

Research Article

## Eating Habits of Teenagers in the Schools of Eastern Highlands Province, Papua New Guinea

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**Abstract:**

**Aim:** Healthy diet is essential for adolescents to meet the nutritional demands of the growing body. Poor dietary habits jeopardize health and affect the ability to learn, concentrate and perform in school. The aim of this study was to analyze the eating habits of teenagers (13-19 years of age) in the urban and peri-urban schools of the Eastern Highlands Province of Papua New Guinea in order to determine the food frequency and quality of daily diet intake.

**Methodology:** A self-administered questionnaire consisted of 58 items on the demographic characteristics, dietary habits and food frequency was distributed to teenagers in the schools. Out of 540 questionnaires issued 512 received in which 446 were completed giving a response rate of 87 percent. The collected data was analyzed using Statistical Package for Social Sciences (SPSS version 19.0). The frequency and descriptive analysis were included in the data analysis.

**Results:** A majority of (58%) adolescents had breakfast daily. The lunch was regular among (48%) adolescents. All respondents (100%) had dinner regularly. About 33% adolescents had energy yielding foods thrice, 42.4% had body building foods once, 28.7% had 3 fruits, and 5.2% had five vegetables a day.

**Conclusion:** A high number of adolescents were irregular in eating breakfast, mid-morning snack and lunch. This study recommended adolescents to have three balanced meals and 3 snacks regularly and advised schools to administer Nutrition Education classes. Limitation of this study was the quantity of food consumed daily not assessed which may be considered by future study.

**Keywords:** Eating habits, adolescents, meal pattern, food frequency.

### INTRODUCTION

Teenagers are the adolescents in the age group of 13 to 19 that refers to a period of rapid growth in human development [1]. It is also a crucial period in which teenagers develop cognitive and social skills [2]. Teenagers may not have adequate time to enjoy meals at home especially in the morning as it is the peak and challenging time for most of them to arrive at school on time to avoid penalty. Studies proved that breakfast is an influential meal [3] because it is associated with essential nutrient intake, academic performance and in-class behaviour [4-6]. The evening is the only time teenagers could have a balanced meal with their family on weekdays. However the food selection is based on the family budget, elders' food preferences, food taboos, available food and time for cooking, sick people at home and nutrition knowledge of Cook [7,8]. The dietary guidelines urge teenagers to consume different types of foods; include a lot of whole grains, vegetables and fruits in daily diet; choose foods low in fat, salt and sugar; be active in sports; and drink more fluid [9]. To energize, build and protect body the teenagers must intake adequate amount of nutrients such as carbohydrates, fats, proteins, vitamins, minerals, fiber and water [10]. The Healthy Eating Pyramid

guides teenagers to plan healthy meals through which one can satisfy the nutritional demands of the body [11,12]. It is also necessary to drink four glasses of water and four glasses of other fluids each day for optimal health [13]. The aim of this study was to analyze the eating habits of teenagers (13-19 years of age) in the urban and peri-urban schools of the Eastern Highlands Province of Papua New Guinea in order to determine the food frequency and quality of daily diet intake.

### Methodology

The study was carried out between May and July 2016. A total of 540 questionnaires were issued to the school liaison officer in the participating schools. They were instructed to distribute to teenagers through class teachers. Of the 512 questionnaires received, 446 were completed giving a response rate of 87 percent. The participants of the study were both boys and girls between the age of 13 and 19 years. A self-administered questionnaire consisted of 58 items was developed based on *How healthy is your diet? Questionnaire* constructed by British Heart Foundation (2009) a registered charity in England and Wales (225971) and in Scotland

(SC039426) [14]. The questionnaire was divided into five parts as A, B, C, D and E. Part A included personal details of adolescent; Part B focused on the background of parents/guardian, Part C was about the family structure of the respondents, Part D encompassed the dietary pattern of adolescent and Part E dealt with the food and frequency. The collected data was analyzed using the Statistical Package for Social Sciences (SPSS version 19.0). The frequency and descriptive analysis were included in the data analysis.

## .RESULTS AND DISCUSSION

### **Socio-demographic characteristics and associated dietary behavior of respondents**

The number of meals eaten daily by adolescents was influenced by the parents or guardians with whom they were living. Out of 446 respondents, 6 of them (4 living with both parents; 1 living with the single parent and 1 living with Guardian) stated they had access to four meals daily. A majority of 149 respondents (93 females and 56 males) living with both parents; 49 respondents (28 females and 21 males) living with the guardian; and 35 respondents (15 females and 20 males) living with the single parent had three meals a day. In some families, respondents were given two meals per day. It was reported that 51 females and 63 males living with both parents; 18 females and 24 males living with Guardians; and 13 females and 19 males living with the single parent were fed with two meals a day. A total of 19 respondents (5 living with the single parent; 3 living with both parents; and 11 living with guardian) ate only one meal daily. Meal pattern of nearly 53.6% of adolescents was satisfactory as they consumed 3 or 4 meals a day. The remaining 46.4% was unsatisfactory since they had less than 3 meals daily. The snacking habit of adolescents was associated with their parents or guardians. A majority of 184 respondents (61 females and 51 males) living with both parents; (20 females and 29 males) living with the guardian; and (10 females and 13 males) living with the single parent were getting snacks only once a day. A total of 153 respondents (96 living with both parents; 29 living with the guardian; and 28 living with single parents) were able to snack twice a day. Out of the remaining respondents 68 of them (42 living with both parents; 15 living with guardian; and 11 living with single parent) snacking thrice, 27 (15 living with both parents; 10 living with guardian; and 2 living with single parent) snacking four times and 14 (11 living with both parent; 2 living with single parent; and 1 living with Guardian) snacking five times daily. The dietary behavior of adolescents living with both parents was better than those living with the guardian and single parent.

The education level of the father in the family had no significant impact on the dietary practices of respondents. Only 6 respondent families were getting four meals a day in which 3 families had the father with tertiary education, 2 families had secondary and 1 had primary education. Most respondents (136 females and 97 males; n = 233; 52.2%) were getting three meals a day where the father had the tertiary education in 75 families; secondary education in 74 families;

primary education in 59 families and no formal education in 25 families. About 188 respondents who were eating two meals daily where fathers' education level was tertiary in 42 families; secondary in 63 families; primary in 60 families; and no education in 23 families. Fathers' education in 19 respondent families who used to get one meal a day was tertiary (4); secondary (9); primary (3) and none (3). Likewise the mother and guardian level of education did not determine the meal frequency of respondents living in the family.

Employment of father influenced the number of meals per day. Only 6 (1.3%) families with employed father provided four meals a day. A majority of 233 (52.2%) families (228 employed and 5 unemployed father) fed adolescents three meals; nearly 188 (42.2%) families (180 employed and 8 unemployed father) offered two meals and about 19 (4.3%) families with employed father fed adolescents one meal daily. Occupation of mother and guardian was also associated with the eating practices of teenagers. Nonetheless, their eating habit was not affected by the number of adults and children in the family.

More than half of respondents (n = 233; 52.2%) had three meals a day. Out of which 115 families' income per fortnight was below 500 PGK (Papua New Guinea Kina); 76 were under the category of 501-1000 PGK; 28 were between 1001 and 1500 PGK, and 14 respondents family income was 1501 and above. The second largest number of 188 (42.2%) respondents eating two meals daily which encompassed of 118 families' fortnight income was below 500; 59 families income ranged 501 to 1000; 7 families earned 1001 – 1500; and 4 families had fortnight income of 1501 and above. A less number of 19 (4.3%) and 6 (1.3) adolescents had been consuming one meal and four meals respectively did not show a significant difference in the range of fortnight family income. The family income had no influence on the meal frequency of teenagers.

### **Meal consumption pattern of respondents**

Breakfast consumption was regular among 144 females and 115 males (n = 259). It was eaten sometimes by 81 females and 93 males. It was rarely consumed by 3 females and 5 males. It was never taken by 1 female and 4 males. Adole and Ware (2014) stated that "breakfast is the important meal of the day" (p. 130) however in this study only 58% of adolescents had breakfast regularly. The mid-morning snack was consumed by 52 respondents regularly; 307 sometimes; 30 rarely; and 57 never. A very less number of teenagers (12%) were consuming mid-morning snacks daily. More than half of respondents (n = 231; 51.8%) ate lunch sometimes; 191 (111 females and 80 males) ate always; 15 consumed rarely, and 9 never had lunch. The lunch was regular among less than half (42.8%) of adolescents. Skipping a meal continuously may affect the classroom performance of adolescents. Only 81 (18%) respondents had evening snacks always. A majority of 298 had sometimes; 31 rarely and 36 never had evening snacks. All respondents (n = 446) were regular on dinner. Most of the respondents (n = 320; 71.7%) had the habit of

snacking before going to bed however never practiced by 126 (28.3%) adolescents.

**Food Habits of Respondents**

The food was grouped as energy yielding, body building and protective foods with a special emphasise to fluids, green leafy vegetables, and sweets. Among 446 respondents 51 (11.4%) had energy yielding foods once; 140 (31.4%) had twice; 147 (33%) had thrice and 108 (24.2%) had more than three times a day. Body building foods were included in the diets of 189 (42.4%) adolescents once; 141 (31.6%) twice; 53 (11.9%) thrice and 63 (14.1%) more than three times daily. Protective foods such as fruits and vegetables were eaten by teenagers as follows. A fruit a day was eaten by 45 adolescents; two kinds of fruit per day by 115; three fruits a day by 128; and more than three kinds of fruit ate by 142 adolescents. It was also revealed that 16 teenagers never had fruits in their daily diet. Among 31 teenagers the daily consumption of vegetables was one kind only; 90 took two kinds; 147 ate three kinds; 57 got four kinds; 23 had five kinds; 94 included more than five kinds; and 4 of them never had vegetables. It is imperative to consume 3 fruits and 5 vegetables a day. However in this study only 28.7% of adolescents had 3 fruits and 5.2% had five vegetables every day. Protective food in the diet of the study group is inadequate. If this state remains unattended longer the adolescents may be affected with nutritional deficiency diseases. The average daily intake of vitamins and minerals is paramount to achieve optimal health.

Green leafy vegetables were eaten by 266 (59.6%) adolescents daily; 112 (25.1%) often; 61 (13.7%) rarely and 7 (1.6%) never. Dietary fiber plays a vital role in the healthy living. Nutritional problems such as overweight, constipation and certain types of cancer can be avoided if fiber intake is regular. The risk of type 2 diabetes and cardiovascular diseases is low when fiber requirement is met. Fluid consumption among teenagers showed that 151 of them drank 1-2 glasses of water; 216 had 3-4 glasses; 58 took 5-6 glasses; 19 drank 7-8 glasses, and 2 had more than 8 glasses a day. It was found that 295 (66%) teenagers drank water straight from the tap and 151 (34%) of them had not practiced. The tap water in the Eastern Highlands Province is not drinkable despite most of the adolescents (n = 365; 82%) did not boil or filter water for drinking and only 81 (18%) of them did sterilize water. Previous studies [15,16] proved that unclean water supply was one of the major causes of high morbidity rate among school students in Papua New Guinea. Fruit juice or coconut water was drunk at least once a day by 259 adolescents and not consumed by 187 adolescents. More than half of respondents (n = 290; 65%) did not drink milk daily; 69 took one glass; 54 had two glasses and 33 had three glasses per day. Teenagers growing body demand high calcium nevertheless this study found that a majority of adolescents (65%) did not drink milk daily. The table presented below showed the fizzy drink pattern of adolescents in the schools was not alarming although seemed one of their favorites. Sweet consumption among 64 teenagers was every day; 196 ate often; 112 had rarely and 74 had never included in daily

diet.

**Table: Fizzy Drink Pattern of Respondents**

Fizzy Drink Intake	Daily		No of cans per day		
			One	Two	Three
Male	Yes	28 (6.2%)	10	15	3
	No	185 (41.4%)			
Female	Yes	42 (9.4%)	24	11	7
	No	191 (43%)			
Total			34 (7.6%)	26 (5.8%)	10 (2.2%)

**CONCLUSION**

Family background has the moderate impact on the eating pattern of adolescents. A high number of teenagers in this study had the habit of skipping breakfast (42%), mid-morning snack (88%) and lunch (57.2%). Only 33% of respondents had energy yielding foods thrice and 42% had protein rich foods at least once daily. A meager number of 4.3% adolescents had 7-8 glasses of water every day. The inclusion of fruits, vegetables, and fluid in the daily diet was found inadequate among almost all teenagers. Majority of adolescents (60%) were regular on consuming green leafy vegetables, and only a very less number of 15.6% and 14% adolescents had fizzy drinks and sweets respectively. This study recommended adolescents to (i) have three balanced meals and three nutrient dense snacks; (ii) drink 8 glasses of fluids including plain water; and (iii) add more fruits, vegetables, and milk daily. It also advised schools to administer Nutrition Education classes for teenagers to choose foods from safe sources, plan nutritious meals and develop healthy eating habits. Limitations of this study were the quantity of food consumed daily, nutritional status and physical activity of the targeted group not assessed which may be considered by future study.

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