



(RESEARCH ARTICLE)



## Anxiety levels of young people in Gazipur, Bangladesh, with different physical activity levels

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GSC Advanced Research and Reviews, 2023, 17(02), 104–111

Publication history: Received on 08 October 2023; revised on 14 November 2023; accepted on 17 November 2023

Article DOI: <https://doi.org/10.30574/gscarr.2023.17.2.0440>

### Abstract

**Background:** An occasional feeling of anxiousness is common in life. Concerns about one's health, finances, or family issues are common. However, anxiety disorders encompass more than just fleeting fear or worry. People who suffer from anxiety disorders often experience persistent anxiety that may worsen with time. The symptoms may make it difficult to carry out regular tasks including relationships, employment, work and schooling. It is crucial to comprehend the psychological well-being of the Bangladeshi population during this unpredictable global period. Less information is currently available about the patterns of anxiety among adult Bangladeshis across time. The people's mental health has been severely impacted by their fear of infection and confusion about the situation. The purpose of this study is to make it easier to counsel the young people on how to promote their psychological health and better lifestyle by boosting their physical activity.

**Method:** Data was gathered using a well-structured questionnaire that included sections including one for demographics. Because of its thoughtful validity and practicability, we employed the generalized anxiety disorder scale to evaluate anxiety levels and the International Physical Activity Questionnaire scale to test various levels of physical activity. Subsequently, the two variables were compared to determine the relationship between anxiety levels and various degrees of physical activity.

**Results:** Anxiety was determined to be  $8.20 \pm 3.67$  on average in the sample and the prevalence of anxiety (GAD-8 score 10 or greater) was determined to be 31.2%. Using Pearson correlation analysis, it was discovered that growing older was a risk factor for anxiety. Anxiety and Physical Activity differed significantly, according to a one-way analysis of variance. There was a significant difference in anxiety levels between those who engaged in vigorous physical activity and those who did not, according to the post-hoc Tukey test.

**Keywords:** Anxiety; Young; IPAQ; Physical activity; Lifestyle

### 1. Introduction

Anxiety, depression, and stress are some of the psychological reactions [1]. Prior studies indicate that consistent physical activity (PA) has a positive impact on the pathophysiological mechanisms underlying anxiety [2,3]. Compared to self-reported sickness, anxiety is linked to higher mortality and could be a more reliable indicator of unfavorable health outcomes [4]. Anxiety-inducing environmental risk factors, such as financial distress, are becoming more prevalent [5]. Physical education classes at the school level are crucial for the adoption of physical activity as a component of a healthy lifestyle, and plenty of research has been published on the benefits of these tasks for the development of physical skills [6]. Getting an estimate of whether and who in Bangladesh is experiencing an increase in anxiety can be crucial to understanding the mental health situation in the nation. It can also aid in the planning of

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community-based preventive initiatives and the allocation of public health and clinical treatment resources to the most vulnerable populations.

Anxiety disorders are distinguished from ordinary anxieties or stressful events by the severity of symptoms and an individual's capacity for coping. According to national surveys, one in three youths aged 13 to 18 and nearly one in five adults over the age of 18 reported having an anxiety disorder in the previous year. Inform your doctor if your anxiety is extreme, persistent, or frequently brought on by circumstances that don't pose a threat. Your doctor can then talk with you about treatment choices or recommend that you see a qualified mental health specialist [7]. In the field of modern medicine, regular physical activity has undeniable benefits for anxiety [2]. PA has an antianxiety effect that is not influenced by age or location [8]. In Bangladesh, an estimated 7 million people suffer from anxiety and depression, respectively [9]. It has been stated that the rates of stress, anxiety, and depression in Bangladesh are as high as 54.3%, 64.8%, and 59.0%, respectively [10-14]. The purpose of this study is to investigate the relationship between various PA levels and the prevalence of anxiety in Bangladesh. The goal of this study is to facilitate the counseling of young people in general on how increasing physical activity can support psychological well-being and a healthier lifestyle.

## **2. Material and methods**

### **2.1. Study design**

500 persons between the ages of 16 and 28 were included in the easy sample technique for the cross-sectional research used in this study. People of all genders, a range of professional backgrounds (students, housewife, office employees, and business owners), and a range of educational backgrounds (graduate and undergraduate) comprised the targeted market. as well as the correlation between anxiety and PA levels.

### **2.2. Data collection and timeline**

The study was carried out in Gazipur, Bangladesh, and open Epi version 3 was used to calculate the sample size, which was 500. Additionally, we maintained the study's reliability by keeping the confidence level at 95% and the error cap at 5%. Data was collected from October 8, 2022, to November 3, 2022, utilizing a straightforward sample technique and a well-structured online Google e-form. Email, Whatsapp, and other social media sites were used to spread the e-form. Additionally, consent was obtained via the same electronic form.

### **2.3. IPAQ scales**

When assessing PA levels in individuals between the ages of 16 and 28, the international PA short form is reliable and useful. Using IPAQ, we inquired about four different categories of PAs: mild PAs (walking), moderate PAs (lifting, lightweight, etc.), and no PAs (sitting). Vigorous PAs include hauling heavyweights. Following that, they are categorized into four groups: vigorous, low, moderate, and no Pas [15, 16].

### **2.4. GAD-8**

It makes it possible to evaluate target group's various anxiety levels. Cronbach's alpha for it is 0.83. It is therefore a trustworthy and reputable scale [17]. We assessed the various anxiety levels in our sample using the GAD-8. An overall score of 10 or more indicated that anxiety might be present [18].

### **2.5. Data analysis**

The statistical analysis criteria for the data analysis was set at 0.05 for statistical significance and a 95% confidence interval using SPSS software version 21.0. Using a one way analysis of variance, a significant difference between anxiety level and PA was determined (ANOVA). After this was established, the true difference between the various PA categories was ascertained using the post-hoc Tukey test.

### **2.6. Ethical consideration**

After being told about the goal of the study, subjects provided their agreement; as the participants were older than 16, no parental or guardian approval was necessary. Participants actively participated, knowing that any personal information they contributed would be kept private and that the data they provided would be utilized responsibly.



**Figure 1** Study location in Bangladesh Map (Gazipur district)

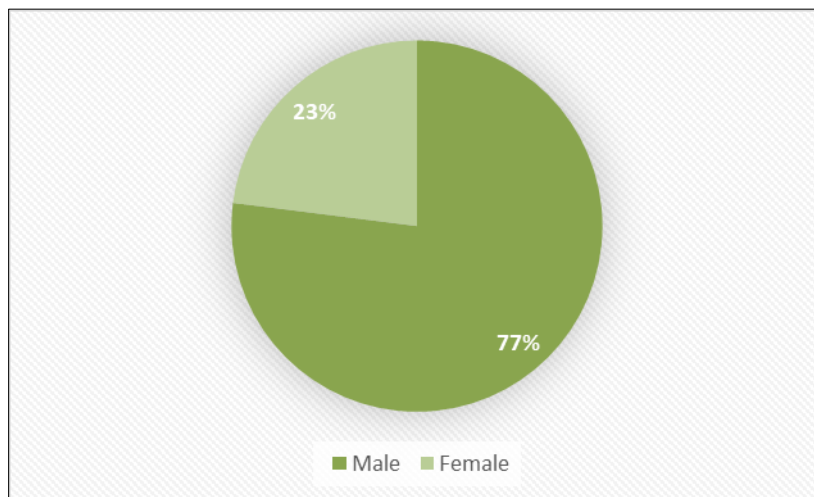
### 3. Results

An investigation was conducted to measure anxiety in individuals with different degrees of PA. 672 participants in the online survey were contacted using Facebook, messenger and WhatsApp. 500 out of 672 respondents completed the online survey, yielding a 74.4% response rate. Only participants in the study who were between the ages of 16 and 28 were included. Males ( $n=385$ , 77%), undergraduates ( $n=299$ , 59.8%), and students ( $n=424$ , 84.8%) made up the majority of the participants.

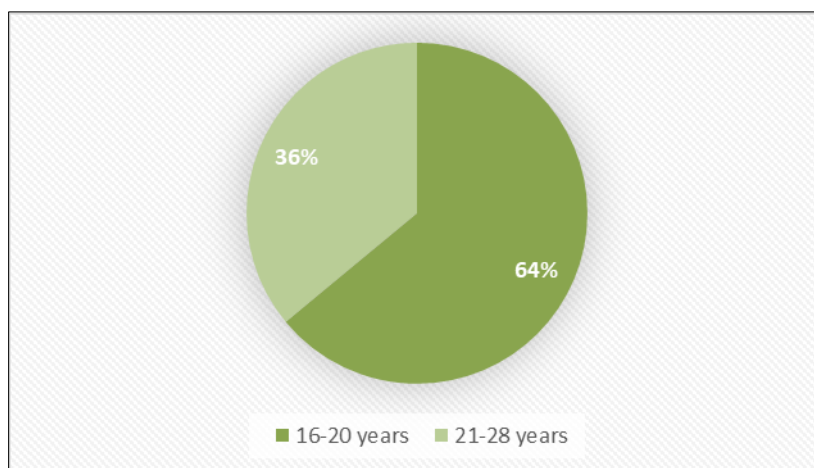
**Table 1** Demographic data of population

Variable	Variable	Number	Percentage
Age (year)	16-20	320	64 %
	21-28	180	36 %
Gender	Male	385	77 %
	Female	115	23 %
Educational level	Not educated	12	2.4 %
	Primary	15	3 %
	Secondary	78	15.6 %
	Undergraduate	299	59.8 %
	Graduate	96	19.2 %

Occupation	Student	424	84.8 %
	Business	9	1.8 %
	Private job holder	17	3.4 %
	House wife	20	4 %
	Unemployed	30	6 %
GDA score	Severe anxiety	81	16.2 %
	Moderate anxiety	75	15 %
	Mild anxiety	180	36 %
	No anxiety	164	32.8 %



**Figure 2** Gender percentage



**Figure 3** Age group of study population

**Table 2** Physical activity level

Physical activity level	Number	Percentage
No physical activity	95	19 %
Low physical activity	189	37.8 %
Moderate physical activity	102	20.4 %
Vigorous physical activity	114	22.8 %

**Table 3** One-way ANOVA comparing anxiety level to levels of education, employment, and physical activity

Variable	Parameter	Sum of squares	df	Mean square	F	P value
Education level	Between group	133.43	8	17.22	0.435	0.744
	Within group	12455.73	492	21.34		
	Total	12589.16	500			
Occupation level	Between group	127.56	10	14.67	0.342	0.496
	Within group	13245.45	490	23.59		
	Total	13373.02	500			
Physical anxiety level	Between group	348.78	3	94.32	2.88	0.018
	Within group	11479.34	497	19.23		
	Total	11828.12	500			

N=500, P<0.05

**Table 4** HSD on Tukey's multiple comparisons of the physical activity ratings on the Generalized Anxiety Disorder Scale

(I)IPAQ-group	(J)IPAQ-group	Mean difference (I-J)	Standard error	P value
No physical activity	No physical activity	1.536	0.455	0.321
	Moderate physical activity	1.324	0.878	0.876
	Vigorous physical activity	3.651	0.325	0.019
Low physical activity	No physical activity	0.543	1.054	0.376
	Moderate physical activity	-0.521	0.988	0.787
	Vigorous physical activity	0.875	1.244	0.675
Moderate physical activity	No physical activity	-0.934	0.565	0.988
	Low physical activity	0.718	0.975	0.867
	Vigorous physical activity	0.979	1.126	0.253

Key: HSD, honest significant difference; IPAQ, International Physical Activity Questionnaire. Dependent variable = Generalized anxiety disorder scale, Post-Hoc Tukey test. p<0.05.

Anxiety was determined to be  $8.20 \pm 3.67$  on average in the sample. During the study period, the prevalence of anxiety (GAD-8 score 10 or greater) was determined to be 31.2%. There were 95 (19%), 189 (37.8%), 102 (20.4%), and 114 (22.8%) participants with no, low, moderate, and vigorous PA levels, respectively (Table-2). Using the one-way ANOVA test, it was determined that there was a nonsignificant difference in anxiety with the gradual increase in education level ( $p = 0.744$ ) and a nonsignificant difference in anxiety with occupation level ( $p = 0.496$ ). The one-way ANOVA test

revealed a statistically significant difference in anxiety levels across no, low, moderate, and strong PA, with  $p = 0.018$  (Table-3). We employed a post hoc Tukey test to determine where to put of the difference. Anxiety levels were shown to decrease with vigorous PA, as evidenced by a significant difference ( $p=0.021$  approximately) and mean difference ( $M= -1.336$ ) between those who did not engage in any physical exercise and those who did (Table-4).

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#### 4. Discussion

Table 2 shows that of the subjects, 95 (19%), 189 (37.8%), 102 (20.4%), and 114 (22.8%) had no PA, low PA, moderate PA, and vigorous PA, respectively. The results of the one-way ANOVA test showed that there was a nonsignificant difference in anxiety with employment level ( $p = 0.496$ ) and a nonsignificant difference in anxiety with the steady increase in education level ( $p = 0.744$ ). A statistically significant difference in anxiety levels between no, low, moderate, and intense PA was found by the one-way ANOVA test, with  $p = 0.018$  (Table 3). To decide where to place the difference, we used a post hoc Tukey test. Vigorous physical activity was associated with lower levels of anxiety, as demonstrated by a significant difference ( $p=0.021$  approximation) and mean difference ( $M= -1.336$ ) between those who did not participate and who participated. Based on statistical analysis of cross-sectional research data, this conclusion was drawn that there was a slightly positive association between anxiety and age.

According to the findings of other experts, young people are particularly vulnerable to the psychological effects of the epidemic because of their greater exposure to social media and lack of knowledge about the state of affairs [19, 20]. Additionally, the study found that people who participate in moderate to intense physical activity (PA) have less anxiety than people who do not. This outcome correlates with a study by Pieh et al. that found that in males, adults, and children, extending the length and intensity of PA decreased feelings of anxiety and depression [21]. Anyan et al. conducted another study in which they assessed the anxiety levels of several PA subgroups and discovered that the subgroup with higher PA had the least anxiety symptoms [22].

Anxiety is most common and has increased most rapidly among young adults. Anxious temperament and subclinical anxiety earlier in life is associated with increased risk of subsequent onset of anxiety disorders, depression, substance use disorders and physical health problems [23-26]. The critical window of vulnerability for the start of many diseases is early adulthood. Consequently, it would be expected that an increase in anxiety in this susceptible group would have a more significant effect on long-term mental health and functional results than an increase in anxiety in older age groups. Furthermore, it has been demonstrated that stress or worry affects brain growth, which doesn't finish until about age twenty five [27-29]. Therefore, increased chronic anxiety in young adults may have long-term effects on their social, psychological, and academic growth. Furthermore, the rise in social media usage, which is linked to higher rates of anxiety and depression in young people, might have played a role in the gradual rise in anxiety, particularly after 2011 [30, 31].

According to a study by Ghandour et al., 7.1% of children and adolescents in the USA between the ages of 3 and 17 have anxiety disorders [32]. According to Mohammadi et al.'s Iranian study, around 2% of children aged 6 to 18 suffer from social anxiety disorder [33]. Studies show a correlation between a decrease in physical activity and an increase in negative emotions. Therefore, physical activity of any kind, even modest to moderate exercise, can help reduce the psychological impacts [34]. This is perhaps the first study to examine anxiety in Gazipur, Bangladesh, with different levels of PA. The importance of PA in maintaining psychological wellness is emphasized by this study.

#### *Limitations*

This study has a number of drawbacks as well. First, there was selection bias because convenience sampling was employed and individuals were chosen through social media. Secondly, we were unable to do an in-person evaluation of PA due to restrictions. For this reason, we used the IPAQ questionnaire to calculate the PA levels. Therefore, additional research is recommended to increase accuracy. Third, there were less females in the 16–28 age bracket in the study due to the cohort's relative accessibility.

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#### 5. Conclusion

Increased physical activity levels were associated with improved psychological health perceptions, suggesting physical activity should be promoted as a means of reducing anxiety. Growing older was also linked to higher levels of anxiety, indicating the necessity for awareness raising, especially for individuals who become less able to lead physically active lives as they get older. Community-based eHealth initiatives might potentially work well to promote an active way of life among the young people.

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## Compliance with ethical standards

### *Disclosure of conflict of interest*

There is no conflict of interest regarding this paper.

### *Statement of ethical approval*

Participants actively participated, knowing that any personal information they contributed would be kept private and that the data they provided would be utilized responsibly

### *Statement of informed consent*

Informed consent was obtained from all individual participants included in the study.

### *Author contribution*

All author contributed significantly to design and development of this work.

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