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Differences in health promoting lifestyle profile among students of the University of Salerno according to gender and the age group of study

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Abstract
Background: The health of female and male university students is an important public health problem in the short, medium and long term because they represent potential professionals of the future, and their lifestyles, their attitudes and their beliefs about health can have a decisive influence on the well-being of the entire population. Despite well documented benefits of health promoting behaviors, many studies have shown that university students exhibit behaviors of unhealthy lifestyle, especially inadequate alimentary behaviour and responsibility for health, which needs further research. The relationship between health indicators and life quality is significantly important in clinical decisions and health policy making and the life quality perspective is a strong stimulus for the individual's decisions and preferences. The aim of this study was to examine gender differences in health-promoting lifestyle among undergraduate students and to analyze changes between the first and second age groups of the study.
Methods: A peer-reviewed and grey literature review of quality of life in undergraduate students was conducted through a narrative search of MEDLINE and on the website of the major European Observatory on Health Systems and Policies. The search was restricted to papers published in English, German and Italian. Data collection was done through a six-section questionnaire. All data were analyzed with STATA (IC 15 64-bit 2017 version).
Results: A total of 519 students formed the sample. Of this sample 182 as men (35.07%) and 315 as women (60.69%). The age ranged from a minimum of 18 years to a maximum of 35 years. Regarding perceived health by the students the results showed the best average for males of the age group A (77.36%). The statistical test denoted highly significant correlation between health perception and genders (P = 0.0002) and very significant correlation between the age cohort A and B (P = 0.005). HPLPII, PHQ-15, EAT-26 and EQ-5D total scores were calculated mean and median highlighted by a bar chart. Significant gender differences were found in the following subscales: psychosomatic disorders (p= 0.0001), alimentary behaviour (p= 0.0001), quality of life related to health (p= 0.0018). Significant differences between age groups A and B were observed in lifestyle (p= 0.005), alimentary behaviour (p= 0.04), quality of life related to health (p= 0.04).
Conclusion: We hypothesized that there were a gender and age groups differences in health-promoting lifestyle among undergraduate students. Results from the present study support our hypothesis. The significant findings are that younger male students enjoy better health and quality of life than female students of the same cohort. They have a better view of their life, they look for new challenges and they are changing in a positive way. Data analysis shows that younger male students have a better self-perception of their health status than females of both age groups. In general, aspects of body image, eating behavior and perceived health competence, as well as academic characteristics, were significantly important in evaluating the quality of life in undergraduate students at the University of Salerno.

Keywords: quality of life, lifestyle, undergraduate students, health promotion, Salerno

1. Introduction
The health of female and male university students is an important public health problem in the short, medium and long term because they represent potential professionals of the future, and their lifestyles, their attitudes [1] and their beliefs about health can have a decisive influence on the well-being of the entire population [2, 3]. According to data from the World Health Organization (WHO), chronic diseases (cardio-cerebrovascular diseases, tumors, diabetes mellitus, chronic respiratory diseases, mental health problems and skeletal muscle disorders) are a worldwide alarm: they have a high mortality rate (they cause 86% of deaths), are highly disabling and are an economic problem for individuals, families and society [4]. In Italy the Ministry of Health and the Regions have long been involved in the fight against chronic degenerative diseases [5]. Various national and international scientific research has shown that there are many factors that influence the health and well-being of the university students, such as psychosocial factors [6, 7], factors of academic motivation (intrinsic and extrinsic motivation towards studies) [8, 9] factors related to lifestyle [10, 11], and factors related to eating behaviour [12, 13] but the literature review has revealed the substantial absence, with some exceptions [14] of the use of a multivariate approach of this study able to grasp the dynamics that interconnect the various multidimensional factors that operate on health and on success or failure in academic studies [15, 16].
Unfortunately, not all people have the same health skills, not everyone is able to organize and decide on issues related to their psycho-physical well-being, improve it, find information

and understand them, take responsibility for their quality of life. These skills are not part of the common experiential baggage but, as WHO states: "Health is created and experienced by people within the organizational environments of everyday life: where we study, work, play and love" [2].

The different contexts of everyday life (companies, schools, hospitals, universities, etc.) should be able to promote health; the burden on the University, as for other organizations, is not only to guarantee adequate structures to avoid endangering the health of users or implementing all the security procedures, but it must guarantee and encourage students to make healthy choices and take care of themselves through the adoption of correct lifestyles, becoming itself a healthy system and an activator in this sense [17, 18].

The aim of this study was to examine gender differences in health-promoting lifestyle among undergraduate students and to analyze changes between the first and second age groups of the study.

2. Materials and methods

The descriptive-analytical cross-sectional study aimed to investigate a health promoting lifestyle and its relationship with undergraduate students based on gender and the age cohort of the study.

The article is based on several approaches and numerous sources of information. The first step of the study was a grey and scientific literature review on the role of different factors in health promotion for undergraduate students and if there were other studies in line with our hypothesis. The systematic literature review was conducted according to the STROBE criteria in the electronic databases MEDLINE and SCOPUS. The search was restricted to papers published in English, German and Italian.

The field research was conducted among students of the University of Salerno in the academic years 2014/2015, from October to March. Participation in the study was voluntary. The study sample comprised 519 undergraduate students that agreed to participate in the study and completed the questionnaire.

Data were collected by self-administered anonymous questionnaires. A secure, web-based application was used to create and manage surveys and online databases. Due to these characteristics, no ethics committee approval was necessary.

The questionnaire was divided into six sections. The first part includes socio-demographic data and problems in student life; the second, the HPLP-II lifestyle (Health Promoting Lifestyle); the third, somatoform disorders PHQ-15 (Person Health Questionnaire); the fourth the eating behaviour disorders EAT-26 (Eating Attitude test); the fifth, the quality of life related to health EQ-5D; and the sixth, the manner in which the respondent arrived at the questionnaire.

Of the six sections, only the items that could clarify our hypothesis were used. The questionnaire consisted of four tests validated by the medical-scientific community and currently used at national level to perform surveys on the lifestyle and well-being of university students. To ensure the feasibility of the study, a pilot survey was conducted on a sample of 100 students from the University of Salerno.

The data collected were analyzed for males and females students separately. Data were analyzed by descriptive statistics and parametric tests (t-Student test, ANOVA). HPLPII, PHQ-15, EAT-26 and EQ-5D total scores were calculated mean and median highlighted by a bar chart. The values of P less than 0.05 were considered statistically significant. All data were analyzed using STATA (IC 15 64-bit 2017 version).

3. Results

The sample consisted of 519 students, including 182 men (35.07%) and 315 women (60.69%). Of this sample, 6 identified as homosexual women (1.16%), 8 as homosexual men (1.54%) and 8 as bisexual (1.54%). The age ranged from a minimum of 18 years to a maximum of 35 years, with an average of 22.93 (SD = 3.097). A self-assessment was requested (from zero to 100%) from those considered to be "good students"; the highest and lowest frequencies belonged to females of the age group A (average of 69.27%) and to males of the age group B (average of 59.58%), respectively. The university experience was quite satisfactory for both genders, having also considered age groups (65.52% vs 67.98%; 50% vs 63.16%). Males of the age cohort A (54.17%) had higher scores than females of the same age group (21.05%) on blocked in the studies. The gender score is reversed in the age group B (30.56% vs 52.40%).

Regarding perceived health by the students, evaluated on a scale of 100 (the best state of health imaginable) to 0 (the worst state of health imaginable), the results showed the best average for males of the age group A (77.36%). The statistical test denoted highly significant correlation between health perception and genders (P = 0.0002) and very significant correlation between the age cohort A and B (P = 0.005).

In HPLP- II total score, both genders and cohort group A and B showed a low average level. The statistical test denoted highly significant correlation between the lifestyle (total score) and the age_categorie of the Unisa students, in fact the calculation with t-Student shows that the value P = 0.03. Not statistically significant, however, was the comparison between lifestyle and gender, the calculation with Anova shows a value P = 0.47.

In PHQ-15 total score, female students showed a high level compared male students; both age group showed medium level. The statistical test denoted highly significant correlation between psychosomatic disorders and genders (P = 0.0001). Not statistically significant, however, was the comparison between psychosomatic disorders and the age group (P = 0.4).

In EAT-26 total score, male students showed high level and female students showed below the medium level. The cohort A and B showed above the medium level, respectively. The statistical test denoted highly significant correlation between eating behaviour and gender (P = 0.0001). Significant correlation were observed between the alimentary behaviour and the age group (P = 0.003).

In EQ5D total score, both genders and cohort A and B showed low level. The statistical test denoted significant correlation between quality of life related to health and the gender differences (P = 0.0092); the statistical test showed no significant differences when comparing group, A and B with quality of life related to health (P = 0.2) (Figure 1-2).

In the subscales of lifestyle (HPLP-II), examples of statements were “Changing in a positive way” and “Looking for new

challenges" in which younger males and females showed higher level (59.31%, 56.35%, p = 0.005; 55.86%, 53.97, p = 0.48).

In the subscales of psychosomatic disorders (PHQ-15), the statements considered were "Headache" and "Feeling tired or with little strength" in which females of both age groups showed the highest level (75%, 66.67%, p = 0.0001; 84.19%, 83.93%, p = 0.0001).

In the subscales of alimentary behavior (EAT-26), the statements considered were "A terrible fear of getting fat", "Felt extremely guilty after eating", "Worried at the thought of having fat on their body" and "eat diet foods" in which male students showed a substantial higher level and significant differences were observed in all the items (p = 0.0001; 0.01; 0.0001; 0.03).

In the subscales of quality of life related to health (EQ-5D), exemples of statements were "Do not experience pain and discomfort" and "Anxiety and depression" in which female students showed above the medium level in both age groups (p = 0.04; 0.0018). Older males had higher level of anxiety and depression than females of the same age group (Table 1).

4. Discussion

We hypothesized that there were a gender and age groups differences in health-promoting lifestyle among undergraduate students. Results from the present study support our hypothesis. The significant findings are that younger male students enjoy better health and quality of life than female students of the same cohort. They have a better view of their life, they look for new challenges and they are changing in a positive way.

Data analysis shows that younger male students have a better self-perception of their health status than females of both age groups; but anyway, both genders showed above the medium level. Still, the evaluation of the perceived competence in health behaviors is important, because it aids in the identification of individuals who need additional support to deal with their own health statuses. Salyer *et al*. [19] and Rueda and Perez-Garcia [20] studied the relationship between different aspects, including perceived health competence and quality of life in clinical samples. The results of both studies corroborate that individuals who perceive themselves to be more competent in managing their own health had a better quality of life.

For students, the perception of their state of health proves to be a relevant issue because it presents a consistent pattern with the presence/absence of symptoms of anxiety and depression, with living the university experience positively or not. Male students showed a better stress management skills than female students. Females tends to be more depressed compared to males because they are more prone to have higher levels of neuroticism [21]. Nassar and Shaheen report higher score averages in the subscales of health responsibility and stress management in Jordanian male students as compared to female students. The authors offer a possible explanation that female students have more duties in preparing themselves for the future role as wife and mother. They might be overloaded with study and duties, and do not have enough time to care about their health and empowerment of abilities for stress management [22].

Regarding other characteristics that impacted significantly in the students' quality of life, the academic ones stand out. In the evaluation of the perceived self-efficacy the extent to which you feel you are a "good student" [23, 24], both groups respond positively, with a greater value for younger female students and older male students. The university experience was quite satisfactory for both genders. The significant relation between good academic performance and better quality of life was also reported by Shareef *et al*. [25] in university students in Saudi Arabia. This result informs us that academic performance is an important characteristic in students' lives, and should be considered in the research/intervention protocols.

Significant gender differences were observed in the following of alimentary behaviour (EAT-26) subscales: have a terrible fear of getting fat, feeling guilty after eating, being worried about having fat on your body, eating diet foods. Females see body fitness in the context of fat loss and the increase/ definition of lower body parts, while males value muscle and the increase/definition of the upper body [26]. In males more than in females, the relationship with food is profoundly determined by the relationship with body fitness. Males tend to identify their physicality to the concept of beauty and the ability to attract the attention of others. Female students paid more attention to the thought of having fat on their body. Often, having a beautiful body image helps to maintain a high self-esteem and also increases the sense of perceived personal effectiveness. Cox *et al*. [27] warn that individuals with greater concern/dissatisfaction with the body are more vulnerable to the development of eating disorders and body dysmorphia. These disorders may have significant impact on the lives of individuals. In addition, the literature has also pointed out that body image concept is directly related to age [28]. On the other hand, the alimentary behaviours acquired in the juvenile age are usually maintained by adults [29, 30, 31] and therefore can have repercussions on the prevention of diseases both in the medium and long term [32, 33].

In general, aspects of body image, eating behavior and perceived health competence, as well as academic characteristics, were significantly important in evaluating the quality of life in undergraduate students at the University of Salerno.

There are limitations in the present study. The first one refers to our cross-sectional study design that does not allow confirmation of the temporal cause and effect relation between the studied variables. However, cross-sectional studies may aid in the identification of the issues that should be considered in intervention studies. Moreover, our results are strengthened by studying a homogeneous population, which includes a wide range of measurements. Finally, the results of the present study may be considered preliminary, but they may hopefully stimulate interest in a greater characterization of university students from different programmes in both genders.

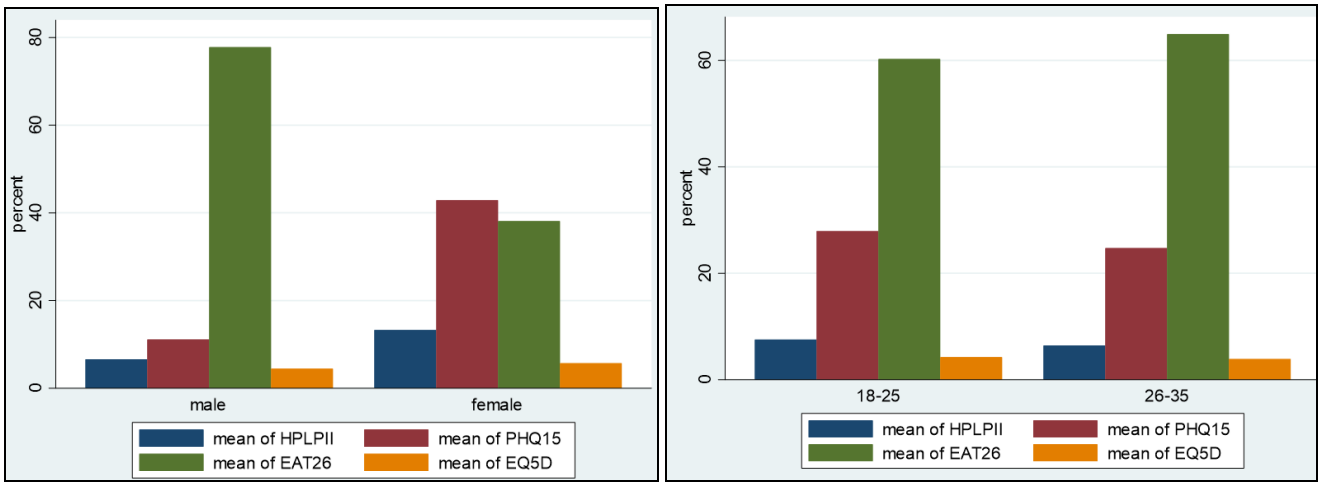

Fig 1-2: Differences in Health-Promoting Lifestyle Profile in male and female students considering age group A and B

Table 1: Gender and age groups differences in Health-Promoting Lifestyle Profile

			Quality of life and Health promoting					
			Yes		No			
Items	**Gender**	**Age_categorie**	**Obs**	**Percent**	**Obs**	**Percent**	**P [1]**	**P [2]**
HPLP-II item Changing in a positive way	Male[1]	A[2]	86 / 145	59.31	59 / 145	40.69	0.28	0.005
		B[2]	11 / 36	30.55	25 / 36	69.44		
	Female[1]	A[2]	142 / 252	56.35	110 / 252	43.65		
		B[2]	30 / 57	52.64	27 / 57	47.37		
HPLP-II item I'm looking for new challenges and experiences	Male[1]	A[2]	81 / 145	55.86	64 / 145	44.14	0.84	0.48
		B[2]	17 / 36	47.22	19 / 36	52.78		
	Female[1]	A[2]	136 /252	53.97	116 /252	46.03		
		B[2]	30 / 57	52.64	27 / 57	47.37		
PHQ-15 item Headache	Male[1]	A[2]	91 /145	62.76	54 / 145	37.24	0.0008	0.09
		B[2]	20 / 36	53.28	16 /36	45.71		
	Female[1]	A[2]	189 /252	75.00	63 /252	25.00		
		B[2]	38 / 57	66.67	19 / 57	33.33		
PHQ-15 item Feeling tired or with little strength	Male[1]	A[2]	92 / 143	64.33	51 / 143	35.66	0.0001	0.72
		B[2]	26 / 35	74.29	9 /35	25.71		
	Female[1]	A[2]	213 /252	84.19	39 / 252	15.81		
		B[2]	47 / 56	83.93	9 / 56	16.07		
EAT-26 item I have a terrible fear of getting fat	Male[1]	A[2]	100 / 145	68.97	45/ 145	31.03	0.0001	0.12
		B[2]	18 /36	50.00	18 / 36	50.00		
	Female[1]	A[2]	115 /252	45.46	137/ 252	54.55		
		B[2]	22 / 57	38.60	35 / 57	61.40		
EAT-26 item I feel extremely guilty after eating	Male[1]	A[2]	130 / 145	90.28	14 /145	9.72	0.01	0.27
		B[2]	25 / 36	69.44	11 / 36	30.55		
	Female[1]	A[2]	206 / 252	81.75	46 / 252	18.25		
		B[2]	47 / 57	82.46	10 / 57	17. 54		
EAT-26 item I'm worried at the thought of having fat on my body	Male[1]	A[2]	121 / 145	84.03	23 / 145	15.97	0.0001	0.25
		B[2]	21 / 36	58.33	15 / 36	41.67		
	Female[1]	A[2]	156 /252	61.90	96 /252	38.09		
		B[2]	36 / 57	63.16	21 / 57	36.85		
EAT-26 item I eat diet foods	Male[1]	A[2]	124 / 145	83.52	21 / 145	14.48	0.03	0.04
		B[2]	27 / 36	75.00	9 / 36	25.00		
	Female[1]	A[2]	198 / 252	78.26	54 / 252	21.74		
		B[2]	38 / 57	67.85	19 / 57	32.14		
EQ-5D item Do not experience pain and discomfort	Male[1]	A[2]	58 / 145	40.00	87 / 145	60.00	0.31	0.04
		B[2]	20 / 36	55.56	16 / 36	44.44		
	Female[1]	A[2]	128 / 252	50.59	124 / 252	49.40		
		B[2]	33 / 57	57.90	24 / 57	42.11		
EQ-5D item Anxiety and depression	Male[1]	A[2]	78 / 145	53.80	67 / 145	46.21	0.0018	0.60
		B[2]	25 / 36	69.45	11 / 36	30.56		
	Female[1]	A[2]	189 / 252	75.00	63 / 252	25.00		
		B[2]	38 / 57	66.67	19 / 57	33.33		

EQVAS total Perception of health 0 - 100	Male[1]	A[2]	145	77.36 mean	0.0002	0.005
		B[2]	36	57.86 mean		
	Female[1]	A[2]	252	64.03 mean		
		B[2]	57	59.23 mean		

5. Conclusion

The study highlighted that the quality of life is a theme heard among the students of the University of Salerno and it is closely linked to an overall state of balance between physical, psychic and behavioral aspects.

University students constitute a large part of the country's young population; thus, promoting a healthy lifestyle is of crucial importance for this group. Fifty three percent of mortality causes are associated with an individual's lifestyle. Obviously, with no modification in lifestyle, there will be irreparable consequences in the future.

The present investigation may give a better understanding of the interrelationship between academic performance, health, lifestyle, and psychosocial factors for university educators and to those involved in social and health policy makers, helping to guide them in the development of effective intervention programmes.

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