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Assessing Health-Promoting Lifestyles of Students in an Omani University Environment: Implications for a Campus-based Health and Wellness Program

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Abstract. Health promotion among students has long been a concern of higher education institutions. The concept of health-promoting university urges higher education institutions to integrate health promotion into their culture and processes. To identify strategies that will create healthy campuses, studies recommend assessing first the health promotion behaviors of students. This study determined to what extent college students at a university in the Sultanate of Oman engage in health-promoting lifestyle behaviors. A descriptive cross-sectional investigation of 400 college students was conducted using the "Health-Promoting Lifestyle Profile II" questionnaire. Institutional ethical approval was granted. Results indicated a moderate health-promoting lifestyle profile score, with the participants showing low engagement in "health responsibility" and "physical activity". Statistically significant variations exist between male and female, single and married participants in areas of "nutrition" and "interpersonal relations"; between age groups in areas of "health responsibility" and between types of accommodation in areas of "interpersonal relations" ($p = .01$). A low to moderate, positive correlation among dimensions of health-promoting lifestyle was statistically significant ($p=.01$). These findings suggest significant implications for the development of health and wellness programs in the university that will hopefully contribute to the realization of a goal to develop into a health-promoting university.

Keywords: health-promoting lifestyle, health-promoting university, health responsibility, lifestyle behaviors

Introduction

Individuals around the world are becoming cognizant of the great significance of the relationship between lifestyle and illness. These individuals are also mindful that assessment of one's lifestyle centers on the personal lifestyle and habits as they impact on health. Lifestyle assessment could be a basis for making decisions that will direct individuals in modifying their behavior towards the promotion of health.

Health promotion has been described in many different methods. Health promotion according to the World Health Organization (1998) is a means of empowering individuals to foster influence over their health and act. According to Pender et al. (2015), health promotion is regarded as the "art and science of assisting people make lifestyle modifications and is a combination of educational and environmental provisions for actions and living conditions favorable to health" (p. 21).

Practicing health promotion can be found in many settings and according to the World Health Organization (2022), activities to promote health via different settings can come in different modes. Health-promoting activities could be offered to individuals and families in their homes or communities and at schools, hospitals, and worksites (Berman et al., 2016).

In the school setting, health promotion is one of the priorities of the World Health Organization. According to the World Health Organization (WHO) and the United Nations Educational, Scientific and Cultural Organization (2021), schools play a critical role in the

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wellbeing of students including their families and the broader community. Thus, health promotion among students has long been a concern of higher education institutions. The approach to health promotion that is based on settings can possibly enrich the role of universities in enhancing the population's health (Tsouros et al., 1998). The concept of Health Promoting University urges higher education institutions to integrate health into their culture and processes in an attempt to promote the health of their population (Suárez-Reyes et al., 2018).

The health and well-being of university students as individuals in their younger years could be related to their health status as they mature into older adults. During their years spent in the university, students may adopt lifestyles that will lead to long-term bad effects. Because college students are living away from home, they are challenged with the responsibility for their own health (Jackson et al., 2007). Also, these students are subjected to a milieu that endangers their health and as a consequence, make them susceptible to diseases (Kim & Kim, 2018) that can affect their college academic performance.

According to the "Health Vision 2050" of Oman (Ministry of Health Undersecretariat for Planning Affairs, 2014), the occurrence and predominance of non-communicable diseases are mostly connected to the lifestyle of people making up the population. The major risk causes for these non-communicable diseases are smoking, inadequate physical activity, and unhealthy foods. Of the seventy-two percent of total deaths due to non-communicable diseases in Oman, 18% of these deaths occurred prematurely among the adult population (Centre of Studies & Research, Ministry of Health, 2017). Also, a lifestyle study revealed that college and university students in Oman devote an average of two hours to TV watching and video gaming thus depriving them of time for adequate physical activity (Abdou & El Sayed, 2010). Although there has been recent improvement in tackling non-communicable diseases and their risk causes, a considerable fraction of Omani adults still are deficient in fruit and vegetable intake, 40% are physically sedentary, more than 40% are hypertensive and 12% have diabetes (Centre of Studies & Research, Ministry of Health, 2017).

The factors that contribute to health risks in younger adults, especially among college students, could be avoided if proper identification and modification are done at an early stage. When students have healthy lifestyle behaviors, it will more likely support success during their college life. Hence, the health-promoting lifestyle of the college population needs significant research consideration. An assessment of the student's health-promoting lifestyle will eventually lead the formulation of well-designed health-promotion interventions that will enhance the college student's quality of life.

In order to identify strategies that will create healthy campuses and highlight the significance of health promotion and wellness in universities and colleges, studies recommend assessing first the health promotion behaviors and wellness of the students (Franzidis & Zinder, 2019; Kim & Kim, 2018; LaFountaine et al., 2007). Exploring students' health-promoting behaviors is essential for creating well-designed health promotion interventions that will enhance college students' quality of life.

Objective

This study seeks to determine the extent of university students' engagement in health-promoting lifestyle behaviors in order to direct the creation of a well-designed health-promotion intervention program for a university in Oman.

Methodology

This study is a descriptive, cross-sectional investigation of the health-promoting lifestyle of college students in a private university in Oman. The study is descriptive because

it described and measured the variables and cross-sectional because the data were collected from a sample at one point in time (Gray & Grove, 2020; Nieswiadomy & Bailey, 2016).

A convenience sampling method was employed in selecting college students as participants in the study. Inclusion criteria for the participants in the study are undergraduate students officially enrolled as students in the university for the academic year and who are willing to take part in the study. The sample size is estimated by using the Sample Size Calculator by Raosoft, Inc. (Raosoft.com., 2022). At a 95% level of confidence, it was estimated to be 362. The addition of a 10% probability of non-response, resulted in a total of 400 participants involved in this study.

The research study utilized a questionnaire composed of two parts. Part A consists of demographic questions asking information about participants' gender, age, marital status, college, and where they are currently living during their school days. Part B is the **"**Health-Promoting Lifestyle Profile II (HPLP II)" instrument by Walker et al. (1996) which measures the extent to which participants take part in a health-promoting lifestyle. It is a summed-behavior rating scale containing 52 items on a four-point response layout with 1 as "never", 2 as "sometimes", 3 as "often", and 4 as "routinely". The reliability of the instrument is reported as an alpha coefficient of $\alpha = .943$ with the sub-scales ranging from .793 to .872 (Walker & Hill-Polaerecky, 1996). The instrument is widely applied in research on health promotions and was reported to have adequate validity and reliability for use among different subjects like students in universities and young adults (Haddad et al., 2004; Jackson et al., 2007; Lee & Loke, 2005). In this study, Cronbach alpha of the scale is 0.95, which indicates an excellent level of internal consistency.

In this study, the HPLP II instrument was translated to Arabic by a person who knows English-Arabic translation. After the translation to Arabic, a professional in Arabic at the university was consulted to check the correctness of the translation. The translated version was then tested on 10 students on the campus to test the clarity of the statements and improve its face validity. All items were completed by the students without any difficulty.

Ethical approval to conduct this study was granted by the "Institutional Human Research Ethics Committee" (HREC) of the university (EC Ref No.: HREC/17/2022). All available measures assured participants of the confidentiality of their responses. Participants were asked to report their health-promoting lifestyle behaviors anonymously and candidly.

Responses to the HPLP II were entered for each participant and were aggregated with the statistics calculated using the Statistical Package for the Social Sciences (IBM SPSS Statistics 20). Descriptive statistical analysis was utilized to determine the frequency distribution, mean, and standard deviation of participants' health-promoting lifestyle and their demographic factors. An independent t-test and analysis of variance (ANOVA) were used to assess variations in participants' health-promoting lifestyles by demographic characteristics. Pearson correlation coefficient ***r*** was used to determine the association between domains of health-promoting lifestyle behaviors. A p-value of ≤ 0.05 is set as statistically significant.

Results

Participants' Sociodemographic Profile

Table 1 reveals participant demographics: 68.5% female, and 31.5% male among the 400 studied. Regarding age, 59.3% are 18-22yrs, 36.3% are 23-27yrs, and only 4.5% are 28-35yrs. Marital status shows 86.3% single, 13.8% married. College distribution indicates 35% from the College of Arts & Sciences, 33.3% from the College of Pharmacy and Nursing, 18.3% from the College of Education, Management and Information System, and 13.5% from the College of Engineering & Architecture. Accommodation-wise, 37.0% reside in on-campus hostels, 35.3% in parents' homes, and the rest in off-campus hostels.

Table 1. Frequency and Percentage Distribution of Participants According to Demographic Factors (N=400)

Demographic Factors	Frequency	Percentage
Gender		
"Male"	126	31.5
"Female"	274	68.5
Age Range		
18-22 yrs. old	237	59.3
23-27 yrs. old	145	36.3
28-35 yrs. old	18	4.5
Marital Status		
Single	345	86.3
Married	55	13.8
College		
Arts & Sciences	140	35.0
Education, Management & Information System	73	18.3
Engineering & Architecture	54	13.5
Pharmacy & Nursing	133	33.3
Type of Accommodation		
In-campus Hostel	148	37.0
Off-campus Hostel	111	27.8
Parents Home	141	35.3

Overall Status of the Health Promoting Lifestyle Behaviors among College Students

In the health-promoting lifestyle profile (HPLP II), mean scores were categorized as "low" (less than 2.5), "moderate" (2.5 to 3), and "high" (over 3) (Al-Khawaldeh, 2013). Table 2 shows two domains with low mean scores: "Health responsibility" (M = 2.30) and "Physical activity" (M = 2.33). Participants exhibited moderate engagement in "Nutrition (M=2.61), Spiritual growth (M=2.99), Interpersonal relations (M=2.93), and Stress management" (M = 2.69). Overall, participants demonstrated a moderate level of engagement in all health-promoting lifestyle domains (M = 2.64, SD = 0.86).

Table 2. Descriptive Statistics for the HPLP-II Domains (N=400)

Domain/Subscale	Range	Mean	Std. Deviation	Level
Health responsibility	1-4	2.30	0.90	Low
Physical activity	1-4	2.33	0.92	Low
Nutrition	1-4	2.61	0.88	Moderate
Spiritual growth	1-4	2.99	0.83	Moderate
Interpersonal relations	1-4	2.93	0.81	Moderate
Stress management	1-4	2.69	0.83	Moderate
Total HPLP-II	**1-4**	**2.64**	**0.86**	**Moderate**

Variations in the Health Promoting Lifestyle Behaviors of College Students According to Demographic Characteristics

Table 3 indicates significant differences in health-promoting lifestyle behaviors by gender, marital status, and age. Notably, females and singles exhibit higher engagement in nutrition (p = .01) and interpersonal relations (p = .01). The 28-35 age group demonstrates greater health responsibility (p = .01) than younger age groups. Table 4 reveals disparities in health-promoting behaviors based on college and accommodation. College of Pharmacy and

Nursing students show higher engagement in health responsibility (p = .01). Regarding accommodation, those in on-campus hostels exhibit more interpersonal relations engagement (M=27.17, p = .01) than off-campus counterparts or those staying with family.

Table 3. Mean Differences in Health Promoting Lifestyle Scores According to Gender, Marital Status, and Age (N=400)

Demographic Characteristics	Health responsibility	Physical activity	Nutrition	Spiritual growth	Inter-personal relations	Stress management	HPLP II total
Gender							
Male	20.33 (5.77)	19.19 (5.23)	22.53 (5.80)	26.49 (4.94)	25.54 (4.75)	21.65 (4.68)	135.74 (25.8)
Female	20.84 (5.66)	18.36 (5.19)	23.90 (4.78)	27.11 (5.02)	26.73 (4.67)	21.41 (4.17)	138.36 (24.28)
t	-.837	1.479	-2.482	-1.154	-2.350	.502	-.983
p	.403	.140	.013*	.249	.019*	.616	.326
Marital Status							
Single	20.70 (5.77)	18.53 (5.32)	23.78 (4.88)	27.03 (4.961)	26.63 (4.63)	21.50 (4.12)	138.18 (24.24)
Married	20.54 (5.22)	19.16 (4.52)	21.49 (6.34)	26.20 (5.233)	24.67 (5.03)	21.41 (5.54)	133.49 (27.92)
t	.195	-.828	3.096	1.146	2.879	.132	1.306
p	.845	.408	.002*	.252	.004*	.895	.192
Age							
18-22 yrs. old	20.09 (5.72)	18.61 (5.30)	23.18 (5.51)	26.98 (5.22)	26.26 (4.85)	21.51 (4.44)	136.66 (25.10)
23-27 yrs. old	21.39 (5.71)	18.64 (5.20)	23.82 (4.63)	26.77 (4.63)	26.53 (4.58)	21.46 (4.13)	138.62 (24.40)
28-35 yrs. old	22.72 (4.18)	18.61 (4.24)	24.38 (4.11)	27.16 (5.13)	26.27 (4.40)	21.27 (4.72)	140.44 (24.71)
F	3.576	.001	.980	.106	.156	.028	.408
p	.029**	.999	.376	.899	.856	.972	.665

**Difference is significant at p = .01 level; ** Difference is significant at p = .05 level*

Table 4. Mean Differences in Health Promoting Lifestyle Scores According to College and Type of Accommodation (N=400)

Demographic Characteristics	Health responsibility	Physical activity	Nutrition	Spiritual growth	Inter-personal relations	Stress management	HPLP II total
College							
-Arts & Sciences	20.34 (5.63)	18.82 (5.40)	23.25 (5.09)	26.75 (5.25)	26.34 (4.91)	21.50 (4.59)	137.00 (25.20)
-Education, Management, Info System	20.17 (5.94)	18.91 (5.76)	23.01 (5.77)	26.34 (4.79)	25.56 (5.13)	21.68 (4.07)	135.69 (26.44)
-Engineering & Architecture	19.27 (5.38)	17.33 (5.29)	22.85 (5.59)	26.77 (4.47)	26.09 (3.92)	20.87 (4.66)	133.20 (23.24)
-Pharmacy &	21.89	18.76	24.20	27.46	26.93	21.61	140.87

Nursing	(5.59)	(4.62)	(4.63)	(5.04)	(4.57)	(4.08)	(23.87)
F	3.522	1.287	1.433	.921	1.405	.453	1.516
p	.015*	.279	.233	.431	.241	.715	.210
Accommodation							
-In-campus	20.82 (6.03)	18.53 (5.53)	23.52 (5.74)	27.48	27.17 (4.46)	21.50 (4.29)	139.04 (25.66)
-Off-campus	21.25 (6.07)	18.87 (5.02)	23.28 (5.29)	26.54	26.39 (5.09)	21.77 (4.73)	138.10 (26.57)
-Parent's residence	20.09 (4.96)	18.51 (5.04)	23.55 (4.37)	26.61	25.48 (4.57)	21.25 (4.06)	135.51 (22.33)
F	1.359	.178	.096	1.532	4.718	.445	.771
p	.258	.837	.909	.217	.009*	.641	.463
**Difference is significant at p = .01 level; ** Difference is significant at p = .05 level*							

Association Between Domains of Health Promoting Lifestyle Behaviors

Table 5 shows a low to moderate, positive correlation among the dimensions of health-promoting lifestyle, which was statistically significant (p=.01 level, 2-tailed). Thus, the null hypothesis which states that there is no significant correlation between areas of health-promoting lifestyle behaviors is rejected.

Table 5. Correlation Matrix (Pearson correlation coefficient r) of Health Promoting Lifestyle Domains (N=400)

	Health Responsibility	Physical Activity	Nutrition	Spiritual Growth	Inter-personal Relations	Stress Management
Health Responsibility	1					
Physical Activity	.698**	1				
Nutrition	.617**	.575**	1			
Spiritual Growth	.487**	.466**	.671**	1	.	
Interpersonal Relations	.510**	.451**	.623**	.778**	1	
Stress Management	.646**	.681**	.665**	.719**	.627**	1
** Correlation is significant at the p = .01 level (2-tailed).						

Discussion

The present study showed the extent to which participants take part in a health-promoting lifestyle particularly "health responsibility" and "physical activity" which are considered low. The frequency of self-reported health-promoting behaviors in these areas is low. The participants, however, took part in a health-promoting lifestyle to a moderate extent in the areas of "nutrition", "spiritual growth", "interpersonal relations", and "stress management". So overall, the participants took part in all health-promoting lifestyles to a moderate extent.

Generally, the overall mean score of the students' health promotion lifestyle profile in the present study was comparable with several previous studies performed on students internationally. For instance, in a health-promoting lifestyle profile assessment among university students in Japan (Wei et al., 2012), Saudi Arabia (Alzahrani et al., 2019), Iran (Amiri et al., 2019), Jordan (Nassar & Shaheen, 2014), Egypt (Gamaleldin et al., 2021), and Mexico (Núñez-Rocha et al., 2020), the overall extent to which participants take part in a health-promoting lifestyle was on a moderate level.

Additionally, an assessment of the individual areas of health promotion lifestyle in the present study revealed that the "interpersonal relationships" and "spiritual growth" showed the highest mean scores as compared to other areas, and is supported by several studies (Alzahrani et al., 2019; Gamaleldin et al., 2021; Wei et al., 2012; Ul Haq et al., 2021). Similarly, the results of the study by Alkhawaldeh (2014), Amiri et al. (2019), Nassar and Shaheen (2014), and Tol et al. (2013) showed spiritual growth as the highest among the dimensions, while the results of Mehri et al. (2016) showed high interpersonal relationship score.

The high mean score for the area of "interpersonal relationships" could be supported by the point that this is a basic and essential part of life. This could also be indicative of better social support obtained from family and/or friends. Social support is viewed as a system of "interpersonal relationships" that provide psychological and material resources aimed at assisting an individual's ability to cope. An individual's successful health promotion is dependent on support from family and/or friends (Pender et al., 2015).

Spiritual growth can be achieved by the ability to expand one's inner being to its maximum potential. The spiritual beliefs of students could be an explanation for the high score in the area of "spiritual growth" among the students. Spiritual beliefs affect an individual's way of interpreting life events and managing his health (Pender et al., 2015).

On the contrary, this study showed that the lowest mean scores were for "health responsibility" and "physical activity" areas. This result is similar to the outcomes of other studies among university students in Japan (Wei et al., 2012), Pakistan (Ul Haq et al., 2021), and Egypt (Gamaleldin et al., 2021). Most studies showed that students engaged to a lower extent in physical activities (Alkhawaldeh, 2014; Amiri et al., 2019; Mehri et al., 2016; Nassar & Shaheen, 2014; Tol et al., 2013).

Low scores on "health responsibility" could be attributed to a lack of knowledge about the signs and symptoms of a disease, a lack of opportunities to discuss health concerns with health professionals, or a lack of health promotion programs on campus to provide information about health and well-being. Likewise, low scores in the "physical activity" domain could be ascribed to some factors related to the school setting as a health-promoting site. The nature of the curriculum could be a factor wherein students become overwhelmed by many lectures and practical activities that require time leading to a tight schedule. The unavailability of resources for planned "physical activity" in school might also play a role in low engagement in physical activities among university students.

Differences in the overall health-promoting lifestyle behaviors of students according to demographic characteristics that are statistically significant are revealed in this study. Female students and those who are single are more engaged in nutrition and interpersonal relation behaviors. This finding is supported by Wei et al. (2012) where female Japanese students performed significantly better interpersonal relations and nutrition. Interpersonal relationship scores were also found to be higher in Mexican women (Núñez-Rocha et al., 2020). Additionally, Alzahrani et al. (2019) reported that health-promoting profiles of Iranian medical students differed by gender, specifically interpersonal relationships. Health-promoting lifestyle behaviors of college students in the current study also differ according to age. Students belonging to the older age group showed more engagement in being responsible for their own health than the younger age groups.

As revealed in the current study, there is a statistically significant difference between colleges in terms of "health responsibility". Pharmacy and Nursing students are more engaged in terms of health responsibility than other students from other colleges. This finding may be explained by the nature of their course, suggesting that pharmacy and nursing students may have had knowledge about health promotion as it is a part of their program at the university.

Limitations

The study's limitations include a descriptive cross-sectional design, limiting insight into changes over time in university students' lifestyle behaviors. A longitudinal approach is suggested for a more comprehensive understanding. Reliance on self-report surveys may introduce response bias, potentially deviating from actual behaviors. Generalization is restricted to the surveyed university, advocating for replication with a broader, representative sample, including faculty and administration, to achieve the goal of becoming a health-promoting university.

Conclusion

University college students demonstrated a moderate health-promoting lifestyle, exhibiting variability across domains. Health responsibility and physical activity showed limited engagement, whereas spiritual growth and interpersonal relations were notably high. Gender and marital status significantly influenced nutrition and interpersonal relations, favoring females and singles. Older students demonstrated greater health responsibility. Notably, Pharmacy and Nursing students displayed heightened health responsibility. The study identified interconnected health-promoting behaviors, emphasizing diverse engagement levels among students. Overall, findings underscore the impact of gender, marital status, age, and college affiliation on shaping health-promoting behaviors among university students.

Recommendations and Implications

The health-promoting lifestyle profile of the students is generally considered on a moderate level and the students reported a lower extent of engagement in the areas of “health responsibility” and “physical activity”. These findings have important implications. University academic affairs need to recognize the value of incorporating the concepts of “health promotion and lifestyle modification” into the curriculum. Adding a course on Health Promotion and Physical Education as a university requirement could be a step toward promoting physical fitness and healthy lifestyles in the student population. Likewise, a setting more conducive and supportive of healthy lifestyle practices among the students should be adequately provided. Formulation and execution of a plan for the “Health and Wellness Center” in the university will serve as an essential resource in meeting the needs of the students and the university population in terms of physical activity, enforcement of healthy diet guidelines, and increasing health responsibility.

Campus-based health programs and services that are interventional should be designed to fit the specific needs of the college student population (Mowbray et al., 2006). All these recommendations to include Health Promotion and Physical Education in the university requirement and the development and provision of Health and Wellness resources in the university will hopefully contribute to the realization of a goal to become a health-promoting university.

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