Practice and awareness of health risk behaviour among Egyptian university students

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الوعي بالسلوك الصحي المحفوف بالمخاطر وممارسته لدى طلاب جامعيين في مصر

أماني رفعت

الخلاصة: يساهم السلوك الصحي المحفوف بالمخاطر بشكل واضح في الوفيات في الوقت الحاضر. وقد أجريت دراسة وصفية مستعرضة لتقييم الوعي في الوقت الراهن والممارسات للسلوك الصحي المحفوف بالمخاطر لدى طلاب جامعيين في مصر. ولم يكن السلوك المحفوف بالخطر ممارساً إلا لدى 121 طالباً (18٪)، وبدت العلاقة إيجابية مع تدخين التبغ وتعاطي الكحول والمخدرات واقتراف السلوكيات الجنسية المحفوفة بالمخاطر. وقد أظهر التحليل بالنحوف المتعدد أن المحددات الرئيسية للسلوك المحفوف بالمخاطر هي الجنس المذكر، والتقدم في العمر، والتمتع بمخصصات مالية كبيرة، وعدم الاكتراث بالمخاطر. وكانت المعلومات حول الإيدز مفقودة لدى 30٪ من الطلاب، كما أن معظم الطلاب الذين اقترفوا ممارسات جنسية لم يستعملوا موانع الحمل أو أي وسيلة للوقاية من العدوى المنقولة جنسياً. وكان المصدر الرئيسي للمعارف هو وسائل الإعلام (38٪) والرملاء (30٪).

ABSTRACT Health risk behaviour contributes markedly to today's major killers. A descriptive cross-sectional study was conducted to assess current awareness and practice of health risk behaviour among Egyptian university students. Only 121 students (18%) were practising risky behaviour. Tobacco use, alcohol and drugs use and risky sexual behaviour were positively correlated. Multiple regression analysis revealed that the main determinants of risky behaviour were being a male, of older age, having a high allowance and having no attention to danger. About 30% of students lacked adequate knowledge on AIDS. Most of those who had sexual relationships did not use contraceptives or any method of protection from sexually transmitted infection. Main sources of knowledge were the media (38%) then peers (30%).

Pratique et connaissance des comportements à risque pour la santé chez les étudiants égyptiens

RESUME Les comportements à risque pour la santé contribuent sensiblement aux causes principales de décès actuelles. Une étude transversale descriptive a été réalisée pour évaluer la connaissance et la pratique actuelles des comportements à risque pour la santé chez les étudiants égyptiens. Seuls 121 étudiants (18 %) avaient un comportement à risque. La consommation de tabac, d'alcool et de drogues et le comportement sexuel à risque étaient corrélés positivement. L'analyse de régression multiple a révélé que les principaux déterminants des comportements à risque étaient le fait d'être un garçon, d'être plus âgé, d'avoir une allocation d'études élevée et de ne porter aucune attention au danger. Environ 30 % des étudiants n'avaient pas les connaissances suffisantes sur le SIDA. La plupart de ceux qui avaient des relations sexuelles n'utilisaient pas de contraceptifs ou d'autres moyens de protection contre les infections sexuellement transmissibles. Les médias (38 %) et les pairs (30 %) constituaient les principales sources de connaissances.

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Introduction

Today, the health of young people—and the adults they will become—is critically linked to the health-related behaviour they choose to adopt.

Young adults aged 15–24 constituted about 20% of the Egyptian population in 2000 [*1*], and university students, whose health and productivity are determined by their current behaviour, are the future highly educated work force. This study aims to evaluate the awareness and practice of health risk behaviour among Egyptian university students, focusing on the use of tobacco, alcohol and drugs and unsafe sexual practices.

Surveys among youth and young adults (10–24 years) in the United States of America during 1991–1999 show the trends for health risk behaviour. The improved behaviour types included sexual practices. On the other hand, tobacco, alcohol and drug use worsened [*2*].

Kann et al. showed that 35% of high school students in the United States of America had smoked cigarettes during the 30 days preceding the survey [*3*].

In the Middle East region, however, studies have given a different picture. In Egypt, a study done on students at Suez Canal University found that prevalence of current smoking was much lower, 12.7% in general, and commoner in males and those of older age. Most smokers lived in urban areas, lived with smokers, and used their pocket money to buy cigarettes [*4*]. About one third smoked the water pipe too. A study done in Syria reported the prevalence of current smoking among high school adolescents to be 16% for boys and 7% for girls. Smoking was strongly associated with parental and sibling smoking; high school students from families with parents and/or siblings who smoked were 4.4 times more likely to be current smokers than those from non-smoking families [*5*]. In a Turkish study there was evidence for the effects of school type, a smoking-related attitude, presence of a stepmother, father's use of alcohol, sister and brother who smoke, student's alcohol use, and participation in art activities as determinants of smoking among middle and high school students in Ankara [*6*].

Methods

A descriptive cross-sectional study was carried out on students at Suez Canal University main campus in Ismailia. The schools were stratified according to type of study: health, mathematical, scientific and human studies. One school was randomly selected from each study type. For the purposes of future intervention, students were randomly allocated from student lists of the first and second years of the 4 selected schools: medicine, computer and informatics, agriculture and education.

A questionnaire was designed, adapted from the questionnaire of the Centers for Disease Control and Prevention 1999 risk behaviour survey [*7*] with cultural modifications. Questions were added regarding source of knowledge and awareness of the danger of any of the types of risky behaviour. Awareness of the dangers of each practice was indicated on a 5-point scale (0–4), where 0 indicated not at all and 4 indicated strongly aware.

The questionnaire was tested on 87 volunteer students to check its validity and to estimate the sample size. Necessary changes were made after testing.

There were 30 063 students enrolled for the academic year. The sample size at 95% CI, was estimated using *Epi-Info* (version 6.4d) to be 655 students (721 stu-

dents adjusting for drop-out of 10%). Questionnaires were printed, enveloped and distributed via the junior faculty and students' affairs staff of the selected schools according to their weighting: 180 for medicine, 240 for agriculture, 250 for education and 51 for computers and informatics.

Epi-Info was used primarily for data entry. Data was analysed using *SPSS*, version 9.0. Sociodemographic characteristics were described. Risky behaviour in each domain was identified as the following:

- Tobacco use: current smokers of cigarettes or water pipes or others,
- Alcohol and substance use: current users of alcohol or other substances,
- Unsafe sexual behaviour: having multiple partners, or sex without contraceptives or protection from sexually transmitted infection (STI).

The different types of behaviour were analysed in relation to the students' sociodemographic characteristics, attention to risky behaviour and source of information using test of significance and odds ratio. A new variable was computed from practice of risky behaviour and examined by multiple regression analysis to identify its determinants.

As the study deals with young adults, certain ethical steps were implemented:

- Formal approval was obtained from the vice president of the university for education and student affairs.
- Approval and support from deans and vice deans of the selected schools were also obtained.
- Junior faculty and students' affairs employees who shared in distributing the questionnaires were introduced to the aim of the study and the importance of confidentiality for students who responded to the questionnaire.
- All the questionnaires were enveloped to preserve the confidentiality of the respondents
- The questionnaire began with a description of the study and a clear explanation of its purpose.

Results

Of the 721 questionnaires sent out, 687 were returned (95% response rate), 172 (25.0%) from the school of medicine, 48 (7.0%) from informatics, 237 (34.5%) from education and 230 (33.9%) from agriculture.

Sociodemographic characteristics

The median age of the students was 18 years; 59.0% were female, 71.0% urban residents and 98.8% never married. There were 3 formally married female students, while 5 male students stated that they were *orfi* married (not officially registered). Many of the students' parents were educated up to university degree level (50.6 % of fathers and 34.5% of mothers) while only 12.1% of fathers and 25.7% of mothers were uneducated. The median monthly allowance was 90 Egyptian pounds (mode 100 Egyptian pounds) and 121 students (17.7%) were working in addition to their study (Table 1).

The majority (58.0%) of students had a moderate awareness of the dangers of risky health behaviour while 25.9% had no awareness at all. The main source of information was the media (37.5%) followed by friends (29.8%).

Tobacco use

One third of the students in the study had ever smoked cigarettes with a median age of starting smoking of 15 years. Current smokers constituted 12.2% of the stu-

Table 1 **Sociodemographic characteristics of students practising different types of behaviour**

Characteristic	Tobacco use (n = 108)		Alcohol and drugs (n = 36)		Sexual behaviour (n = 27)		Total (N = 687)
	%	OR	%	OR	%	OR	%
Age (years)							
≤18	27.8	1.0	28.9	1.0	25.9	1.0	54.7
≥19	72.2**	3.9	71.1*	3.5	74.1*	3.6	45.3
Sex							
Female	11.1	1.0	18.8	1.0	18.5	1.0	59.0
Male	88.9**	17.0	81.2*	6.5	81.5**	6.8	41.0
Residence							
Rural	25.9	NA	22.3	NA	15.4	NA	29.0
Urban	74.1	NA	77.7	NA	84.6	NA	71.0
Marital status							
Single	99.1	NA	98.9	NA	92.6	1.0	98.8
Married	0.9	NA	1.1	NA	7.4*	8.7	1.2
Work							
No	62.9	1.0	57.6	1.0	46.2	1.0	82.3
Yes	37.1**	3.6	42.4**	3.7	53.8**	6.0	17.7
Allowance (Egyptian pounds/month)							
≤100	50.0	1.0	52.8	1.0	59.3	NA	73.1
>100	50.0**	3.4	47.2*	2.6	40.7	NA	26.9
Father's education							
Uneducated	8.6	NA	12.5	NA	11.1	NA	12.1
Primary	9.5	NA	5.7	NA	7.4	NA	13.4
Preparatory	8.6	NA	6.8	NA	7.4	NA	6.1
Secondary	16.2	NA	14.8	NA	18.5	NA	17.9
University	57.1	NA	60.2	NA	55.6	NA	50.6
Mother's education							
Uneducated	23.6	NA	22.0	NA	11.1	NA	25.7
Primary	8.5	NA	7.7	NA	22.2	NA	10.3
Preparatory	6.6	NA	7.7	NA	3.7	NA	5.6
Secondary	26.4	NA	24.2	NA	33.3	NA	23.9
University	34.9	NA	38.5	NA	29.6	NA	34.5
School of study							
Medicine	20.4	1.0	22.2	1.0	7.4	1.0	25.0
Informatics	4.6	0.8	5.6	0.9	3.7	1.8	7.0
Education	13.9	0.5	5.6	0.2	7.4	0.7	34.5
Agriculture	61.1**	2.7	66.7**	2.4	81.5**	9.0	33.5
Attention to risk							
None (0)	35.5*	1.5	36.1	NA	37.0	NA	25.9
Moderate (1–2)	48.6	1.0	55.6	NA	48.1	NA	58.0
High (3–4)	15.9	1.0	8.3	NA	14.8	NA	16.1

Table 1 **Sociodemographic characteristics of students practising different types of behaviour** *(concluded)*

Characteristic	Tobacco use ($n = 108$)		Alcohol and drugs ($n = 36$)		Sexual behaviour ($n = 27$)		Total ($N = 687$)
	%	OR	%	OR	%	OR	%
Source of knowledge							
Family	6.3	1.0	0.0	NA	8.7	NA	19.1
Study	12.5	3.1	10.0	NA	0.0	NA	13.6
Friends	48.8**	6.2	46.7	NA	47.8	NA	29.8
Media	32.5	3.0	43.3	NA	43.5	NA	37.5
Total	100.0	15.7	36.0	5.2	100.0	3.9	100.0

**Significant at P < 0.05.*
***Significant at P < 0.001.*
OR = odds ratio.
NA = not available.

dents, with those smoking daily consuming 600 cigarettes per month (mode). The majority of smokers had tried to quit. About one fifth (20.4%) had ever tried smoking water pipes while only 10.9% were currently smoking, mode 1 time in the previous month. Water pipe use in cigarette smokers was 72%. About 3% had tried other tobacco products, mainly the pipe, mode 1 time in the previous month. The students had high awareness of the dangers of smoking both cigarettes and water pipes (Table 2).

Alcohol and substance use

Alcohol was ever tried by 14.4% of students questioned, median age 17 years for first use. Currently only 4.1% were drinking alcohol, mode 1 time in the previous month. Awareness of the dangers was very high.

Marijuana was ever tried by 6.8% of subjects, with median age 18 years for first use. At the time of the study, only 2.5% were using it, mode 1 time in the previous month. Seven students (1.0%) ever tried heroin at median age for first use of 13 years. Only 4 were still using it, mode 2 times in the previous month. Only 8 students ever used intravenous drug injection at median age of 13 years for first use and only 3 students were still using it daily. Ever using stimulating drugs was reported by 9.3%, while 18.2% ever sniffed substances such as benzene, paints and sprays. There was very high awareness regarding the danger of all drugs among students (Table 3).

Unsafe sexual practices

About 10% of the subjects ever had sex, median age for starting sex 16 years. Only 4.8% had sex in the previous 3 months, mode 1 partner. One third of them did not use any contraception and 61.5% did nothing to protect themselves from STI. A quarter of the students who had sex in the previous 3 months used coitus interruptus as a method of contraception. About one third did not have enough knowledge on AIDS. Attention to the danger of having multiple partners or unprotected sex was very high (Table 4).

Table 2 **Health risk behaviour in regard to tobacco use, *N* = 687**

Practice	No.	%
Ever smoked cigarettes	209	30.4
Current smokers	84	12.2
Ever smoked water pipe	140	20.4
Current smokers of water pipe	75	10.9
Current smokers of both cigarettes and water pipes	54	7.9
Tried to quit smoking (*n* = 84)	59	70.2
Where cigarettes were obtained (n = 80)		
Bought them	54	67.5
Another person gave them to me	21	26.3
Another person bought them for me	1	1.3
Took them from a person without his notice	4	5.0
Other tobacco-related practices		
Snuff	9	1.3
Pipe	10	1.5
Cigar	1	0.1

	Median	Mode
Smoking prevalence		
Age of starting smoking (years)	15	17
Days cigarettes smoked (in the previous month)	30	30
Number of cigarettes smoked (in the previous month)	90	600
Days water pipe smoked (in the previous month)	4	1
Days of other tobacco use (in the previous month)	2	1
Awareness of the dangers of:		
Smoking	4	4
Water pipe	4	4

Table 3 **Health risk behaviour in regard to alcohol and substances use, *N* = 687**

Practice	No.	%
Ever tried alcohol	99	14.4
Current alcohol consumer	28	4.1
Ever tried marijuana	47	6.8
Current user of marijuana	17	2.5
Ever tried heroin	7	1.0
Current heroin user	4	0.6
Ever use of intravenous drug injection	8	1.2
Current use of intravenous drug injection	3	0.4
Ever used stimulating drugs	63	9.2
Ever sniffed spray, benzene or paint	125	18.2
Ever driven a car or motorcycle under alcohol or substance influence (*n* = 450)	16	3.6

	Median	Mode
Age of first drinking alcohol (years)	17	18
Days of alcohol consumption[a]	2	1
Age of first marijuana use (years)	18	18
Days of marijuana use[a]	3	1
Age of first heroin use (years)	13	13
Days of heroin use[a]	2	2
Age of first use of intravenous drugs (years)	13	13
Days of intravenous drugs use[a]	30	30
Awareness of the dangers of:		
Alcohol	4	4
Marijuana	4	4
Heroin	4	4
Intravenous drug injection	4	4
Stimulants	4	4

N = *687.*
[a] *In previous month*

Table 4 **Health risk behaviour in regard to sexual practices, *N* = 687**

Practice	No.	%
Ever had sex	68	9.9
Had sexual relations in the previous 3 months	33	4.8
Had alcohol or drugs before sex the last time ($n = 33$)	10	30.3
Has knowledge on AIDS	454	66.1
Used contraceptive in the last sexual encounter ($n = 32$)		
Nothing	12	37.5
Pills	3	9.4
Condom	5	15.6
Cream/gel	2	6.3
Coitus interruptus	8	25.0
Others	1	3.1
Not sure	1	3.1
Used protection against sexually transmitted infection in the last sexual relationship ($n = 26$)		
Nothing	16	61.5
Condom	5	19.2
Other	4	15.4
Not sure	1	3.8
	Median	**Mode**
Age of starting sex (years)	16	17
Number of sexual partners in previous 3 months	2	1
Awareness of the dangers of		
Having multiple sex partners	4	4
Having sex without protection	4	4

Risky behaviour

The risky behaviour is summarized in Table 1, which shows that:

- Tobacco current users constituted 16% of the students. Tobacco use was higher among older students (OR: 3.9, 95% CI: 2.5–6.0); males (OR: 17.0, 95% CI: 9.0–31.5); those with higher monthly allowance (OR: 3.4, 95% CI 2.2–5.2); those who were working (OR: 3.6, 95% CI: 2.3–5.6); students of agriculture (OR: 2.7, 95% CI: 1.6–4.8); those paying no attention to risky health behaviour (OR: 1.8, 95% CI: 1.1–3.0) and those getting their information from friends (OR: 6.3, 95% CI: 2.3–18.9).
- Current users of alcohol and other drugs comprised 5% of the students, more among the older students (OR: 3.5, 95% CI: 1.6–7.9); males (OR: 6.5, 95% CI: 2.7–16.6); those having higher allowance (OR: 6.2, 95% CI: 1.7–23.1); those who were working (OR: 3.7, 95% CI: 1.7–8.1); and students of agriculture (OR: 2.4, 95% CI: 1.1–6.0).
- Sexual risky behaviour was reported by only 4% of the students. It was more prevalent in older students (OR: 3.6, 95% CI: 1.5–8.7); male students (OR: 6.8, 95% CI: 2.5–18.1); *orfi* married (OR: 8.7, 95% CI: 1.7–45.4); and students of agriculture (OR: 9.0, 95% CI: 2.0–56.0).

As shown in Table 5, there is a statistically significant correlation between the 3 types of risky behaviour. Only 121 subjects (17.6%) were practising risky behaviour. Multiple regression analysis (Table 6) revealed that the main determinants of risky behaviour were being male (OR: 9.7), older in age (OR: 2.3), having a high allowance (OR: 1.7) and paying no attention to danger (OR: 1.5).

Discussion

Health risk behaviour, which can be a contributing factor in the leading causes of mortality and morbidity among youth and adults [3], is often established during youth and extends into adulthood. The different types of behaviour are interrelated and are

Table 5 **Correlation between the three types of risky behaviour, Pearson correlation**

Risk behaviour	Tobacco use	Alcohol and drug use	Sexual behaviour
Sexual behaviour	0.345**	0.457**	1.000
Alcohol and drug use	0.419**	1.000	–
Tobacco use	1.000	–	–

***Significant at P < 0.001.*

preventable. These include tobacco use, alcohol and other drug use, and risky sexual behaviour that can result in unintended pregnancy and STI, including HIV.

Two thirds of all deaths among persons aged > 25 years result from only 2 causes—cardiovascular disease and cancer. The commonest type of risk behaviour associated with these 2 causes of death is linked to tobacco use, which is initiated during adolescence [*3*]. The results of the present study confirm the results of a previous study [*4*] and show that tobacco users were mostly male, older in age, working or with high allowance, paying no attention to risks and highly influenced by peers and the media. The cigarette smoking rate has been stable since that study over all years, however, prevalence of smoking of water pipes increased dramatically (72% of smokers in the current study compared with 30% in the previous one). This is probably a reflection of the new trend among the youth in Egypt for smoking water pipes in cafés. Despite the banning of cigarette advertising in the Egyptian media, the depiction of water pipe smokers is widespread in TV serials and movies and is associated with pleasure. In addition, advertisements for water pipe tobacco products are common on Arab satellite channels. The effect of this habit on pulmonary function in comparison to cigarette smokers and non-smokers was investigated [*8*] and the results showed that the detrimental effects of water pipe smoking are not as great as those of cigarette smoking; lung function parameters were higher in water pipe smokers, especially the parameters for small airways. Water pipe smoking, however, has adverse effects on general health; it may predispose to oral cancer and is associated with a statistically increased incidence of squamous cell carcinoma and keratoacanthoma of the lips. [*9*]

Table 6 **Determinants of risky behaviour, multiple regression analysis**

Variable	B	*P*	OR	95% CI
Male	2.2743	< 0.0001	9.7	5.5–17.0
Older age	0.8324	0.0009	2.3	1.4–3.8
High allowance	0.5494	0.0248	1.7	1.1–2.8
No attention to risk	0.3941	0.0346	1.5	1.1–2.1

Model significant at P < 0.001.
OR = odds ratio.
CI = confidence interval.

Intensive and sustained efforts to counter-market tobacco among youth are necessary to negate the "friendly familiarity" created by tobacco advertising and to communicate the true health and social costs of tobacco use [*10*].

Although the main risky behaviour of the students in this study was tobacco use, 4% of them practise unsafe sex risky behaviour and 5% practise substance use. As they get their knowledge mainly from media that project drug use and extra-marital sex as not culturally accepted, they were highly aware of their risks and minimally practising them.

In addition, 18.2% of the students in the study had ever sniffed substances such as petrol products, paints and sprays. Petrol sniffing as a specific form of substance abuse is associated with dysfunctions that range in severity from subtle cognitive impairment to encephalopathy and death. Petrol sniffing causes a progressive decline of cognitive function that eventually leads to permanent neurological changes *11*].

Only 70% of the subjects had enough knowledge on AIDS. Most of those who had sexual relationships did not use any method for protection from STI nor did they use contraceptives. Friends, the social culture at university, and the interaction of the two with the developmental characteristics of the period between adolescence and adulthood are more important influences on sexual relationships than parents or high-school sex education classes. How and whether friends talked about sex and practised safe sex were strong normative influences in predicting safer sex among individuals [*12*]. Adolescents have not changed their behaviour in response to the pandemic, despite being well informed about HIV/AIDS and having positive attitudes toward HIV/AIDS prevention [*13*]. Those AIDS-prevention programmes which, rather than merely providing information, focus on helping youths perceive HIV as a problem, motivating them to act safely and implement safe acts have successfully reduced adolescents' risk acts.

The majority of the students in this study got their information on AIDS and sex from friends and the media. The mass media in Egypt does not offer enough information on AIDS. In a previous study it was found that only 7% of female and 62% of male medical students approved doing tests for the detection of AIDS, reflecting cultural sensitivity (A. Refaat. Knowledge *and attitude of medical students towards premarital examination program.* Paper presented at the 1st international conference of behavioural medicine, Cairo, Egypt, November 1994).

The present study showed the 3 types of risky behaviour were correlated and that students started them before university age and in sequence: smoking at age 15, sex at 16 then alcohol and drugs at age 17. In the United States of America also, it was found that adolescents engage in multiple health-risk behaviour according to age and that many adolescents engage in these kinds of behaviour serially rather than at the same time [*14*].

Conclusions and recommendations

Less than one fifth of the students in this study practise risky behaviour, mainly as tobacco use. They paid moderate attention to risky behaviour, and got their information from the media and peers. The study revealed certain types of risky health behaviour that are not usually stressed in health communication programmes, such as smoking of water pipes, sniffing of petroleum products and lack of information on AIDS.

Based on the results of this study, it is recommended that a health communication programme be designed targeting Egyptian youth and adolescents that addresses all the types of risky behaviour identified. Counter-marketing campaigns should highlight a tobacco-free lifestyle as the majority lifestyle of diverse and interesting individuals.

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