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RESEARCH ARTICLE

Prevalence of lifestyle associated risk factors for non-communicable diseases and its effect on quality of life among nursing students, faculty of nursing, Tanta University

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Abstract

Inadequate physical activity and unhealthy dietary patterns established during youth may extend into adulthood and may increase risk for chronic diseases, such as coronary heart disease and cancer. **Aims:** this study aims to investigate the prevalence of lifestyle-associated risk factors for non-communicable diseases among nursing students of faculty of nursing - Tanta University and evaluate its effect on their quality of life. **Design:** A cross-sectional analytic design was used to conduct this study. **Subjects:** The study subjects were nursing students in faculty of nursing, Tanta University during the academic year 2013-2014. The total number of the study subjects were 475 students, 335 females and 140 males. **Tools of data collection** include: 1) A structured questionnaire sheet developed by the researchers based on Global School Based Student Health Survey (GSHS) and comprises three parts. Part (1): Socio-demographic characteristics of the students. Part (2): Students' personal and family health history and Part (3): Students' life style behaviors. 2) The World Health Organization Quality Of Life (WHOQOL) – BREF. **Results:** about one third of both males and females were overweight (28.6% and 30.4%) respectively. 8.6 % of males and 8.4 % of females were obese. More than half of male students (57.1%) and about one third of female students (33.7%) were classified as prehypertension (at risk for hypertension). The highest proportion of the studied subjects of both males and females were physically inactive (71.4% and 81.2%). The majority of the studied subjects showed poor or fair scores of the different quality of life domains. **Conclusion:** The highest frequencies of the studied subjects their life style regarding breakfast, number of meals/ day, physical exercise and leisure time was unhealthy and the majority of them exposed to passive smoking. **Recommendations:** It is recommended that health education messages for college students should be disseminated through formal and informal programs to bring about life style behavior changes in terms of physical activity and dietary habits.

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INTRODUCTION

Non-communicable diseases (NCDs) and their associated risk factors have emerged rapidly and are becoming a major public health challenge worldwide. Non-communicable diseases (NCDs) are a major contributor to the burden of disease in developed countries and are increasing rapidly in developing countries. This is mainly due to

demographic transitions and changing lifestyles of populations associated with urbanization⁽¹⁻⁴⁾. The impact of NCDs is devastating in terms of premature morbidity, mortality, and economic loss⁽⁵⁾.

Increasing trends of non-communicable diseases is a worldwide phenomenon. Globally, deaths from non-communicable diseases are expected to climb to 49.7 million in 2020, an increase of 77% in absolute numbers and increase in their share of the total from 55% in 1990 to 73% in 2020⁽⁶⁾. According to the World Health Organization (WHO), this cluster of diseases accounted for 36 million (63%) of the 57 million total deaths in 2008 were due to non-communicable diseases, comprising mainly cardiovascular diseases (48% of non-communicable diseases), cancers (21%), chronic respiratory diseases (12%) and diabetes (3.5%). These major non-communicable diseases share four behavioral risk factors: tobacco use, unhealthy diet, physical inactivity and harmful use of alcohol (WHO 2010)^(7,8). The goals defined by the World Health Organization for 2008 to 2013 include the reduction of chronic non-communicable diseases (CNCDs) risk factors because these diseases account for up to 60% of global mortality, this rate may reach 77% in the next decade⁽⁷⁻¹²⁾.

A significant amount of NCDs mortality and morbidity experienced worldwide today is preventable. The main risk factors that were acknowledged in are known for decades and are similar in almost all countries⁽¹³⁾. Non-communicable diseases are a group of diseases the onset and progress of which are concerned with lifestyle and behavior factor(s) such as dietary habits, physical activities, rest, smoking, alcohol consumption... etc. They are chronic diseases including cancer, heart diseases and diabetes⁽¹²⁾. The lifestyle-related diseases are also non-communicable diseases (NCDs) against which worldwide actions are being taken⁽¹⁴⁾.

Lifestyle-related risk factors included unhealthy diet with foods high in saturated and trans fat, salt and sugar (especially in sweetened drinks), physical inactivity, tobacco use and the use of alcohol and illicit drugs contribute to more than two thirds of all new cases of NCDs. They are responsible for the development of various metabolic diseases such as hypertension, diabetes, hypercholesterolemia, overweight and obesity. Alarming, these risk factors are also becoming rampant in adolescents and consequently, contribute to a higher cost to manage and treat NCDs in the future⁽¹²⁻¹⁴⁾. Meanwhile, it is well established that a healthy lifestyle is of benefit in the prevention of disease and promotion of well-being. Healthy practices, such as weight management, physical recreational activity and sleeping habits, have an impact on the individuals' health status. At least 80% of heart disease, stroke and type 2 diabetes, as well as 40% of cancer could be avoided by healthy diet, regular physical activity and avoidance of tobacco use^(1,15,16).

Today, the health of young people is critically linked to the health related behaviors they choose to adopt. Although morbidity and mortality from non-communicable diseases mainly occur in adulthood, exposure to risk factors begins in early life. Adolescence and young adulthood are significant periods of growth and maturation, unique changes occur and many adult patterns are established during this period⁽¹⁸⁾. The importance of this age group also lies in the fact that many serious diseases in adulthood have their roots in young age group. Young people make up almost a fifth of the world's population. Close to 85 per cent of the 1.061 billion young men and women between the ages of 15 and 24 live in developing countries⁽¹⁷⁻²¹⁾.

In Egypt, Young adults aged 15-24 years constituted about more than one fifth (22.55%) of the Egyptian population in 2008, and university students⁽²²⁾. The World Health Organization has already warned of increasing NCDs among adolescents and young people as a major public health problem. Any negative impact on such a significant portion of the general population is bound to seriously affect national development. Young people seem not to be aware of the effects of unhealthy behaviors, so they are less likely to engage in health promoting activities⁽²³⁾.

Health-related quality of life plays an increasingly important role as an indicator of the population health. It is a comprehensive concept, which is based on a holistic understanding of health and can be defined in different ways⁽²⁴⁾. All experts agree that health-related quality of life can be understood as a multidimensional concept, which comprises physical, emotional, mental, social and behavior-related components of wellbeing and depicts the ability to function from the subjective view of the affected person. In contrast with the classic medical criteria for assessing the health of a person, this concept includes the viewpoint of the affected persons with respect to their physical functioning and their wellbeing⁽²⁴⁻²⁵⁾.

World Health Organization (WHO) defines quality of life (QoL) as "an individual's perceptions of their position in life in the context of the culture and value systems in which they live, and in relation to their goals, expectations, and concerns". Good physical, social, emotional, and psychological health help protect young people against behavioral problems, violence and crime, misuse of drugs and alcohol⁽²⁶⁾. In the context of universities, promoting health and well-being means promoting effective learning and human development⁽²⁷⁾. Vice versa,

education is a strong predictor of lifelong health and quality of life in different populations, settings, and time⁽²⁴⁾. Measuring and monitoring health related quality of life (HRQoL) in youth and young adults continue to increase in importance for both researchers and decision makers. Several factors can negatively predict the health related quality of life of youth such as overweight and obesity, alcohol consumption, and physical inactivity^(28,29).

Health maintenance of adolescents and adults is an integral component of primary health care (PHC). The leading causes of death and disability among adults are largely related to personal health and lifestyle behaviors and may be preventable through routine health maintenance interventions in the form of screening, counseling and chemoprophylaxis. Life style related risk factors are mainly implicated for increased burden of CNCs^(1, 15-20). Early identification of these risk factors especially among nursing students is essential, considering their role as future nurses and role models in public health intervention.

Primary health care (PHC) is an important setting for addressing lifestyle risk factors because of its accessibility, continuity, and comprehensiveness of the care provided⁽³⁰⁾. There is evidence that clients expect to receive lifestyle intervention from PHC clinicians. Lifestyle interventions delivered in PHC and health care centers are effective in helping clients to stop smoking, reduce 'at-risk alcohol' consumption, improve weight, diet and physical activity levels. The 5As (assess, advise (including motivational interviewing) and agree on goals, assist (including referral), and arrange (follow up) have been developed as a framework for addressing these risk factors in clinical practice⁽³⁰⁾.

Nurses consider the provision of lifestyle intervention appropriate to their role and it is well accepted by clients^(31,32). There is inadequate data about the magnitude of the problem of NCD and its risk factors among the young population in Egypt. Estimating the burden of the disease in the younger age groups will help in setting strategies for prevention and control of the risk factors for CNCs. Hence, there is a definite need to monitor the prevalence of these risk factors in this age group and its effect on their quality of life to be able to plan intervention measures for them.

SUBJECTS AND METHODS

The aim of the study was to:

- Investigate the prevalence of lifestyle-associated risk factors for non-communicable diseases among nursing students of faculty of nursing- Tanta University.
- Evaluate the effect of associated life style risk factors on their quality of life.

Research Question

1. What is the prevalence of associated life style risk factors among nursing students of faculty of nursing Tanta University?
2. What is the potential adverse impact of lifestyle associated risk factors on the quality of life of nursing students?

Research design

A cross-sectional analytic design was used to investigate the relation between lifestyle-associated risk factors for non-communicable diseases among nursing students and their quality of life.

Setting

The study was conducted in the faculty of nursing / Tanta University

Sampling

Proportional stratified random sample technique was used in the selection of this study sample of nursing students. 30 % of each stratum (grade) was chosen randomly. A total sample of 475 students from both sexes was chosen randomly from a total number of the four grades students equal (1584) as follows:

123 students from grade one, 125 students from grade two, 115 students from grade three, and 112 students from grade four.

Subjects:

The study subjects were nursing students in faculty of nursing, Tanta University during the academic year 2013-2014. The total number of the study subjects were 475 students, 335 females and 140 males. Their ages ranged between 17 to 24 years who appeared healthy and were willing to participate in the study.

Data collection tools:

Two different tools were used for the purpose of data collection. These included a structured questionnaire sheet on risk factors of non-communicable diseases, based on Global School Based Student Health Survey (GSHS) and The World Health Organization Quality Of Life (WHOQOL) -BREF.

Tool I: Structured questionnaire sheet.

A structured questionnaire sheet which was developed by the researchers based on Global School Based Student Health Survey (GSHS)⁽³³⁾ was used. This tool comprises 37 questions, divided into three parts.

Part (1): Socio-demographic characteristics of the students (5 questions) which covers data about the students' age, gender, grade, family income, and number of family members.

Part (2): Students' personal and family health history (10 questions) as regard presence of any health problems for the student or his family members. Subsequently, anthropometric measurements, blood pressure and glucose level measurement were taken.

Part (3): Students' life style behaviors (22 questions) which cover data about eating breakfast, foods they might eat, drinking and eating habits, physical activity and the time they spend mostly sitting when they are not in faculty or studying their lessons, cigarette and other tobacco use, drinking alcohol, drugs, such as marijuana, cocaine, or heroine.

Tool II: The World Health Organization Quality Of Life (WHOQOL) - BREF⁽³⁴⁾.

The WHOQOL - BREF Field Trial Version has been developed to provide a short form quality of life assessment that looks at domain level profiles. The WHOQOL-BREF is therefore based on a four domain structure. 1) Physical domain consists of 7 questions that describe activities of daily living, dependence on medicinal substances and medical aids, energy and fatigue, mobility, pain and discomfort, sleep and rest in addition to work capacity. 2) Psychological Domain (6 questions) that describe bodily image and appearance, negative feelings, positive feelings, self-esteem, spirituality / religion / personal beliefs, in addition to thinking, learning, memory and concentration. 3) Social relationships (3 questions) that describe personal relationships, social support and sexual activity. 4) Environmental domain consists of 8 questions to describe financial resources, freedom, physical safety and security, health and social care: accessibility and quality, home environment, opportunities for acquiring new information and skills, participation in and opportunities for recreation / leisure activities, physical environment (pollution / noise / traffic / climate) and transport.

The WHOQOL-BREF contains a total of 26 questions. To provide a broad and comprehensive assessment, one item from each of the 24 facets contained in the WHOQOL-100 has been included. In addition, two items from the overall quality of life and general health facet have been included. The scoring system was as follow: Domain scores are scaled in a positive direction. The mean score of items within each domain is used to calculate the domain score. Mean scores are then multiplied by 4 in order to make domain scores comparable with the scores used in the WHOQOL-100. There are also two items that are examined separately: question 1 asks about an individual's overall perception of quality of life and question 2 asks about an individual's overall perception of their health.

Methods

1-Obtaining approvals

Official permission to conduct the study was obtained from the dean of the faculty of nursing, Tanta University to conduct the study.

2-Developing the tools

The structured questionnaire sheet was developed based on GSHS. The developed tool was distributed to a jury of 5 academic professors in community health nursing and medical surgical nursing to test their validity. Accordingly corrections and modifications were done. A pilot study was carried out on (about 5 % of the target

sample) (n= 24 students) to test the tool for relevance, clarity and reliability. Those students were later excluded from the study sample.

3- The actual study

- Ethical considerations:

Students' informed consent was obtained. They were informed about their rights to refuse or withdraw at any time. The data collection tools were anonymous, and total confidentiality of the information obtained was ensured.

- The collection of the data continued during a period of three months starting from February till the end of April 2014.
- The data was collected by administering the questionnaire sheet to each student individually to complete it by his/herself with the attendance of the researcher to offer guidance and clarification when needed.
- Subsequently, anthropometric measurements, blood pressure and glucose level were assessed as follows:
 - ▶ Height was measured to the nearest centimeter using a measuring scale without footwear.
 - ▶ The weight was measured using a platform weighing scale with students wearing light clothing.
 - ▶ The body mass index (BMI) was calculated as follow:

BMI = weight in kg ÷ (height in meter)². The students categorized according to BMI into:

Weight description	BMI
Underweight if the BMI	Less than 18.50
Average (normal) weight if the BMI	18.50 to 24.99
Over weight if the BMI	25.00 to 29.99
Obese if the BMI	30 or more

- ▶ The blood pressure was measured using a mercury sphygmomanometer. Measurements were taken from the right arm of subjects seated and at rest for at least 5 minutes, no less than 30 minutes after any meal. The blood pressure of each student was classified according to the following table. This table shows the classification of blood pressure adopted by the American Heart Association for adults who are 18 years and older⁽³⁵⁾

Category	Systolic, mmHg	Diastolic, mmHg
Normal	Less than 120	Less than 80
At risk (Prehypertension)	120–139	80–89
High blood pressure	140 or higher	90 or higher

- ▶ Glucose level was measured using blood glucose test strips (Gluco LAB auto-coding blood glucose test meter). The blood glucose level of each student was classified according to **American Diabetic Association guideline (ADA)**⁽³⁶⁾. The reference values was as follows:

Category of random blood sugar	Value of random blood glucose level
Normal	79 – 110 mg/dl
Pre- diabetic	Between 140 – 200 mg/dl
Diabetic	More than 200 mg/dl

- The average time spent for collecting data from each student was approximately 30 - 45 minutes to complete the questionnaire sheet and the questions of health related to quality of life scale in addition to completing the needed measurements.
- The quartiles of calculated percentage score for quality of life domains were identified. Poor level was considered if the total score percentage was below 60% , fair if the total score percentage was 60-70% and good if the total score percentage was >70%.

4- Statistical analysis

The data were coded, entered and analyzed using SPSS (version 20). For categorical variables, frequencies, and percentages were calculated for baseline sociodemographic characteristics of the study subjects and the associated

life style risk factors. Differences between categories of each variable were statistically analyzed using chi square test (X^2). The association between variables was calculated by Spearman correlation coefficient (r). For numerical data, the mean and standard deviation were calculated. Paired t / F tests were used to analyze the relationships. The level of significance was adopted at $p < 0.05$.

Results

Table (1) shows Distribution of the studied group according to sociodemographic characteristics. Regarding the age distribution of the studied group, about two thirds of male students were in the age group less than 20 years (62.9 %) where the highest frequencies of female students were in the age group of ≥ 20 years old (69.9%). The mean age of the studied group was 19.22 ± 1.18 for males and 20.29 ± 1.28 for females. About two thirds of both males and females their income was enough and save of it (62.1 and 63.9 %) respectively. Only 10 % of males suffering from diseases compared to 24.5 of female students. 21.4 % of males and 32.9 % of females were suffering from arthritis. 22.1 % of male students and 30.4 % of female students had family history of chronic diseases where the highest proportion of both male and female students had obese member in the family (54.8 % and 66.7 %) respectively. More than half of male student and slightly less than half of female students +had more than one relative suffering from chronic diseases (51.6% and 49.1 %) respectively. There were significant differences between male and female students in relation to age, students suffering from disease, and the type of disease ($P < 0.001$).

Table (2) and figure (1) shows the distribution of the studied group according to their enrollment grade, it was clear that the highest frequencies of the studied sample was females in grades two, three and four (70.4 %, 79.1 %, and 95.5 %) respectively, while 60.2 % of the first grade were males compared to 39.8 % females. There was a significant difference between males and females ($P < 0.001$).

Table (3) shows the distribution of the studied group according to their opinion about their body weight and the actions taken. This table revealed that the highest frequencies of both male and female students reported that their weight is near to appropriate weight (68.6 % and 47.8 %) respectively. No actions were taken regarding the weight by more than one third of both male and female students (35.7% and 38.5 %) respectively. However, slightly less than half of the studied subjects either males or females tried to lose weight (47.9 % and 48.1 %).

Table (4) illustrates the prevalence of health related risk behaviors among the studied group by sex. It was clear that more than half of males and more than two thirds of females were of normal (healthy) weight (56.4% and 69.7 %) respectively. While, about one third of both males and females were overweight (28.6% and 30.4%) respectively and 8.6 % of males and 8.4 % of females were obese. No significant differences were observed between males and females ($P > 0.05$). As for the overall blood pressure, this table shows that more than half of the male students (57.1%) and about one third of the female students (33.7%) were classified as prehypertension (at risk of hypertension). The majority of the studied group either males or females had normal blood glucose level (96.4% and 99.1%) respectively. Only 3.6 % of males and 0.9% of female students had low level of blood glucose. Less than half of the male students (46.4%) and about two fifths of females (39.7%) live sedentary life with no physical activity for long periods. Regarding the physical exercise, the highest proportion of the studied subjects of both males and females practiced physical exercise for less than three days / week (71.4% and 81.2%) respectively. Only 6.4% of males and 0.9 % of females were smokers for less than one year for more than half of males (55.6%) and all the females (100%). Furthermore, the highest frequencies of both males and females were exposed to passive smoking (70% and 60.3%) respectively. Significant differences were observed between males and females in relation to body weight, BP, glucose level, Leisure time, Physical exercise, smoking behavior and exposure to passive smoking ($P < 0.05$).

Table 5: Presents the distribution of the studied group according to their dietary habits. The table shows that, the highest frequencies of both males and females never or sometimes have breakfast and taking only one meal / day (64.3% & 51.7% and 55.7% and 60%) respectively. Significant differences were observed between males and females ($P < 0.05$). As regard the daily consumption of fruit and vegetables, the highest proportion of both males and females, more than three quarters of them take fruits and vegetables 1-3 times / day (77.1% & 67.7% and 78.6% & 72.5%) respectively. Concerning the consumption of milk and milk products, the majority of both males and females take them once or less than once / day (82.9% and 86.6%) respectively. As regard the consumption of fast food, chips, spicy food and soft drinks, the highest proportion of the studied subjects from males and females reported that they take them once or less than once / day (55% & 77.6%, 68.6% & 69.6%, 65% & 51.3% and 54.3% & 71%) respectively. No significant differences were observed between males and females in relation to the consumption of fruit and milk & milk products ($P > 0.05$).

Table (6) shows Prevalence of associated life style risk behaviors among the studied subjects. It was obvious that most of the associated life style risk behaviors were adopted by the highest proportion of the study subjects either males or females. Meanwhile, less frequencies of males and females reported that they using spicy or extra salt, take soft drinks more than three times / day or smoking cigarette (2.9% & 4.4%, 6.4% & 1.5%, and 6.4% & 0.9%) respectively.

Table 7 presents the means of systolic and diastolic blood pressure values and blood glucose levels in the studied group. There were significant differences between males and females ($P < 0.05$). Males showed higher systolic and diastolic blood pressure than females as indicated by their mean and S.D (116.07 ± 66.31 & 113.20 ± 12.45 and 77.57 ± 5.41 & 73.00 ± 8.46) respectively. On the other hand, Females showed higher glucose level than male as indicated by their mean and S.D (115.39 ± 21.06 and 107.44 ± 19.15).

Table (8) shows the age and sex distribution of the studied group according to their quality of life and health perception. It was obvious that the highest frequencies of the studied subject had good quality of life and health perception scores regardless their age and sex. Significant differences were observed between ages of males and females in relation to their quality of life and health perception ($P < 0.05$).

Table (9) presents age and sex distribution of the studied group according to different domains of quality of life. It was clear that the least frequencies of the studied subjects had good scores of physical domains regardless their age (10% of students less than 20 years and 2.1% of students aged 20 years or more), and sex (3.7% of males and 4.9% of females). Significant differences were observed in relation to age and sex of the studied subjects. As regard the psychological domain, Less than 5 % of the studied subjects had good scores. The studied subjects shows relative increase of the scores of the domain of social relationship (24.3% of less than 20 years and 9.3% of students aged 20 years or more) and (16.4 % of males and 11.9 % of females). Significant differences were observed in relation to age and sex of the studied subjects. Concerning the environmental domain, the majority of the studied subjects showed poor or fair scores. No significant differences were observed.

Table (10) illustrates the correlation between the students' quality of life and health satisfaction and their dietary habit. It was clear that there was significant and strong positive correlation between Quality of life of the studies subjects and their health satisfaction, having breakfast and number of meal / day ($P < 0.1$). Meanwhile, negative correlation between quality of life and fast food, chips and consumption of spicy and salty food were observed. As regard students' health satisfaction, there were strong positive correlation were observed in relation to breakfast, number of meals, fruit, vegetable and soft drinks consumption / day ($P < 0.1$).

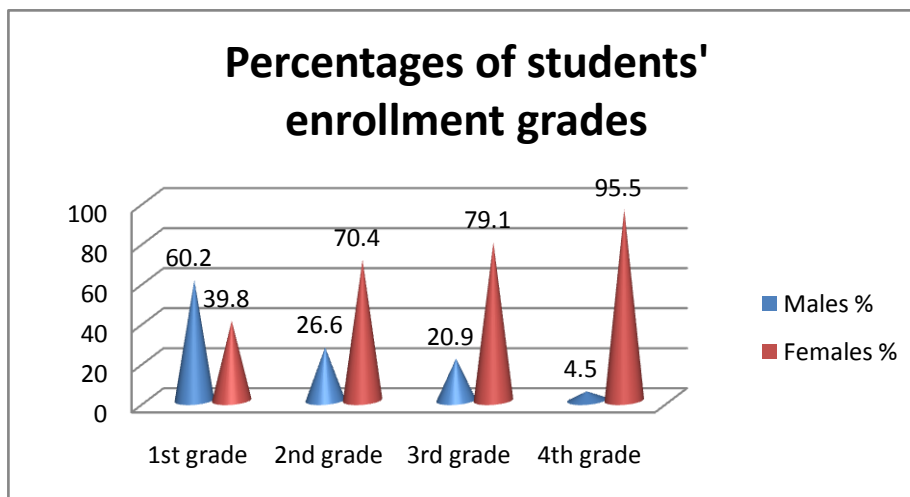
Table 1: Distribution of the studied group according to sociodemographic characteristics

Demographic data	Sex				X ²	P value
	Males = 140		Females = 335			
	No	%	No	%		
Age						
Less than 20 years	88	62.	101	30.1	44.09*	<0.001
20 – 25 years	52	37.	234	69.9		
Mean \pm S.D	19.22 \pm 1.18		20.29 \pm 1.28		2.25	0.521
Family income						
Not enough	21	15.	39	11.6		
Enough	32	22.	82	24.5		
Enough and save of it	87	62.	214	63.9		
Students suffering from diseases	14	10	82	24.5	13.90*	0.001
Disease	No =14		No = 82			
DM	0.0	0.0	11	13.4	7.135	0.068
Arthritis	3	21.	27	32.9		
Heart disease	0.0	0.0	9	11		
Others (acute)	11	78.	35	42.7		
Presence of family health	31	22.	102	30.4	3.37*	0.041
Disease	N = 31		No = 102		12.90*	0.045

Hypertension	5	16.	19	18.6		
DM	9	29	8	7.8		
Arthritis	0	0	2	2		
Heart disease	0	0	2	2		
Obese	17	54.	68	66.7		
Others (acute)	00	0	3	2.9		
Kinship of affected member					5.49	0.240
Patents	13	41.	35	34.3		
Grand parents	0	0.0	4	3.9		
Uncle / aunt	2	6.5	13	12.7		
More than family member	16	51.	50	49.1		

Table2: Distribution of the studied group according to the enrollment grade

Enrollm ent grades	Males		Females		X ²	P
	No	%	No	%		
1 st grade	74	60.2	49	39.8	93.527*	< 0.001
2 nd grade	37	26.6	88	70.4		
3 rd grade	24	20.9	91	79.1		
4 th grade	5	4.5	107	95.5		

Figure 1: Distribution of the studied group according to their enrollment grade.**Table3: Distribution of the studied sample according to their opinion about their body weight and the actions taken**

Variable	Males (140)		Females (335)		X ²	P
	No	%	No	%		
Student opinions					29.48*	< .001
Much less than appropriate weight	11	7.9	17	5.1		
Slightly less than appropriate weight	10	7.1	39	11.		
Near to appropriate weight	96	68.6	160	47.		
Much more than appropriate weight	2	1.4	51	15.		
Slightly more than appropriate weight	21	15	68	20.		

Action done by the students					.824	.662
No actions was done	50	35.7	129	38.		
Try to lose weight	67	47.9	161	48.		
Try to gain weight	23	16.4	45	13.		

Table 4: Prevalence of health related risk behaviors among the studied group by sex

Health related risk behavior	Males (140)		Females (335)		X ²	P value
	No	%	No	%		
Actual body weigh status					8.46*	.037
Under weight	9	6.4	5	1.5		
Normal (healthy)	79	56.4	200	69.7		
Over weight	40	28.6	102	30.4		
Obese	12	8.6	28	8.4		
Overall BP					23.77*	< .001
Normal	60	42.9	216	64.5		
Prehypertension	80	57.1	113	33.7		
Hypertensive	0	0	6	1.8		
Glucose level					4.27*	.052
Low level	5	3.6	3	0.9		
Normal	135	96.4	332	99.1		
High level	0	0	0	0		
Leisure time					9.265*	.010
Physical activity	13	9.3	70	20.9		
Sedentary life/Lack of physical	65	46.4	133	39.7		
Both activity	62	44.3	132	39.4		
Physical exercise					5.89*	.055
< three days/ week	100	71.4	272	81.2		
3-5 days/week	20	14.3	35	10.4		
> 5 days/ week	20	14.3	35	10.4		
Smoking behaviors					12.27*	.001
Non smoker	131	93.6	332	99.1		
Smoker	9	6.4	3	0.9		
Duration of smoking						
Less than one year	5	55.6	3	100	14.07*	.001
Year or more	4	44.4	0	0		
Passive smoker	98	70	202	60.3	3.99*	.048

Table 5: Distribution of the studied group according to their dietary habits

Dietary habits	Males (140)		Females (140)		X ²	P
	No	%	No	%		
- Having					6.38*	.012
Never /sometimes	90	64.3	173	51.7		
Often / always	50	35.7	162	48.4		
- Number of					6.32*	.042
One meal / day	78	55.7	201	60		
Two meals/day	56	40	131	39.1		

≥ three meals	6	4.1	3	.9		
- Taking fruit					.603	.740
≤ once / day	13	9.3	38	11.3		
1-3 times/day	108	77.1	257	76.7		
> 3 times / day	19	13.6	40	11.9		
- Vegetable					9.544*	.008
≤ once / day	16	11.4	74	22.1		
1-3 times/day	110	78.6	243	72.5		
> 3 times / day	14	10	18	5.4		
- milk and milk					1.511	.470
≤ once / day	116	82.9	290	86.6		
1-3 times/day	22	15.7	39	11.6		
> 3 times / day	2	1.4	6	1.8		
- Fast food					30.181*	< .001
≤ once / week	77	55	260	77.6		
1-3 days/week	43	30.7	63	18.8		
> 3 days / week	20	14.3	12	3.6		
Chips, Biscuits					6.981*	0.030
≤ once / day	96	68.6	233	69.6		
1-3 times/day	31	22.1	90	26.9		
> 3 times / day	13	9.3	12	3.6		
- Spicy food					7.45*	.024
≤ once / day	91	65	172	51.3		
1-3 times/day	45	32.1	149	44.5		
> 3 times / day	4	2.9	14	4.2		
- Soft drinks					16.81*	< .001
≤ once / day	76	54.3	238	71		
1-3 times/day	55	39.3	92	27.5		
> 3 times / day	9	6.4	5	1.5		

Table 6: Prevalence of associated life style risk behaviors among the studied subjects

Health related risk behavior	Males (140)		Females (335)	
	No	%	No	%
Over weight / obese	52	37.	130	38.8
Never /sometimes having breakfast	90	64.	173	51.7
Less than 3 meals / day	13	95.	332	99.1
Vegetable ≤ once / day	16	11.	74	22.1
Taking fruit ≤ once / day	13	9.3	38	11.3
Using spicy /extra salt	4	2.9	14	4.2
Soft drinks > 3 times / day	9	6.4	5	1.5
Chips > 3 times / day	13	9.3	12	3.6
Fast food > 3 times / week	20	14.	12	3.6
Sedentary life / long period of sitting	65	46.	133	39.7
Physical exercise < three times/week	10	71.	272	81.2
Smoker	9	6.4	3	0.9

Passive smoker	98	70	202	60.3
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Table 7: Means of systolic and diastolic blood pressure values and blood glucose levels in the studied group

Variable	Males	Females	F	P. value
Systolic BP	116.07± 66.31	113.20 ±12.45	6.682	0.010*
Diastolic BP	77.57± 5.41	73.00 ±8.46	34.73	<0.001*
Glucose level	107.44± 19.15	115.39 ± 21.06	14.48	<0.001*

Table 8: Age and sex distribution of the studied group according to their quality of life and health satisfaction

Variable	Age				Sex			
	Less than 20		20 -25 years		Males		Females	
	No	%	N	%	No	%	N	%
Quality of life								
Very poor	2	1.1	7	2.4	4	2.9	5	1.5
Poor	5	2.6	22	7.6	5	3.6	2	6.6
Satisfactory	29	15.3	52	18.	23	16.	5	17.3
Good	121	64.1	17	61.	85	60.	2	63
Very good	32	16.9	30	10.	23	16.	3	11.6
X²	10.56*				4.39			
P	.032				.356			
Health perception								
Very poor	1	.4	12	4.2	4	2.9	9	2.7
Poor	17	5.9	36	12.	10	7.1	4	12.8
Satisfactory	33	11.5	46	16.	20	14.	5	17.6
Good	109	38.1	16	58	86	61.	1	56.4
Very good	29	10.1	26	9.1	20	14.	3	10.5
X²	10.88*				5.22			
P	.028				.266			

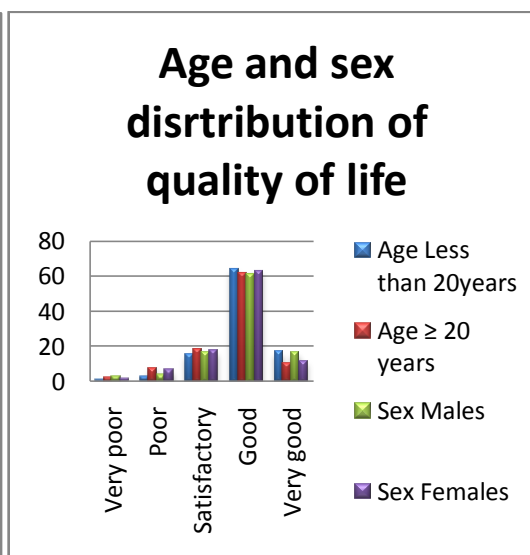
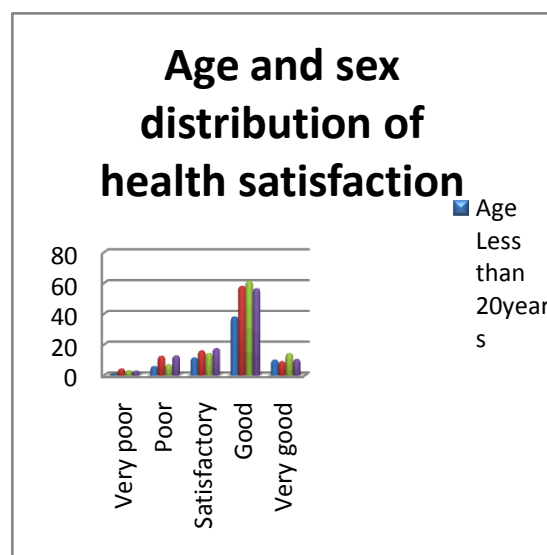


Table 9: Age and sex distribution of the studied group according to different domains of quality of life

Domain	Male (140)		Female ()		<20 years		≥ 20 years	
	No	%	N	%	N	%	N	%

Physical								
Poor	64	45.7	24	73	1	5	20	69.
Fair	62	44.3	83	24	7	3	72	25.
Good	14	10	7	2.	7	3.	14	4.9
X²	37.69*				9.73*			
P	< 0.001				.008			
Psychological								
Poor	77	55	24	73	1	6	20	72.
Fair	57	40.7	87	26	7	3	72	25.
Good	6	4.3	2	0.	2	1.	6	2.1
X²	19.99*				9.35*			
P	< 0.001				.009			
Social								
Poor	49	35	15	45	6	33	1	47.
Fair	57	40.7	15	45	9	50	1	40.
Good	34	24.3	31	9.	3	16	3	11.
X²	19.23*				10.03*			
P	< 0.001				.007			
Environment								
Poor	10	72.9	27	81	1	79	2	78
Fair	36	25.7	62	18	3	19	6	21.
Good	2	1.4	1	0.	1	.5	2	.7
X²	5.35				.275			
P	0.069				.872			

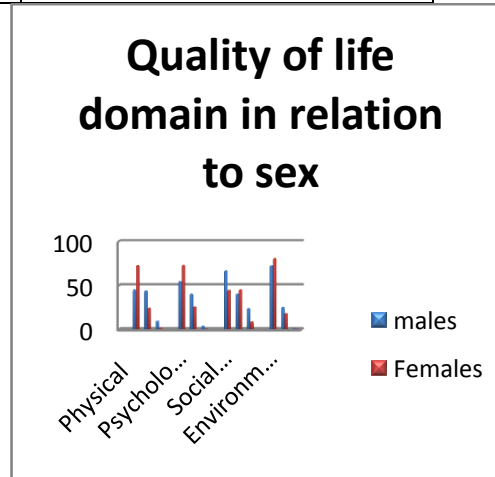
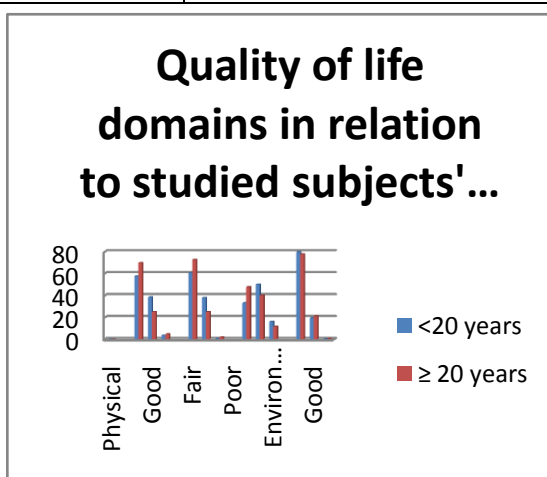


Table (10): Correlation between the students' quality of life and health satisfaction and their dietary habit

Diet items	Quality of life		Health perception	
	R	Sig	R	Sig
Quality of life			.363**	< .001
Breakfast	.119**	.009	.119**	.009
Meals' number/ day	.174**	< .001	.142**	.002
Fruit / day	.046	.320	.140**	.002

Vegetable/ day	.039	.391	.201**	< .001
Milk and milk product	.053	.249	.123**	.007
Soft drinks /day	.033	.473	.094*	.040
Fast food / week	-.010	.836	.013	.774
Chips, Biscuit and ice	-.076	.097	-.028	.539
Spicy food /day	-.057	.212	.035	.442

DISCUSSION

Lifestyle diseases in adults have been related to the prevalence of risk factors in childhood and adolescents. Most of these diseases have the relationship between the development of non-communicable diseases and the interactions between the environment, the genetic predisposition and lifestyle. Lifestyle diseases like hypertension, atherosclerosis, coronary heart disease, and type 2 diabetes mellitus with their complications now emerge as the most severe health problems in developed and developing countries. These diseases take a tremendous toll in premature sickness, disability, death and have a major economic impact on its victim and health care delivery system⁽³⁷⁾. Identifying health problems and inadequate lifestyles such as obesity, smoking, alcohol consumption and sedentary life can be of great importance for the survey of a community's health needs and priorities⁽³⁸⁾.

Several studies proved that the perceived condition of health and the health related quality of life are associated with future health status, functioning and even mortality⁽³⁹⁾. This study carried out to investigate the prevalence of life style associated risk factors for non-communicable diseases among the nursing students and to identify its effect on their quality of life. In this study, it was found that many students are putting themselves at risk for future diseases by engaging in unhealthy behaviors. Most of associated life style risk behaviors were adopted by the highest proportion of study subjects either males or females. Out of total subjects aged 17 to 24 years, approximately one half of males and two fifths of females spend sedentary leisure time, the majority of both males and females were physically inactive, and the highest frequencies of both groups were exposed to passive smoking. Regarding their health status, slightly less than one third of both males and females were overweight and about one tenth of them were obese. More than half of males and about one third of females were pre hypertensive (their BP more than 120/80 and less than 140/90). In addition, the present study revealed bad dietary habits among the study subjects as regard number of meals/day, breakfast, fast foods, fruit and vegetable consumption. These results are in agreement with the results of other studies that conducted to assess the university students and young adults' lifestyle related risk behaviors^(2,9,40-42).

On the other hand, the present study carried out with nursing undergraduates, revealed elevated prevalence of healthy lifestyles in relation to using spicy or extra salt, soft drinks consumption and smoking which may be attributed to the fact that many of study subjects were resident the university hostel that follow strict rules regarding diet and smoking. As regard smoking, 6.4 % of males compared to only 0.9 % of females claimed to be smokers that may be explained as smoking is socially unacceptable especially in rural and semi urban communities such as Tanta in Egypt that may force students particularly female students to avoid reporting being a smoker. Low smoking prevalence is consistent with the findings of Alves de Vasconcelos et al (2012)⁽⁴¹⁾ and other studies performed with undergraduate health students who reported prevalence of elevated prevalence of healthy lifestyles in relation to smoking and alcohol consumption⁽⁴³⁻⁴⁶⁾. In the same line, the smoking prevalence in this study is consistent with the prevalence observed in more than 12 cited articles on smoking among university students in Saudi Arabia (Al-Turki and Al-Rowais, 2008; Al-Mahmoudi and Amin, 2010)^(47,48), where the overall tobacco consumption among female students ranged from 1 to 16%. Low prevalence has also been observed in other studies conducted on female college students of different universities in Saudi Arabia, where the prevalence was (8.6 and 4.3%, respectively) (Koura et al., 2011; Al-Kaabba et al., 2011)^(49,50). The observed lower prevalence of smoking among female students in their studies can be attributed to the social stigma that may force students to avoid reporting being a smoker, as smoking is considered a taboo in conservative communities such as Saudi Arabia, especially Taif which may be responsible for the underreporting among females (Mandil et al., 2011)⁽⁵¹⁾. In contrast, a higher smoking prevalence was found in a study with undergraduate biological science students^(52,53).

Physical inactivity is considered an independent risk factor of a number of chronic diseases such as coronary heart disease, diabetes and hypertension⁽⁵⁴⁾. In the present study the majority of both male and female students (71.4% and 81.2%) respectively were physically inactive (Table 5) The high level of physical inactivity observed in this study may be attributed to the students' tendencies to social networking sites instead of sports in addition to lack of public courts and playgrounds. This result is in agreement with other studies revealing high prevalence of

physical inactivity among all Saudi females generally, and among university students particularly (desouky et al., 2014 and Lollgen et al., 2009)^(52,55).

This results are in consistence with results from the WHO STEPwise approach to NCDs surveillance conducted in Saudi Arabia in 2005, where 76.2% of females aged 15 to 24 years were physically inactive (Saudi Arabia Ministry of Health, 2005)⁽⁵⁶⁾. They attributed this finding to the limited opportunities of Saudi females to engage in physical activity due to the absence of physical education programs for girls, in addition to cultural reasons where families may not encourage females to engage in physical activity. Moreover, most of Saudis rely on cars rather than walking for short-distance travel (Al-Hazzaa, 2011; Al-Hazzaa et al., 2012)^(57,58). In the same line, the results of our study are in agreement with those revealed from other Iranian and Jordanian studies (Kelishadi et al., 2007; Suleiman et al., 2009)^(59,60).

Also, the present study showed that a high proportion of the study subjects males and females (46.6% and 39.7%) respectively spent most of their time sedentary watching T.V or playing computer games. College students are highly exposed to unhealthy eating habits leading to body weight gain. The present study revealed that about one third of males and about one fifth of females eat fast food one to three days per week. Furthermore, 14.3% of males and 3.6% of females eat fast food more than three days / week.

This may attributed to the easy accessibility of fast food with growing prosperity. Furthermore, the students spend most of the daytime in the faculty. In addition, males are permitted to hang out with their friends than females.

As regard the status of body weight, the highest frequencies of study subjects reported that their weight was nearly appropriate. They take no actions in this regard despite approximately two fifths of both males and females were either overweight or obese. The problem of obesity among university students is alarming. The high prevalence of overweight and obesity is probably due to the recent trend of youths of eating fast food, which is high in saturated fats, in restaurants, most of the days of the week, and the inadequate practice of physical activity. The same result was found by other studies which indicate that today's children are probably less fit than children decades ago and tend to be more over Weight and sedentary^(30, 61). Meanwhile this result disagree with Alves de Vasconcelos et al (2012) who reported that female undergraduates showed low prevalence of weight excess and attributed this to the participants' socioeconomic status, the women's desires to be thin are very common among the ones belonging to a higher social class⁽³⁹⁾.

Hypertension is an important single independent risk factor for heart disease and stroke. Up to 57.1 % of males and 33.7 % % of female students were prehypertention (at risk of hypertension). This may attributed to the high prevalence to lifestyle changes towards urbanization and dietary eating habits. According to the prevalence of pre-hypertension, this study results are in consistence with those observed from another study on female university students in Dammam city, where 13.5% of them were pre-hypertensive (Koura et al., 2012)⁽⁴⁸⁾. However, a higher prevalence of prehypertension observed in another study on male students in the same region (Sabra, 2007)⁽³⁹⁾.

Quality of life of university students is an important issue in order to tackle the physical, mental, social problems as early as possible to produce future leaders for the future developed nation. One of the objectives of this study was to identify the effect of life style behaviors on the nursing students' quality of life. This study showed that generally, the overall QoL and health perception among university students is good despite the differences between the different domains.

The highest values of the QoL were obtained for social relation domain. About two thirds of males and those who were less than 20 years in addition to more than half of females and those who 20 years or more showed fair or good social relation. This may explained as a great proportion of the students were resident the university hostels which provide an excellent opportunities for social interactions. Moreover, the university students participate in leisure activities that arranged by the university to enhance the connections between university and the community and fun-based activities for more interactions between students from different programs and their lecturers.

On the other hand, the lowest score of QoL were obtained for environmental domain were more than three fourths of the students had poor score. This may attributed to low socioeconomic standard, environmental pollution, overcrowding and inadequate transportation. Moreover, the university locates in suburban city and the majority of students resident the surrounding village. The study showed that, there was a significant difference in QOL and health perception according to age of the student's. Younger age scored higher in WHOQoL- Brief as indicated by their high scores. This may attributed to the fact that older ones may experience a wider range of stressful life events compared to younger ones.

In addition, this study revealed that males had better self- perceived health and quality of life than females. This can be explained by the fact that males are preferred to females in our Egyptian society particularly rural areas and they gain more attention and care. Meanwhile, no significant differences were observed between male and female students. The results of this study were in agreement with other studies who revealed that Health-related quality of life decreases with increasing age for all physical subscales and the summary scale and that Women report

a lower health-related quality of life than men in the German population^(62, 63). In the same line, this is consistent with other studies that investigate predictors of young university students' HRQoL^(28,64,65).

Generally this result disagree with those of Al-Naggar et al (2013) who reported that there was no difference in QoL according to age⁽²⁷⁾. However, another study reported that the only consistent QoL finding differentiating the medical from nonmedical student groups was in terms of the WHOQoL-Brief environment domain⁽²⁰⁾.

The findings presented in this study highlighted the association between students' quality of life and health perception and their dietary habits. Strong positive and significant correlations were observed between the students' quality of life and break fat and number of meals per day, concerning the correlation between the students' health perception and dietary behavior, significant correlations were found between health perception and the daily intake of fruit, vegetable, breakfast, number of meals. This result is in consistent with other studies that reported that the lifestyle behavior of students linked to their HRQoL particularly for dietary habits^(2, 20, 28).

Conclusion

Based on the results of this study it was concluded that, the highest frequencies of both male and female students reported that their weight is near to appropriate weight and no actions were taken regarding the weight by more than one third of both male and female students despite that about two fifths of both male and female students were overweight or obese. The highest frequencies of the studied subjects their life style regarding breakfast, number of meals/ day physical exercise and leisure time was unhealthy and the majority of them exposed to passive smoking. More than half of males and about one third of the females were at risk of hypertension and categorized as prehypertension. The majority of the studied subjects showed poor or fair scores of the different quality of life domains.

Recommendations

- 1- Health education messages for college students should be disseminated through formal and informal programs to bring about life style behavior changes in terms of physical activity and dietary habits.
- 2- Health communication programs should be designed targeting college students that address all types of risky behaviors.
- 3- Comprehensive intervention program which should focus on various health promoting issues such as access of healthy food, prohibition of smoking at home and work should be emphasized.
- 4- The availability of and access to safe playing courts and ground should be assured.
- 5- Environmental changes should be made to improve their quality of life.
- 6- Conducting further research on a larger scale to identify the magnitude of preventable risk behaviors.

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