Relationship of Self-esteem and Body Mass Index with Academic Performace of Postgraduate Students in Pakistan

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ABSTRACT A survey study was done to investigate the association of academic performance (AP) of postgraduate students with their Body Mass Index (BMI) and Self Esteem (SE). The respondents for this study were 362 students (282 male and 80 female) selected from 7 public sector universities offering M.Phil Education. Multi-stage sampling technique was adopted for the purpose of data collection. The objective of the study was to find out mutual relationship among self-esteem, BMI and academic performance of the postgraduate students of the public universities of Pakistan. Data analysis was done by applying t-test and correlation analysis to investigate the association of different issues on students' academic performance. The results show that relationship between BMI and academic performance of the students is r=-0.255[**]. The relationship between BMI and self-esteem of the students is r=—0.448[**] and that the relationship between self-esteem and academic performance of the students is r=-0.348[**].

INTRODUCTION

Students' educational performance is always a top priority for the educators and institutions. It means to make a difference globally, regionally and locally. Institutions, educationists and researchers have been exploring the variables which contribute mainly for the excellent performance of the students.

It has been observed most of the times that academic performance of the students is directly related with self-esteem. The children who have high self-esteem have better feelings and they are able to solve problems in a better way as compared with their fellows. As they are able to bear problems in a better way, their quality of positive self-esteem is because they are optimistic and logical.

Self-esteem may be defined as the level at which individuals see themselves worthy, competent, civilized and good at the time of performing any task. It therefore affects in the manner people act, react, and respond in the society and the behavior with which they have interaction with others. Abraham Maslow's hierarchy of human needs suggests that self-esteem is very important aspect.

According to Chen and Graham (2018), Asian students have the highest grade point average, nonetheless the lowest self-esteem was amongst main ethnic groups. Self-esteem gap among Asians and their White and Black fellows was partly described by more confirmation of low ability attributions. Phan and Ngu (2018) concentrated on an inspection of the *global* and *domain-specific self-esteems* among secondary mathematics learning.

According to Salahshour et al. (2016), it has been observed that students who are nervous show poor academic performance while dealing with difficulties and problems. Such a group of students has been found to have problems even in dealing with their peers. They have been observed to be mostly disturbing and criticizing. Educational researchers believe that psychological factors are very affective for the success or failure of learners while discussing the association among academic performance, self-worth and self-esteem.

According to Booth et al. (2014), there is an association of obesity amongst the adults who have lower academic performance for females as compared with males; this association should not be ignored. The variables which affect students' academic performance may be in or outside the educational institution. Such factors may

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be named as institutional factors, personality factors, family factors, socio-economic factors and peer factors (Crosnoe et al. 2004).

In general these factors consist of geographical belongingness, ethnicity, age, gender, marital status, parental profession, language, income parents' education level, religious affiliations socio-economic status (SES). These factors are normally counted under the umbrella of demography (Ballantine et al. 2017).

There are different characteristics of the need for self-esteem like self-love, aptitude, respect, skills and confidence. It is a complicated idea which is affected by many elements like gender, age and education (Norton and Han 2008; Spencer et al. 2002; Waddell 2006). According to Erik Erikson's (1995) published book titled Dialogue with Erik Erikson, stages regarding psychosocial development the years of youth are significant at the time of youth in which they either are successful in having identity or have some confusion about it. That is why it is rational to guess that the time of youth is significant in increasing self-esteem.

The measurement of students' academic performance has been a substantial topic during the last few decades; whereas from country to country and person to person these factors differ.This research study will uncover the unscientific conviction that obese and over- weight people are dull, lazy and sluggish; who ultimately would not perform well in the academic programs at their university. People, who are busy, do not bother about their health due to the busy span of life. A lot of organizations around the world are doing researches to find out the solution of this utmost issue. With this the problem of obesity, over -weight, under-weight has appeared as an important world problem.

Body Mass Index (BMI) is one of these methods. BMI is basically a numerically measure of a person's thickness or thinness of body, permitting health experts to deliberate over weight, obesity, and under weight problems (Fletcher and Lehrer 2009). A cognitive deficit among the patients having anorexia nervosa has been found by researchers during the past several years. The findings of McDowell et al. (2003) claimed that there is no association between cognitive ability and depression.

Therefore, it is suggested that other justifications should be discovered for the deficit in cognition among the patients having anorexia

nervosa. There are studies which try to evaluate the causal effect of obesity on economic outcomes with mixed results which focus on females and conclude that weight lowers performance (Norton and Han 2008).

There are also studies with contradiction which emphasize on the weight of the students and their academic performance. Few researchers conclude that body weight lessens performance grades though merely for females (Sabia 2007), whereas there are studies that report no significant difference in performance of both the genders due to the presence of higher or lower BMI (Fletcher and Lehrer 2009; Kaestner and Grossman 2009). In Pakistan many studies have been done to investigate the factors associated with the academic performance of the learners' at all educational levels. Literature is scarce on the studies which show association of academic performance with BMI and self-esteem in Pakistan. Whereas, it is generally perceived that students having normal body weight would excel better than those having variations in weight than normal weight students.

Apart from other important factors, socio-economic status is the most researched and discussed factor among the researchers and educational professionals. A very important justification regarding to this argument is the socio-economic position of the students; as it affects mainly the academic performance of the students.

The present research study intends an identification and analysis of the factors which affect the performance of the students. The services of education are mostly intangible and tough to measure as they consequently result in the deliverance of knowledge, life skills and attitude changes of the students (Tsinidou et al. 2010). For the last many decades the association between academic performance and gender has been researched (Eitle 2005). There have also been found a gap between the male and female students' academic performance in which female showed better performance at certain instances as compared with the males (Chambers* and Schreiber 2004). In students' performance father's occupation, income and ethnicity are significant contributors (McCoy 2005; Peng 1995).

Previous studies have concluded that progression in age from adolescence to onwards results in the decrease in self-esteem (Murray et al. 2000; Reitzes and Mutran 2006; Robins et al.

2001). According to Norton and Han (2008), researchers suggest that this decrease in self-esteem of the adolescents is because of the variations in the way of their thinking which permits them to foresee themselves in lower state.

Basically Rosenberg established this scale to compute self-esteem among the adolescents. The individual feelings were assessed by *Rosenberg self-esteem scale* (*RSE*) that consist of ten questions. It takes about only ten minutes to complete RSE. The total scores of RSE are ranging from 10 to 40. The partakers respond any one of the four options given to them from "strongly agree" to "strongly disagree." Higher scores in the survey show a commendable self-respect; whereas lower scores according to this scale indicate self-rejection, self-contempt and self-dissatisfaction (Rosenberg 1965).

Macneil et al. (2011) describes that the self-esteem of the students lowers time by time who have lower educational background as they receive more and more work to do. Keeping in view all this discussion, researchers conducted this study to find a relationship of different factors on the students' academic performance at the university level in public sector universities of Punjab.

As described by Hatamian (2016), a significant and positive relationship exists between academic performance and self-esteem. Kheirkhah et al. (2013), describes that for the last one century many researchers have admitted that human beings have self-esteem, which is very important and valued trait for humans. At the same time academic performance has been a central point for the educators and psychologists (Kheirkhah et al. 2013). There exists a mutual relationship between academic performance and the self-esteem.

It may be concluded that higher the self-esteem, there would be higher academic performance due to the positive self-assessment and self-confidence which are useful in learning and developing attitude towards education ultimately towards a better academic performance.

Objectives

The objectives of the study are
- to find the difference in quality of students' academic performance in relation to their gender and explore the effect of Self Esteem on students' academic performance
- to explore the effect of BMI on students' academic performance

- to find out the mutual relationship among self-esteem, bmi and academic performance

Hypotheses

- there is no significant difference in quality of students' achievement in relation to their gender.
- there is no significant difference of BMI on students' academic performance
- there is no significant difference in mutual relationship among self-esteem, BMI and academic performance

MATERIAL AND METHODS

Participants

Postgraduate students at seven public universities in the Punjab province participated in this study on academic performance in postgraduate program. Data on academic performance was collected from the students. Multi-stage sampling technique was adopted for the purpose of data collection. Students were requested to complete the questionnaires. The students were assured that all the collected information will be kept highly confidential and will not be used anywhere else except for educational research purpose.

Method

Students were also requested to provide information regarding their grades in the course work of M.Phil. degree for the calculation of the academic performance of the students. The subjects from each selected university were further requested to provide the updated information about their body weight and height for the calculation of the BMI. The demographic variables of the sample selected were age, marital status, father's income, mother's income, education and rural urban location. Rosenberg (1965) Self-Esteem Scale (RSE), was used to measure the self-esteem. This scale is known as having high reliability and test retest correlation with a range from 0.82 to 0.88 and Cronbach alpha range for samples ranging from 0.77 to 0.88 (Wells and Marwell 1976; Izgiç et al. 2004).

Instruments

For the calculation of self-esteem the researchers adopted a SES invented by Rosen-

berg (1965). This scale consists of 10 statements with 4 points Likert scale. A total of 362 students from 7 different public sector universities participated in this study. For the calculation of BMI and to avoid any confusion about weight and height, the researchers managed a weight machine and a height measuring scale.

Procedure

The research was done at seven public sector universities of the province of Punjab offering M.Phil Education programmes. The participating students were briefed about the purpose of the research study and they were also informed that all the information obtained from them would be used entirely for the purpose of research. The students agreed to participate in the study.

Data Analysis

The BMI of the students was calculated by using the BMI formula. Data analysis was done by applying t-test and correlation analysis to investigate the association of different issues on students' academic performance. The analysi was done by using statistical package for social sciences (SPSS) software version IBM SPSS Statistics 20.

RESULTS

The distribution of the demographical characteristics in Table 1 were examined. It was determined that 77.9 percent of the students who participated in the research were male, 22.1 percent were female. The percentage of students in this study who participated was 13.5 percent students from University of the Punjab, Lahore, 15.2 percent students from University of Education, Lahore, 11 percent students from University of Sargodha Sargodha, 15.2 percent students from GC University, Faisalabad, 19.1 percent students from University of Agriculture, Faisalabad, 14.9 percent students from Bahauddin Zakariya University, Multan and 11.0 percent students from The Islamia University, Bahawalpur. The age range of the participants in this study was 80.4 percent were 20-30 years and 19.6 percent were 31-40 years old. 70.4 percent got 70-79 marks whereas 29.6 percent students secured 80-100 percent marks. As far as BMI

was concerned, 10.2 percent students were Under weight (<18.5), 68.5 percent students were Normal (18.6-25) 10.5 percent students were Overweight (25.1-30) and 10.8 percent students were Obese (>30).

The findings of this study were consistent with the findings of Sabia (2007), who concluded that there is no significant difference between the body weight and the genders. The findings of Hutamian (2016) investigated that there is no relationship between BMI and the academic performance of the students which also gives the same results with this study. Ballantine et al. (2017) found that adolescents with low self-esteem had poorer mental and physical health, and poor economic prospects. As a result poor academic performance is seen. The results of this study also matches with the results of present study.

In Table 1, the number of universities, gender, residential place, age, semester, cademic performace and body mass index can be seen.

Table 1: Frequency distribution

	N
University	
University of the Punjab (Lahore)	49
University of Education (Lahore)	55
University of (Sargodha)	40
GC University (Faisalabad)	55
University of Agriculture (Faisalabad)	69
Bahauddin Zakariya University(Multan)	54
The Islamia University of Bahawalpur Bahawalpur)	40
Gender	
Male	282
Female	80
Residential Place	
Urban	177
Rural	185
Age	
20-30	291
31-40	71
any other	0
Semester	
First	0
AP Academic performance	
(% marks in M.Phil)	
0-49	0
50-59	0
60-69	0
70-79	255
80-100	107
BMI Body Mass Index	
Underweight(<18.5)	37
Normal(18.5-25)	248
Overweight(25.1-30)	38
Obese(>30)	39

According to the analysis done in Table 2, the mean of male students was 2.06 and female students mean was 0.29. It was seen that standard deviation (SD) of male students was 0.24 and female students' SD was 0.29. The SE of female students was 0.032 and SE of male students was 0.014 after the calculation by SPSS. It was found that the difference between male and female students' self-esteem was statistically not significant at 95 percent significance level (t-value = 0.90^{NS}, P-value = 0.366, $p<.05$).

According to the analysis done in Table 3, it can be seen that AP (Academic performance) of 255 students with 70-79 marks was SD= 0.26 and SE 0.017, whereas the AP (Academic performance) of 107 students with 80-100 marks was SD= 0.15 and SE 0.014.

It was found that the comparison between AP (Academic performance, % marks in M.Phil) regarding different Self Esteem Scales was statistically highly significant at 95 percent significance level (t- value = -7.05**, P-value = 0.000, $p<.05$).

According to the analysis done in the Table 4, it can be seen that 10.2 percent students were

Table 4: Relationship between Body Mass Index* AP Academic performance (% marks in M.Phil)

BMI Category	70-79	80-100	Total	Percentage
Underweight(<18.5)	27	10	37	10.2
Normal(18.5-25)	152	96	248	68.5
Overweight(25.1-30)	37	1	38	10.5
Obese(>30)	39	0	39	10.8
Total	255	107	362	100.0

Chi-square value =39.69 P-value = 0.000
NS = Non-significant (P>0.05); * = Significant (P<0.05);
** = Highly significant (P<0.01)

Under weight (<18.5), 68.5 percent students were Normal (18.6-25), 10.5 percent students were Overweight (25.1-30) and 10.8 percent students were Obese (>30). It was found that the difference between students' BMI was statistically highly significant at 95 percent significance level (Chi-square value = 39.69**, P-value = 0.000, $p<.05$).

The relationship between body mass academic performance, BMI and self-esteem can be seen in Table 5. The results of the analysis done in Table 5 show that the relationship between BMI and academic performance of the students is r=-0.255**. The relationship between BMI and self-esteem of the students is r=—0.448** and that the relationship between Self-esteem and academic performance of the students is r=-0.348**.

Table 5: Correlation (relationship) among different characteristics

	Academic performance	Body Mass Index	Self-Esteem Scale
Academic performance	1.000		
Body Mass Index	-0.255**	1.000	0.000
Self-Esteem Scale	0.348**	-0.448**	1.000
	0.000	0.000	

Upper values indicated Pearson's correlation coefficient; Lower values indicated level of significance at 5% probability.
* = Significant (P<0.05); ** = Highly significant (P<0.01)

DISCUSSION

The findings of this study show that there is a statistically high significance between the re-

Table 2: Comparison between male and female response regarding different Self-Esteem scales

Statement	Gender	N	Mean	SD	SE	t-value	Prob.
SEm Self-Esteem Scale (overall)	Male	282	2.06	0.24	0.014	0.90NS	0.366
	Female	80	2.04	0.29	0.032		

NS = Non-significant (P>0.05); * = Significant (P<0.05); ** = Highly significant (P<0.01)
SD = Standard deviation; SE = Standard error

Table 3: Comparison between AP (Academic performance, % marks in M.Phil) regarding different Self Esteem Scales

Statement	AP	N	Mean	SD	SE	t-value	Prob.
SEm Self-Esteem Scale (overall)	70-79	255	2.00	0.26	0.017	-7.05**	0.000
	80-100	107	2.19	0.15	0.014		

NS = Non-significant (P>0.05); * = Significant (P<0.05); ** = Highly significant (P<0.01)
SD = Standard deviation; SE = Standard error

sults of postgraduate students academic performance and self-esteem, whereas BMI of both the male and female students has no significance on their academic performance. The socio-economic status of parents has also significant effect on the academic performance of the students.

A total number of 362 students participated in this study, of which 77.9 percent of the students were male and 22.1 percent of the students were female. As for as BMI is concerned, 10.2 percent students were Under weight (<18.5), 68.5 percent students were Normal (18.6-25) 10.5 percent students were Overweight (25.1-30) and 10.8 percent students were Obese (>30).

This research study was conducted to explore the association of academic performance with BMI and self-esteem among the postgraduate students. In this regard a survey study was conducted. The findings of this study show that there is no correlation between the academic performance of the students and the BMI. Significant correlation between academic performance and self-esteem was observed. There was no significant difference seen between the genders when observed on the basis of BMI. A study done by Apichai et al. (2019) on the undergraduate students having physical disability shows that they had average or higher self-esteem level, while there was no statistically significant relationship between academic achievement and self-esteem whereas in this study significant correlation between academic performance and self-esteem was observed.

A study by Ribeiro et al. (2017) concludes that there exists a negative association between stress and QoL (Quality of Life) in university students, through the deterioration of various aspects related to physical and mental health.

Alswat et al. (2017) concluded that no correlation existed between BMI and school performance of the students, except in the subject of physics results where obese pupils performed poorer than normal-weight students as the findings of this study also proved that there is no correlation between the academic performance of the students and the BMI. Female studies were found to have the more prominent levels of pressure and more medical issues (Williams and Galliher 2006).

While looking at the scholastic execution of the under study against the moderate, negative and critical affiliation, various factors were considered and their affiliation was affirmed by at-

testing that a solid connection interfaces every one of them. It was additionally featured that a high and noteworthy level of pressure was available and understudy's poor and awful execution was the after effect of these huge levels of pressure present as a part of their identities (Hafeez et al. 2016).

The information of this study is likewise predictable with different investigations, where rudimentary or secondary school youngsters who indicated enhancements in BMI had a factually noteworthy enhancement in scholastic execution (Hollar et al. 2010; Melnyk et al. 2013).

CONCLUSION

Based on the data analysis, it has been concluded that the academic performance with BMI has no significant relationship with each other whereas academic performance and self-esteem of the postgraduate students had positive relationship with each other. There was hardly any similar research conducted in an Asian context in Pakistan where relationship of academic performance with BMI and self-esteem perceived stress have been studied in such a way. This research shows that through slight modifications, even during the research phase of the postgraduate students, it is possible to stimulate students to enhance the self-esteem of the students by motivating them to work on regular basis and also control health and maintain body fitness by healthy lifestyle eating and regular exercising.

Based on the results of the research, it may be suggested to prepare settings where students can perform better; trainings should be provided by the institutions. So, that lesser imprints of stress can affect the students' academic performance and their health. At the same time research supervisors should also observe the situations at which the research students become low or high self-esteemed.

RECOMMENDATIONS

By observing the results of the present study it is recommended that there is a great need to minimize the academic stress of the postgraduate students regarding their study and academic performance in the public sector universities Workshops should be conducted in the universities to bring awareness among the students

about their BMI. Self-esteem brings positive results of the university students so more and more measures should be taken by the universities to enhance the students' self-esteem. The Cumulative Grade Point Average (CGPA) of the students can be improved in the public sector universities by increasing self-esteem among them and minimizing their perceived stress.

The study can be done on undergraduate level or at advance higher level like doctoral or post-doctoral level. A comparative study can produce interesting results also. In this study systematic random sampling was used, a different sampling technique should be used to see the results similarity or dissimilarity.

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