Original Article

DIETARY HABITS AND PHYSICAL EXERCISE AMONG UNDERGRADUATE STUDENTS IN SOUTHEAST NIGERIA.

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ABSTRACT

INTRODUCTION
Studies have established that chronic diseases are largely diseases of lifestyle. It is pertinent to ascertain lifestyle habits among young people in order to institute necessary disease prevention strategies to enable them to stay healthy as they grow older.
This study aims to assess the dietary habits and physical exercise among undergraduates at the University of Nigeria, Enugu Campus.

METHODS
This study was a descriptive cross-sectional study carried out among 345 undergraduates of the University of Nigeria Enugu Campus using multistage sampling, a self-administered questionnaire and analyzed using SPSS version 22.

RESULTS
The study included 345 students with a mean age of 22.5±3.1years, and [209 (60.6%)] female. The majority (252; 73.0%) had good knowledge of healthy dietary habits. Majority of respondents believed that an unhealthy diet is a very important risk factor for various diseases 303 (87.8%). Dietary practice showed that while only a third of them (110; 31.9%) take breakfast daily, few of them (61; 17.7%) eat 5 or more servings of fruit and vegetables daily. Higher proportion (83.8%) of student nurses had good knowledge of healthy dietary habits than Medical students (74.8%) and Law students (74.8%), (χ^2 =12.009, p=0.002); and among female students compared to male students [80.9% vs 61%, χ^2= 16.457, p=0.000). More student nurses (26.3%) also had an adequate daily intake of fruits and vegetables and least among medical students (3.6%) (χ^2=22.710, p=0.000). While the majority believed that regular exercise improves health (295; 86%), only 13 (3.8%) exercise between 3-5 times in a week. Physical exercise was highest among student nurses (13; 14.9%) and least among medical students (4; 3.6%) (χ^2=8.456, p=0.015).

CONCLUSION
Although most of the respondents had good knowledge and attitude about healthy dietary habits and physical exercise, their dietary practices and level of physical activity were poor.

KEYWORDS
Diet, exercise, lifestyle, undergraduates, Nigeria.

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INTRODUCTION

Healthy diets and physical activity are essential for health and longevity. The amount of energy consumed in relation to physical activity and the quality of food are key determinants of nutrition-related chronic disease.[1]Nutrition has been identified as a major modifiable determinant of chronic disease, with increasing evidence that alterations in diet have considerable effects on health throughout life. More so, dietary adjustments may not only determine present health but may determine whether or not an individual will develop diseases like cancer, cardiovascular disease and diabetes much later in life.[1] Studies have shown that obese children are more likely to grow up and become overweight adults.[2]Physical activity and food intake are behaviours that are mutually interacting and can, therefore, be somewhat influenced by the same policies and strategies.[1] Unfortunately, not much attention is given to creating policies or interventions that enable healthy lifestyle choices in developing countries.

Lifestyle has been defined as "the set of habits and customs that are influenced by the life-long process of socialization, including social use of substances such as alcohol and tobacco, dietary habits, and exercise, all of which have important implications for health".[3] They often require a high level of discipline and self-control.[4] With increasing awareness of the health and emotional challenges that may accompany obesity and obesity-related problems, young adults have been seen to be more health-conscious and are likely to engage in physical activities as well as monitor what they eat and their portion sizes.[5]

Nutritional knowledge is identified as the basic factor determining better lifestyle awareness. According to WHO, 'nutrition is the intake of food, considered in relation to the body's dietary needs while good nutrition is an adequate, well-balanced diet combined with regular physical activity'.[6] Balanced diet has been defined as 'a diet containing proportionate amounts of those food groups which are considered to be optimal for good health'. 'A properly balanced diet should: be highest in fruits and vegetables; have a moderate amount of refined

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carbohydrates, fish and dairy products; lesser amounts of meat; and minimal amounts of fats and refined sugars'.[7]Studies have shown that students with better nutritional knowledge tend to have normal body mass indices (BMIs).[8] In Nigeria, undergraduate athletes in Kwara State had good knowledge of proper nutrition, and there was a correlation between nutrition and their performance.[9]

Furthermore, knowledge exerts a great influence on attitude. Studies have shown that students who have better nutritional knowledge have the best attitude towards proper nutrition [9, 10, 11]and that there is a strong correlation between nutritional knowledge and the students' field of study.[10, 11] However, this is not always the case as some studies found that among some other undergraduate population, in spite of having better knowledge, the medical students did not consciously make any effort to choose a healthier lifestyle or to eat healthy food.

'Lack of time' was identified as the single most important reason for skipping meals, not eating healthier meals and for the poor practice of regular exercise. Poor time management was also cited as a factor preventing the achievement of a healthier lifestyle among university students.[8] Among some undergraduate athletes, in spite of good knowledge, no care was taken to adjust nutritional requirements or increase carbohydrate intake during periods of increased physical activity as majority of the meals consumed by the athletes are affected by their wives/mothers, friends, appetite and financial capacity.[9]

Based on the foregoing, it is important to further assess lifestyle habits among young people in the university as these are tomorrow's workforce of the nation. Evidence is needed in order to institute necessary policies and disease prevention strategies targeted at undergraduates to enable them to stay healthy as they grow older. This study assessed the dietary habits and physical exercise among undergraduates at the University of Nigeria, Enugu Campus. Specifically, it determined the knowledge and attitudes towards good dietary habits among the undergraduates as well as their own perspective of their dietary habit and their practices. It also examined their attitudes and practice regarding physical exercise.

Methodology

A descriptive cross-sectional study, conducted amongundergraduate students of the University of Nigeria Enugu Campus, with a population of about 5000 students. It is located in the south-eastern part of Nigeria.

Sampling

A multistage sampling technique involving simple random sampling by balloting was used to select 3 faculties out of 6, and one department from each of the 3 faculties, including departments of Medicine and Surgery, Law, and Nursing. Then stratified random sampling method was used to select students from each of the years of study in the selected departments.

Data collection

A pre-tested, self-administered, semi-structured questionnaire which elicited the knowledge, perceptions, attitude and practice of dieting and physical exercise among UNEC students was used. The ability of respondents to correctly answer 4 out of the 8 questions relating to healthy dietary habits (such as the definition of balanced diet, which meal is most important, types of food to avoid, the best way to prepare your food, etc.) was considered good knowledge.

Data analysis

Data collected were analysed using SPSS version 21 (SPSS Inc, Chicago, Illinois, USA) and Chi-square was used to determine significance at $p<0.05$.

Ethical Consideration

Ethical clearance was obtained from the Health Research Ethics Committee, University of Nigeria Teaching Hospital: NHREC/05/01/2008B-FWA00002458-1RB00002323. Participation in the study was voluntary, and informed consent was obtained from each participant.

RESULTS

Of the 345 students who participated in the study,mean age was 22.5±3.1years, with more female respondents [209 (60.6%)] and they were mostly single [335 (97.1%)].

Knowledge of 'healthy diet.'

In the knowledge and understanding of healthy diet, majority (298; 86.4%) of respondents correctly identified the meaning of balanced diet while 252 (73.0%) had good knowledge of healthy dietary habits (see figure 1).

Attitude towards healthy dietary habits

Table 2 shows that majority of respondents 317 (91.8%) agree that it is very important to eat healthy each day, that an unhealthy diet is a very important risk factor for various diseases 303 (87.8%), that it is good to be aware of the calorie content of foods that one eats 256 (74.2%) and that it is good practice to read food labels before buying food products 270 (78.3%).

Respondents' perspectives about their dietary habits

Table 3 shows that only about half of the respondents (160; 46.4%) feel they eat regularly and less than half (141; 40.9%) feel they eat balanced diet. However, the majority of respondents (78.3%) feel their diet is good but needs improvement while 208 (63.0%) considered their diet to be healthy.

Dietary practices of respondents

Table 4 shows the dietary practices of respondents. Only a third of them (110; 31.9%) take breakfast daily, about half (175; 51.2%) eat at least 3 times a day while only 61 (17.7%) eat 5 or more servings of fruit and vegetables respectively.

Attitude towards physical exercise among respondents

Table 5 shows that majority of the respondents 286 (83.4%) believe they should exercise regularly, that regular exercise will improve their health 295 (86%), and that exercise reduces the risk of developing diseases like diabetes mellitus 274 (80%). 199 (58%) feel exercise will enable them to control their weight and 185(47.1%) feel exercise is needed to look younger and attractive.

Practice of physical exercise among respondents

Over half (178; 51.6%) of the respondents exercise less than once a week, whereas only 13 (3.8%) exercise between 3-5 times in a week (see figure 2). Among those who exercise, majority (190 (55.1%) do so for less than 30 minutes (see figure 3).

Relationship between sociodemographic characteristics and healthy dietary habits

Table 6 shows that higher proportions (83.8%) of nursing students were seen to have good knowledge of healthy dietary habits compared to medical students (74.8%) and least among Law students (74.8, %), (χ^2 =12.009, p=0.002). Knowledge was also statistically significantly higher among female students compared to male students [80.9%

vs 61%, χ^2= 16.457, p=0.000) but was not associated with age or year of study.

The healthy dietary practice of eating adequate amounts of fruits and vegetables in relationship with sociodemographic factors was described in table 7. Again,a higher proportion of student nurses (26.3%) were seen to have an adequate daily intake of fruits and vegetables, followed by law students (23.0%) and was remarkably low among medical students (3.6%) (χ^2=22.710, p=0.000). Fruit and vegetable intake were not associated with sex, age or year of study.

Relationship between sociodemographic characteristics and practice of physical exercise

Table 8 shows that practice of physical exercise at least 3 or more times in a week is highest among student nurses (13; 14.9%) and least among medical and dental students (4; 3.6%) (χ^2=8.456, p=0.015). Practice of physical exercise is also found to be higher among junior students than senior students [13 (16.0%) vs 11 (5.2%); χ^2=9.275, p= 0.002].

DISCUSSION

The results show that the mean age of participants is 22.6±3.1 years, which is the normal average age for undergraduates and falls within the UNESCO age range for the definition of youth.[12]

In this research, the majority (86.4%)of the respondents have good knowledge of what constitutes a balanced diet which was described as protein, vegetables and other food groups. Overall knowledge of good dietary habits was also high among respondents. This agrees with a study carried out at the University of Ilorin which revealed that majority 84.56% of undergraduate athletes possessed nutritional knowledge[9] and in contrast with a similar study done by Letlape et al.in Pretoria, South Africa which showed poor knowledge (10.5%) of balanced diet among the high school students studied.[13] The difference in the findings among those studies may be due to the differences in the literacy level of the study groups and age, with a high level of knowledge seen among undergraduates, while the low level was seen among high school students. Good knowledge is an indication that there is high awareness about healthy nutrition among undergraduates which may translate to good attitudes and habits.

The attitude of the respondents towards given statements on healthy dieting was mostly satisfactory. This finding indicates that most of the students were aware of the importance of diet to one's health and that a healthy diet is important for good health. This corresponds with a study done on athletes in the University of Ilorin, where the results revealed that the athletes have positive dietary attitude[9] which is essential in improving nutritional education as well as compliance with healthier diets which fosters a healthier community.

Although about 80% perceived their diet to be healthy, the same proportion felt their diet could be improved on. Similar results were seen by the National Obesity Observatory which majority of adult respondents (90.5%) felt that their diet was 'quite healthy' or 'very healthy' compared to those who felt it was 'not very healthy' (8.9%).[14]

Dietary practices among respondents were generally poor when compared with their knowledge and attitude. This is in contrast to the finding by a previous study where there was a strong correlation between knowledge and practice.[10] Only 31.9% of respondents said they take breakfast daily. This result agrees with another study carried out in southeast Nigeria, which found that o*n dietary recall, among the university students, breakfasts were mainly missed, particularly when the students' financial positions were low.*[15]Similarly, a study done by Rafia et al. in which 100 female students were studied showed that although breakfast is considered as the main meal of the day, only 28 students (28%) in the study took breakfast daily.[10] In contrast, a study done by Malak et al. in Sudan in which 180 medical students participated showed that 67.6% had daily breakfast.[16] Regular breakfast is important as it helps to reduce fatigue which is important as students have a busy and demanding schedule.

About half of the respondents (51.1%) eat three or more times a day corresponding to the results obtained by Redhwan et al. in a study done in Malaysia which found that regarding eating habits, the majority of students regularly eat three times per day.[17] This result, however, contrasts with that obtained by the study of University Students in South Eastern states of Nigeria which found that o*n dietary recall, university students across the locations ate mainly two sets of meals per day.*[15]

Only 17.7% of respondents respectively take the world health organization (WHO) recommended 5 servings of fruits and vegetables per day. This result contrasts with that of the study done by Malak in Sudan, in which of the 180 medical students who participated 71.2% consumed adequate vegetables at least three times per week.[16] This difference between the results of the two study groups maybe as a result of the kind of foods culturally acceptable in the different locations.

Poor practice will lead to nutritional disorders, increased morbidity in the community as well as increased economic burden in catering for the sick both for the individual and the institutions responsible for the individual and the government. The community physician may seek forums where they can teach members of the community to use food available in their locality even as students, to ensure healthy and nutritious feeding without going out of the limits of available funds. Poor habits among students may also be caused by the tight academic schedule, which makes students skip meals in attempts to meet up with the hectic school demands.

This study found out that 83.4% think they should exercise regularly, 86% feel that regular exercise improves their health and 80% believe that exercise reduces their risk of developing diseases like diabetes mellitus. This means that there is good knowledge of exercise; thus, interventions are easier to carry out as they would be receptive to changes that would affect their health. This is similar to studies done by Oyerinde et al. on secondary school students in Ogun State, Nigeria which shows that 95% were aware that regular exercise improves general health status and protects against diabetes[18] and research by Taha carried out on students in Al Khobar in Saudi Arabia where 92% believed that physical exercise improves their health status.[19] However, this differs significantly from the study carried out on students in South-Eastern Nigeria where it was found that only 59.5% were aware of the health-related benefits of habitual exercise practice[15] This could have been as a result of the study population that was used,

which was not comprising of students mainly from the health-related disciplines.

In the attitude toward exercise, this study shows that there is quite a good attitude towards exercise, and this is similar to a study done in Pakistan which found a significant number of students engaging in exercise because of the benefits.

In this study, although about one-third of respondents exercise once or twice a week, only 3.8% exercise up to 3-5 times weekly and less than half (44.6%) spend at least 30mins during each exercise. This finding is similar to the study in Pretoria, where only 8.3% exercise regularly[13] but contrasts with the study in Osun State, Nigeria, where 36.3% of the students studied were actively exercising in public schools. Half of the students (50%) were also actively exercising in a study carried out in Nnamdi Azikiwe University Awka, Nigeria.[20] This indicates that even with good knowledge and attitude, behaviour change is still a big issue with individuals.

Previous studies have shown that there is a strong correlation between nutritional knowledge and the students' field of study.[10, 11] Inthisstudy,knowledge and practice of proper nutrition as well as the practice of physical exercise were found to be highest among student nurses and least among medical students. Interestingly, a previous study also showed that among some other undergraduate populations, in spite of having better knowledge, the medical students did not consciously make any effort to choose a healthier lifestyle or to eat healthy food.[8] In a previous study, 'lack of time' was identified as the single most important reason for skipping meals, not eating healthier meals and for poor practice of regular exercise. This can explain the poor dietary and exercise practices among medical students as their academic workload is considerably larger than the other students. Poor time management was also cited as a factor preventing the achievement of a healthier lifestyle among university students.[8]

Conclusions

Majority of the respondents had good knowledge, attitude and perception about healthy dietary habits and physical exercise; however, their dietary practices and level of physical activity were poor. Dietary habits and physical exercise were associated with the course and year of study.

It is recommended that undergraduate students be provided with healthy meals at affordable prices so as to enable them to eat healthy in spite of heavy academic workload. Physical activity should also be encouraged by creating enabling environments and policies for students to exercise in the university. Nutrition should also be emphasized in the curriculum of the medical students since once they graduate, they will be coming in contact with patients with non-communicable diseases, whom they need to advise and follow up.

Conflict of interest

None declared.

Table 1: Socio-demographic characteristics of respondents

Variable	Frequency	Percentage
Age group		
<20	77	22.3
21-25	234	67.8
26-30	28	8.1
>31	6	1.7
Sex		
Male	209	60.6
female	136	39.4
Department		
Medicine/dentistry	111	32.2
Nursing sciences	99	28.7
Law	135	39.1
Marital status		
Single	335	97.1
Married	10	2.9
Year of study		
1-3	81	23.5
4-6	264	76.5

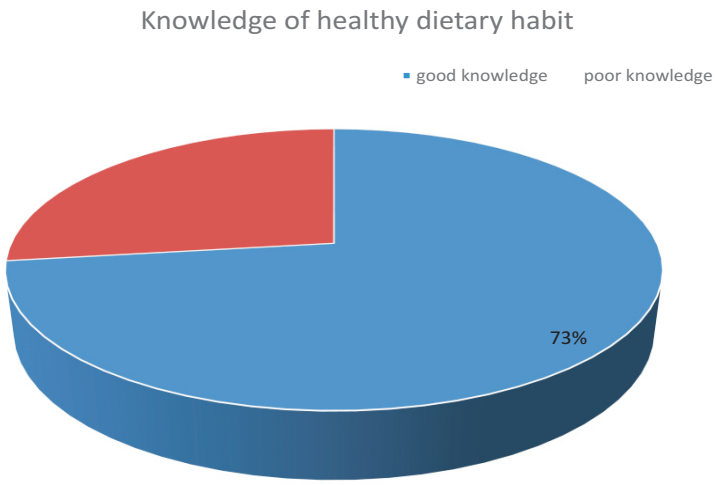

Figure 1: Knowledge of healthy dietary habits

Table 2. Respondents' attitude towards healthy dietary habits

Variable	Strongly disagree n (%)	Disagree n (%)	Neutral n (%)	Agree n (%)	Strongly agree n (%)
It is very important to "eat healthy" each day	21(6.1)	2(0.6)	5(1.4)	75(21.7)	242(70.1)
Unhealthy diet is a very important risk factor for various diseases	25(7.2)	9(2.6)	8(2.3)	100(29)	203(58.8)
It is good to be aware of the calorie content of food that one eats.	22(6.4)	19(5.5)	48(13.9)	162(47.0)	94(27.2)
I think fast food is all junk	62(18.0)	107(31.0)	98(28.4)	56(16.2)	22(6.4)
Reading the food labels before buying the food product is a good practice	20(5.8)	13(3.8)	42(12.2)	142(41.2)	128(371)
The tastiest foods are usually the ones that are bad for you	104(30.1)	139(40.3)	56(16.2)	31(9.0)	15(4.3)

Table 3. Respondents' perspectives about their dietary habits

Variable	Frequency (n=345) (%)
Dietary habit	
Take regularly meals	160 (46.4)
Eat balanced diet	141 (40.9)
Eat good food	73 (21.2)
Eat variety of food	51 (14.8)
Eat salads often	20 (5.8)
Eat low-fat diet	19 (5.5)
Eat lots of fruits	67 (19.4)
Eat lots of vegetables	63 (18.3)
[illegible]	14 (4.1)
Drink lots of water	72 (20.9)
How would you rate your dietary habit?	
Very satisfactory	47 (13.6)
Good but needs improvement	270 (78.3)
Very poor	28 (8.1)
How healthy do you think your diet is?	
Very healthy	261 (77.4)
Not healthy	66 (18.2)
Don't know	15 (4.3)

Table 4: Daily dietary practices of respondents

Variable	Frequency (n=345)	Percent (%)
Take breakfast daily	110	31.9
Frequency of meals		
Eat less than three times per day	167	48.8
Eat 3 or more times per day	175	51.2
Water intake		
Drink <2l of water per day	164	48.2
Drink> 2l of water per day	176	51.7
Fruit and veg intake		
<5 servings	284	82.3
5 servings or more	61	17.7

Table 5: Respondents' attitude towards physical exercise

Variables	Strongly disagree n (%)	Disagree n (%)	Agree n (%)	Strongly agree n (%)
I ought to exercise regularly	29(8.5)	28(8.2)	131(38.2)	155(45.2)
Exercising everyday will improve one's health	31(9.0)	17(9.0)	115(33.5)	180(52.5)
Exercising everyday reduces risk of developing diseases like diabetes mellitus	29(8.5)	37(10.9)	144(42.4)	130(38.2)
Exercising will enable me to control my weight.	60(17.5)	83(24.3)	121(35.4)	78(22.8)
Exercising will make me look younger and attractive	59(17.1)	98(28.4)	108(31.3)	77(22.3)

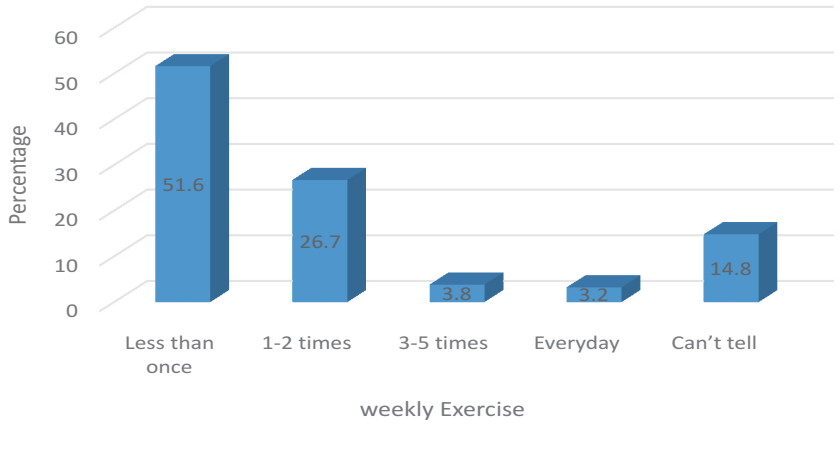

Figure 2: Respondents' physical exercise practices

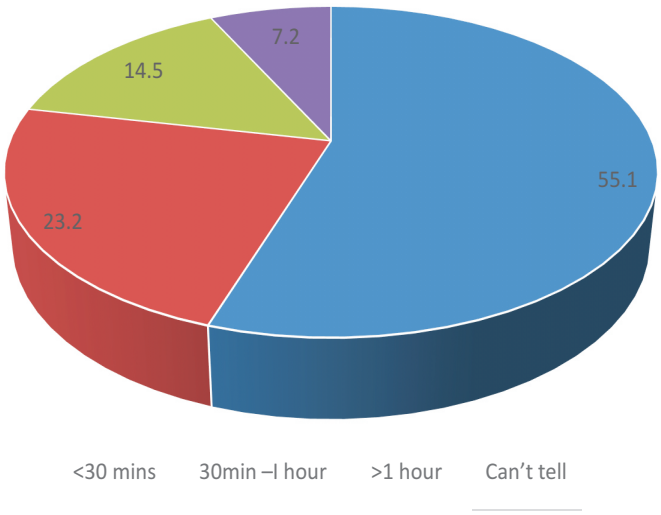

Figure 3. Duration of time respondents spend on each exercise session

Table 6: Knowledge of healthy dieting by sex, age, course and level of study

Variable	Good knowledge n (%)	Poor knowledge n (%)	χ^2	P value
Sex				
Male	83 (61.0)	53 (39.0)	16.457	0.000*
Female	169 (80.9)	40 (19.1)		
Age group (years)				
. .	55 (71.4)	22 (28.6)		
21-25	173 (73.9)	61 (26.1)	-	0.895
26-30	20 (71.4)	8 (28.6)		
≥ 3 1	4 (66.70	2 (33.3)		
Department				
Medicine/dentistry	83 (74.8)	28 (25.2)		
Nursing	83 (83.8)	16 (16.2)	12.009	0.002
Law	86 (63.7)	49 (36.3)		
Year of study				
1-3	61 (75.3)	20 (24.7)	16.457	0.000*
4-6	191 (72.3)	73 27.7)		

*Statistically significant p-value

Table 7: Fruit and vegetable intake by sex, age, year and course of study

Variable	Adequate Frequency (%)	Inadequate Frequency (%)	χ^2	P-value
Sex				
Male	27 (19.9)	109 (80.1)	0.728	0.470
Female	34 (16.3)	173 (83.7)		
Age group (years)				
≤ 20	16 (20.8)	61 (79.2)		
21-25	40 (17.1)	194 (82.9)	-	0.411
26-30	3 910.7)	25 (89.3)		
≥ 31	2 (33.3)	4 (66.7)		
Department				
Medicine/dentistry	4 (3.6)	107 (96.4)		
Nursing	26 (26.3)	73 (73.7)	22.710	0.000*
Law	31 (23.0)	104 (77.0)		
Year of study				
1-3	16 (19.8)	65 (80.2)	0.312	0.618
4-6	45 (17.0)	219 3.0)		

*Statistically significant p-value

Table 8: Practice of physical exercise by sex, age, course and year of study

Variable	Less than 3 times a week Frequency (%)	At least 3 times a week Frequency (%)	χ^2	P-value
Sex				
Male	108 (93.9)	7 (6.1)	1.086	0.384
Female	162 (90.5)	17 (9.5)		
Age group (years)				
≤ 20	63 (91.3)	6 (8.7)		
21-25	179 (92.7)	14 (7.3)	2.277	0.517
26-30	23 (85.2)	4 (14.8)		
≥ 31	5 (100.0)	0 (0.0)		
Department				
Medicine/dentistry	106 (96.4)	4 (3.6)		
Nursing	74 (85.1)	13 (14.9)	8.456	0.015*
Law	90 (92.8)	7 (7.2)		
Year of study				
1-3	68 (84.0)	13 (16.0)		
4-6	202 (94.8)	11 (5.2)	9.275	0.002*

*Statistically significant P-value

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