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## Physical and Psychological Well-being of University Students: Survey of Eleven Faculties in Egypt

Walid El Ansari, Shokria Labeeb, [...], and Amira El-Houfy

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### Abstract

#### Background:

We examined perceived health status and physical and psychological well-being of 3,271 undergraduate students attending eleven faculties in a university in Egypt.

#### Methods:

During 2009-2010, participants completed a self-administered questionnaire that gathered socio-demographic, physical and psychological health data. Body mass index (BMI) was calculated from students' measured height and weight. Differences across these variables were computed by gender and participating faculties.

#### Results:

Whilst more females watched and rated their health favorably, they were more likely to feel psychosomatic/physical health problems, to have seen a medical practitioner or been ill that they had to stay in bed. Females were consistently more likely to feel burdened overall, and across several aspects apart from financial problems. Less females had 'normal' BMI, were satisfied with current weight, perceived their body image as 'just right', or were not worried about their shape. More males rated their quality of life favorably. About 25% of

males and 32% of females were either overweight/obese. Exams, presentations, and the lack of time for studies were the frequently-reported burdens.

Comparisons of health/well-being indicators across the participating faculties suggested some evidence of ‘clustering’: Favorable indicators would cluster at some faculties; and conversely, less favorable variables would cluster at other faculties.

## Conclusions:

Generally, the levels of some health complaints and psychological problems/burdens are higher than in other countries. Increased vigilance of university administrators and leaders to monitoring the health and well-being of their students, as well as their health needs is required if policy makers are to operate from a valid evidence base platform. Given cultural factors prevalent in the Eastern Mediterranean region generally, female students might require particular attention. The clustering effects suggest the need for local (faculty-specific) health and well-being profiles as basis and guidance for relevant health promotion programs in faculty/university settings.

**Keywords:** Burdens and stressors, gender, physical health, psychological well-being, psychosomatic, social support, university students

## INTRODUCTION

University students represent the future of families, communities, and countries. They also face the stresses of achieving success in their academic goals,<sup>[1]</sup> and are expected to be competitive, adding to the demands and burdens and possibly leading to more stress.<sup>[2]</sup> University is a period of responsibility for choices and lifestyle practices,<sup>[3]</sup> where students are exposed to the challenges of young adulthood and also tackle the mental and social issues of students’ life.<sup>[4]</sup> Many students confront changes in living conditions, and (health

promoting/damaging) adjustments to lifestyle and environment.[5] For instance, the average weight gain of freshmen during the first term of university was 1.3-3.1 kg,[6,7] where lifestyle characterized by unhealthy practices or 'habits' could persist into middle/old age to inflict health hazards later in life.[8,9] Students also deal with issues around financial constraints and financial support, social interaction and loneliness.[10] Many college students live far from home, escalating their susceptibility to initiating smoking and/or excessive alcohol consumption.[11] Further, unhealthy behaviors could conglomerate together, generating a multiplier effect; »65% of young adult women full-time students at a USA university had  $\geq 2$  unhealthy behaviors.[12]

These characteristics underscore the importance of physical and psychological/mental well-being of university students,[13–15] particularly that their health/well-being might be 'worse off' than that of the general population. For instance, college students have increased risk for future smoking, compared with same-age peers not attending college.[16] Likewise, Swedish students appear to have a lower perceived quality of life than that of same-age young workers,[17] and similar findings have been reported in the UK.[18] Further, university students have more health complaints than their working counterparts, but do not seek help for these problems.[17,18,19] In Germany, pertaining to the health-related quality of life, university students reported a significantly decreased mental health score compared to the norm population (aged 21-30 years).[20] Psychosomatic complaints have also been documented in university students of different European countries.[13,21] Despite such alarming findings from many countries across the globe, and the subsequent implementation of numerous university health promotion programs aimed at students, the health/well-being of university students of Eastern Mediterranean region seem to have not received due attention. Indeed, to date, published data from some countries (e.g. Egypt) has been sparse, reflecting the little research

that is undertaken in some of these countries on the subject. This confirms the thin evidence base to guide health promotion interventions in university settings in this region.

In contrast, in the USA, periodic/regular surveys monitor the health/well-being of nation-wide samples of university students from public/private colleges and universities e.g.[14,22] Even in the UK, whilst there is now yearly National Student Survey monitoring of university student's satisfaction with their educational experience,[23] there does not appear to be a corresponding yearly/periodic monitoring of the health/well-being of university student. The impression is that there seems much more published studies on the health of university students originating from the USA, Europe and Far East countries, than those originating from the Eastern Mediterranean basin. The study described in this paper, implemented in Egypt, bridges this knowledge gap.

### Aim of the study

Little research on the health of university students has incorporated a range of indicators of health, quality of life and study-related burdens, in addition to focussing on resources like social support. In addition, little research has examined these issues in the context of Egyptian university students. Likewise, very few studies have been undertaken that collected the same data (appropriate sample sizes) across many faculties within one university. Hence, the current study examined perceived health status, physical and mental/psychological well-being variables, of undergraduate students attending at eleven faculties at Assuit University, Assuit, Egypt. The four specific objectives were to:

- Describe the socio-demographic characteristics of students (e.g., age, gender, marital status and children, living arrangements, parents' education, study related variables, financial sufficiency, and the importance of faith);

- Assess the self-reported prevalences of physical health/well-being indicators (e.g., self-rated general health, health awareness, health service use, physical health problems/strains, body image perception and measured BMI);
- Assess the self-reported prevalences of psychological health/mental well-being indicators (e.g. quality of life; social support, satisfaction with social support, perceived burdens and psychosomatic health problems/strains); and,
- Compare data from the participating faculties in relation to the physical and mental/psychological health and well-being of their students.

## METHODS

### Sample and data collection procedures

Ethical approval for the study was provided by the university ethics committee, and data used in the current analysis was collected as part of the General Student Health Survey.[\[24–26\]](#) The Egyptian data was collected at the same time from all participating faculties (2009-2010, between the months of September and June), where self-administered questionnaires were distributed to students attending lectures of randomly selected courses at Assiut university in Assiut city (during the last period of the lecture or during allocated time). The Egypt data comprised 3,271 students [104 with gender not recorded, leaving 1,504 males (47.5%) and 1,663 females (52.5%)] at 11 faculties of Assiut university (faculties of: Business, Engineering, Education, Arts, Social Work, Sciences, Physical Education, Computers and Information, Veterinary Medicine, Specific Education, and Agriculture). Participant's mean age was 18.9 years (SD 1.42). The University was chosen on the basis of research interests, existing contacts and history of successful previous collaboration. Student participation was voluntary and anonymous (no incentives were provided), and each questionnaire had an information sheet outlining the

research objectives. Data were confidential and protected at all stages of the study. A representative random sample of students was sought at all participating faculties (about 10% of students at very faculty), and students were informed that by completing the questionnaire, they agreed to participate in the study. All data were computer entered by one person, thus maximizing the quality assurance and minimizing errors of data entry. Based on the number of returned questionnaires, the response rates were about  $\approx 90\%$ .

## Health and well-being questionnaire: physical and psychological health

The study was a general student health and well-being survey. It included socio-demographic information (e.g., gender, age), self-reported health data, as well as questions on health awareness, health service use, social support, burdens and stressors and university study related questions.

### General health and health awareness (2 items)

These inquired about general health and were adopted from The American College Health Association.<sup>[14]</sup> Students rated their current general health: “How would you describe your general health?” (5 point response scale, 1 = ‘excellent’ to 5 = ‘poor’, later recoded to 3 categories). Another item<sup>[13]</sup> asked students about their general awareness (surveillance) of their health: “To what extent do you keep an eye on your health?” (4 point response scale, 1 = ‘not at all’ and 4 = ‘very much’, later recoded to 2 categories).

### Health service use and severe illnesses (2 items)

“Have you seen a medical practitioner (excluding a dentist) in the past 6 months?”, and “During the past 12 months, have you been so ill that you had to stay in bed?”, both with dichotomous ‘yes’/‘no’ response.<sup>[13]</sup> Participants who



answered 'yes' to the former item were then asked about the number of times they had seen a medical practitioner (later recoded to 3 categories: '1-2 times', '3-4 times' or ' $\geq 5$  times').

#### Health problems, strains and psychosomatic symptoms (22 items)

Students rated 22 symptoms measuring a range of health complaints as adopted from previous studies.[[13](#),[21](#),[27](#),[28](#)] Sample items included stomach trouble/heartburn, back pain, rapid heart beats/circulatory problem/dizziness, headaches, sleep disorder/insomnia, concentration difficulties, neck and shoulder pain, and depressive mood. Respondents rated the question: "How often have you had these complaints during the past 12 months?" (four-point response scale, 1 = 'never'; 4 = 'very often'). Cronbach's alpha of the scale was 0.88. For the current analysis, we recoded 'sometimes' and 'very often' into one category.

#### Quality of one's life (1 item)

"If you consider the quality of your life: How did things go for you in the last four weeks?". The item was based on the COOP/WONCA charts[[29](#)] (5 response categories, 1 = 'very badly' to 5 = 'very well'. For the current analysis, this variable was further recoded into three categories.

#### Social support and satisfaction with social support (2 items)

The modified Sarason's Social Support Questionnaire,[[30](#)] using two questions: "How many people do you know – including your family and friends – support you whenever you feel down?". The numerical response was recoded into 'low' (0 or 1 person), 'medium' (2-3 persons) or 'high' (>3 persons) social support. Satisfaction with social support was measured by the item: "Are you on the whole satisfied with the support you get in such situations?" (5 point Likert

scale, 1 = 'very satisfied', 5 = 'very dissatisfied', later recoded into 3 categories).

#### Perceived burdens/Life stressors (14 items)

These appraised a range of burdens as perceived by the students by assessing burdens associated with course work and exams, relationships to peers and parents, isolation, financial situation, and expectations regarding the future generally and future job prospects, adopted from published studies.[\[13\]](#) The scale had a Cronbach's alpha of 0.77. Items were introduced with the question: "To what extent do you feel burdened in the following areas?", with the 6 response categories ranging from 'not at all' to 'very strongly', subsequently recoded into 2 categories.

#### Body mass index

This was calculated from the measured weight and height using Metric BMI Formula [ $\text{BMI (kg/m}^2\text{)} = \text{weight in kilograms/the squared height (m}^2\text{)}$ ].

According to WHO guidelines,[\[31\]](#) BMI was then categorized into: underweight ( $\text{BMI} < 18.5 \text{ kg/m}^2$ ), normal ( $18.5 \leq \text{BMI} \leq 24.9 \text{ kg/m}^2$ ), overweight ( $25.0 \leq \text{BMI} \leq 29.9 \text{ kg/m}^2$ ), or obese ( $\text{BMI} \geq 30.0 \text{ kg/m}^2$ ). Measurements were undertaken using (Seca Digital Weight and Height Scale), with height measured to the nearest 0.1 cm (barefooted), and body weight measured to the nearest 0.1 kg (light clothing and no footwear).[\[32\]](#)

#### Satisfaction with current weight (1 item)

"How satisfied are you with your current weight in general?" (4 response categories: 'very satisfied', 'somewhat satisfied', 'somewhat dissatisfied' and 'very dissatisfied'). These four categories were subsequently recoded into two categories (very/somewhat satisfied; and somewhat/very dissatisfied).

When did you measure your weight for the last time? (1 item)

This item had 6 response categories ('yesterday', 'last week', 'last month', 'some months ago', 'more than one year ago', 'do not know'). The last two categories were then grouped together to indicate those who had weighed themselves an unsuitably long time ago.

Body image perception (1 item)

Assessed on a five-point Likert scale adapted from the Health Behavior in School-aged Children (HBSC) study.[33] Students were asked: "In your opinion are you...", with five response options ('far too thin', 'a little too thin', 'just right', 'a little overweight', 'very overweight'). For the analysis, the five options were re-coded into three binary variables ('underweight', 'Just right', 'overweight').

Worried about one's shape (1 item)

"Have you been so worried about your shape that you have been feeling you ought to diet?" (6 point response scale 1 = 'never'; 5 = 'always'). For the analysis, the six options were re-coded into three binary variables ('rarely or never', 'sometimes or often', 'very often or always').

The original questionnaire was in English language. It was translated to Arabic using two independent forward translations. The research team reviewed any instances of disagreement and made decisions accordingly. The translations focused on and ensured the equivalence of meaning, and the assessment of the same attributes/features in each cultural group/country, as cross-cultural and cross-language equivalence require attention.

Statistical analysis

SPSS 19.0 (SPSS Inc. Chicago, IL) was used in the analysis of the data. For the first objective, frequencies and percentages are reported by faculty, and also are reported separately for males and females in order to provide precise estimates. In connection with the second and third objectives, in order to assess differences by gender or faculty, Chi-square test computed the overall difference in frequencies between males and females and also between faculties. For objective four, in order to provide a more precise picture of any differences across the physical or psychological health variables by faculty, we calculated the adjusted residuals. This enabled that when a difference existed by faculty on a given physical/psychological health variable from the overall marginally calculated expected values, it was able to ascertain that the given health variable for a given faculty was either e.g., significantly higher or significantly lower than the overall university mean. For parametric data, we compared means and an ANOVA table enabled to check that differences between faculties were greater than might have been expected by chance. *Post hoc* analyses located where the differences lied (not merely that they existed). Across the sample, the percentages of males and females were nearly equal (47.5% and 52.5%), hence no standardization for gender was undertaken.

## RESULTS

[Table 1](#) depicts some of the sample's characteristics across the participating sites. Some Faculties at Assiut university were 'larger' faculties in terms of student numbers, hence those contributed more students to the sample ( $\geq 10\%$  of sample - Business, Engineering, Education, Arts and Social Work) than other faculties ( $<10\%$  of sample – Sciences, Physical Education, Computers and Information, Veterinary Medicine, Specific Education, Agriculture). Males were more represented at the three faculties (Business, Engineering, Physical Education), which were the three largest participating faculties ( $\approx 42\%$  of the

participants). The resultant effect was that overall across the whole sample (university), the percentages of male and female students were nearly equal (47.5% and 52.5% respectively, or about 90 males for every 100 females). Participants attended a wide variety of modules that contributed to different disciplines, and most were at academic levels that ranged from Preparatory/Year 1 to Year 3, with fewer students attending  $\geq$  Year 4 of study. Most students felt that it was very/some what important for them to achieve good grades in their university studies, and about half the sample felt that their academic performance was about the same when compared to their fellow students. For students at most faculties, father's education generally varied between either the completion of High School or of Bachelor degree, with fewer fathers who had no formal education, or alternatively who had completed Higher or Graduate Degrees. Across all faculties, relatively more mothers than fathers had no formal education, and conversely, relatively fewer mothers than fathers had completed a Bachelor, Higher or Graduate Degrees.

Variable	Faculty							
	Business N=498	Engineering N=572	Education N=461	Arts N=424	Health work N=424	Science N=286	Physical Education N=348	Computer and Information Systems N=427
Percent of total sample	14	18	14	13	13	9	11	13
Gender								
Female	413 (83)	501 (88)	391 (85)	359 (85)	322 (76)	291 (101)	349 (97)	421 (98)
Male	185 (37)	71 (12)	70 (15)	65 (15)	202 (48)	95 (33)	99 (28)	46 (11)
Year of study <sup>a</sup>								
Year 1 preparatory	199 (40)	309 (54)	44 (10)	399 (94)	179 (42)	109 (38)	111 (31)	139 (33)
Year 2	107 (21)	248 (43)	127 (28)	86 (20)	91 (21)	82 (29)	111 (31)	110 (26)
Year 3	119 (24)	44 (8)	279 (61)	89 (21)	81 (19)	21 (8)	172 (48)	91 (21)
Year 4	21 (4)	61 (11)	9 (2)	407 (97)	11 (3)	9 (3)	21 (6)	41 (10)

Table 1  
Characteristics of survey participants by faculty

## Socio-demographic features of the sample

Table 2 depicts selected socio-demographic features of the sample by gender. Across both genders, younger students ( $\leq 20$  years) were more represented, pointing to the nature of study in higher education institutions in Egypt, where a significant fraction of students are traditionally aged ('fresh' from high school). Males were more represented in the older age brackets (21-29 years). The vast

majority of the sample were single,  $\approx 1\%$  of males and of females were legally married (a smaller proportion reported civil marriage), and  $\approx 1\%$  of females had children. During semesters, whilst more females lived on university campus, more male students lived with their parents/with roommates. Females were slightly more likely to report that the amount of money they had (disposable income) was always/mostly sufficient. The majority of the sample felt that their religion was very important in their life.

Variable	Gender	
	Male (N=1594) N (%)	F.
Age		
20	1184 (75)	
21-29	313 (20)	
30+	9 (0.6)	
Marital status		
Married/ Legal	14 (1)	
Married/ Civil	14 (1)	
Single	1644 (10)	
Children (Having children)	13 (1)	
Living arrangements (During semester)		
Owns/rents own home	437 (30)	

[Table 2](#)

Selected socio-demographic features of the sample by gender

## Prevalence of physical health variables by gender

[Table 3](#) shows a range of physical health variables by gender. Females were slightly more likely to rate their health as excellent/very good, and to a lesser extent watch (keep an ‘eye’) on their health. During the 6 months prior to the survey, females were slightly more likely to have had consulted a medical practitioner, particularly on 3-4 occasions. Additionally, in the year prior to the survey, women were more likely to have been so ill that they had to stay in bed. As regards health problems and strains across the whole sample (data not presented), the most reported problems were fatigue (85% had this problem some times/very often during last year); and concentration difficulties and headache (76% had either of these problems some times/very often during last year). Females were more likely to have headaches, back pain or neck/shoulder pain.

Variable	Gender		p value <sup>a</sup>
	Male (N=1504) n (%)	Female (N=1663) n (%)	
General health			<0.001
Excellent/Very good	347 (30)	234 (39)	
Good	701 (47)	780 (47)	
Fair/Poor	441 (23)	636 (14)	
Watch one's health (To some extent/Very much)	1099 (74)	1242 (76)	0.09
Seen medical practitioner in past 6 months <sup>b</sup> (Yes)	669 (38)	679 (41)	0.044

Table 3

Physical health by gender

Across both genders,  $\approx 65\%$  of the sample exhibited normal BMI (based on measured weight and height). At the extremes of BMI (underweight and obese), there was little differences between the genders. In the middle ranges of BMI, males were more likely to feel 'normal' and females as 'overweight'. This pattern also manifested itself in students' subjective perceptions; females were more likely to be dissatisfied with their weight and much more likely to worry about their shape to the extent of ought to diet. Conversely, males were more likely to be satisfied with their weight and much more likely to rarely/never worry about their shape to the extent of ought to diet. When asked "When did measure your weight for the last time?", more males reported that they either did not know or it was  $>1$  year ago. About 60% of the sample perceived their body image as 'just right', and males were slightly more likely than females to perceive themselves in the three body image categories.

### Prevalence of psychological health variables by gender

Table 4 depicts the psychological health variables by gender. Slightly more men than females felt that their quality of life was good. About 70% of the sample reported that they usually had  $>3$  persons whom they can depend on for social support whenever they felt down, and there were no gender differences in the satisfaction with the social support participants received in such circumstances. Across the whole sample, the most frequent burdens encountered by students had to do with exams, presentations, etc., (about 60% agreed/strongly agreed

that this was a burden to them), and the lack of time for studies (54% agreed/strongly agreed that this was a burden to them). Across the range of burdens, females were consistently more likely to feel burdened overall, and in several detailed aspects apart from financial problems. They reported more burden from studies in general, examinations, assignments and presentations, other responsibilities that they had in addition to their university study, and lack of time for their university studies. Both genders felt psychosomatic health problems/strains, although women experienced higher rates of nervousness/anxiety and depressive mood, and to a lesser extent, fatigue.

Variable	Gender		P value <sup>a</sup>
	Male (N=1504) n (%)	Female (N=1663) n (%)	
Quality of one's life (Quite well/Very well)	632 (43)	569 (35)	<0.001
Social support whenever you feel down			0.217
Low (None/1 person)	96 (7)	91 (6)	
Medium (2-3 persons)	349 (24)	425 (26)	
High (>3 persons)	1041 (70)	1131 (69)	

**Table 4**

Psychological health by gender

## Self-reported physical and psychological/mental health and well-being variables across participating faculties

**Table 5** compares the rates of physical and psychological health variables for the whole sample and by faculty. The contrast revealed that some of the participating faculties demonstrated more favorable prevalences across a range of the physical and psychological health features that were examined. For instance, students at the faculty of Social Work generally exhibited a constellation of favorable levels of the variables under examination: higher levels of health awareness/consciousness (watch one's health); lower probability of seeing a medical practitioner in the 6 months prior to the survey (does not include seeing a dentist); and lower rates of back pain and neck/shoulder pain. In addition, these students were likely to be satisfied/very satisfied with the



social support that they have, felt fewer burdens and psychosomatic problems/strains (psychological health) that were constantly lower than the university's mean. Similar to this favorable pattern to some extent, students from the faculty of Physical Education demonstrated better rates than the sample's average for some variables (general self-rated health, watching over one's health, proportions with normal BMI, quality of life, together with fewer burdens and less psychosomatic strains).

**Table 5**  
Physical and psychological health indicators for whole sample and by faculty

Variable	Whole sample N=279	Faculty						
		Business N=127	Engineering N=73	Education N=44	Art N=22	Social Science N=55	Physical Education N=17	Veterinary Medicine N=50
<b>Physical health</b>								
General health	183 (70)	110 (78)	91 (70)	142 (70)	49 (74)	49 (71)	11 (70)	49 (70)
Watch one's health	235 (75)	143 (77)	108 (78)	146 (75)	53 (76)	27 (80)	14 (76)	48 (77)
Back/shoulder pain	138 (33)	243 (88)	121 (59)	174 (59)	179 (76)	109 (22)	71 (84)	71 (58)
Neck/shoulder pain	194 (53)	188 (58)	175 (53)	183 (58)	122 (23)	51 (28)	70 (87)	49 (53)
<b>Psychosomatic</b>								
Stress	249 (77)	143 (73)	146 (74)	199 (86)	224 (74)	241 (74)	117 (76)	102 (72)
Nervousness	199 (57)	101 (57)	101 (58)	170 (57)	171 (54)	100 (22)	100 (60)	91 (74)
Depressive mood	138 (33)	201 (82)	121 (59)	174 (59)	179 (76)	109 (22)	71 (84)	71 (58)
So ill during the past year that they had to stay in bed	102 (36)	101 (57)	101 (58)	170 (57)	171 (54)	100 (22)	100 (60)	91 (74)

**Table 5**

Physical and psychological health indicators for whole sample and by faculty

Conversely, compared to the sample's averages, faculty of Engineering students demonstrated a less favorable 'overall situation' across the physical and psychological health variables: A lower level of health awareness/consciousness (watch one's health), in addition to higher rates of back pain and neck/shoulder pain, higher rates of some types of burdens (e.g., studies in general; exams, assignments, presentations; and workload in addition to studying), which was closely mirrored with a higher prevalence of fatigue, nervousness/anxiety and depressive mood. Likewise, students of Veterinary Medicine exhibited: higher levels of being so ill during the past year that they had to stay in bed; lower quality of life; more burdens generally; and more psychosomatic strains (nervousness/anxiety and depressive mood). Students from the other remaining faculties did not demonstrate any apparent patterns in any of the two directions, achieving well on some aspects of physical and psychological health, and conversely doing less well on other features when contrasted with the university's means.

## DISCUSSION

This study assessed perceived health status, and physical and psychological health variables of students enrolled at eleven faculties at Assiut University, Egypt. Generally, the health/well-being of students at higher education institutions is receiving increasing attention, given the large numbers of young adults who pursue their university studies, and the variety of healthy/unhealthy behaviors that they could 'pick up' during the years at university.[1,13,15,21,24] Hence, up-to-date information about different health/well-being indicators of university students is critical, as such evidence base guides the foundations of health promotion intervention programs implemented at colleges and universities. The current study bridges the gap of sparse research on the topic in Egypt, to provide data on health status and health needs of higher education students.

In relation to the study's first objective, regarding the demographic findings, in our sample  $\approx 1\%$  of participants had children, which was much lower than levels of university students in western or Nordic countries e.g., in Sweden, where 31% and 17% of female and male students respectively had children.[8] Perhaps such contrast between findings from Egypt and Sweden as regards students with children could be due to two considerations, both having to do with overarching educational, cultural and religious factors prevalent in the eastern Mediterranean region. The first point is that traditionally, the educational aspirations of Egyptian students (and their parents) are such that students move on to university study directly after completing high school, rather than opting to first seek employment for a few years as might be the case in many European countries. This is supported by the finding that the majority of students in our sample were  $<20$  years, and conversely, that mature students were nearly nonexistent across the eleven faculties under study. This tendency

of younger-aged students is also in agreement with other countries of eastern Mediterranean basin: a recent study of 1,300 students of higher education institutions in Libya reported a mean student age of 21 years, and only 8% of the sample were  $\geq 25$  years of age;[34] and an earlier study of 600 students in Alexandria University, Egypt found that the mean age of students were 20 years ( $\text{♂}$ ) and 19.4 years ( $\text{♀}$ ).[35] In contrast, more university students in e.g., Denmark and Germany were older as compared with the Egyptian sample, where for instance, students  $>23$  years of age amounted to 27% (Denmark) and 20% (Germany).[21] Similar to Denmark and Germany, research of seven universities in England, Wales and Northern Ireland (3,706 students) reported a student's mean age of 24.9 years (SD 8.6), and that those who were  $\leq 20$  years comprised about half or less of the sample.[26] Given the younger mean age of Egyptian students at university, indeed, in Egypt, it is quite 'unusual' to find young adults who are attending university and already have children at that young age. In addition, in Egypt, for males, the direct transition from high school to university also affects the duration of their compulsory military service, which they must undertake, and also their military rank during that service, given that the duration of military service is based on the highest academic qualification achieved. The second point is that Egypt is a predominately Islamic nation, where it would be actually rare that children are born outside of wedlock, a point that is not uncommon in Western countries e.g., Sweden. This might explain the low prevalence of children in this sample of Egyptian university students.

In terms of participants' financial situation/income sufficiency, at least three quarters of our sample (74% $\text{♂}$ , 81% $\text{♀}$ ) rated the income they have at their disposal as either always/mostly sufficient, which was slightly higher than levels of university students in Libya (64% $\text{♂}$  and 77% $\text{♀}$  reported sufficient income).[34] These percentages of Egyptian students also compared favorably

with students in Spain or Germany who self-reported their income as sufficient (72% and 64% of the surveyed students, respectively).[13] Our findings also balanced positively with students in UK, where 51%♂ and 59%♀ felt that the amount of money that they have is always/mostly sufficient,[26] and also compared advantageously with students in Lithuania (38% reported sufficient income).[13] Sufficient income is key for commodities and for healthy living, as healthy food consumption might be influenced by the financial resources at one's disposal. More money to buy food could improve nutrition,[36] lower incomes were associated with higher dietary cholesterol,[36] and less money negatively influenced nutrition with a decreased affordability to eat balanced meals.[37] In connection with our sample's living arrangements/accommodation during term/semesters, much more females (64%) than males (26%) were living on University Campus (hostels). These levels were higher than those reported for a representative sample of students at nine higher education institutions in Libya (9.4%♂ and 22.1%♀),[34] and also contrast: in Egypt more females reside on campus; in Libya more males reside on campus. Although, both countries are predominantly Islamic nations, it could be that in Libya, for women, local (same town) higher education institutions are preferred that those that are distal, where cultural factors might still prevent women from either pursuing university studies in localities other than their local town/city or from living alone in university accommodation rather than with parents/relatives. Nevertheless, students living in university/college accommodation require attention, given that a recent study in Alexandria University hostels (Egypt) found that 76♂ and 86♀ students were dissatisfied with their hostel living.[35]

As for objective two, we assessed the prevalences of several physical well-being variables. For self-rated health, in our sample, 77%♂ and 86%♀ rated their general health as good, very good or excellent, which was close to levels in the UK, Northern Ireland and Wales (88%♂ and 90%♀ students rated their general

health as good/very good/excellent),[26] and also close to university students in Libya (86%).[34] In Alexandria, Egypt,[35] 80%♂ and 75%♀ of the surveyed students rated their general health as either average or good. However, whilst Abolfotouh *et al.*[35] measured perceived health status using a scale comprising several questions, the current research, in line with other studies,[26,34] employed a single question. Nevertheless, the levels of self-rated health of our sample were also somewhat close to those of students at 123 institutions in the USA (91% reported good/very good/excellent general health status).[14] In connection with health awareness (“To what extent do you keep an eye on your health?”), 74%♂ and 76%♀ of our sample watched their health either to some extent/very much, which was lower than the levels of a UK sample of students (81%♂ and 85%♀ watched their health to either some extent/very much).[26] However, the Egyptian levels were higher than those reported in Spain or Germany (both ≈60%), and close to Lithuania (79%).[13] Pertaining to health service use in the current sample, 38%♂ and 41%♀ had seen a medical practitioner in the past 6 months comparing favorably with levels seen in UK students (□48%♂ and 65%♀),[26] and agreeably lower than Spanish (67%), German (82%) and Lithuanian (57%) levels.[13] It is informative to affirm whether students’ lower use of health services in Egypt is due to lower needs (e.g. health and pain complaints, strains, psychosomatic symptoms) or conversely, due to further barriers of access to the appropriate health services. In connection to subjective health/pain complaints, strains and psychosomatic symptoms, in the Egyptian sample 52%♂ and 57%♀ reported back pain during the last year (sometimes/very often), which matched the levels of headache (52%) described in Sweden.[8] However, back pain in our sample was higher than in a recent UK student sample (36%♂ and 46%♀),[26] higher than in the USA (42%♂ and 49%♀ students experienced this health problem in the past year),[14] and also higher than in Spanish and German students (>40%

prevalence of back pain employing the same rating scale as in the current study).[13] In our sample, the most reported problem was fatigue (83% reported this problem sometimes/very often during the last year, data not presented), in contrast to the UK (headaches ranked first - 42%♂ and 65%♀),[26] and in contrast to the USA (back pain was the highest ranking complaint by students).[14]

In relation to BMI, 25%♂ and 32%♀ of our sample were either overweight/obese. However, in assessing the prevalence of overweight and obesity across countries, two important challenges come to the fore: the use of self-reported versus measured BMI by different studies; and the lack of a single internationally used reference or cut-off value sometimes.[38] These two features render comparisons across different countries difficult. We employed measured BMI (usually less used than reported BMI, probably due to respondent burden) and international BMI cut-offs.[31] For instance, in Thailand[39] 16% of a sample of university students was obese using the cut-off of BMI > 25, and employed cut-points delineating overweight and obesity that were set at BMI values > 23 and >25 in accordance with studies in other Asian (Japanese) populations.[40] In the current study, we employed internationally recognized cut-off points: underweight (BMI < 18.5 kg/m<sup>2</sup>), normal (18.5 ≤ BMI < 24.9 kg/m<sup>2</sup>), overweight (25.0 ≤ BMI < 29.9 kg/m<sup>2</sup>), or obese (BMI ≥ 30.0 kg/m<sup>2</sup>).[31] In response to the question “When did you measure your weight for the last time?”, about 15%♂ and 19%♀ of our sample had weighed themselves the day/week prior to the survey. Whilst a watchful eye on one's weight (self-weighing) might generally be viewed as appropriate, recent research of adolescent girls suggested that frequent self-weighing is cross-sectionally associated with both healthy and potentially harmful unhealthy weight control behaviors, and does not contribute to weight loss over time.[41] As for body image perception, slightly more males (60%) than females (56%) in

our sample perceived their body image as 'just right', in contrast to a UK and Danish sample where more males than females perceived their body image as 'just right'.[\[24\]](#) However, the 58% sample prevalence of 'just right' body image perception in our sample is higher than in the UK ( $\approx 31\%$ ) and Denmark ( $\approx 50\%$ ).[\[24\]](#) Body image perception is generally critical, as the perception of overweight was an important determinant of nutritional behaviors and weight management in adolescents, where many of those who were overweight or at risk for overweight but who did not recognize themselves as such were unlikely to employ weight control practices.[\[42\]](#) Similarly, in the Netherlands, research of adolescents suggested that feeling overweight, rather than being overweight, appears to be important for psychosocial well-being.[\[43\]](#)

For the third objective, the current study assessed the prevalences of several psychological well-being variables. In our sample, 35%♂ and 43%♀ of participants felt quite well/very well quality of life, where both levels were lower than in Denmark (67%) and the UK (65%).[\[24\]](#) This finding might require further attention, as although a great proportion of our sample were of Egyptian ethnicity/nationality, ethnicities or nationalities other than Egyptian (i.e. migrant students) attending university study in Egypt might stand a higher risk. For instance, in Germany, recent research of health-related quality of life of undergraduate medical students with migration backgrounds suggested that medical students with migration backgrounds had lower scores for health-related quality of life compared to students without a migration background.[\[20\]](#) However, we employed a single question for quality of life, whilst Kurré *et al.*[\[20\]](#) used the SF-12 Health Survey. In contrast, a study in Turkey[\[44\]](#) examined relationships between social phobia and quality of life of 700 undergraduate university students employing the World Health Organization Quality of Life-Brief Form,[\[45\]](#) where students without social phobia had significantly higher quality of life quality than those with social phobia.

Comparisons of quality of life among university students from different countries is complicated by the many dimensions that collectively contribute to quality of life (e.g., physical health-related, mental/psychological health-related, academic-related, environment-related, social phobia, others). Such comparisons are also complicated by the numerous tools used to measure quality of life of university students, whether these are general tools (i.e. not specific for college students) (e.g., SF-12 - two summary scale scores of physical and mental health, World Health Organization Quality of Life-Brief Form, others), or alternatively, exclusive/specialized instruments (i.e., specific for college students) (e.g., Wellness Evaluation of Lifestyle measure,[46] Student Quality of Life and Satisfaction measure,[47] Maggino and Schifini D'Andrea measure[48]).

As for social support, about 6%♂ and 7%♀ of students in our sample had no social support or support of one person, lower than levels reported in Spain (11.7%) or Lithuania (23%), but close to those reported in Germany (7%).[13] The levels of perceived burdens were highest in relation to exams, assignments and presentations where 66%♂ and 54%♀ very strongly/strongly agreed that it was a burden. This suggested that university assessment points (exams, assignments, presentations) of students' academic work could be physiologically stressful for students. Such study burdens have also been reported in English and Danish students, but the absolute rates seem not directly comparable with the Egyptian data due to the different cut-offs used.[24] In relation to psychosomatic problems/strains, fatigue was most reported (85% of students had this problem sometimes/very often during the last year). Further, in this sample of Egyptian students, depressed mood during the year preceding the survey was 61%♂ and 48%♀, higher than in the UK (31%♂ and 23%♀)[26] and in the USA (20%♂ and 14%♀ reported depression as a health problem experienced in the past school year).[14] In comparison with the UK,[26] the



higher levels in our sample could reflect actual higher levels of depressive symptoms (we employed the same question and response scale collapse as that used in the UK study). Alternatively, in comparison with the USA,[\[14\]](#) the Egyptian rates might be higher due to that we collapsed two options of the response format together (sometimes/very often options). Surprisingly, a recent study of 373 students from Mansoura University in Egypt[\[49\]](#) reported 28% depression prevalence. The reasons for the discrepancies between the findings of our study and Amr *et al.*[\[49\]](#) remain to be understood. For instance: 1) whilst our study was of university students located in the South of Egypt (Assiut), Amr *et al.*'s[\[49\]](#) study was implemented in the North of Egypt (Mansoura) where circumstances and extent of freedom of young adults could be different due to cultural features; and, 2) a point to note is that our questionnaire inquired about depressive symptoms, whilst they[\[49\]](#) used a hospital anxiety and depression scale, which might have influenced the findings. Indeed, depressive symptoms is a challenging health problem among college/university students in many countries.[\[50–53\]](#)

For objective four, we compared eleven participating faculties as to their students' self-reported physical health and the mental/psychological well-being variables. A pattern of clustering of 'more favorable' or 'less favorable' levels of the variables was observed across some faculties. Whilst some faculties had levels higher than the sample's average in the favorable variables, and less than the sample's average in the less favorable variables, other faculties exhibited the opposite pattern.

It is complex to postulate the determinants of such clustering. For the faculties that demonstrated a less favorable 'overall situation' across the physical and psychological health variables (e.g. Engineering and Veterinary Medicine), this might well reflect some of the realities of university life. Whilst the scope of

this paper is not comparing the merits/demerits of different disciplines, generally, Engineering is viewed as a demanding discipline; it has a knowledge and technique base such that it is easy for a student to be wrong; this might in itself be stressful. Given such features, it is plausible that Engineering students were more likely to feel that their studies and examinations were more of a burden, and that these burdens were associated with psychosomatic complaints. In addition, traditionally, both Engineering and Veterinary Medicine are faculties held to be the so called 'practical' faculties [i.e. faculties/disciplines of study that encompass many (tougher) practical elements and possibly a greater deal of 'hands-on' type of study components]; as opposed to e.g. Faculties of Social Work or of Arts, which traditionally are so called 'theoretical' faculties (i.e. faculties/disciplines of study that encompass fewer practical elements and less 'hands-on' type of study components).

However, generally most faculties revealed mixed levels of favorable and less favorable variables. It is arduous to assume the determinants of such clustering patterns. Such display of a collection (gathering) of 'favorable' or 'less favorable' health factors and practices could be related to many aspects that might characterize each faculty, its 'environment', or related policies/procedures for the student selection that might determine the composition of the student population. Indeed the differences could mirror the different base student populations of the faculties or the region where a faculty is located (when all faculties are not clustered on one campus). Certainly, various confounding factors (usually not measured) could puzzle such complex relationships and multifaceted associations of constellations that are taxing to unpack or attribute to features of the participating faculties or individuals. Income and gender issues could act as intermediaries that might moderate attitudes.<sup>[24]</sup> Alternatively, at the individual person level, such clustering is possible, as healthy/less healthy habits and practices cluster in certain

individuals,[54] groups, or cohorts to collectively generate the greater picture. E.g., nearly 65% of women aged 18-22 enrolled full-time at an urban university in the USA had two or more unhealthy behaviors.[12]

The current study also uncovers some interesting relationships. For instance, on the one hand, our participants reported a higher rate of sufficient income than students of some developed countries. On the other hand, they reported that their quality of life was lower and that depression symptomatology was higher than students of some developed countries. Such potential incongruencies/discrepancies between participants' perceptions of income, quality of life and depression symptomatology might be, as outlined earlier, due to measurement issues (e.g., numerous/different tools used to measure a concept; extent of combined/collapsed options of the response format employed in the analysis; different cut-offs used; use of a single question vs. a battery of questions to measure a concept, etc.). Alternatively, cultures of the eastern Mediterranean Arabic-speaking countries including Egypt might be inclined to thank god for income (and other matters) regardless of what they actually have (feature of the Muslim faith), feeling a sense of content/satisfaction for whatever they possess (much or little). This might have influenced their responses to the income sufficiency question resulting in a higher reported rate of sufficient income than students of some developed countries. A second interesting relationship was in terms of self-rated health, where about 77%♂ and 86%♀ of the sample rated their general health as good, very good or excellent. However, simultaneously, 83% of the sample reported fatigue sometimes/very often during the last year (data not presented). These discrepancies might suggest that fatigue *per se* might not be viewed as a serious complaint/feature by our sample, to the extent that it might influence the participants' rating of their overall health.

This study has limitations. Cross-sectional epidemiological studies are useful for establishing prevalences and underlying risk factors, however, direction of effects cannot be ascertained. Self-reported data might include recall bias, sociability and social desirability, and those who participate (self-selection) may be atypically receptive[55] and may be those with better health; this reduces the generalizability of findings (p. 377). Individuals absent from the university during the data collection day/s (maybe due to ill physical/psychological health) might not have had other opportunities to participate. It is not clear how our sample university compares with other universities in Egypt. For minimal respondent burden, some indicators were assessed by single items (students completed the questionnaire during lectures). Despite wide data collection, so that selection of students would be representative of their faculties, even with appropriate sample sizes and good response rates, the current sample remains a convenience sample which are not uncommon in student surveys across the world.[9,26,34,56,57] In the USA, post secondary institutions (universities and colleges) self-selected themselves to participate in the American College Health Association National College Health Assessment survey.[14,22] The differences in health factors across participating faculties would have been more scrutinized with more information available on any potentially differing conditions/environments at the various faculties. Future research should try to address these limitations.

## CONCLUSION

We conclude that although ratings of general health and health awareness in this sample of Egyptian students were, in many instances, within a comparable range to other countries, some subjective health/pain complaints, strains and psychosomatic symptoms were higher. In addition, about one quarter of males and one third of females were either overweight/obese. The findings also

suggested that females might be at risk and hence require additional attention. The study illustrated clustering effects of favorable or alternatively unfavorable health and well-being indicators among students of certain faculties signifying the necessity for faculty-specific health profiles as a valid basis for health promotion programs in university settings.

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[Walid El Ansari](#), [Shokria Labeeb](#),<sup>1</sup> [Lawrence Moseley](#),<sup>2</sup> [Safaa Kotb](#),<sup>1</sup> and [Amira El-Houfy](#)<sup>1</sup>

Department of Sport and Exercise, Faculty of Applied Sciences, University of Gloucestershire, Gloucester, United Kingdom

<sup>1</sup>Department of General Nursing, Faculty of Nursing, Assiut University, Assiut, Egypt

<sup>2</sup>Faculty of Health, Science and Sports, University of Glamorgan, United Kingdom

**Correspondence to:** Prof. Walid El Ansari, Faculty of Applied Sciences, University of Gloucestershire, Oxstalls Campus, Oxstalls Lane, Gloucester GL2 9HW, United Kingdom. E-mail: [.ku.ca.solg@irasnadilaw](mailto:.ku.ca.solg@irasnadilaw)

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