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HEALTH PSYCHOLOGY | RESEARCH ARTICLE

BMI and psychological constructs: Comparative study of medical and non-medical female students of Riyadh, Saudi Arabia

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Abstract: Purpose: The high ratio of obesity prevalence was found in Saudi females. On the other hand, medical students have shown diverse patterns of knowledge and practice for their health around the world. This research aimed to measure the effectiveness of medical education for female medical sciences students related to BMI and psychological constructs by providing a comparative analysis between female medical and non-medical students of University. Material and Methods: For this study, descriptive, cross-sectional, the comparative design was used. Standardised scales were utilised to gather data. The sample comprised (N = 400) female students from medical and non-medical colleges. Independent sample t-test was calculated to measure the difference between demographics and health-related variables, BMI and psychological constructs for groups of medical and non-medical students. Results: Results presented no significant difference in demographic variables and health-related variables that shows that all students share similar demographic and health-related characteristics. However, a significant difference was

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PUBLIC INTEREST STATEMENT

Medical school syllabi focused upon health, life-style and health management can prepare students for adequate healthy practices and patient counselling. High ratio of obesity prevalence was found in Saudi Arabian females. On the other hand, medical students have shown diverse patterns of knowledge and practice for their health around the world. Thus, this research combined the issues to study the gaps of effectiveness of medical education for female medical student related to Body Mass Index and psychological constructs. This study will provide the difference between BMI and psychological constructs among young female students enrolled in medical and non-medical disciplines. The study concluded that students of health sciences were engaged to health management courses, therefore, adopt a healthier lifestyle. It is recommended to increase the health awareness projects for humanity students to raise their awareness to maintain health-related activities and to enhance the perception of well-being. Students, teachers and policy makers will get first-hand information regarding normative attitude of health professionals found in the Kingdom of Saudi Arabia.

found on the psychological variables of well-being well-being ($t = 2.436$, $p < 0.05$) and weight-specific quality of life ($t = -3.865$, $p > 0.05$). Conclusion: Therefore, the findings of the study concluded that female students of medical sciences were engaged related to health management courses, so they adopt a healthier lifestyle. It is recommended to increase community-based projects for non-medical students to facilitate and raise their awareness to maintain health-related activities and to enhance the perception of well-being.

Subjects: Health Psychology; Mental Health; Techniques & Interventions - Psychosocial & Behavioural Issues; Health & Society

Keywords: medical students; non-medical students; female students; body mass index (BMI); psychological constructs; weight-specific quality of life

1. Introduction

Weight status and its psychological effect on young women can lead to positive constructs, but the nature of this association is not clearly understood, especially in the Saudi Arabian context because it is a less investigated issue. Therefore, it is crucial to study the variable of body mass index (BMI) and various psychological constructs to understand the health status of female university students in Saudi Arabia (Zaidi, Qasem, & Awad, 2016). Previously the relationship of said variables was evident to correlate to some extent that provokes the initiation for current comparative study. The main aim of this study is to measure the differences between medical and non-medical students on BMI and various psychological constructs. This comparison will facilitate to highlight the effectiveness of educational programs and their impact on the student's lifestyle.

Students' psychological constructs of their bodies include the internal and external locus of control, positive attitudes, and negative attitudes about their weight and body mass index (Voelker, Reel, & Greenleaf, 2015). Whereas psychological constructs are a meaningful combination of concepts but are not directly observable (Strauss & Smith, 2009). Both of the factors of BMI and psychological constructs can impact on each other. One of the boosting effects may be related to educational program syllabi. Medical school syllabi focused upon health, lifestyle, and management can prepare students for adequate healthy practices and patient counselling (Hivert et al., 2016).

It is evident that increased body weight influence not only life expectancy but every dimension of health including physical, emotional, psychological, and social life (Djalalinia, Qorbani, Peykari, & Kelishadi, 2015). The negative impact of overweight comes with many psychological complexities among young females. It can be the cause of reduced the level of Quality of Life (QoL), low level of well-being and less satisfaction toward life (Sand, Emaus, & Lian, 2015; Yazdani et al., 2018). A meta-analysis confirmed the relationship between obesity and body dissatisfaction among females (Weinberger, Kersting, Riedel-Heller, & Luck-Sikorski, 2016). A study conducted in Saudi Arabia projected the prevalence among women to 78% by 2022 (Al-Quwaidhi, Pearce, Critchley, Sobngwi, & Flaherty, 2014).

It is a well-known fact that the impact of overweight is not limited to physical health but also disturb the quality of life, especially in female (Busutil et al., 2017). Studies were conducted to measure the relevance of BMI with the perception of weight-specific QoL within the obese population. Results confirmed that the obese population presented more relevant information and presented a significant change in well-being with a change in weight (Hauber et al., 2010).

Perception of health was found to be correlated with psychological well-being and satisfaction with life among middle-aged women (Lee & Oh, 2013). If students are satisfied with their psychological needs and feel prosperous socially and psychologically, it can impact their health and overall well-being (Diener et al., 2010).

Youth can be influenced by any positive or negative environmental effects easily. Thus, this transactional period of personality developmental is essential to be studied. On the other hand, obesity and overweight are one of the alarming health-related risk factors found at the high level of prevalence among females in KSA. Female students who are enrolled in Princess Norah University can provide representative information regarding weight, health, and related psychological constructs. Previously, some scales were translated into Arabic language and validated by involving PNU students (Zaidi, Awad, Abdelsalam, Qasem, & Kayal, 2015). These scales can be a valuable source to understand the difference in health attitudes among medical and non-medical students. Furthermore, the results of the study will help to identify and evaluate the needs of students and educational programs and will suggest conducting a training workshop to fill the gaps in certain aspects. Matsuda (2007) concluded that prevention of obesity on non-risk public health level is highly recommended while reviewing the progress of 'Healthy Japan 21' movement. Lastly, this study will find out the answer to the research question, "What are the differences between medical and non-medical students on BMI and psychological constructs?"

In view of literature following hypotheses were formulated:

H1: There will be a significant difference between scores on demographic variables of medical science students and non-medical students.

H2: There will be a significant difference between scores on personal health-related variables of medical science students and non-medical students.

H3: There will be a significant difference between scores on BMI and psychological constructs (weight-specific QoL and psychological well-being) of medical science students and non-medical students.

2. Methods and material

The study aims to evaluate the difference in BMI and psychological constructs between the medical sciences and non-medical female students. The present study used a descriptive, comparative research design. This study is quantitative.

2.1. Participants

The participant of this study comprised ($n = 400$) female University students of Princess Nourah University. This university was selected as it is representative of the female-only university. For sample size calculation, the software of OpenEpi was used. Sample size formula was as follows: $n = [DEFF * Np(1-p)] / [(d^2/Z^2_{1-\alpha/2} * (N-1) + p*(1-p)]$

The figure of 399 was calculated, but it was rounded up to 400 ($n_1 = 200$ Medical sciences; $n_2 =$ Non-medical = 200 students) for the equal proportion of two groups (Dean, Sullivan, & Soe, 2018). All the students above 18 years of age and have spent at least 1 year in the program were included to ensure the impact of program and students' maturity level. Exclusion criteria applied to those respondents who were having any health-specific condition, i.e. pregnancy or registered in diet control programs. Students from the Foundation year program were also excluded.

2.2. Measuring instruments

Following measures were used in the research:

Demographic Form for health-related variables: A personal information questionnaire prepared by the researchers to determine demographic variables (e.g. age, educational qualification of parents, marital status, housing) and health-related variables (i.e. the perception of health, the frequency of exercise, body image and health status).

2.3. BMI

Data for BMI were gathered by applying the BMI formula (World Health Organization [WHO], 2007).

2.4. Weight-specific quality of life

A brief Arabic translated form was utilised. IWQOL-Lite consists of 31 items. It provides scores on five subscales. It is a self-reported measure that measures the weight-related quality of life. It is easy to administer. Items are based on the 5-point rating Likert scale. Scoring is in reverse direction. Better quality of life on the IWQOL-Lite can be depicted by lower scores. IWQOL-Lite was also translated and validated into Arabic for the PNU population. The validation study reported the acceptable reliability of 0.72 (Zaidi et al., 2015).

2.5. Brief psychological well-being scale

This scale is quick to administer as it contains only 10 statements (Su, Tay, & Diener, 2013). The response can be rated on a 5-point Likert scale. Higher scores indicate better functioning and satisfaction. This short version of the scale was translated and validated in the Arabic language with the PNU students' population. Reliability was found excellent as 0.91 (Zaidi et al., 2015).

2.6. Ethical approval and procedure

After getting ethical approval from IRB, Princess Nourah Bint Abdulrahman University (IRB Log number: 18-0054), the survey was conducted. A formal consent form explaining the purpose of study and confidentiality was given to the participants. Students were approached in their free slot of time, and meeting was arranged according to their connivance. Researchers had administered a brief demographic information sheet for participants. Respondents were asked to respond on standardised psychological scales just after their BMI measurement.

2.7. Data analysis

Statistical program for social sciences (SPSS V. 24) software was used to analyse the data. Moreover, the mean and standard deviation was calculated for both of the groups of medical sciences and non-medical students. A t-test was computed to find out the difference among both groups of students of medical sciences and non-medical on BMI and psychological constructs.

3. Results

3.1. Comparison of demographic variables between students

Table 1 is showing sociodemographic variables including age, marital status, Father's education, and mother's educational qualification and housing status. According to results, the majority of the students' age group falls between 20 and 21 years. The majority were single. For the level of their parents' education, the highest education level of the father was Bachelor level and for mothers A-Level. Most of the students were living with their families. There is no significant difference in demographic variables between students of the medical campus and students of the non-medical campus. Although independent sample t-test did not yield a significant difference among medical sciences and non-medical students on the demographic variable. It can be assumed that all the students of Princess Nourah Bint Abdulrahman University are having similar kind of demographic background.

3.2. Comparison of health-related variables

Five-point Likert scale (Poor = 1-Excellent = 5) was used for the perception of health. Most of the students perceived their health as good. The frequency of exercise reported by students was once in a week as average. The Likert scale of 5-point ranging from 1 to 5 was used for perceived body image. The average response of the students reported perceived body image ranging from good to very good (3.43–3.57), and they told that they are not having any health problem (yes = 1; no = 2). Table 2 is showing no significant difference between the students' groups of medical sciences and non-medical on health-related variables.

3.3. Comparison of BMI and psychological constructs scores

Table 3 is depicting that significant difference had been found on the variables of well-being ($t = 2.436$, $p < 0.05$) and weight-specific quality of life ($t = -3.865$, $p > 0.05$) among medical sciences students and

Table 1. Comparison of demographic variables between medical sciences and non-medical students (N = 400)

Variables	Groups	M	SD	t	p	95% CI for MD
Age	Medical sciences	21.05	1.383	1.259	0.209	-0.101, 0.461
	Non-medical	20.87	1.476			
Marital status	Medical sciences	1.16	0.390	2.404	0.017	0.015, 0.145
	Non-medical	1.08	0.264			
Father's education	Medical sciences	3.88	1.565	-0.576	0.565	-0.375, 0.205
	Non-medical	3.97	1.380			
Mother's education	Medical sciences	4.62	1.686	-0.095	0.924	-0.324, 0.294
	Non-medical	4.63	1.447			
Housing	Medical sciences	1.02	0.140	1.350	0.178	-0.007, 0.037
	Non-medical	1.01	.071			

M, mean; SD, standard deviation; t, independent sample t-test; CI, class interval; MD, mean difference; df = 398; $p > 0.05$.

Table 2. Comparison of health-related variables between medical sciences and non-medical students (N = 400)

Variables	Groups	M	SD	t	Sig.	95% CI for MD
Health status	Medical sciences	3.25	0.990	-0.969	0.333	-0.303, 0.103
	Non-medical	3.35	1.073			
Exercise	Medical sciences	3.37	1.426	0.645	0.519	-0.184, 0.364
	Non-medical	3.28	1.364			
Perceived body Image	Medical sciences	3.43	1.145	-1.209	0.228	-0.368, 0.088
	Non-medical	3.57	1.171			
Health problems	Medical sciences	1.83	0.402	-0.561	0.575	-0.113, 0.063
	Non-medical	1.86	0.485			

M, mean; SD, standard deviation; t, independent sample t-test; CI, class interval; MD, mean difference; df = 398; $p > 0.05$.

students enrolled in non-medical programs. Whereas no significant difference was found on BMI ($t = 0.513$, $p > 0.05$). It can be seen in (Table 3) that both groups of the students of Medical Sciences and Non-medical are within the normal range of weight (i.e. 18.5–24.9).

4. Discussion

It is always beneficial to study and explore the connection between health determinants (Zaidi et al., 2016). The said study revealed that BMI was negatively correlated with well-being among female university students. As it has been noticed that the ratio of f prevalence was found high, specifically in a female in Saudi Arabia (Al-Quwaidhi et al., 2014). Therefore, in this context current study aimed to find out the difference between medical sciences students with students of non-medical. Princess Nourah Bint Abdulrahman University provided the possibility to approach female students as being a women-only university. In previous studies, it was found

Table 3. Comparison of BMI, well-being and weight-specific quality of life scores between medical sciences and non-medical students (N = 400)

Variables	Groups	M	SD	t	p
BMI	Medical sciences	24.38	5.222	0.513	0.609
	Non-medical	24.12	4.980		
Well-being	Medical sciences	39.97	9.401	2.436*	0.015
	Non-medical	37.81	8.251		
IWQoL Scale	Medical sciences	41.37	13.208	-3.865*	0.000
	Non-medical	47.17	16.633		

BMI, body mass index; IWQoL, Impact of Weight on Quality of Life; M, mean; SD, standard deviation; t, independent sample t-test; df = 398; *p > 0.05.

that medical students depicted various dimensions of knowledge and practice toward health and lifestyle. One of the pre-post design studies had reported increased physical activity among medical students (Brehm et al., 2016). Another study revealed a higher score on nutrition knowledge among medical students compared to non-medical students (Sajwani et al., 2009).

According to the results, the initial two hypotheses related to demographic and health-related variables were not found having statistically significant. It depicts that irrespective of the medical or non-medical field all the university students of PNU have more or less equal socio-demographic status. Moreover, insignificant results of the health-related variable are further depicting that all female students are enjoying good health status. Here it is valuable to mention that the Mean of all the student's weight falls within the average weight category (18.5–24.9). It might be assumed that due to having no health-related medical problems and having an average frequency of physical activity once a week, the average mean falls within the average category. Health consciousness among young females might be another justification for the average category of BMI.

The third hypothesis was partially approved. Although no statistically significant difference was found on BMI, average BMI with the normal weight category can be considered as a good predictor of health among young female students. The last two variables of well-being and weight-specific QoL results were found significant. Results for these variables are consistent with previous studies (Sand et al., 2015; Weinberger et al., 2016). Moreover, the mean score of well-being for medical science students falls within the average range of well-being scale that is 38–40 points.

It is mentioned earlier in the description of measures that a high score on IWQoL shows impairment in the perception of weight. The mean score of science students is lesser than non-medical students. One of the reasons for the difference in variables of well-being and weight-specific QoL might be explained by the nature of programs in which students are enrolled. Mostly medical science students are involved with medical subjects and are more concerned with the health and management of health.

5. Conclusion

It can be concluded that there is no difference found on demographic and health-related variables among the students of PNU. However, well-being and weight-specific QoL scores were found higher among medical sciences students. These findings further lead toward the policy planning and implementation of health and behavioural sciences awareness programs for students, community-based programs in general, and non-medical in particular. Social factors might buffer the results such as support from family, peer group, and influence of media. These factors can be covered in future studies. Moreover, on the bases of comparison of medical and non-medical students, the result was found statistically significant for higher score of medical students on well-being and lower

score on impact of weight on QoL. In the future, pre-post design and multinarrative analysis for medical science students can reveal the real difference for lifestyle, nutrition, knowledge, practice, health care, and many other variables.

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Conflict of interest

The authors declare no conflicts of interest.

Data availability

The data that support the findings of this study are available from the corresponding author, [UZ], upon reasonable request.

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