

The Impact of Body Mass Index, Age and Gender on Dispositional Mindfulness amongst Medical Students

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ABSTRACT:

Obesity has a significant adverse impact on psychological health and well-being.

Objectives: To explore the relationship of age, gender and body mass index with mindfulness among medical students in a private medical college.

Study Design: Cross-sectional study.

Methodology: This study with enrolled students (n=233) was carried out after ethical review committee's (ERC) approval at CMH Kharian Medical College (CKMC), Physiology Department, Kharian-Pakistan. Both male and female medical students were enrolled. Level of mindfulness among them were noted after filling the Mindfulness Attention Awareness Scale (MAAS). BMI was calculated of enrolled students and its relation with mindfulness was observed.

Statistical analysis: Data was analyzed by SPSS software, version 21. Spearman's rho test was used to determine the association between mindfulness with BMI as p-value ≤ 0.05 was considered significant.

Results: All the enrolled students showed that BMI was not normally distributed among them. Female students were 63.52% whereas males were 36.48% in present study. Significant correlation was seen between age and mindfulness with p-value of <0.000 . Inverse relation was seen between BMI and mindfulness. It has no significant association with gender

Conclusion: We concluded that age was directly related with mindfulness while inverse relation was seen between mindfulness and BMI among medical students.

Key Words: Medical students, Mindfulness, Age and Body Mass Index.

INTRODUCTION

Obesity, defined as abnormal accumulation of body fat, has emerged as a growing health concern worldwide, especially in the past few decades. It is one of the leading causes of a plethora of comorbid conditions such as Type-2 Diabetes Mellitus, hypertension, cardiovascular, respiratory and musculoskeletal pathologies, infertility and other reproductive abnormalities etc.¹ It also has a significant adverse impact on psychological health and well-being.² According to the latest WHO statistics, more than a third of the world's population is either overweight or obese. Developed countries were previously considered to be the major contributors to the global burden of obesity but in the recent years, developing nations have begun to catch up with their first world counterparts.³ In Pakistan, a recent epidemiologic survey revealed that over 20% of the population is overweight and 5.1% are obese. Since the median age in Pakistan is 22.8 years, the study of parameters such as body weight and factors influencing body weight amongst young individuals requires special interest.⁴ A large proportion of this young demographic are college students. Among these, medical students comprise a large fraction.⁵

Majority of medical students find it difficult to maintain a structured, well rounded daily routine during the five year course of their studies. They often lead a sedentary lifestyle involving long stretches of time spent sitting down, going

through course books and study material. Balanced and healthy nutrition is rarely given priority when fuelling themselves during long study sessions or even during leisure time. Unregulated quantities of fast food and carbonated and/or energy drinks are consumed on a regular basis in medical college cafeterias and hostels throughout the country.⁶ Furthermore, the widespread availability of unlimited internet access in college campuses has led to more and more in-living medical students spending their leisure time sitting in front of their laptops and/or mobile devices, either engaged in online games, or watching content on online streaming platforms.⁷ This shift in habits, involving more and more time spent indoors, with minimal physical activity is contributing to the alarming rate of increase in obesity and general lack of physical well-being amongst medical students.⁸

With the ever increasing rate of obesity among medical students, approaches that augment already established methods, like adequate physical activity and a balanced diet, have gained significant traction within the research community in the recent years.⁹ One such approach is to focus on the mental well-being of an individual struggling with obesity in addition to the traditional methods of getting back in shape.¹⁰ Amongst the various mental health parameters, mindfulness or mindful living has emerged as a pertinent measure of mental well-being. It is defined as "the practice of maintaining a non-

judgmental state of heightened or complete awareness of one's thoughts, emotions, or experiences on a moment-to-moment basis."¹¹

While research regarding the impact of exercises to improve mindfulness have seen a recent surge, the exploration of the link between mindfulness and obesity, especially amongst medical students has been scarce. Body Mass Index (BMI) has long been the most frequently used parameter for classifying individuals on the basis of body weight and height.¹² This study aims to explore the correlation between BMI and mindfulness amongst medical students studying in a private medical college in Pakistan in order to provide meaningful insight into the impact of body weight on psychological well-being, attention and awareness. It also aims to study the relationship of age and gender with mindfulness among medical students studying in a private medical college.

Objectives: To explore the relationship of age, gender and body mass index with mindfulness among medical students in private medical college.

Methodology: This study with enrolled students (n=233) was carried out after ethical review committee's (ERC) approval at CMH Kharian Medical College (CKMC), Physiology Department, Kharian-Pakistan. Both male and female medical students were enrolled. Level of dispositional mindfulness among them were noted after filling the Mindfulness Attention Awareness Scale (MAAS). BMI was calculated of enrolled students and its relation with mindfulness was observed. The participants were included on the basis of being medical students, aged between 17 to 25 years and in otherwise normal physical health while the exclusion criteria were; age below 17 or above 25 years, comorbidities such as hypertension, diabetes mellitus, cardiovascular disease and a history of smoking/ drug use. Informed written consent was taken. Methodology was followed with modification as in previous research.¹³

Statistical Analysis: The data were analysis by using SPSS 21. Frequency and percentage were measured for gender and age. Distribution of mindfulness with age and gender was given mean±SD. Pearson's Chi-Square test was applied to determine the association between age, gender with mindfulness while Spearman's rho test applied for correlation between mindfulness and BMI and p-value ≤ 0.05 was taken as statistically significant.

RESULTS:

Gender and age distribution were presented as frequency and percentages in table-1 for enrolled students. Out of 233 subjects, majority of students (n=141) were in age group 20-21.

Table-1: Age and Gender Distribution as Frequency & Percentage (n=233)

Variables	Categories	Frequency	Percentage (%)
Gender	Male	85	36.48
	Female	148	63.52
AGE	17 - 19	44	18.9
	20 - 21	141	60.5
	22 - 24	48	20.6
	Total	233	100.0
AGE (years)	Mean± SD	20.50 ± 1.18	

The distribution of mindfulness with age was presented as mean ± SD in table-2. In current project, results showed that p-value is 0.001 so we concluded that there is association between age groups & mindfulness.

Table-2: Association of Mindfulness with Age groups

Age group	Mean	N	Std. Deviation	P-value
17 - 19	3.7370	44	1.02432	
20 - 21	3.6157	141	1.06336	0.001*
22 - 24	3.6604	48	.81983	
Total	3.6478	233	1.00754	

*Statistically significant

The distribution of mindfulness with gender was presented as mean ± SD in table-3. In current project, results showed that p-value is 0.565 so we concluded that there is no association between gender & mindfulness.

Table-3: Association of Mindfulness with Gender

Gender	Mean	N	Std. Deviation	P-value
Male	3.7024	86	0.84679	
Female	3.6159	147	1.09217	0.565
Total	3.6478	233	1.00754	

As p-value in Spearman's rho Tests of Correlation is 0.000 so it was assumed that there is correlation between BMI & Mindfulness as shown in table-4. Also, Correlation Coefficient (-0.237) was inversely proportional i.e if BMI increases than mindfulness decreases.

Table-4: Mindfulness & BMI - Correlation

	Correlations		Pre COVID Body Mass Index	Pre COVID Mindfulness
Spearman's rho	Pre COVID Body Mass Index	Correlation Coefficient	1.000	-.237**
		Sig. (2-tailed)	.	.000*
		N	233	233
	Pre COVID Mindfulness	Correlation Coefficient	-.237**	1.000
		Sig. (2-tailed)	.000	.
		N	233	233

*Statistically significant

DISCUSSION:

This cross sectional study was planned for medical students at CMH Kharian Medical College (CKMC), Physiology Department, Kharian -Pakistan. Present study contributed to growing literature on the benefits of protective factors like mindfulness on psychological health during especially in relation with obesity. According to our results, individuals with greater mindfulness tend to be better equipped, psychologically, to deal with the stresses of medical studentship and may have an overall better body mass index profile. In fact, high levels of mindfulness showed significantly low mental stress. Unfortunately, due to limited resources and research, this major health issue remained undiscovered. Thus we examined the relationship of age, gender and body mass index with

mindfulness among medical students in private medical college.

Both males and females medical students were recruited in our work as in other previous studies. Females were 63.52% (148) while males were 36.48% (85) as depicted by table-1. Selection of gender among subjects was in line with our study i.e 29% males and 71% females in one study held in 2011 at University of Amsterdam.¹⁴

In current project, results in table-2 showed that there is association between age groups & mindfulness as p-value is 0.001. Similar results were shown in previous researches that showed that mindfulness was correlated with age in a positive manner having p-value of <0.0001. Hence, our work was in lines with previous studies.¹⁵ (converseno2020)

Literature review revealed that there was a significant negative correlation between BMI and overall mindful eating score ($r=0.28$; $p=0.005$).¹⁶ (moor 2012) this depicted that as BMI increased, overall mindful eating scores decreased. Thus, individuals with high mindful eating scores (mindfulness) had low BMI score. Similarly, in our study, correlation coefficient (-0.237) was inversely proportional i.e. if BMI increases than mindfulness decreases among subjects.

In the current project, results in table-3 showed that gender is not associated with mindfulness as p-value is 0.565. Paradoxical to current study, one study showed association between mindfulness and sex having p-value of <0.0001. Hence, our work contradicted with their findings.¹⁵ (converseno2020).

Psychiatric illness (stress, depression), obesity and decreased mindfulness attention awareness score are public health issues globally. They affect millions of lives thus causing poor life quality, increased mortality and comorbid conditions.¹¹ However, the relationship between BMI and mindfulness remained unclear. Methodological differences among different studies have produced different results. Other research has investigated the relationship between BMI and eating behaviors measured by subscales in the mindful eating measure used in this study. Research using the Three Factor Eating Questionnaire found that disinhibition had a significant positive correlation to BMI.¹⁷ These findings were similar to our findings showing negative correlation between BMI and mindfulness.

Limitations: Our study had limitations like financial constraints, lack of resources and lacked the evaluation of mindfulness attention awareness scale relation with physical activity.

CONCLUSION:

We concluded that age was directly related with mindfulness while inverse relation was seen between mindfulness and BMI among medical students. Gender had insignificant relation with mindfulness. Future studies will be required to figure out other reasons that result in high BMI and low mindfulness among humans so that prevention programs can be employed in-order to minimize its overall burden.

Authors' Contribution: AFA & RM: Conception and design of work

IN & AK: Collecting and analyzing the data

MUR & NS: Drafting the manuscript

AN & UK: Collecting and analyzing the data

SS & SNH: Drafting the manuscript

TL: Drafting and revising the manuscript for intellectual content.

Acknowledgement: All authors are thankful to Allah SubhanaoTaála. Ms Mahjabeen Safdar's valuable input regarding statistical analysis warrants immense gratitude. We are grateful to Prof.Dr.Brig (Retd) Shoaib Naiyar Hashmi (HI) for his unwavering support and valued expertise throughout the research process.

Conflict of Interest: None to declare

Financial Disclosure: None

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