Faculty of Health Sciences, Linköping University

Medical Programme

LIFESTYLE FACTORS ASSOCIATED WITH PERCEIVED ILL HEALTH AND REPORTS OF SYMPTOMS AMONG MEDICAL AND TECHNOLOGY UNIVERSITY STUDENTS

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Svensk sammanfattning

Folkhälsan i Sverige är i många avseenden god men det finns allvarliga folkhälsoproblem som tenderar att öka och det gäller bland annat fetma och livsstilsrelaterade sjukdomar, som t ex diabetes och hjärt-kärlsjukdomar. Flera tidigare studier har visat att det finns tydliga könsskillnader vad det gäller hälsa och livsstil, t ex äter kvinnor mer frukt och grönt än män.

Universitetsstudenters hälsa är viktigt att studera ur flera perspektiv. Dels vet man ganska lite om studenters hälsa, då de anses som en selekterad grupp i samhället, och dels är de unga människor som tidigt i sitt vuxna liv skapar vanor de oftast håller fast vid resten av livet. Särskilt läkarstudenter borde ha en hälsosammare livsstil än andra studenter då de under en lång utbildning får en gedigen kunskap om hälsan. Dessutom har de som färdiga läkare, när det gäller prevention och hälsa, ofta en roll som en sorts förebilder för patienter vilket ytterligare understryker vikten av att läkarstudenter har kunskap om hur man förändrar sin livsstil.

Syftet med den här studien var att undersöka sambanden mellan livsstilsfaktorer och självrapporterad ohälsa och symptom hos läkar- och teknologstudenter ur ett könsperspektiv. Vi ville även undersöka om läkarstudenter skiljer sig från en annan grupp studenter vad gäller livsstil och hälsobeteende.

En enkät delades ut till läkar- och teknologstudenter vid Linköpings Universitet. Av 570 studenter besvarade 445 studenter enkäten. Enkäten innehöll frågor om livsstil, socialt liv, stress, ohälsosymptom och självupplevd hälsa.

Av det insamlade materialet framkom tre huvudfynd. Det första var att det fanns väldigt små skillnader mellan läkar- och teknologstudenter. Det andra att det fanns många könsskillnader, där män t ex åt mindre frukt och grönt och drack mer alkohol, men samtidigt upplevde sig ha mindre symptom, som t ex rygg- och nackvärk. Det tredje var att det förutom motion var sociala faktorer som, var för sig, var sammankopplade med självupplevd hälsa och symptom.

En viktig slutsats av denna studie är att läkarstudenter, som borde veta mer om hälsa och livsstil, var relativt likartade med teknologstudenter i dessa avseenden. Ur ett folkhälsoperspektiv kanske inte information till vuxna är något bra sätt att ändra befolkningens levnadsvanor, utan istället kanske man måste lagstifta om energiinnehåll i mat. En annan viktig slutsats är att det främst är sociala faktorer som avgör hur bra man mår, vilket är viktig kunskap för alla som arbetar med unga människors hälsa.

Abstract

Background: Little is known about health and lifestyle among university students, since they are not considered as a risk group. The aim of this study was to investigate associations between life style factors and perceived ill health and reports of symptoms among medical and technology university students in a gender perspective. We also wanted to investigate if medical students differed from another student group concerning life style and health behaviour since they are exposed to knowledge of health, prevention and health risks during their student period.

Material and methods: A questionnaire was handed out at different lectures at Linköping University to N=570 medical and technology university students (response rate 86 %) with questions regarding demographics, lifestyle, social life, stress, self-reported symptoms and perceived health. Statistical calculations were made with SPSS.

Results: There were few differences between medical and technology students, but several gender differences. A larger proportion of females than males ate fruit and vegetables every day, thought more often about nutrition, drank alcohol more seldom and had someone to confide in. They, however, ate snacks and sweets, felt lonely and stressed more often than males. Perceived health didn't differ between the sexes. Multivariate analysis was made to investigate associations between lifestyle and social life factors and self-reported health and perceived health. Gender was associated with several symptoms, as was exercise. However, the strongest associations were between social life factors and different symptoms.

Conclusions: This study showed that gender differences, regarding lifestyle and perceived health, were quite apparent among the university students. Other main findings were that there are few differences between medical and technology students regarding their lifestyle and perceived health. The life style factor exercise, together with different social life factors were independent and strongly associated with self-perceived health and symptoms, such as back and neck pain, gastrointestinal problems and low spiritedness.

Key Words: Student health, perceived health, symptoms, lifestyle, gender.

Introduction

Today, the Swedish population is eating more and exercising less than before. The prevalence of obese people is increasing, which threatens the general public health. Obesity is strongly associated with life-style-diseases such as diabetes type II and cardio-vascular disease. In Sweden, the prevalence of psychological ill health has increased since the beginning of the 1990's, especially among young women [1].

Several studies have showed that there are gender differences in lifestyle and perceived health. Women eat more fruit and vegetables and drink less alcohol, that is; in many ways women live a healthier life than men. Men are more likely than women to have more than one risk behaviour for ill health [1]. However, women tend to report symptoms and perceived ill health to a higher extent than men [2,3] and also consume more health care than men, at least when looking at visits to the doctor [4].

Health and health behaviour among young adults are important to study since the habits and lifestyle they develop early in their adult life have a tendency to persist over time. It seems that it's difficult for an individual to see early on how the lifestyle choices he or she makes can and will affect his or her health in the future. Lifestyle changes as early as possible in life are not only easier to make, but are also more cost effective in a future health care perspective [5].

The morbidity and self-perceived ill health are lower among people in Sweden with "higher education" [1]. University students and medical students in particular, are a select group in that they are young and educated. Little is known about the health and lifestyle among students, since they are not considered a risk group [6]. However, students are exposed to several risk factors. To some extent university students face other types of stressors than other younger persons not studying at universities. Stress is an important risk factor; students have a heavy workload, compete with other students and get little feedback for their work [3].

Doctors, and other health professionals, today must spend more time being health educators [7] than traditional doctors did, since the lifestyle-related diseases increase [1]. Therefore it is important that doctors (a) has knowledge on how to change ones lifestyle and (b) is credible role models for the patient. For instance, one can imagine that it is harder for a patient to be

motivated to smoking cessation by a doctor who smells of cigarette smoke. In that context it is important for doctors to self be aware of their own lifestyle and habits.

So – how does one change ones lifestyle? If knowledge in health and disease makes you live a more healthy life, then medical students, after 5 ½ years of education in health, disease and risk factors, should live a healthier life than the average Swede and also more than other University students [8]. Healthy medical students are likely to become healthy doctors who can then model and promote lifestyles with their patients [9].

Aims

The aim of this study was to investigate associations between life style factors and perceived ill health and reports of symptoms among medical and technology university students in a gender perspective. We also wanted to investigate if medical students differed from another student group concerning life style and health behaviour since they are exposed to knowledge of health, prevention and health risks during their student period.

Material and methods

Subjects

The study population in this report consisted of two types of university students; medical students from The Faculty of Health Sciences and technology students from the Institute of Technology, at Linköping University. For each programme, two groups were chosen, those in their first year of their studies and those in their fourth year. The technology students were chosen as a comparison group to the medical students. To be able to compare two different groups of students the comparison group needed to have an education as comparable as possible to the medical students, excluding health knowledge. Both medical and technology studies are quite demanding educations and the students have to have top grades to get admitted. There are in general a less percentage of women in technology studies than in medical studies, so the technology program with the highest percentage of women was deliberately chosen.

The medical students were approached at their first month of medical studies and at the beginning of their fourth year. The fourth year (7th term) is the beginning of their clinical training. The technology students were also approached at their first month of technology studies and at their last course together, which begins at their fourth year (8th term). The difference between technology and medical students at their fourth year is that the technology students are at the end of their studies and medical students are only in the middle of their studies. This is because medical school in Sweden is 5½ years compared to 4½ years for technology studies.

The sample in this study included two courses of medical students and two courses of technology students, altogether comprising N=520 students. The questionnaire was answered by n=445 students (n=3 students answered the questionnaire without specifying their sex), which means an overall response rate of 86%. In the total sample, 63% were males and 37% were female students. There were some variations in participation rate between the included programmes as shown in **table 1**. The first year medical students (N=70) had a response rate of 73% (n=51) and the fourth year medical students (N=63) had a response rate of 89% (n=56). First year technology students (N=237) had a response rate of 84% and the fourth year technology students (N=150) had a response rate of 93% (n=150). The distribution of participants in the educational programmes is shown in **table 1**.

Table 1: Participants in the study

	Total		Male		Female
	n	%	n	%	n
Medical students term 1	51	39.2	20	60.8	31
Medical students term 7	56	37.5	21	62.5	35
Technology students term 1	197	69.0	136	31.0	61
Technology students term 8	138	74.6	103	25.4	35
Total	442	63.3	280	36.7	162
p-value=<0.0001					

The sex distribution of the two programs was different, with a significant (p<0.0001) overload of male students among the technology students and on the contrary an overload of females among the medical students. The age distribution of the participants is shown in **table 2**.

Table 2: Age distribution in the study

	Total	≤ 22 yrs		23-28 yrs		29-34 yrs		≥ 35 yrs	
	n	%	N	%	n	%	n	%	n
Medical students term 1	51	64.7	33	23.5	12	7.8	4	3.9	2
Medical students term 7	56	8.9	5	80.4	45	5.4	3	5.4	3
Technology students term 1	198	97.0	192	3.0	6	0	0	0	0
Technology students term 8	139	5.0	7	92.8	129	2.2	3	0	0
Total	444	53.4	237	43.2	192	2.3	10	1.1	5
p-value=<0.0001									

One major difference between medical and technology students was that 97% of first year technology students were ≤ 22 years old compared to 64.7% of first year medical students together with the fact that 11.2% of all medical students are ≥ 29 years old compared to 2.2% of all technology students. One explanation to the uneven age distribution could be that there are so many applicants to Swedish medical school that only a small percentage of the applicants get accepted every term. Many apply several years in a row, which could explain that some medical students are older than technology students.

Collection of data and ethical considerations

Data was collected during autumn and winter of 2005/06. The questionnaires were handed out at regular lectures at the educational programmes. All of these lectures had voluntary attendance, and that is why full assembly couldn't be guaranteed. An ethical consideration in the study was the voluntary participation; therefore all students were informed prior to the distribution of questionnaires that participation in the study was completely voluntary.

Questionnaire

The questionnaire was a slightly modified version of a "Health Profile Survey" that has been handed out to all students at their first term at the Faculty of Health Science, Linköping University since 1999. A small pilot study was made in June 2005. Four persons answered the questionnaire and commented on how easy the questions were to understand and how long it took to answer the whole questionnaire. Some minor changes in formulation were made to increase comprehension. It took approximately 5 minutes to answer the questionnaire, which was quite acceptable.

The questionnaire contained questions covering six factors: 1) Demographics, 2) Lifestyle, 3) Social life, 4) Stress, 5) Self-reported symptoms and 6) Perceived health.

1) **Demographic factors:** This group contained questions regarding sex, age (divided into the age-groups: ≤22 yrs, 23-28 yrs, 29-34 yrs and ≥35 yrs), civil status and having children. The age intervals were chosen so that no one in their fourth year of studies could choose the first answer (if they had had a regular Swedish education).
2) **Lifestyle factors:** This group included questions regarding exercise habits, food habits (including questions about vegetables, fruit, sweets, snacks and alcohol intake), smoking habits and use of bicycle helmet.
3) **Social life factors:** This group included questions regarding how often the student meets his/her family and friends (never, seldom, now and then, often, and very often) and also how often the student feels lonely and whether he/her has someone to confide in.
4) **Stress:** The student answered how often he/her feels stressed (never, seldom, now and then, often, and very often).
5) **Self-reported symptoms**: This group included questions regarding perceived symptoms the last three months and the student could answer yes or no. The symptoms asked were back- and neck ache, joint ache, gastrointestinal problems, headache, insomnia, fatigue, low spiritedness, concentration difficulties and allergy. The students were also asked if they had visited a physician the last twelve months.
6) **Perceived health:** The students were asked to self asses their health using a VAS-scale with 10 degrees. They were also asked how they perceive their own health compared to others in their own age.

Statistics

All data was stored in a common database and statistically analyzed using the SPSS version 13.0 program (SPSS Inc., Chicago, IL, USA). Mean and its standard deviation were measured by the non-parametric Mann Whitney-test. In the further statistical analysis perceived health and self-reported symptoms were used as dependent variables and life style and social life factors as independent variables. Univariate associations were assessed by the Chi-Square and Pearson's correlation. Univariate analyses of the relations between potential independent variables and the dependent variables were performed prior to the multivariate analysis (regarding perceived health) and the multiple logistic analyses (regarding

symptoms), to reveal variables to be included in the final multivariate model. In general, a p-value of $p<0.05$ was considered statistically significant.

Results

The data in **table 3** shows the studied lifestyle factors and how they vary according to gender. Statistical analyses were all made on the full distribution of answers for each life style factor, but for illustrative purposes only some of the answers are presented in the tables.

Table 3. Different lifestyle behaviours among female and male university students.

	Total		Male		Female		p-value
	%	n	%	n	%	n	
Exercising once or more a week	65.3	288	66.1	185	64.0	103	0.939 (n.s.)
Often or always thinking of own nutritional habits	61.1	270	57.8	162	66.7	108	0.048
Preparing and cooking own food every week or day	91.9	405	91.4	255	92.6	150	0.215 (n.s.)
Eating fruit and vegetables every day	57.2	253	45.0	126	78.4	127	<0.0001
Eating sweets and snacks every week or several times a week	57.2	252	50.2	140	69.1	112	0.008
Smoking daily	1.4	6	1.1	3	1.9	3	0.420 (n.s.)
Drinking alcohol once or more a week	38.3	169	43.7	122	29.0	47	0.045
Wearing bicycle helmet never or seldom	95.2	418	95.7	267	94.4	151	0.518 (n.s.)

The vast majority of students exercised once or more a week, the same pattern between sexes. Over 90 % of all the students cooked regularly their own food. There was a gender difference in lifestyle regarding thinking of own nutritional habits, eating fruit and vegetables and alcohol consumption. It was significantly more common that females were thinking of own nutritional habits often or always compared to male students. It was almost twice as common that female students consumed fruit and vegetables every day compared to male students. A higher percentage males drank alcohol every week, compared to females. Significantly more female students consumed more often sweets and snacks. Very few, or under 2 % of the

students were daily smokers. Only around 5 % of the students utilized bicycle helmet regularly.

There were some differences between the education programmes regarding thinking of own nutritional habits, eating fruit and vegetables, and drinking alcohol. 72.6% of first year medical students consider their own nutritional habits often or always compared to 53.8% of first year technological students (p=0.290). Regarding fruit and vegetables, 72.5% of first year medical students and 82.1% of fourth year medical students ate fruit and vegetables every day compared to 46.2% of first year technology students and 56.8% of fourth year technology students (p=<0.0001). Regarding alcohol, 25.4% of first year medical students and 26.7% of fourth year medical students drank alcohol once or more a week compared to 43.9% of first year technological students and 40.3% of fourth year technological students (p=0.090). These tendencies of differences between the programs were in multivariate analysis found to be explained by the uneven sex distribution between the educational programs.

The data in **table 4** shows different social life factors and how it varies according to gender. Statistical analyses are all made on the full distribution of answers for each social factor, but for illustrative purposes only some of the answers are presented in the table.

Table 4: Different social life behaviours among female and male university students.

	Total		Male		Female		p-value
	%	n	%	n	%	n	
Never or seldom meet family	17.7	78	18.6	52	16.0	26	0.089 (n.s.)
Never or seldom meet friends	2.2	10	2.6	7	1.9	3	0.766 (n.s.)
Often or very often feel lonely	5.0	22	3.2	9	8.0	13	<0.0001
Don't have someone to confide in	7.8	34	10.5	29	3.1	5	0.005
Often or very often feel stressed	43.0	190	31.5	88	63.0	102	<0.0001

Almost one fifth of all students declared that they never or seldom meet their family. Only a small number of students never or seldom meet friends. It was significantly more common that male students declared that they didn't have someone to confide in. There was also major gender differences in social life concerning feeling lonely and feeling stressed. A significantly larger proportion of female students reported that they often or very often felt lonely

compared to male students and more females felt often or very often stressed than male students.

Differences between the education programmes are significant regarding meeting family. 7.8% of first year medical students and 5.4% of fourth year medical students never or seldom meet their family compared to 21.1% of first year technology students and 23.2% of fourth year technology students (p=0.003). Adjusted for sex distribution in a multivariate analysis the difference is still significant (p=0.003)

Different types of symptoms reported and perceived during the last three months by the students are presented in **Table 5**.

Table 5: Perceived symptoms during the last three months and gender

	Total		Male		Female		p-value
	%	n	%	n	%	n	
Back and shoulder pain	47.4	209	41.4	116	57.8	93	0.001
Gastrointestinal problems	37.6	166	26.8	75	56.2	91	<0.0001
Headache	55.1	243	47.3	132	68.5	111	<0.0001
Insomnia	33.3	147	31.4	88	36.6	59	0.264 (n.s.)
Low spiritedness	33.6	148	26.5	74	45.7	74	<0.0001

When asked if they had had symptoms during the last three months, a higher percentage of women than men answered yes. For instance, more than half of the females had had gastrointestinal problems during the last three months. That shows that there is a gender difference, since slightly more than a quarter of the men answered yes to the same question. The only symptom in table 5 that women didn't report to a higher extent than men is insomnia, where the slight difference isn't significant.

There is a difference between the education programmes regarding gastrointestinal problems. 49.0% of first year medical students and 64.3% of fourth year medical students have gastrointestinal problems compared to 34.2% of first year technology students and 28.1% of fourth year technology students (p=<0.0001). However, adjusted for the sex distribution in a multivariate analysis the difference between the programmes were no longer significant.

Perceived health was measured by a Visual Analogue Scale (VAS-scale ranging from 1 to 10). In table 6 and table 7 is shown the means and standard deviations for perceived health according to gender and according to educational programmes, respectively.

Table 6: Self-perceived health and gender

	Total		Male		Female		
	m	sd	m	sd	m	sd	p-value
VAS (mean)	8.18	±1.79	8.23	±1.78	8.11	±1.80	0.431 (n.s.)

Table 7: Self-perceived health and education groups

	VAS (mean)	
	m	sd
Medical students term 1	8.22	1.91
Medical students term 7	8.70	1.09
Technology students term 1	8.07	1.82
Technology students term 8	8.12	1.88
p-value= 0.202 (n.s.)		

The two tables above show that there is no significant difference between males and females or between education programmes in self-perceived health. There was a tendency that medical students perceived their health higher than the technological students, however not statistical significant (p=0.202).

Univariate and multivariate correlations between potential lifestyle and social life variables associated to perceived health is shown in **table 8**.

Table 8: Univariate and multivariate analysis of potential lifestyle and social life factors associated to perceived health.

	Univariate		Multivariate	
	r	p-value	B	p-value
Programme	0.013	0.131 (n.s)		
Gender	-	0.516 (n.s)		
Exercise	0.251	<0.0001	0.353	<0.0001
Nutrition	0.096	0.059 (n.s.)		
Cooking	0.070	0.314 (n.s.)		
Fruit and vegetables	0.033	0.929 (n.s.)		
Sweets and snacks	-0.065	0.078 (n.s.)		
Smoking	-0.088	0.319 (n.s.)		
Alcohol	-0.005	0.406 (n.s.)		
Bicycle helmet	0.027	0.154 (n.s.)		
Meet family	0.057	0.432 (n.s.)		
Meet friends	0.232	<0.0001	0.164	0.089 (n.s.)
Feel lonely	-0.431	<0.0001	-0.760	<0.0001
No one to confide in	0.249	<0.0001	1.241	<0.0001
Stress	-0.302	<0.0001	-0.333	<0.0001
Multivariate model: F=39.041, df=5, p-value=<0.0001, adj r^2=0.303				

The only lifestyle factor that was significantly correlated with perceived health was exercise habits, a variable that was still statistically significant related to perceived health in the multivariate analysis. Several of the social life factors were correlated to perceived health; meet friends, feel lonely, and no one to confide in and perceived stress. These were also statistically significant in the multivariate model except for the variable meeting friends. In the final multivariate model, the variables associated to perceived health were; exercise habits, feeling lonely, no one to confide in and perceptions of stress. Of these final variables in the model, no one to confide in appeared to be the strongest associated variable to perceived health.

The following tables (table 9-13) show how lifestyle and social life factors correlate with different perceived symptoms the last three months. The first one, **table 9**, regards self-reported back and shoulder pain.

Table 9: Univariate and multiple logistic analysis of potential lifestyle and social life factors associated to self-reported back and shoulder pain

	Univariate		Multivariate	
	r	p-value	B	p-value
Programme	-0.065	0.174 (n.s)		
Gender	0.158	0.001	0.480	0.026
Exercise	-0.099	0.038	-0.200	0.055 (n.s)
Nutrition	0.036	0.018	0.100	0.416 (n.s.)
Cooking	0.046	0.337 (n.s.)		
Fruit and vegetables	0.078	0.102 (n.s.)		
Sweets and snacks	0.091	0.056 (n.s.)		
Smoking	0.029	0.544 (n.s.)		
Alcohol	0.027	0.570 (n.s.)		
Bicycle helmet	-0.062	0.197 (n.s.)		
Meet family	-0.016	0.007	-0.051	0.674 (n.s.)
Meet friends	-0.062	0.195 (n.s.)		
Feel lonely	0.090	0.059 (n.s.)		
No one to confide in	0.016	0.743 (n.s.)		
Stress	0.164	0.001	0.253	0.038
Multivariate model: Chi-square=20.404, df=5, p-value=<0.0001, r^2=0.061				

Back and shoulder pain was in the univariate analysis correlated with gender, exercise, nutrition, meet family and stress. Being a woman was strongly associated with back and shoulder pain, also in the multivariate analysis. The multivariate model included the variables gender and stress, which were both independently correlated with perceived back and shoulder pain.

Univariate and a multivariate model of factors associated to self-reported gastrointestinal problems during the last three months are shown in **table 10**.

Table 10: Univariate and multiple logistic analysis of potential lifestyle and social life factors associated to self-reported gastrointestinal problems.

	Univariate		Multivariate	
	r	p-value	B	p-value
Programme	-0.079	0.094 (n.s.)		
Gender	0.292	<0.0001	1.078	<0.0001
Exercise	-0.134	0.005	-0.246	0.019
Nutrition	0.018	0.700 (n.s.)		
Cooking	0.060	0.208 (n.s.)		
Fruit and vegetables	0.068	0.154 (n.s.)		
Sweets and snacks	0.044	0.355 (n.s.)		
Smoking	-0.015	0.749 (n.s.)		
Alcohol	-0.013	0.778 (n.s.)		
Bicycle helmet	0.054	0.260 (n.s.)		
Meet family	0.007	0.884 (n.s.)		
Meet friends	0.022	0.649 (n.s.)		
Feel lonely	0.097	0.040	0.040	0.763 (n.s.)
No one to confide in	0.032	0.509 (n.s.)		
Stress	0.220	<0.0001	0.312	0.020
Multivariate model: Chi-square=50.694, df=4, p-value=<0.0001, r^2=0.148				

Self-reported symptoms from the gastrointestinal tract were univariately associated with gender, exercise, feeling lonely and feeling stressed. Of these lifestyle and social life factors only gender, exercise and stress remained independently associated with perceived gastrointestinal problems in the multivariate analysis. Of the variables included in the multivariate model, the female gender was most strongly associated with gastrointestinal problems.

Univariate and multivariate model of factors associated to self-reported and perceived headache during the last three months is shown in **table 11**.

Table 11: Univariate and multiple logistic analysis of potential lifestyle and social life factors associated to self-reported headache.

	Univariate		Multivariate	
	r	p-value	B	p-value
Programme	0.051	0.287 (n.s.)		
Gender	0.206	<0.0001	0.846	<0.0001
Exercise	-0.154	<0.0001	-0.335	0.001
Nutrition	-0.057	0.230 (n.s.)		
Cooking	0.019	0.695 (n.s.)		
Fruit and vegetables	0.015	0.758 (n.s.)		
Sweets and snacks	0.117	0.014	0.165	0.122 (n.s.)
Smoking	-0.052	0.280 (n.s.)		
Alcohol	-0.035	0.463 (n.s.)		
Bicycle helmet	-0.008	0.864 (n.s.)		
Meet family	-0.007	0.876 (n.s.)		
Meet friends	0.066	0.166 (n.s.)		
Feel lonely	0.114	0.017	0.240	0.072 (n.s.)
No one to confide in	-0.026	0.584 (n.s.)		
Stress	0.103	0.030	-0.036	0.776 (n.s.)
Multivariate model: Chi-square=37.365, df=5, p-value=<0.0001, r^2=0.109				

Perceived headache was in the univariate analysis associated with gender, exercise, eating sweets and snacks, feeling lonely and stress. In the multivariate analysis only gender (female) and exercise was still significantly correlated with perceived headache.

Univariate and a multivariate model of factors associated with self-reported insomnia during the last three months is shown in **table 12**.

Table 12: Univariate and multiple logistic analysis of potential lifestyle and social life factors associated to self-reported insomnia.

	Univariate		Multivariate	
	r	p-value	B	p-value
Programme	0.171	<0.0001	0.380	<0.0001
Gender	0.053	0.264 (n.s.)		
Exercise	0.008	0.861 (n.s.)		
Nutrition	-0.015	0.755 (n.s.)		
Cooking	0.035	0.460 (n.s.)		
Fruit and vegetables	-0.020	0.678 (n.s.)		
Sweets and snacks	-0.066	0.166 (n.s.)		
Smoking	-0.012	0.805 (n.s.)		
Alcohol	0.038	0.423 (n.s.)		
Bicycle helmet	-0.037	0.434 (n.s.)		
Meet family	-0.134	0.005	-0.276	0.043
Meet friends	-0.089	0.062 (n.s.)		
Feel lonely	0.232	<0.0001	0.541	<0.0001
No one to confide in	0.025	0.608 (n.s.)		
Stress	0.200	<0.0001	0.431	0.001
Multivariate model: Chi-square=54.008, df=4, p-value=<0.0001, r^2=0.160				

Insomnia was in the univariate analysis associated with education programme, meeting family, feeling lonely and stress. In the multivariate analysis meeting family was negatively correlated with insomnia which means that those who don't meet their family regularly are more likely to have insomnia than those who do. Feeling lonely is also associated with insomnia. Another finding is that perceived insomnia seems to differ between the education programmes. 30.0 % of first year medical students and 37.5% of fourth year medical students report insomnia compared to 26.6% of first year technological students and 45.3% of fourth year technological students (p=0.001).

Univariate and a multivariate model of factors associated with self-reported low spiritedness during the last three months is shown in **table 13**.

Table 13: Univariate and multivariate analysis of potential lifestyle and social life factors associated to self-reported low spiritedness.

	Univariate		Multivariate	
	r	p-value	B	p-value
Programme	-0.061	0.200 (n.s.)		
Gender	0.196	<0.0001	0.341	0.174 (n.s.)
Exercise	-0.159	0.001	-0.363	0.002
Nutrition	-0.039	0.413 (n.s.)		
Cooking	0.044	0.355 (n.s.)		
Fruit and vegetables	0.030	0.531 (n.s.)		
Sweets and snacks	0.097	0.041	0.086	0.499 (n.s.)
Smoking	-0.003	0.946 (n.s.)		
Alcohol	-0.121	0.011	-0.174	0.098 (n.s.)
Bicycle helmet	0.001	0.979 (n.s.)		
Meet family	-0.071	0.138 (n.s.)		
Meet friends	-0.152	0.001	-0.048	0.758 (n.s.)
Feel lonely	0.402	<0.0001	1.113	<0.0001
No one to confide in	-0.066	0.169 (n.s.)		
Stress	0.279	<0.0001	0.395	0.008
Multivariate model: Chi-square=103.963, df=7, p-value=<0.0001, r^2=0.294				

Low spiritedness was in the univariate analysis associated with gender, exercise, consumption of sweets and snacks, drinking alcohol, meeting friends, feeling lonely and stress. Feeling lonely was strongly correlated with low spiritedness in the multivariate analysis. In the multivariate analysis, stress and lack of exercise were also significantly correlated with low spiritedness.

Discussion

Although university students are a select group, they are an important group to follow. Not only because they are young and well-educated but their choices of lifestyle in their student years are likely to last for a large part of their adult life and thereby influence their future health. To some extent university students also face other types of stressors than other younger persons not studying at universities. Some characteristic features of being a university student today is that they face a heavy workload, have a low degree of control over their personal situation (often with scarce funding and resources) and that they receive limited appreciation and feedback of their work. After they have graduated they face a competition-dominated and individualistic labour market and also the potential risk for unemployment. The long-term health consequences of these stressors are quite unknown [3].

A main finding in this study is that there are rather small differences between medical and technology students regarding their lifestyle and perceived health. If future physicians, with extensive knowledge in health and diseases, don't make lifestyle changes themselves - can the society really hope for the public health to improve with the aid of information? Informing the public may not be the best way to change the lifestyles of today's young. Could perhaps new laws, with restrictions in how much fat and sugar (energy) ready made food should contain, solve the problem? Or restrictions on how much images are allowed to be altered? One can only speculate without further studies.

Another concern on the fact that medical students don't live a healthier life or seem to feel better than other students is that they as physicians will act as role models for the patients. Studies have shown that physicians who live a healthier life themselves are more likely to influence patients in preventive action [8,10].

Not surprisingly, this study showed gender differences regarding lifestyle and health. Women more frequently ate fruit and vegetables every day and thought of nutrition more often. In contrast men more often drank alcohol. If you consider "often or always thinking of nutrition" as a health behaviour, women had a healthier lifestyle than men in this study. That confirms what other studies have shown [1,3]. Regarding social life, women report more stress and loneliness than men, but a lesser percentage of men report to have someone to confide in.

A higher percentage of women reported symptoms during the last three months, which is consistent with other studies made[4]. However, the self-perceived health didn't show any gender differences, which is not consistent with other studies. For instance, The Swedish National Public Health Report from The National Board of Health and Welfare [1] showed that a slightly larger part woman reported perceived ill health.

In the multivariate analysis of factors associated with self-reported symptoms, gender was associated with back- and joint pain, gastrointestinal problems and headache. That means that, even when you adjust for other all the other studied factors, gender is still associated with several symptoms. This study doesn't answer why there are gender differences, but one explanation could be the social structure in Sweden and other Western countries where young women are more susceptible to the role models one can find in e.g. magazines. The social pressure for women to be slim and healthy is harder than for men [11].

The multivariate analysis showed several associations between lifestyle and social life factors and perceived health. The variables; exercise, to have someone to confide in, not feeling lonely and stressed was associated with good health. Worth noting is that the only studied lifestyle factor included above are exercise. It is the social life factors that have the strongest association with good health. Hale et al [12] showed that social support and the sense of belonging to a group is important for the physical health of college students.

Also, when we looked at associations between reported symptoms and lifestyle and social life factors with multivariate analysis, exercise was the only lifestyle factor that had significant associations with some of the symptoms (little exercise was associated with back- and joint pain, gastrointestinal problem, headache and low spiritedness). Besides exercise and gender, all the other associated factors were found among the social life factors. Insomnia was associated with feeling lonely and not meeting family (and education programme). Low spiritedness was associated with feeling lonely. Stress was associated with back- and joint pain, gastrointestinal problems, insomnia and headache.

This paper is the result of a cross-sectional study. For even better understanding on how and if medical students change their lifestyle during their education it might have been better to follow the same group of students over time. However, that wasn't possible due to the timeframes of this study. To further increase the power of this study we could have chosen

students from many different education programmes and universities as a comparison group to the medical students, alongside of the technology students. If so, one could have chosen matched controls to the medical students to avoid any gender and age difference. However, the advantage of this study is that all participants in this study are in demanding education programmes, which otherwise could have been a confounder with a larger control group that was less similar to medical students. This study had a high response rate (86%) and one possible contributing explanation to this could have been the way data was collected. Meeting the students at regular lectures ensured that many were present, but one could also speculate that the students, in spite the voluntary participation, could feel obligated to answer the questionnaire when all the other students present did.

There are many ways to measure the complex state of health. The word "health" has several definitions and we chose to define health as self-perceived health. It's hard to say if that is the best way, however several studies has shown that is a valuable method [13, 14]. A great number of studies [14] have shown that self-reported and perceived health is a good predictor of morbidity and mortality.

Conclusions

This study shows that there are few differences between technology and medical students. However, the study showed that there are several gender differences among the studied university students. It also showed that many of the studied lifestyle factors (thinking of nutrition, cooking, eating vegetables, fruit, sweets and snacks, smoking and drinking) are not associated with self-reported symptoms or perceived health. Exercise, together with several of the social life factors studied were the factors that were most strongly associated with the investigated symptoms and health.

This study has shown that the most important field when it comes to preventing ill health among students are in the social field. That is important information for everyone who works with young people, public health and student health in particular.

So, how do you improve a student's social life? One way could be to include more group activities and problem solving in the educational situation. It's common knowledge that individuals who solve a difficult problem together or have to deal with emotionally difficult

things as a group come closer on a personal level. Another suggestion is to offer students easy access to counselling. The Student Health Care Centre at Linköping University, for example, have waiting lists to their counsellors and is therefore not able to give all the support that perhaps would be necessary to improve the social life of students. One way to solve that problem could be to offer students opportunities to talk in private to other students, without professional training in counselling or psychotherapy, but with professional secrecy. This would of course be in co-operation with Student Health Care Centres at the Universities.

The gender differences that were found in this study are confirmed by other studies, but the question if knowledge in health and sickness makes one live a healthier life should be further studied. Students are, as they are considered a select group, not enough studied with regard to their lifestyle and health. Medical students (and other health care students) in particular are important to study since they are likely to act as role models for patients. A study with a longer timeframe, where students could be followed through their education would be a valuable contribution to the present knowledge in this field.

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