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STUDY ON THE CONSUMPTION OF MACRONUTRIENTS AND ITS ASSOCIATION WITH HEALTH RELATED QUALITY OF LIFE IN FEMALE COLLEGE STUDENTS AGED 17- 21 YEARS

Nutritional Science

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ABSTRACT

Youth is a critical phase of life and a period of major physical, physiological, psychological and behavioural changes. Nutritional deficits due to poor dietary habits, poor mental health, lack of physical activity affects this population and has a long lasting impact on the quality of life. A total of 228 subjects were enrolled in this cross-sectional study. Dietary macronutrient intake assessment was performed using a 3-day diet recall method. Health-related quality of life (HRQOL) of the participants was assessed with the generic and standardized Short Form -36 Health Survey questionnaire. It was found that the % EAR consumption of energy & protein was found to be lower in the obese category which clearly indicates that skipping of meals was higher in the obese category. A positive association between diet quality and physical & emotional role functioning was also observed in the present study.

KEYWORDS

Macronutrients, Health related quality of life (HRQOL), SF-36

INTRODUCTION

Nutritional status is an indication of the overall well-being of a population. Adequate nutritional status of young women is important for good health and increased work capacity of women themselves as well as for the health of their offspring. Health-related quality of life (HRQOL) serves as a crucial metric in healthcare research and practice, offering a comprehensive view of individuals' overall health status. Health-related quality of life (HRQOL) is a multidimensional concept that includes domains related to physical, mental, emotional, and social functioning (Barayan SS et al, 2018). This holistic approach makes HRQOL a valuable tool for understanding the impact of health conditions on daily living.

Nutritional deficits due to poor dietary habits, poor mental health, lack of physical activity affects this population and has a long lasting impact on the quality of life. (Spinelli, 2021). Many studies carried out on HRQOL and its association with nutritional status have found that there is a strong relationship between nutritional risk and the "physical" portion of QOL. It has been suggested that this health-related QOL (subjective sense of physical and/or mental well-being) is directly associated with nutritional well-being, as nutrition can influence transport proteins, hormones, muscle mass, and functional ability. (Heather Keller et al, 2004).

METHODOLOGY

A total of 228 undergraduate (first degree year) female students aged 17-21 years studying in a suburban college in Mumbai were recruited using purposive sampling technique. Ethics Committee approval for the study was sought from the ISBEC (Inter System Biomedical Ethics Committee).

Dietary macronutrient intake was assessed using a 3-day diet recall which was administered to the participants by the research dietitian via a face-to-face interview method. The HRQOL was assessed using SF-36 questionnaire which was administered to the participants by the research personnel via face-to-face interview method, where they were briefed about the survey. Body Mass Index was calculated and the participants were classified in categories based on Asian cut-offs for BMI classification.

RESULTS AND DISCUSSION

From the Table (1) given below, it can be inferred that the average intake of calories was 1356 kcal ± 309 kcal/ day. On average, the protein intake was found to be 38.5g ±11.2 g/day, which is approximately 11.3 % of the total caloric intake. However, the mean carbohydrate and fat intake was recorded to be 163.5g ± 39.1g/ day and 60.3g ± 22.0 g/day respectively. This accounted for 48.2 % of total calories as carbohydrate while 40.5 % caloric intake as fat. From the above table it can be inferred that the % EAR consumption of energy was found to be 78.85% in the obese category whereas the % EAR consumption of energy & protein was found to be higher in the underweight and normal category.

Table 1: Mean Dietary Macronutrient Intakes of the Study Participants.

Categories based on Body Mass Index	Underweight (<18.5 kg/m^2)	Normal (18.5-22.9 kg/m^2)	Overweight (23-24.9 kg/m^2)	Obese (>25 kg/m^2)	P Value
Energy (kcal)	1386 ± 315	1359 ± 306	1306 ± 306	1309 ± 308	0.58
% EAR	83.40	81.80	78.67	78.85	
Protein (gms)	38.2 ±10.7	39.7 ±11.8	39.1 ±11.1	35.8 ±10.7	0.35
% EAR	106.1	108.3	108.1	99.4	
Carbohydrate (gms)	170.0 ± 42.8	161.2 ± 37.2	160.8 ± 34.4	157.8 ± 38.2	0.36
Fat (gms)	62.5 ± 27.9	61.1 ±19.4	54.8 ±19.1	55.7 ±14.9	0.32

Data presented as Mean ± SD
Level of significance $p<0.05$

This clearly indicates that skipping of meals was found to be common among the study participants but the prevalence was higher in the obese category. Vizzuso et al. reported that higher carbohydrate intake was linked to a reduced risk of obesity in adolescents, while diets with higher energy intake and lower carbohydrate content were associated with a substantial risk factor for adolescent obesity management (Vizzuso et al., 2020).

In Table 2 it can be seen that dietary intake showed a positive association with Physical role functioning and emotional role functioning. With regards to social role functioning, its positive correlation was observed with total calorie intake and carbohydrate intake. Significant positive associations were observed between social role functioning and protein and fat intake ($P<0.05$).

Conversely, energy, carbohydrate and fat were negatively associated with Mental health indicating that higher consumption of energy, carbohydrates and fat may degrade and affect mental health. With regards to social role functioning, its positive correlation was observed

with total calorie intake and carbohydrate intake.

Table 2: Association of Health Related Quality of Life (HRQOL) With Macronutrient Intakes

HRQOL	Energy Intake	Protein Intake	Carbohydrate Intake	Fat Intake
Physical Functioning	0.077	0.105	0.079	0.058
Body Pain	0.038	0.101	0.020	0.022
Vitality	-0.007	0.058	0.004	-0.068
Physical Role Functioning	0.059	0.078	0.066	0.052
Social Role Functioning	0.111	0.136*	0.052	0.147*
General Health Perceptions	-0.047	-0.011	-0.041	-0.054
Emotional Role Functioning	0.043	0.041	0.048	0.074
Mental Health	-0.063	0.035	-0.105	-0.006

Data presented as correlation R Value
*Significance is at level $p<0.05$

CONCLUSIONS

Unhealthy lifestyle habits in young adults have been linked to accelerated biological aging in adulthood. Interestingly, studies have shown that a healthy lifestyle during adolescence, characterized by factors like a favorable diet, regular physical activity, adequate sleep duration, and maintaining a healthy body weight, is associated with favorable anthropometric markers related to CVD risk. In our study the % EAR consumption for proteins was found to be lower in the obese category as compared to the other groups due to higher consumption of empty calorie foods in this category which may be triggered due to the common practice of skipping meals. This highlights the importance of healthy eating habits during adolescence to improve daily living quality and prevent future health problems. In summary, maintaining a high-quality diet during adolescence is crucial for promoting better mental health, and enhancing the overall quality of life in young adults.

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