most athletes are aware of the importance of macronutrients like carbohydrates, proteins and fats, there is limited knowledge regarding daily recommended intake (RDA) and sports-specific nutrition. Despite adequate physical health, many athletes lack awareness about the proper role of micronutrients and hydration. The study concludes that there is increased need for educational interventions at colleges and sports training institution to improve the nutritional literacy of young athletes. Proper nutrition is essential for optimizing athletic performance, and informed dietary practices can help young athletes improve their endurance, recovery, and overall health.

Keywords: Wellness, Nutritional Knowledge, Athletes.

INTRODUCTION

In recent scenario of life style and food habit of the of young athletes has shifted a lot due to availability of packed food and ready to eat food due to convenience for consumption perhaps. The modern life style, busy schedule and shift happening among the young mass and the family also complimenting the food choice pattern. Also the new media influence community knowledge and awareness about food and their nutritional value. Due to lack of guidance from right kind people and influence of influencers on social median peers has mislead the young people regarding food to be consumed. Especially when it is about young athletes it becomes more important as physical workout and stress they go though demands a specific amount of healthy and nutritious food. Hence it becomes even more important to understand and analyse the nutrition requirement and the awareness among the young athletes so that further training and guidance can be incorporated with the help of right kind of source like at college level, from coach or at household level.

To understand the growth and development of young athletes their physical, cognitive, and emotional changes during childhood and adolescence need to be understood and taken care of as all above parameter can affect the health and performance of the athlete. The physical changes during adolescence affect energy needs, performance, and recovery of physic of a person. As they age they have to undergo a lot of physical and hormonal changes due to puberty, food consumption becomes even more important.

The macro and micro nutrients has various role in athletic performance. As they help in supports for energy, endurance, strength, and recovery (Ansari *et al*., 2024). Adequate micronutrients that consumption of fruits and vegetables especially becomes vital for bone health, immune function, and cognitive performance. Hydration again become very important for preventing fatigue, cramps, dehydration and maintaining electrolytic balance. Nutrition education on millets needs to be undertaken to create awareness among the students, thus, it may further can help in millet consumption (Prashanthi *et al*., 2022).

In adolescent years psychological aspects of nutrition for young athletes become also important due to hormonal changes they have to go through. There is a relationship between diet, mental focus, and cognitive function which cannot be overlooked. The importance of a healthy relationship with food and body image also becomes a factor for consideration with respect to adolescent (Hoseini *et al*., 2023). Hence right kind nutritional food can help combat performance anxiety, stress, and fatigue among them.

This study is imparted to understand the profile of young athletes their knowledge on nutrition and health so that further initiatives can be taken for give them right kind of awareness from righteous sources for better impact and health of the young athletes.

MATERIALS AND METHODS

This chapter outlines the research methodology employed to assess the health and nutrient status, as

well as the nutrient knowledge of athletes in two districts of Odisha: Baragarh and Khordha. The study is designed to investigate the general profile, sports profile, health profile, and nutritional knowledge of among athletes, with the ultimate goal of understand their overall health and nutrition status.

Study design: This study adopts a descriptive and cross-sectional research design, as it enables the collection of data at a single point of time. The research focuses on assessing the health and nutrient status of athletes and their knowledge regarding nutrition.

Study area: The study targets athletes aged 13-19 years who are actively engaged in competitive sports in two districts: Baragarh and Khordha, located in Odisha. The athletes involved in this study mostly are either participating in local or regional competitions or are part of sports academies.

Sample size: The total sample size for this study is 100 athletes, with 50 athletes from each district (Baragarh and Khordha). This sample size was determined using convenience sampling, which allowed the inclusion of athletes who were easily accessible and willing to participate in the survey.

Sampling design: The athletes were selected using purposive sampling, who are in specific age group, active in sports and willing to participate in the study. A structured questionnaire was developed and used as the primary data collection tool. The questionnaire was designed to collect data on three key areas:

1. Profile of Athletes: Demographic information such as age, gender, type of sport, level of competition, education and occupation of parents and family type the participants training duration, and frequency.

2. Health and Nutrient Status: Questions related to health status that is presence and absence of some specific health issues examined.

3. Nutrient Knowledge of Respondents: Questions assessing the athletes' knowledge of nutrition, such as understanding of macronutrients, hydration needs, and performance-enhancing diets.

The questionnaire was pre-tested among a small group of athletes to ensure clarity and reliability. Necessary revisions were made before the final administration.

The questionnaires were distributed to athletes in both Baragarh and Khordha districts. The survey was administered in person on the availability and convenience of the athletes. The respondents were informed and their consent to participate in the study was acquired.

Data analysis was carried out using statistical methods to interpret the results. The responses from the questionnaires were entered into a spreadsheet and analyzed using SPSS (Statistical Package for Social Sciences). Descriptive statistical analysis was applied to summarize the data. Frequency and percentage was used to assess the distribution of various demographic characteristics and responses related to health, nutrition, and nutrient knowledge. Tables were used to present the results visually.

The study was conducted in the districts of Baragarh and Khordha in Odisha. These districts were selected based on their active participation in sports and the availability of a diverse group of athletes. The geographical distribution of athletes allowed for comparisons between two distinct areas in terms of nutritional practices and knowledge.

The participants were informed about the purpose of the research and assured of the confidentiality of their responses. Written consent was obtained from all respondents prior to participation.

RESULTS AND DISCUSSION

Socio Demographic Profile: The socio demographic profile of respondents including age, gender, marital status, religion, educational status, occupation were studies and presented in Table 1.

It has been observed from the table that, among the study participants, 71 % were male while 29 % of the respondents were female. More than half (53 %) of the respondents were in the age group of 13 to 16 years of age and 47 % were falling into the category of 17 to 19 years of age. As far as educational level of the respondents are concerned, only 7 % of respondent studied up to primary school, 26 % has educated themselves up to High School level, 41 % has studied up to plus two level and 26 % of the respondent had graduation as their highest educational qualification.

Table 1: Socio Demographic Profile of Respondents.

Variables	Categories	Percentage distribution
Age	13-16	53.00
	17-19	47.00
Gender	Male	71.00
	Female	29.00
Educational qualification	Primary	7.00
	High School	26.00
	Plus two	41.00
	Graduation	26.00
Mothers' education	Below 10th	2.00
	Upto 10th	4.00
	Up to 12th	4.00
	Graduation	19.00
Mothers' Occupation	Govt. Teacher	34.00
	Private Teacher	8.00
	House wife	57.00
	Bank Manager	1.00

Fathers' education	Below 10th	4.00
	Upto 10th	21.00
	Up to 12th	3.00
	Graduation	72.00
Father' occupation	Teacher	50.00
	Doctor	18.00
	Bank Manager	15.00
	Army officer	10.00
	Actor	5.00
	Businessman	2.00
Religion	Hindu	84.00
	Muslim	13.00
	Christian	3.00
Family type	Nuclear	52.00
	Joint	48.00
Family Size	3 or less	27.00
	Above 3	73.00
Marital status	Married	3.00
	Unmarried	97.00
Monthly income of family	10000-20000	22.00
	20000-40000	40.00
	40000-60000	27.00
	More than 60000	9.00

Mother's education of the respondents revealed that only 2 % have studied below tenth class, a clear majority that is 75 % of mother has studied up to tenth standard, likewise 4 % mother studied up to plus two and 19 % of mother has completed their graduation studies. Occupation of mother's showed that 34 % mothers were Govt. teachers, 8 % were private teachers, 57% were housewives and only one mother was bank manager. The father's education and occupation were studied and found that only 4% had education level below 10th standard, 21% of father has educated themselves up to 10th class, while 3% studied up to higher secondary classes and a clear majority that is 72 % completed their graduation studies. As far as occupation of father is concerned, half of them were teachers, 18% were doctors, 15% were bank managers, 10% were army officers, 5% were actors and only 2 % were businessman.

The study populations were mostly Hindu (84 %) while13% were Muslim and only 3 % were Christians. More than half (52 %) were from nuclear families while rest belonged to joint families. Likewise, 27 % of respondents were from family size below three members while 73 % were from families with more than three members. All most all respondents were unmarried, only three percent respondents were married.

Family monthly income revealed that, 22 % fell within the range of Rs. 10000/- to 20000/-, 40 % had income between Rs. 21000/- to 40000/-, 27 % of families had income within Rs. 41000/- to 60000/- and only nine family belong to families with monthly income more than 60000/-.

Pattern of sports activity. The pattern of engagement of respondents in different sports activity was studied and presented in Table 2.

The table revealed that majority of the respondents (68%) were practicing their sports from less than 4 years while thirty two percentage is doing the sports they mentioned for more than four years. And Majority that was 71 % percentage of respondents do practice their sports every day, 18 % reported to be doing their sports trainings three to four days a week and 11 % reported they do their training for more than four days a week. Practice routine of athlete found that a clear majority that was about 83 % either in the morning or in the evening and about 15 % practice both morning and evening and rest 2 % do not practice on daily basis.

Table 2: Distribution of respondents according to Pattern of engagement in sports activity.

Pattern of engagement in sports activity	Categories	Percentage Distribution
Sports Engagement Duration	Below 4 years	68.00
	Above 4 years	32.00
Frequency of practice of sports	Every day	71.00
	3-4 days a week	18.00
	Above 4 days a week	11.00
Practice time	Only morning/only evening	83.00
	Both morning and evening	15.00
	Other	2.00
Competition level played	International	1.00
	National	9.00
	Regional	69.00
	Other	21.00

Health status of athletes. Self reported health related issues were recorded and presented in Table 3.

Table 3: Distribution of respondents according to Health Issues.

Health issues	Present (%)	Absent (%)
Anxiety	5	95.00
Depression	5	95.00
Respiratory problem	10	90.00
Gastric problem	26	74.00
Head ache	20	80.00
Fever	39	61.00
Muscle Problem	22	78.00
Difficulty in daily life	6	94.00

The table showed that barring a few health issues, majority of the respondents were free from major problems like anxiety, depression and difficulty in day to day activities. About 20 % or slightly above reported to suffer from muscle problems, headache and gastric problems. However 39 % reported to have fever during the study period. High prevalence of anemia was observed among adolescent girls of Ganjam district, Odisha (Patro *et al*., 2023).

Nutritional status of athletes: The Body Mass Index (BMI) was calculated by using the formula (BMI=Weight in Kg /Height in meter^2) and respondents were classified based on the WHO classification into **under weight (BMI below 18.5)**, **normal (BMI 18.5 to 24.9) and over weight (BMI 25 or more).** The nutritional status of athletes were analyzed and presented in Table 4.

It has been found from the table that about majority of the respondents (89 %) had normal BMI, while 10 % were under weight and only 1 % respondent found to be overweight. These findings align with that of Karmakar *et al*. (2019).

Nutritional Knowledge. Nutritional Knowledge of respondents was studied and presented in Table 5.

Table 4: Distribution of respondents according to Nutritional status.

BMI of respondent	Percentage distribution
Under weight	10.00
Normal	89.00
Over weight	1.00

Table 5: Distribution of respondents according to Nutritional Knowledge.

Variables	Categories	Percentage distribution
Meaning of nutrition	Anything to eat	60.00
	Power	11.00
	Source of life	27.00
	I don't know	2.00
Awareness about nutrition	Aware	94.00
	Unaware	6.00
Source of nutritional information	Nutritionist	3.00
	Internet	16.00
	Fellow athletes	44.00
	Coach	37.00
Knowledge on nutrition	Excellent	1.00
	Very good	16.00
	Good	82.00
	Poor	1.00
Methods to acquire balance diet	Eating sufficient & varying type of food	54.00
	Eating foods rich in vitamins	26.00
	Selecting foods rich in protein	19.00
	Taking tablets as supplements	0.00
	Other	1.00
Nutrient require in great quantity	Carbohydrate	70.00
	Protein	8.00
	Fat	8.00
	Vitamin & minerals	14.00
Major function of Carbohydrate	It gives immediate energy	85.00
	Helps for brain function	10.00
	Muscle Building	2.00
	Other	3.00
Recommended carbohydrate	Below 60%	45.00
	60%-70%	44.00
	Above 70%	11.00

Major function of protein	It gives Immediate Energy	12.00
	Helps in Brain Function	36.00
	Muscle Building	51.00
	Other	11.00
Recommended Protein	1.2-1.4g/kg/day	66.00
	More than 1.4g/kg/day	44.00
Function of water	Cooling your body	4.00
	Transport nutrition	3.00
	Maintain blood volume	13.00
	Protect dehydration	34.00
	All	46.00
Function of sports drink	Help the body retain fluid	72.00
	Help to boost fat	15.00
	Replace sodium & potassium loss	11.00
	Other	1.00

The table showed that majority of the respondents, (about 90 %) reported that they were aware about nutrition while 6 % said they were unaware. Only 3 % respondents dependent on nutritionists for knowledge on nutrition, while 15 % got it from internet, a good number of respondents (44 %) depend upon fellow athletes and 32 % depend on the coach for the same. Klein *et al*. (2021) also found social media as source of nutritional information in their study.

On knowledge about need of calories for better performance 95 % reported to be aware of it while 5 % of the respondents were unaware. And on knowledge regarding sports specific nutrition only one percent reported to have excellent knowledge, while 16 % had very good and 82 % percentage reported to have good knowledge on sports nutrition and one percentage has poor knowledge on nutrition.

The respondent said that little more than half believe best method to achieve balance diet is eating sufficient & varying types of food, twenty six percent believed eating foods rich in vitamins appropriate for achieving balance diet, nineteen percent select foods rich in protein, no body believe that taking tablets as supplement is achieving balance diet and one percent has any other believes about it.

A clear majority that is seventy percent of the sample were aware that carbohydrate is the nutrient required in greater quantity as source of energy. Among the respondents a clear majority that is about eighty four and twelve percentage aware were that major function of carbohydrate and protein is “It gives immediate energy” respectively, ten percentage and thirty six percentage respectively thinks function of Carbohydrate and protein “helps for brain function” respectively, about two percent and fifty percentage thinks carbohydrates and protein function respectively as “muscle Building” and about two and eleven percentage think “other” regarding carbohydrate and protein percentage respectively. But on knowledge on Daily Recommended Amount (RDA) of Carbohydrate, forty five percentage of respondent said they required less than 60% carbohydrate in their meal for energy, forty four percent of respondent think of carbohydrate fulfills energy requirement between 60% - 70% and rest eleven percentage think it as more than 70%. And regarding protein sixty six percentage think the protein RDA is 1.2 to 1.4g/kg/day and rest forty four percentage said it is more than 1.4/g/kg/day and above. It showed a good number participants had basic knowledge regarding nutrition. While Ahmadi *et al.* (2023) found similar findings that the respondent had poor knowledge regarding nutrition the finding may be different due to different geographic and cultural location.

On intake of water four percentage said water gives cooling effect to body, three percentage said it helps in transport of nutrient, thirteen percentage to maintain blood volume, thirty four said it helps to protect from dehydration and forty six percentage said all the above mention reasons are functions of water. Likewise on function of sports drink a clear majority that was seventy two percentage thinks sports drink helps the body to retain fluid, fifteen percentage helps to boost fat, eleven percent think it helps to replace sodium and potassium loss and rest two percentage find none of the above function of consumption of sports drink.

Bolla and Varalakshami (2018) has found that energy expenditure is high in comparison to energy intake, that mean their nutrient intake is low and reason could be their unawareness about right amount of energy intake. Studies also shown gender has no significant effect on the nutritional knowledge of youth.

Klein *et al*. (2021) in their says did not find the sex as a variable can be considered for nutritional knowledge as they find there was no difference in knowledge regarding nutrition in both sexes but in many similar studies researchers had found nutritional knowledge in different sexes vary.

CONCLUSIONS

The study highlights the critical relationship between wellness, nutritional knowledge, and athletic performance among young athletes. Findings indicate that while many athletes exhibit a general understanding of basic nutrition principles, there are notable gaps in specific areas such as nutrient timing, hydration strategies, and the importance of balanced macronutrient intake. These knowledge deficits often correlate with inconsistent dietary practices, potentially impacting recovery, performance, and long-term health. Moreover, the study underscores the importance of integrating nutritional education into athletic training programs. Young athletes who received structured guidance from coaches, nutritionists, or sports

professionals demonstrated better adherence to optimal dietary practices and reported enhanced energy levels and performance outcomes. In conclusion, bridging the gap in nutritional knowledge through targeted education and personalized strategies is essential for fostering holistic well-being and peak performance among young athletes. Future research should explore innovative, athlete-centered approaches to nutritional education and evaluate their impact on long-term athletic and health outcomes.

FUTURE SCOPE

— Exploring the impact of personalized nutrition plans on endurance, strength, and recovery.
— Investigating nutrient timing strategies to maximize performance.
— Evaluating the effectiveness of nutrition education programs in schools and sports academies.
— Assessing the influence of social media and digital tools on young athletes' dietary choices.

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Conflict of Interest. None.

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