Health-related lifestyles and risk behaviours among students living in Alexandria University hostels

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أنماط الحياة الصحية والسلوكيات المحفوفة بالمخاطر بين الطلاب المقيمين في المدن الجامعية بالإسكندرية

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الخلاصة: قام الباحثون بتقييم أنماط الحياة الصحية، ومحدِّداتها في 600 من طَلَبة جامعة الإسكندرية المقيمين في المدن الجامعية. وجُمعت الـمُعْطَيَات بواسطة استبيانات، كما تم أخذ قياس ضغط الدم والقياسات الأنثروبومتـرية. وكان معظم الطلاب غير راضين عن أوضاعهم من حيث المسكن، والوضع الصحي، والدعم المقدَّم لهم. فقد كان 86٪ منهم يتناولون غذاءً غير صحي، واتَّصف 33.8٪ منهم بقلة النشاط البدني، و25.3٪ منهم بزيادة الوزن، أو على وشك التعرُّض لخطر زيادة الوزن. كما وجد أن 17.5٪ من الطلاب الـذكور يـدخنون في وقت الاستبيان، وأن 32.2٪ منهم ينتهجون سلـوكيات سيِّئة مـن حيث النـوم، في حين ينتهج 28٪ منهم ثلاثة أو أكثـر مـن السلوكيات المحفوفة بالمخاطر. واشتكى 23٪ منهم من الشعور بضعف صحتهم، وذَكَـرَ 80.3٪ منهم أنهـم يشعرون بأن الدعم الاجتماعي المقدَّم لهم يتـراوح بين المنخفض والمتوسط. كما وجدت فروق يُعْتَدُّ بهـا إحصائياً بين الجنسَيْن في ما يتعلق ببعض السلوكيات.

ABSTRACT We assessed health-related lifestyles and their determinants among 600 Alexandria University students living in university hostels. Data were collected by questionnaires, and anthropometric and blood pressure measurements were taken. Most students were not satisfied with their situation in terms of accommodation, health and support. About 86% ate unhealthy diets, 33.8% were physically inactive, 25.3% were overweight or at risk of becoming overweight, 17.5% of male students were current smokers and 32.2% had poor sleep behaviours. About 28% of the students adopted 3 or more risk behaviours. About 23% reported low perceived health status and 80.3% felt they had low to moderate social support. There were significant sex differences regarding some behaviours.

Santé, modes de vie et comportements à risque des étudiants de l'Université d'Alexandrie logés en résidence universitaire

RÉSUMÉ Nous avons évalué la relation entre la santé et les modes de vie et leurs déterminants chez 600 étudiants de l'Université d'Alexandrie logés en résidence universitaire. La collecte des données a été réalisée par le biais de questionnaires, avec enregistrement des mesures anthropométriques et de la pression artérielle. La plupart des étudiants se sont déclarés non satisfaits de leur situation en termes de logement, de santé et de soutien social. Environ 86 % d'entre eux reconnaissaient avoir une alimentation peu saine, 33,8 % ne pratiquaient aucune activité physique, 25,3 % présentaient un surpoids ou étaient exposés au risque de surpoids, 17,5 % des étudiants de sexe masculin étaient des fumeurs actifs et 32,2 % avaient de mauvaises habitudes de sommeil. Près de 28 % des étudiants avaient adopté au moins 3 comportements à risque. Environ 23 % avaient le sentiment de ne pas être en bonne santé et 80,3 % de ne bénéficier que d'un soutien social faible ou modéré. Pour certains comportements, il est apparu des différences significatives entre les deux sexes.

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Introduction

Students living in university hostels are a distinct group of university students who have unique needs and problems. They have particular physical, social and emotional characteristics. They are away from home for the first time and have to learn to manage their own affairs, and adjust to new conditions of living without a family member of greater experience to guide them [1,2]. Also students who live independently are subject to less parental control that can inhibit unhealthy behaviour. Such students are more prone to poor eating habits, lack of sleep, or the acquisition of new habits, such as smoking or drug use. All these factors do not contribute positively to the development of a healthy lifestyle [3].

The hostels (university on-campus residence halls) are residence halls where most students share facilities and common areas, such as bedroom, bathroom, kitchen, dining area, study room and television room. The bedrooms can be single or double, or, to accommodate a large number of students, may be dormitory style with up to 14 students [4].

Alexandria University has had a residential college system since 1954 and there are now 23 hostels. The main hostels are situated in Shatby and Ezbet Saad areas and accommodate a large number of college students.

The present study was designed to assess the health-related lifestyle and its determinants among students living in Alexandria University hostels. We aimed to:

- Identify health-related lifestyles among students, such as smoking habits, physical exercise and dietary habits.
- Identify daily life problems in hostels and the students' satisfaction with their residence in hostels.
- Assess the students' perceived health status and social support.

Methods

Study population and sampling techniques

Students living in the main university hostels, 2 for males and 2 for females, during the period of study (academic year 2002–03) were the target population of the study. These comprised 6623 students from different colleges and from different scholastic grades. From these students, 600 were selected through multistage sampling. The first stage was a proportionate allocation method of sampling from the main hostels and some rented hotels. The second stage was allocation of the number by faculty in terms of science/medicine/technical faculties versus arts/business faculties. In the third stage, the sample in each faculty was allocated to represent proportionately the total number of students in that faculty. In the last stage, all educational grades were proportionately allocated.

Data collection

A pre-designed self-reported questionnaire was developed and completed by the students in 20–30 minutes. Questionnaires were distributed to the students in the hostels with the help of the hostel supervisors. The study was explained to the students and confidentiality was assured. We had a response rate of 94%. The following data were obtained.

- Personal and sociodemographic characteristics of the students and parental lifestyle. Socioeconomic status was scored based on the following variables: education and occupation of parents,

family size, housing conditions and family income.

- Daily life problems in hostels in terms of social, environmental, medical, nutritional, educational and transportation problems. The presence or absence of 19 problems was asked about. Each was answered by yes (1 point) or no (0 point). Students were considered satisfied with their residence in the hostels if they reported less than 50% of the problems; otherwise they were considered dissatisfied.

- Perceived health status. This was based on a tool previously applied on a similar population [5]. It was designed to enquire about the students' views on: their self-rated health at the time of inquiry, whether they were living a healthy life, they felt active in the morning, tired during the day, whether they suffered from chronic illness or disability that disturbed everyday life and the number of episodes of respiratory illness they had suffered in the preceding 6 months. The total perceived health status summed to 12. The students' perception of their health status was considered bad (< 6 points), average (6–8 points) and good (> 8 points).

- Perceived symptoms during the preceding 6 months. This was assessed using a sum index of the frequency of feeling 8 symptoms [5]. Each symptom was scored on a 3-point scale: seldom (0), occasional (1), and always (2) with a total score of 16 points. Students were categorized into mild perceived symptoms (≤ 5 points), moderate (6–8 points) and severe (> 8 points).

- Social support of the students. This was assessed through the Duke–UNC Functional Social Support Questionnaire [6]. An Arabic version of the questionnaire was constructed, with an estimated reliability of more than 0.90. This scale is composed of 8 statements, each is scored on a 3-point scale [seldom (0), occasional (1), always (2)] with a total score of 16 points. Students were categorized according to social support as low (≤ 8 points), moderate (9–12 points) and high (> 12 points).

- Health-related lifestyle among students in the hostels in terms of dietary behaviour, body image and attempted weight control measures, performance of physical activity, leisure activities, sleep behaviour and smoking behaviour.

  - Unhealthy dietary behavior was assessed in terms of the following dietary risk behaviours: no breakfast, frequent consumption of fast food, snack intake, excess tea and/or coffee or soft drink consumption, and daily milk consumption. Accordingly, unhealthy dietary behaviour was classified into 3 groups: low risk (1 dietary risk behaviour), moderate (2 dietary risk behaviours) and high (from 3–6 dietary risk behaviours).

  - Physical activity behaviour and sedentary lifestyle were assessed in terms of the following.

    - Frequency and type of current physical activity. This was categorized into: vigorous physical activity at least 20 minutes 3 times or more per week, non-vigorous activity less than 20 minutes or less than 3 times per week, and physical inactivity [7].

    - Frequency of participation in a sports team [7].

    - Students' satisfaction with the performed physical activity, and attitude towards, attempt to and

the barriers to performing physical activity [5].

- • Average daily hours of watching television: watching television 2 or more hours/day was considered to be excessive [8].

- Smokers were classified into daily, weekly and experimental smokers as recommended by the World Health Organization [9]. To estimate the prevalence rate of smoking, daily and weekly smokers, who constitute the regular smokers, were estimated [10].

- Sleep behaviour was assessed in terms of: i) the total hours of sleep per day (8 hours or more of sleep per day was considered sufficient [11]; ii) the regularity of bedtime and the wake-up time (regular or irregular) and if it was early or late. Sleep behaviour was considered healthy if both the bedtime and the wake-up time were regular, and unhealthy if both were irregular, and average if either one of them was regular.

- Students were asked about their perceptions of harm from specific lifestyle behaviours (dietary behaviour, overweight, exercise and smoking). They were also asked whether they wanted to modify their current lifestyle and whether they had made a serious attempt to do so in the previous year.

Anthropometric measurements were taken at the hostels by one of the authors (R.Ch. Fayyad) to assess body weight status. The body mass index (BMI) of each student was calculated [12] and then applied to United States reference data [13]. BMI < 5th percentile by age and sex was considered thin, BMI > 5th percentile and < 85th

percentile was considered normal, BMI ≥ 85th percentile and < 95th percentile by age and sex was considered at risk of becoming overweight and BMI ≥ 95th percentile was considered overweight.

Blood pressure was measured for each student. For systolic blood pressure (SBP) measurements, the first Korotkoff phase (K1) was used, for diastolic blood pressure (DBP) the fifth Korotkoff phase (K5) was used. Students were seated for at least 5 minutes and the appropriate cuff size was used. Two blood pressure measurements were taken with a minimum of 30 seconds rest between each, and the values were used for calculating the mean blood pressure [14].

The blood pressure of each student was classified as follows [15]: normal (SBP < 130 mmHg and DBP < 85 mmHg), high normal (SBP 130–139 mmHg and DBP 85–89 mmHg), mild hypertension (SBP 140–159 mmHg and DBP 90–99 mmHg), moderate hypertension (SBP 160–179 mmHg and DBP 100–109 mmHg), severe hypertension (SBP180–209 mmHg and DBP 110–119 mmHg) and very severe hypertension (SBP ≥ 210 mmHg and DBP ≥ 120 mmHg). When SBP and DBP fell into different categories, the higher category was selected to classify an individual's blood pressure.

Data analysis

Data were analysed using the *SPSS*, version, 7.5. Pearson chi-squared test was used to compare categorical data and Student *t*-test to compare between quantitative data. A chi-squared test for linear trend was used to establish whether increasing risk levels were associated with a change in perception of risk or a desire to modify behaviour. Odds ratios (OR) were calculated with 95% confidence intervals for the likelihood of

an individual perceiving a behaviour to be harmful and having tried to change such behaviour according to the presence or absence of such behaviour. *P*-value ≤ 0.05 was the level of significance.

Results

Table 1 shows the characteristics of the students. Of the 600 university students surveyed, 263 (43.8%) were males and 337 (56.2%) were females. Ages ranged from 17 to 25 years; the mean age of the males was 20.2 (SD 2.03) years, while that of females was 19.4 (SD 1.8) years. More than half of the students (60.7%) belonged to low social class families and only 13.4% to high social class. More than half of the students (59.5%) were enrolled in science/medi-

cine/technical faculties, while 40.5% were enrolled in arts/business faculties.

Male students had significantly longer mean duration of residence [2.8 (SD 1.24) years] than females [2.52 (SD 1.28) years], while mean room density was significantly higher among females [5.3 (SD 3.9) students/room] than that among males [2.2 (SD 1.9) students/room] (Table 2). The medical problems regarding the hostels reported by the students included absence of a physician or nurse (76.7%), lack of curative services (76.3%) or shortage of preventive services (55.7%). The environmental conditions reported were bad sanitation (83.3%) or absence of hot water (69.5%). Educational problems reported by the students included an inability to concentrate while studying due to overcrowding (71.5% of students),

Table 1 **Distribution of the students according to age, college and social class, and sex**

Characteristic	Males (n = 263)		Females (n = 337)		Total (n = 600)		Statistical test
	No.	%	No.	%	No.	%	
Age (years)							
< 18	17	6.5	37	11.0	54	9.0	$\chi^2_1 = 30.36$**
18–19	82	31.2	152	45.1	234	39.0	
20–21	106	40.3	115	34.1	221	36.8	
22–25	58	22.0	33	9.8	91	15.2	
Total	263	100.0	337	100.0	600	100.0	
Mean (SD)	20.2 (2.03)		19.4 (1.8)		19.8 (1.8)		$t = 5.23$**
Type of college							
Science/medicine/ technical	127	48.3	230	68.3	357	59.5	$\chi^2_1 = 24.42$**
Arts/business	136	51.7	107	31.7	243	40.5	
Social class							
High	24	9.2	56	16.6	80	13.4	$\chi^2 = 13.86$**a
Moderate	57	21.8	98	29.1	155	25.9	
Low	180	69.0	183	54.3	363	60.7	
Total	261	100.0	337	100.0	598	100.0	
Mean (SD)	8.8 (4.8)		10.8 (5.0)		9.9 (5.0)		$t = 4.75$**

** Significant at P < 0.01.
aChi-squared for linear trend.
SD = standard deviation.

Table 2 **Distribution of students according to hostel variables and sex**

Variable	Males (n = 263) Mean (SD)	Females (n = 337) Mean (SD)	Total (n = 600) Mean (SD)	Statistical test
Duration of residence (years)	2.8 (1.24)	2.52 (1.28)	2.64 (1.27)	t = 2.72**
Room density	2.2 (1.9)	5.3 (3.9)	3.9 (3.6)	*t* = −13.05**
Hostel problems				
Social (0–5)	2.75 (1.2)	3.52 (1.04)	3.18 (1.18)	t = 8.25**
Environmental (0–4)	2.73 (1.05)	3.08 (0.97)	2.93 (1.02)	t = 4.24**
Medical and nutritional (0–5)	3.6 (1.25)	3.78 (1.19)	3.7 (1.22)	*t* = 1.79 (NS)
Educational (0–5)	2.8 (1.39)	2.95 (1.34)	2.89 (1.37)	*t* = 1.37 (NS)
Total (0–19)	11.87 (3.39)	13.33 (3.21)	12.69 (3.37)	*t* = 5.39**
Hostel satisfaction	No. (%)	No. (%)	No. (%)	
Satisfied	63 (24.0)	48 (14.2)	111 (18.5)	χ^2 = 9.24**
Dissatisfied	200 (76.0)	289 (85.8)	489 (81.5)	

**Significant at P *< 0.01.*
SD = standard deviation; NS = not significant.

time wasted in necessary daily life activities (63.5%), missing lectures because of meal times (60.5%), time wasted because of parental visits (55%) and problems of transportation (48%).

Female students reported a significantly higher mean number of hostel problems [13.33 (SD 3.21)] than males [11.87 (SD 3.39)]. This sex difference was most evident for social ($P < 0.001$) and environmental ($P < 0.001$) problems. Only 18.5% of the students were satisfied with their hostels, with a significantly higher proportion of males reporting satisfaction than females ($P < 0.01$).

Table 3 shows the distribution of students according to their perceived health status, perceived symptoms, social support and academic performance. Only about a quarter (26.4%) perceived their health as good, 31.2% had only mild perceived symptoms, and 19.7% considered the level of social support was high. Nearly a quarter of the students (22.8%) perceived their health status to be bad in terms of poor self-rated health (9.5%), unhealthy lifestyles (13.8%),

feeling sluggish in the morning (24.2%), tiredness during the day (11.7%), having 2 or more respiratory illness episodes in the preceding 6 months (16.8%) or having a chronic illness or disability (6.2%).

Furthermore 37.5% had suffered from severe symptoms in the preceding 6 months such as tremors (61.2%), dizziness (51.3%), abdominal pain (36.3%), irritability (31.3%), headache (31.3%), insomnia (26.3%), fatigue (20.5%) and anxiety (13.5%). A significantly higher proportion of female students than males had poor perceived health status ($P < 0.05$) and severe perceived symptoms ($P < 0.01$).

About three-quarters of the students (75.8%) achieved only fair to poor academic performance while 24.2% achieved a good one. Males were significantly more likely than females to report a poor performance (χ^2 for linear trend = 20.33, $P < 0.01$).

Table 4 shows the association between hostel satisfaction and social class, social support, perceived health status and perceived symptoms. The percentage of students dissatisfied with hostel living tended

Table 3 **Perceived health status and symptoms, social support and academic performance of the students according to sex**

Variable	Males (*n* = 263)		Females (*n* = 337)		Total (*n* = 600)		Statistical test
	No.	%	No.	%	No.	%	
Perceived health status							
Good	82	31.2	77	22.8	159	26.5	χ^2 = 5.69*
Average	129	49.0	175	51.9	304	50.7	
Poor	52	19.8	85	25.3	137	22.8	
Perceived symptoms							
Mild	110	41.8	77	22.8	187	31.2	χ^2 = 36.4**
Moderate	87	33.1	101	30.0	188	31.3	
Severe	66	25.1	159	47.2	225	37.5	
Social support							
High	41	15.6	77	22.8	118	19.7	χ^2 = 0.13*
Moderate	156	59.3	144	42.8	300	50.0	
Low	66	25.1	116	34.5	182	30.3	
Academic performance							
Excellent	7	3.3	12	4.5	19	4.0	χ^2 = 20.33**[a]
Very good	28	13.3	69	25.7	97	20.2	
Fair	114	54.0	154	57.2	268	55.8	
Poor	60	28.4	32	11.9	92	19.2	
Fail	2	1.0	2	0.7	4	0.8	

*Significant at P < 0.05; **significant at P < 0.01.
[a]Chi-squared test for linear trend was applied.

to rise significantly with low social support (χ^2 = 6.18, *P* < 0.01), bad perceived health status (χ^2 = 17.59, *P* < 0.01) and severe perceived symptoms (χ^2 = 28.19, *P* < 0.01). However, no significant association was found with social class (χ^2 = 1.30, *P* > 0.05).

Table 5 shows that a greater proportion of females (32.2%) had 3 or more health-related risk behaviours or conditions than males (22.8%) (*P* < 0.01) and the difference in the mean number of risk-behaviours was statistically significant (2.07 versus 1.87, *P* < 0.05).

Table 6 presents the prevalence of health-related risk behaviours/conditions according to sex. Thus 85.5% of the students ate unhealthy diets, 33.8% were physically inactive, 6.8% were hypertensive, 32.7% watched television for more than 2 hours per day, 25.3% were overweight and/or at risk of becoming overweight, 17.5% of male students were current smokers, 4% of males were drug users, and 32.2% had poor sleep behaviours in terms of quantity and quality.

With respect to sex, males were significantly more likely than females to report unhealthy dietary behaviour, overall hypertension, poor sleep behaviour, current tobacco use and drug use (4.0%), while females were more likely to be overweight or at risk of becoming overweight and to be physically inactive.

Table 7 shows no significant association between social class and any of the health-related risk behaviours. In contrast, family history of risk behaviours was significantly

Table 4 **Distribution of the students according to social class, perceived health status, perceived symptoms and social support, and satisfaction with hostel**

Variable	Hostel satisfaction				Total		Odds ratio (95% CI)
	Satisfied		Dissatisfied				
	No.	%	No.	%	No.	%	
Social class							
High	24	30.0	56	70.0	80	100.0	1[b]
Middle	52	33.5	103	66.5	155	100.0	1.18 (0.66–2.11)
Low	132	36.4	231	63.6	363	100.0	1.33 (0.79–2.25)
χ^2 = 1.30[a], NS							
Perceived health status							
Good	72	45.3	87	54.7	159	100.0	1[b]
Average	107	35.2	197	64.8	304	100.0	0.66 (0.44–0.97)
Poor	30	21.9	107	78.1	137	100.0	0.34 (0.20–0.56)
χ^2 = 17.59**[a]							
Perceived symptoms							
Severe	56	24.9	169	75.1	225	100.0	1[b]
Moderate	59	31.4	129	68.6	188	100.0	1.38 (0.90–2.13)
Mild	94	50.3	93	49.7	187	100.0	3.05 (2.01–4.63)
χ^2 = 28.19**[a]							
Social support							
High	47	39.8	71	60.2	118	100.0	1[b]
Moderate	113	37.7	187	62.3	300	100.0	0.91 (0.59–1.41)
Low	49	26.9	133	73.1	182	100.0	0.56 (0.34–0.91)
χ^2 = 6.18**[a]							

**Significant at P < 0.01.
[a]*Chi-squared test for linear trend was applied.*
[b]*Reference category.*
CI = confidence interval; NS = not significant.

Table 5 **Number of health-related risk behaviours and/or conditions by sex**

Number of risk behaviours	Males (*n* = 263)		Females (*n* = 335)[a]		Total (*n* = 598)		Statistical test
	No.	%	No.	%	No.	%	
0	9	3.4	10	3.0	19	3.2	
1	92	35.0	83	24.8	175	29.3	
2	102	38.8	134	40.0	236	39.5	
3+	60	22.8	108	32.2	168	28.0	χ^2 = 8.90**[b]
Mean (SD)	1.87 (0.97)		2.07 (0.92)		1.98 (0.95)		*t* = −2.41*

*Significant at P < 0.05; ***significant at* P < 0.01.
[a]*There were data missing for 2 students.*
[b]*Chi-squared test for linear trend was applied.*
NS = not significant; SD = standard deviation.

Table 6 Prevalence of health-related risk behaviours and/or conditions among the students by sex

Health-risk behaviour/condition	Males (n = 263)		Females (n = 337)		Total (n = 600)		Statistical tests
	No.	%	No.	%	No.	%	
Dietary behaviour							
Healthy (no risk)	25	9.5	62	18.4	87	14.5	χ^2_1 = 9.42**
Low risk (1)	78	29.7	122	36.2	200	33.3	
Moderate risk (2)	93	35.4	98	29.1	191	31.8	
High risk (3+)	67	25.4	55	16.3	122	20.4	
Mean no. of risk behaviours (SD)	1.84 (1.06)		1.49 (1.10)		1.64 (1.1)		t = 3.85**
Actual body weight status[a]							
Thin	10	3.8	7	2.1	17	2.8	χ^2_1 = 4.04*
Normal	197	74.9	234	69.3	431	71.8	
At risk of overweight	44	16.7	76	22.6	120	20.0	
Overweight	12	4.6	20	6.0	32	5.3	
Overall blood pressure							
Normal	219	83.3	319	94.7	538	89.7	χ^2 = 19.52**[b]
High normal	15	5.7	6	1.8	21	3.5	
Mild high blood pressure	26	9.9	12	3.5	38	6.3	
Moderate high blood pressure	3	1.1	0	0.0	3	0.5	
Physical exercise							
Vigorous	79	30.0	17	5.0	96	16.0	χ^2_1 = 69.62**
Non-vigorous	143	54.4	158	46.9	301	50.2	
No exercise	41	15.6	162	48.1	203	33.8	
Frequency of participation in sports' team of the faculty [Mean (SD)]	0.76 (1.14)		0.11 (0.46)		0.39 (8.9)		t = 8.72**
Watching television (hours per day)							
Less than 2	181	68.8	223	66.2	404	67.3	χ^2 = 0.47, NS
2 or more	82	31.2	114	33.8	196	32.7	
Mean (SD)	1.77 (0.75)		1.51 (0.78)		1.49 (0.76)		t = 0.73, NS
Smoking behaviour							
Smoker	46	17.5	0	0.0	46	7.7	
Non-smoker	217	82.5	335[c]	100.0	552	92.3	
Sleep behaviour							
Good	36	13.7	86	25.5	122	20.3	χ^2_1 = 76.06**
Average	93	35.3	192	57.0	285	47.5	
Poor	134	51.0	59	17.5	193	32.2	

*Significant at P < 0.05; ** significant at P < 0.01; NS = not significant.
[a]In applying chi-squared test (degree of freedom = 1); at risk of overweight and overweight were grouped together versus thin and normal together, vigorous and non-vigorous groups were grouped together, and good and average sleeping behaviours were grouped together.
[b]Chi-squared test for linear trend was applied.
[c]There were data missing for 2 students.
SD = standard deviation.

Table 7 Prevalence of health risk behaviours (or conditions) by students' characteristics

Variable	Unhealthy diet			Overweight			Lack of exercise			Smoking		
	No.	%	OR	No.	%	OR	No.	%	OR	No.	%	OR
Social class												
High	66	82.5	1	25	31.2	1	31	38.8	1	4	16.7	1
Moderate	133	85.8	1.28	41	26.5	0.79	50	32.3	0.75	10	17.5	1.06
Low	312	86.0	1.3	86	23.7	0.68	122	33.6	0.80	31	17.2	1.04
χ^2		NS			NS			NS			NS	
Family history of risk behaviour												
Negative	322	83.0	1	112	21.7	1	80	26.8	1	12	9.1	1
Positive	191	90.1	1.86*	40	47.6	3.28**	123	40.9	1.89**	34	26.0	3.5**
χ^2		5.58*			25.65**			13.34**			12.96**	
Academic performance												
Good	100	86.2	1	30	25.9	1	48	41.4	1	2	5.7	1
Poor	317	87.1	1.08	89	29.5	0.93	120	33.0	0.70	37	21.0	4.39*
χ^2		NS			NS			NS			4.54*	
Perceived health status												
Good	128	80.5	1	36	22.6	1	33	20.8	1	7	8.5	1
Average	262	86.2	1.51	81	26.6	1.24	110	36.2	2.16*	25	19.4	2.58*
Poor	123	89.8	2.13	35	25.5	1.17	60	43.8	2.98**	14	26.9	3.95**
χ^2		NS			NS			17.92**			7.93*	
Perceived symptoms												
Mild	158	84.5	1	42	22.5	1	38	20.3	1	15	13.6	1
Moderate	151	80.3	0.75	48	25.5	1.18	62	33.0	1.93*	14	16.1	1.21
Severe	204	90.7	1.78	62	27.6	1.31	103	45.8	3.31**	17	25.8	2.20*
χ^2		NS			NS			29.60**			3.85*	
Social support												
High	95	80.5	1	32	27.1	1	34	28.8	1	10	24.4	1
Moderate	262	87.3	1.67	67	22.3	0.77	91	30.3	1.08	26	16.7	0.62
Low	156	85.7	1.45	53	29.1	0.65	78	42.9	1.85*	10	15.2	0.55
χ^2		NS			NS			7.60*			NS	

*Significant at P < 0.05; ** significant at P < 0.01.
OR = odds ratio; NS = not significant.

associated with all the risk behaviours included. Perceived poor health status and perceived severe symptoms were significantly associated with both smoking behaviour ($P < 0.05$) and physical inactivity ($P < 0.01$). On the other hand, low social support was associated with physical inactivity ($P < 0.05$), while fair to poor academic performance was associated with smoking ($P < 0.05$).

Table 8 shows the perception of risk associated with each behaviour. Only 63.4% of students with unhealthy dietary intake perceived their diet to be a health risk and 73.0% of overweight students perceived their body build to be a health risk. On the other hand, nearly all physically inactive students (99.5%) perceived their inactivity as harmful to health, and all smokers felt that their behaviour was harmful. Students with unhealthy dietary behaviour were

significantly more likely to perceive an associated risk to their health than students without that risk behavior (OR = 2.43, $P < 0.01$). This finding was the same for both overweight (OR = 24.45, $P < 0.01$) and physically inactive students (OR = 52.08, $P < 0.01$).

Of 44 smokers, 40 (90.1%) wanted to reduce their smoking, but only 34 (77.3%) had tried to do so during the past year. The corresponding figures were 86.2% for overweight students, 87.5% for students eating an unhealthy diet and only 29.6% for physically inactive students.

Overweight students were significantly more likely to want to change their behaviour than normal weight students (OR = 3.0, $P < 0.01$). On the other hand, inactive students were significantly less likely to want to change their behaviour than active students (OR = 0.11, $P < 0.01$). The

Table 8 **Association between health-risk behaviours (or conditions) and perceived harmfulness of the behaviour, and desire and attempt to change the behaviours**

Health-risk behaviour	Perceived harmful			Wanted to change			Tried to change		
	No.	%	OR	No.	%	OR	No.	%	OR
Dietary behaviour									
Healthy	36	41.4	1	77	88.5	1	26	29.9	1
Unhealthy	325	63.4	2.43**	449	87.5	0.91	185	36.1	1.32
P-value		8.11**			NS			NS	
Overweight									
No	43	9.6	1	302	67.4	1	189	42.2	1
Yes	111	73.0	24.45**	131	86.2	3.0	78	51.3	1.4
P-value		239.32**			19.14**			NS	
Exercise									
Active	250	78.1	1	314	79.1	1	163	41.1	1
Inactive	186	99.5	52.08**	60	29.6	0.11**	13	6.4	0.10**
P-value		44.63**			140.38**			77.82**	
Smoking behaviour									
Non-smoker	–	–	–	–	–	–	–	–	–
Smoker	44	100.0	–	40	90.1	–	34	77.3	–

*Significant at P < 0.05; ** significant at P < 0.01.
OR = odds ratio.
NS = not significant.

proportion of students who had seriously tried to change certain behaviours was not associated with the level of adoption of that behaviour except for exercise in that inactive students were the least likely to attempt to increase exercise (OR = 0.10, $P < 0.01$).

Discussion

The findings of the present study regarding unhealthy dietary behaviour, poor sleep behaviour, physical inactivity, overweight and smoking and drug use are much worse than those of a previous study [16] on Egyptian adolescents living at home, where more than half of them ate raw vegetables, 6% smoked cigarettes, 8% tried smoking only once, 10% were at risk of overweight, and 4% were overweight. This means that college students in the Alexandria University hostels appear to be initiating health-risk behaviour earlier, and in most cases before they are developmentally ready to deal with the potential outcomes.

More female students reported a lack of physical activity and were overweight. This could be explained by the behavioural as well as sociocultural factors as females have fewer opportunities to go outside the hostel environment, whereas males can be more independent, mobile and share food and exercise with their peers.

During adolescence, significant psychological development and changes in personal relationships and physical maturation can affect one's perception of health [17]. The findings of our study reveal that nearly a quarter of the students reported bad perceived health; lower proportions suffered from health conditions. This may explain why the majority of the students were dissatisfied with residence in the hostels, especially those with bad perceived health and severe perceived symptoms. However, females were more likely than male stu-

dents to be dissatisfied with residence in the hostels, and more likely to have more problems, possibly because they generally came from higher social class families and there was a higher proportion of dissatisfied students among those of high social class families.

Social support and social milieu have long been thought to be major contributors to health and the interaction of stress and illness [18]. Our study showed that nearly one-third of the students had low social support based on Duke-UNC Functional Social Support. This could be explained by the reported conditions and social pressures inside the hostels in terms of unhealthy behaviour of some students, neglect of students' problems, home-sickness and the absence of close relationships. Furthermore, the high prevalence of dissatisfaction might explain the low social support among students as there was a strong association between them. A previous study found a direct relationship between social support and wellbeing among college students [18]. Social support in the present study was a strong predictor of engagement in healthy lifestyle such as physical activity. This is supported by other authors [19], who reported that negative support was a predictor of not quitting smoking.

It is assumed that attitudes acquired or consolidated during adolescence are the best predictors of intention to engage in selected health behaviour [20]. Perception of harm was significantly higher among those who adopted any of the 4 risk behaviours; unhealthy dietary habit, overweight, physical inactivity or smoking. The majority of the students had positive attitudes towards healthy lifestyle. Thus, the present study shows that in spite of the high percentage of students with positive beliefs and attitudes towards all health behaviours, one-third still had at least 1 risk behaviour,

and over a quarter reported adopting 3 or more unhealthy practices. This suggests that there is a need to investigate other factors affecting the practices of university students that lead to students participating in certain behaviours.

Previous studies have assumed that parental lifestyle affects an individual's patterns of behaviour. Parental smoking status was a significant predictor of smoking among adolescents [21–23]. The strong association between adolescents' obesity and parental fatness has also been reported [24,25] and young people tend to view physically active parents as role models as well as a source of support and encouragement for exercise [26,27]. Our study demonstrated the strong relationship between family history of risk behaviours such as tobacco use, unhealthy dietary behaviour, sedentary lifestyle and overweight, and each of the university students' corresponding risk behaviour.

An association between the socioeconomic status and different lifestyle habits has been proposed by some researchers [28–30] and denied by others [31]. The findings of the present study failed to demonstrate such association. The students residing in the hostels had attained the same educational level, and were living in the same environmental conditions. Therefore, the environmental conditions within the hostels rather than social class might be the main predictors of engaging in risk behaviour.

Improved academic performance has been reported to be an appropriate goal for college health promotion personnel [32,33]. However, our study found that three-quarters of the students residing in the hostels had fair to poor academic performance based on the reported results of the mid-year examination. This might have occurred because of the high prevalence of educational problems reported by the majority of students in the hostels. Poor sleep behaviour might also be serious enough to hamper academic performance [34,35]. This was a problem particularly among male students in the hostels who reported more frequent poor behaviour than females. Smoking may be another contributor to poor academic performance among students [36]; we found a strong association between smoking and academic performance. Evidence suggesting an association between improved academic performance and physical activity for children and adolescents is emerging [37]. However, we failed to find this association.

Overall, students residing in university hostels in Alexandria University do not appear to be satisfied with their situation in terms of accommodation, health and support. In addition, the prevalence of unhealthy behaviours among this group of students is of concern. Clearly these issues need to be addressed in order to provide a supportive environment in which students can thrive and which encourages healthy behaviours.

Recommendations

- Health education messages for college students residing in Alexandria University hostels should be disseminated through formal or informal programmes to bring about behavioural changes in terms of smoking, physical activity, healthy dietary habits, and sleep behaviour.

- Focus group interviews with students should be conducted to elicit in-depth information about students' problems as well as their suggestions for improvement.

- A peer-education programme should be implemented at the hostels and coordinated by one of the health educators or supervisors. Students who are strongly motivated towards appropriate eating and exercise behaviour should take a lead role in influencing their peers.

- Environmental changes should be made to reduce barriers to healthy lifestyles among students through improvement of recreation facilities, provision of sports facilities and equipment, and provision of good healthy food.

- Recreational activities for students at hostels should be arranged such as weekend trips.

- A comparative study between the students residing in hostels and those outside hostels regarding different lifestyle and health-risk behaviour is especially recommended.

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Clinical guidelines for the management of hypertension (WHO EMRO Technical Publication Series, No. 29)

The World Health Organization has estimated that high blood pressure causes one in every eight deaths, making hypertension the third leading killer in the world. In the Eastern Mediterranean Region cardiovascular diseases and stroke are becoming major causes of illness and death as populations age, smoking rates continue to rise and diets and lifestyles change. Good management is central to any strategy formulated to control hypertension at the community level. These guidelines are aimed at standardizing the management and care of hypertension, and at promoting integration of prevention of hypertension into primary health care settings. The guidelines are intended to benefit physicians at primary, secondary and tertiary level, general practitioners, internists and family medicine specialists, clinical dietitians and nurses as well as health and policy-makers in the Region. They provide the necessary information for decision-making by health care providers or patients themselves about disease management in the most commonly encountered situations

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