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Gender differences in health-promoting behaviors and psychological well-being of Palestinian medical students based on the HPLP II

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ABSTRACT

Background: Medical school is considered a critical developmental stage for students. They face many challenges and rapid changes. Unfortunately, they adopt unhealthy behaviors that can negatively affect their future health and role as healthcare providers in some cases. ***Objective****:* This research aimed to compare gender disparities in health-promoting habits among Palestinian medical students. ***Methods:*** A cross-sectional study was carried out using the HPLP II mean scores d out on 400 students composed of 22.25% males and 77.75% females. According to Pender's model, a self-reported anonymous questionnaire, including the health-promoting lifestyle profile II, was distributed to a convenient sample of students during the Spring of 2018. Data analysis was performed using descriptive analysis and parametric tests. ***Results:*** Gender differences in the total health-promoting lifestyle profile II scores and health responsibility were significant, with females having higher scores than males. Males were more significantly engaged in the physical activity subscale than females ($p < 0.01$). Females scored significantly higher than males in the interpersonal relations subscale ($p < 0.001$). Gender differences in other subscales were statistically insignificant. ***Conclusions:*** This study might give healthcare providers and educators insights into developing specific warranted interventions and gender-sensitive measures to orient medical students towards better healthy lifestyles. Medical schools are invited to prioritize healthy styles and behaviors based on gender in the curriculum.

Keywords*:* Health-Promoting Lifestyle Profile-II, Gender, Medical Students.

INTRODUCTION

Global trends show a shift towards unhealthy lifestyles and behaviors which cause rising health problems and mortality (1, 2). An unhealthy life is reported negatively influence human physical and mental well-being (3). Insufficient physical activity (PA), smoking, unhealthy dietary practices, and excessive alcohol consumption are mainly the main contributors to significant acute and chronic diseases (4), as well as mental health problems such as anxiety and depression (5, 6). Health risks might be prevented by leading a healthy lifestyle consisting of good nutritional habits (NH) and regular exercise, routine medical check-ups, preserving good emotional health, and eliminating unhealthy habits (7).

A healthy lifestyle significantly predicts productivity, life expectancy, and future health status (1). To enhance the healthy lifestyle of populations, the World Health Organization (WHO) declared that health promotion is the basic strategy in healthcare (8). Health promotion is a vital affirmation of personal health status, which keeps individuals responsible for their health (9). Health-Promoting Lifestyle Behaviors were illustrated as principles for people to follow to stay healthy and have proven to be decisive as effective healthcare strategies (10, 11). According to Pender's model, Health-Promoting Lifestyle Profile-II (HPLP II) is composed of 52 health-promoting behaviors that are categorized into six subscales that include health responsibility (HR), physical activity (PA), nutritional habits (NH), interpersonal relations (IR), spiritual growth (SG), and stress

management (SM) (12, 13). HR, PA, and NH represent the health behaviors that involve being attentive to one's health, fitness, and knowledgeable food consumption (14). IP relies on communication with others to achieve a sense of intimacy (15). SG focuses on developing inner sources to achieve inner peace, connect with the universe, and develop the potential to achieve goals (15). SM involves using effective sources to reduce tension and stress (16). The total HPLP II score ranges from 52 to 208, measured by the mean score of the 52 items. The total HPLP II score is classified into four levels: poor (52–90), moderate (91–129), good (130–168), and excellent (169–208) (17).

The university period represents a critical stage where students are subjected to significant biological, social, and psychological changes and the search for their own identity (18). In this regard, this period can be considered a fundamental stage concerning the present and future student's health, during which the acquired habits are consolidated and new ones are incorporated, thus determining the future health of students. It is reported that university students are more prone to be engaged in several unhealthy behaviors which may adversely affect their well-being, such as adopting poor nutrition and a tendency toward physical inactivity (1, 13, 19). Due to their heavy workload and study, medical students experience high rates of psychological morbidity, reduced PA, poor diet, increased rates of obesity and smoking, excessive alcohol consumption, and eating unhealthy fast food (20-22). Considering health promotion as the primary strategy to promote healthy lifestyles along with the prospective role of medical graduates in it, medical students are an effective target to maintain the healthy lifestyle of the community in general and thus preventing non-communicable diseases that will be an eventual outcome of adopting unhealthy lifestyles (17, 23). Even though medical students are being taught rigorously about health, they surprisingly suffer from unhealthy behaviors with no formal health-promoting proceedings considering their personal and cultural variability (24).

Several factors have significantly affected the health-promoting lifestyle profile in one or more subscales, including the year of study, age, educational level, gender, living with family, and working time (24-28).

The importance of studying gender as a suspected variable that could affect medical student health behaviors is attributed to the fact that gender differences force people to adopt certain behaviors, attitudes, and beliefs that are highly perpetuated in our society, family, and workplace (29, 30). In addition, the gender difference is extensively studied in other countries and is a significant factor influencing healthy lifestyle beliefs (31) and reactions to stress (32).

Good knowledge of medical students' health behaviors might ease the design of interventions that fit the culture to enhance healthier behaviors among medical students, especially when they are looked at as prospected physicians. Therefore, this study aimed to measure the HPLP II characteristics among male and female medical students in Palestine using Pender's model.

METHODS

Study design and sampling

A descriptive cross-sectional study was performed among Palestinian medical students after receiving official ethical approval in 2018. The study targeted students in the first or second academic year of the study. The questionnaire was afforded to 430 students, and 400 agreed voluntarily to participate after signing the informed consent. The gender variable was homogenously distributed regarding the other variables, including academic year, health status, and place of residence. The minimal sample size was calculated by applying Jekel's equation and was 370 participants (33).

Tools and data collection

According to Pender's model, health-Promoting Lifestyle Profile-II (HPLP II), including 52 items divided into six subscales, was used as an anonymous self-administered questionnaire (18). We received the requested authorization to apply the questionnaire in English, the official language adopted for medical studies in Palestine, and the students were assisted when required. The six HPLP II subscales include nutritional habits (NH),

interpersonal relations (IR), health responsibility (HR), spiritual growth (SG), physical activity (PA), and stress management (SM). The participants' answers to the 52 items were estimated based on a four-point Likert scale (1= never, 2= sometimes, 3= often, and 4= routinely). In order to calculate the different subscale scores, only the answers "routinely" and "often "were considered to practice health-promoting behaviors and psychological well-being. The subscale score was computed by adding the scores for all components, and the overall HPLP II was the sum of all subscale scores. The higher the score, the healthier the lifestyle is. A pilot study was performed with a sample of 20 medical students to validate the tool, and the reliability analysis for the total HPLP II using the Cronbach Alpha factor was 0.881.

Data Analysis

Descriptive statistics and nonparametric tests were used to analyze the collected data—statistical Package for the Social Sciences (SPSS) version 24.0. Armonk, NY: IBM Corp) was used for statistical analysis. The score variations in the total HPLP II were determined by applying an independent t-test, with a p-value considered significant if its value is < 0.05. The test Chi-square was used to determine gender differences in the scores of the items.

RESULTS

Demographic characteristics

A total of 400 medical students (22.3 % males and 77.7% females) enrolled in the study; the higher female percentage could be attributed to the fact that more females are attending medical specialties compared with males, about 70% of students in the faculty of medicine and health sciences, and they were more responding to participate in the study. More than half of the participants had an excellent health status. About 69.3% came from urban areas, about 55.8% took part in the study's first year, while about 44.2% took part in the study's second year. The participant's sociodemographic characteristics are illustrated in (Table 1).

Table (1): Sociodemographic factors of the study sample characteristics.

Variable	n (%)
Gender	
Male	89 (22.3)
Female	311 (77.7)
Total	400 (100)
Health status	
Excellent	211(52.8)
Good	183 (45.8)
Bad	6 (1.4)
Total	400 (100)
Place of residence	
City	277 (69.3)
Village	85 (21.3)
Camp	38 (9.4)
Total	400 (100)
Academic year	
First	223 (55.8)
Second	177 (44.2)
Total	400 (100)

Health-promoting behaviors

More females were engaged in the sense of HR than males in all items (49.3% versus 42.1%). The variation in HR was not significant in the total score; however, a clear significance was observed in the items: "inspecting their bodies at least once a month for any suspicious signs" (26% versus 11.2%), a p-value of <0.01, and "seeking a second opinion when they asked health professionals for advice" (67.8% versus 54%), $p < 0.05$.

A significant difference between males and females regarding being involved in physical activity was observed. More males than females were involved in the overall PA items (30.4% versus 23.5%), with a p-value of 0.003. This was clear in the items: "training forcefully at least five times a week" (37% versus 23.4), $p < 0.05$, and "reaching their target heart rate faster during exercise" (32.5% versus 20.9%), $p < 0.05$. Concerning the overall NH item, the gender difference was insignificant, 41.2% for males versus 38.7% for females (*supplementary table 1S)*.

Psychological Well-Being

Males and females had roughly equal SG ratios in all items (73.5% versus 74.1%). Fewer males than females were engaged in IR (61.9% versus 71.5%). The total IR score was significantly variable (p-value less than 0.001) between males (IR=24.7) and females (IR=27) in the total IR. Also, significant differences were found in the three IR items: "talking more about their troubles and concerns to individuals close to them" (46% versus 63%), $p < 0.01$, and "keeping important and satisfying relationships with others" (73% versus 82.9%), $p < 0.05$, and "discovering ways to meet their demands for intimacy" (50.5% versus 64.9%), $p < 0.05$. The difference between males and females in stress management was insignificant (51.9% versus 49.1%), respectively, $p > 0.05$. In the item "focusing on enjoyable feelings at bedtime," the ratio of males was higher (62.9% versus 48.8%), $p < 0.05$ *(supplementary table 2S).*

Comparison of scores of the HPLP II

The total score of HPLP II is 131.3 for males and 134.4 for female participants, which is considered within the recommended levels for adopting healthy lifestyle strategies (17). There is a marginal significance in the total HPLP II score based on gender difference (p-value = 0.084).

The scores of HR were higher in females than those in males with no statistical significance (23.6 versus 21.3), p= 0.06. Furthermore, males were significantly more engaged in PA subscales than females (16.7 versus 15), $p < 0.01$. On the other hand, females had a significantly higher IR subscale score than males (27 versus 24.7), $p < 0.001$ (Table 2).

Table (2): The scores of the subscales of the HPLP II for male-female medical students using a t-test (n = 400).

Category	Subscale (HPLP II)	Gender	N	Subscale score	Subscale mean	Subscale mean difference	t-test	p-value
Health behaviors	Health responsibility	Male	89	21.3	22.5	-2.345	1.555	0.060
		Female	311	23.6				
	Physical activity	Male	89	16.7	15.9	1.709	2.763	0.003 **
		Female	311	15.0				
	Nutritional habits	Male	89	20.8	21.1	-0.552	0.952	0.170
		Female	311	21.4				
Well-being habits	Spiritual growth	Male	89	27.4	27.2	-0.491	0.684	0.247
		Female	311	27.0				
	Interpersonal relations	Male	89	24.7	25.8	-2.352	3.593	0.0002***
		Female	311	27.0				
	Stress management	Male	89	20.5	20.4	0.129	0.216	0.414
		Female	311	20.3				
Total HPLP II		Male	89	131.4	133.4	-3.896	1.377	0.084
		Female	311	134.3				

Note: The mean values for males and females are given. *p < 0.05, **p < 0.01, ***p < 0.001.

DISCUSSION

Unhealthy lifestyle behaviors such as low physical activity and an unhealthy diet are considered risk factors for many chronic diseases such as ischemic heart diseases and diabetes mellitus (34). Thus, considering the importance of a healthy lifestyle and the vital role of medical students in provoking better public health concerns regarding these behaviors, it is essential to evaluate their lifestyles based on gender. According to

Pender's model, this leading study in Palestine compared the HPLP characteristics of male and female medical students. Results revealed that females had significantly higher scores in the IR subscale than males. These results were consistent with previous studies (17, 25, 35, 36). Such findings could be explained by females being more skilled in developing relations, having a primary role in looking after family members, and reinforcing family ties and relationships (37, 38).

The PA scores were significantly higher in males than in female students. These findings were in harmony with previous studies (25, 38-40). A low level of PA among females could be explained by local cultural restrictions that limit females' use of outside facilities for particular types of PA (13). Males tend to invest more of their free time in activities like sports, while females stay with their families to assist them (41).

This study found that females had better HR than males, agreeing with multiple previous studies (25, 39, 42). This was most obvious for the items concerning the regular examination of the body shape and obtaining a second judgment from health professionals. Interestingly, a recent study indicated that the gender difference in the estimation of healthy body weight was to the degree that females considered they had overweight despite being of healthy weight, while males who were overweight were considered average healthy weight (43). Following our study, previous research showed that females were more actively seeking health-related data and were much more attentive to the possible health effects of the goods they bought than men (44). Consequently, a better perception of the impact of a healthy lifestyle on the students' psychological well-being should be developed, especially among males. Targeting young adolescents is vital in preventing social and health problems in communities that would otherwise exist due to mental health problems and unhealthy lifestyles.

Higher HPLP II scores for females in HR and males in PA suggest controversial attention within each gender group that should be an initial target to rectify since there is an apparent relationship between physical activity and body satisfaction, and this will aid in improving healthy behaviors in these subscales simultaneously (45). Besides, it was reported that physical activity is associated with better academic achievement among females (46), which suggests the importance of establishing a proper area for females at universities to be involved in more physical activities that are neglected as part of cultural and social beliefs in Palestine. Adopting constructed university courses that support females' physical activity and considering the cultural restrictions will encourage females to increase their physical activity.

The significant difference between males and females in the IR subscale in our study and the reported effect of IR on mental health among adolescents elicits that IR should be given more attention at universities by using teaching methods that improve medical students' communication skills (47, 48). Moreover, these skills will be a vital part of their mission after graduation and must be given more attention to providing the community with qualified healthcare practitioners.

The average total HPLP II score is good (133.4) among medical students in our study, which is considered better than the average total score among medical students in Iran (moderate, 109.7) (49), Saudi Arabia (moderate, 123.8) (17), and among international students in Turkey (moderate, 126.65) (50).

The total HPLP II score was higher in females than males without statistical significance. These findings were in agreement with studies conducted in Iran (51), Turkey (52), India (35), and Poland (53), but in contrast with other studies reporting higher scores of total HPLP II among males in Korea (54), Spain (55), and Saudi Arabia (17). These variant findings might be due to cultural variations, characteristics of the studied sample, and their academic background (9). It is noteworthy that different responsibilities are anticipated by different genders in diverse cultures, which might affect how they perceive the importance of health as a concept between different genders (52). It is recommended to target multidisciplinary approaches to health-promoting lifestyles in both gen-

ders, beginning with the development of knowledgable concepts about the strategies for achieving health behaviors, such as HR, PA, and NH, and the consequences of unhealthy behaviors on physical and mental wellbeing.

Furthermore, university policymakers should provide a suitable space for females to engage in physical activities. Students' well-being habits should be targeted through course activities and the adopted learning methods to increase IR between students and the community. The availability of specialized committees will support the students and teachers with practical strategies toward better spirituality and stress management.

This study had several limitations: the self-reported questionnaire was filled by the students during lectures. Therefore, student answers might have a type of information bias. The ratio of females to males was high, which might have affected the study results.

CONCLUSIONS

Medical school educators should consider involving the concept of HPLP IIs in the curriculum plans. The gender differences of HPLP IIs indicate that decision-makers should give more consideration to the adoption of appropriate intervention strategies for each gender. Further studies are warranted to give better insights regarding HPLP IIs of medical students as future doctors, especially during their new presence at university. Participation of medical students in constructing public educational lectures for their colleagues and the community may increase their awareness about healthy behaviors and promote their responsibilities as prospective healthcare providers.

Ethical approval and consent to participate

This article contains human participants, and the IRB granted the ethical approval at An-Najah National University, Nablus, Palestine.

Availability of data and materials

All results and supplementary data are included in this paper

AUTHORS' CONTRIBUTION

Mustafa Ghanim 1: Conceptualization, project administration, supervision, data curation, writing-original draft, editing. **Nihad Al-Othman 2**: Supervision, data curation, validation, data analysis, methodology, writing-original draft.**Maha Rabayaa 3**: Writing and editing, formatting, and results interpretation. **Moath Alqaraleh 4**: Visualization, data analysis, validation, and writing-original draft.

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Competing interest

The authors claim that there is no conflict of interest

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