

## **Comparison between the First and Sixth Year Medical Students in the Arabian Gulf University of Bahrain Regarding Anxiety and Depression**

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### **Authors' contributions**

*This work was carried out in collaboration between all authors. Author AK designed the study and wrote the first draft of the manuscript. All other authors shared equally in every other step of this study. All authors read and approved the final manuscript.*

**Original Research Article**

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### **ABSTRACT**

A cross sectional study involving all year 1 and 6 medical student of Arabian Gulf University in Bahrain in the year 2011-2012 was performed by self reporting anxiety and depression using HADS forms. The results showed that 33.96 % of year 1 and 55.07% of year 6 students showed anxiety, while student of year 1 and 6 showed 18.87% and 31.88% depression state respectively. Statistically the anxiety and depression were significantly higher in year 6 compared to year 1 students (Analysis of Variance ANOVA,  $p < 0.05$ ). Neither of these mental states were significantly different in males and females students. The averaged score of male medical student was  $9.64 \pm 0.4$  for anxiety and  $8.01 \pm 0.4$  for depression compared to  $9.88 \pm 0.5$  and  $8.13 \pm 0.5$  which were scored in females for anxiety and depression respectively (ANOVA  $p > 0.05$ ). It is concluded that the stress associated with studying medicine is continuous and accumulative during the years of the study and that medical students confrontation with extra stressors related to

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their studies in addition to the normal daily stressors of life making them more vulnerable to anxiety and depression states.

*Keywords: Anxiety; depression; medical students; HADS; gender difference.*

## 1. INTRODUCTION

Medical students very often find themselves in stressful situations due to various reasons. Worldwide reports demonstrated that there is a good relation between studying medicine and stress [1-6]. Consequent to higher risk of mental illness in medical student, the USA medical student' health insurance was made to cover mental health and substance abuse treatment [7]. In fact, the stressful life of a doctor probably begins shaping during the first years of medical school [8] and some have said that if a student survives the cascade of studying medicine, then he will undoubtedly be able to cope with the stresses of being a doctor. Studies have shown that medical students are often concerned about the amount of knowledge they have to master, their personal endurance and ability, the lack of time for other activities, the feelings of anonymity, the peer competition and of course the loss of social time [9,10]. Being prevalent in medical students, stress significantly decreases as the year of study increases, except for the final year [11]. Higher percentage of Tobacco smoking in medical student despite the good knowledge of the hazards was related to the stressful situation the medical students are experiencing [5]. Among other complications which take place in medical students because of stress and anxiety are higher incidence of hypertension [4] and eating disorders [12]. The medical curriculum in the Arabian Gulf University is following the Problem-base Learning (PBL) scheme. In this form, and during the first 4 years of studying, groups of students formed of 9-10 students per group are discussing one medical problem each week. The last two years of their study the students are doing their internship studies in hospitals. We wanted in this study to analyze the strains and pressures the students are exposed to during the course of their study and the effects of these strains on the student's lives.

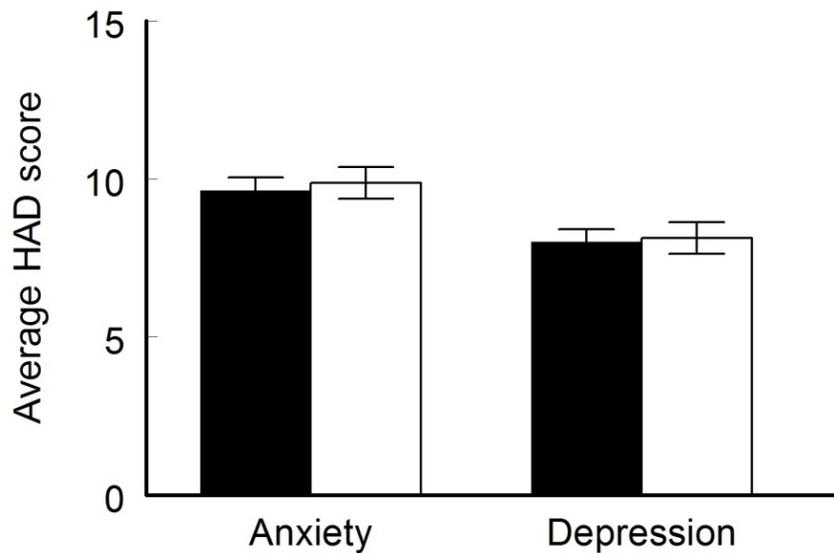
## 2. MATERIALS AND METHODS

The presence of two mental states, anxiety and depression, among students of year 1 and students of year 6 during the academic year 2011-2012 were studied. A randomly selected 53 students out of 162 in year 1 (26 males and 27 of females) and 69 students out of 112 in year 6 (33 males and 36 females) to fill the Anxiety/Depression scale forms. The commonly used Hospital Anxiety and Depression Scale (HADS) was used to collect the data. The HADS is a world wide scale adapted for the use of doctor to assess the presence of anxiety or depression in their patients and to roughly estimate the severity of the cases if present. However, the merely use of self reporting in a screening instrument as the HADS is considered as a limitation of this study. Student were classified accordingly into a- Normal (scoring below 7 point for stress and anxiety) 2- Liable for mental illness when they score between 8-10- and 3- Mentally ill when they score above 11. Analysis Of Variance (ANOVA) test was used to calculate any significant differences between the groups. This study was approved by the Ethical Research Committee of the Arabian Gulf University Medical college in the Kingdom of Bahrain.

### 3. RESULTS AND DISCUSSION

All data are expressed as Mean±SEM. Analysis of Variance (ANOVA) test was used to calculate significant differences between the groups. *P* values below 0.05 were considered statistically significant.

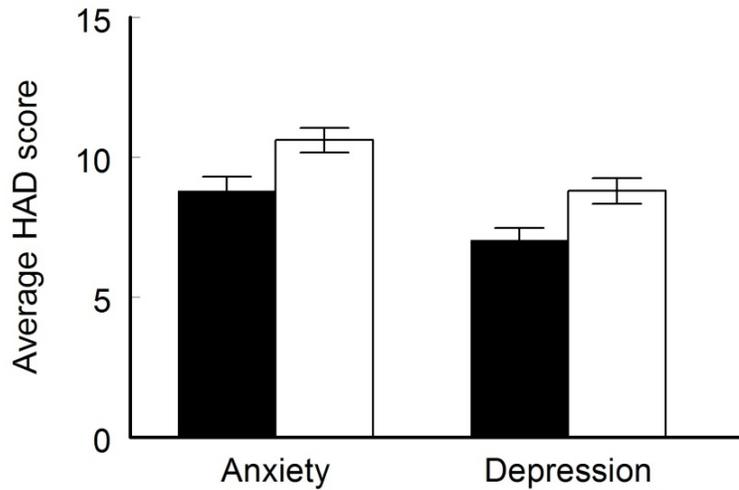
Analysis of data demonstrated that there is no role for gender in the presence of anxiety and depression among the Arabian Gulf University (AGU) medical students as the mean of scores obtained from year 1 and year 6 females was not significantly different from the mean of scores obtained from year 1 and year 6 males regarding both mental states. It was also found that there is no role for gender among different educational levels in anxiety and depression, as the *p*-value for both diseases was higher than 0.05. (Anxiety: 0.762, Depression: 0.943) (Fig. 1).



**Fig. 1. The averaged HAD scores for anxiety and depression in male (black bars) and female (white bars) students. No significant difference was recorded**

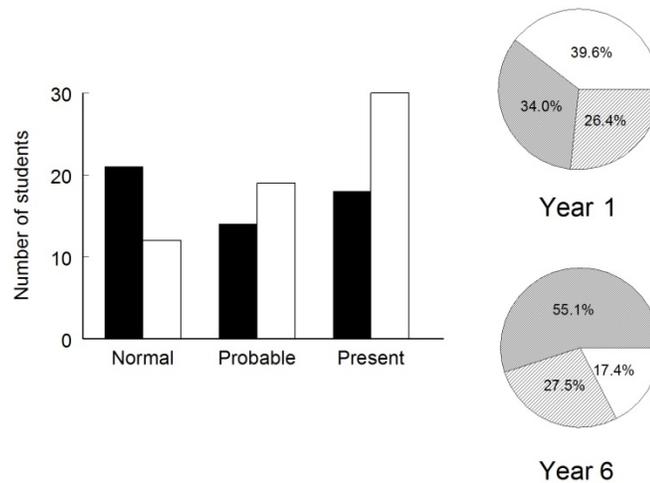
However, by calculating the mean of scores obtained from year 1 and year 6 without any regards to the gender, it was found that the prevalence of anxiety ( $8.8\pm 0.5$  in year 1 and  $10.6\pm 0.4$  in year 6 students, ANOVA,  $F=7.504$ ,  $P=0.0071$ ) and depression ( $7.04\pm 0.4$  in year 1 and  $8.8\pm 0.5$  in year 6 students, ANOVA,  $F=7.447$ ,  $P=0.0073$ ) is significantly higher in year 6 than in year 1 students (Fig. 2).

Concerning the degree of severity of anxiety and depression among different educational levels, our results were showing significant differences. According to the categorization of the HADS, the subjects were classified into 3 specific groups based on their individual scores. Students scoring 0-7 in the HADS were considered to be normal, those scoring 8-10 are having a mild case of the mental state, and those scoring 11 and above (up to 21) are considered to have a moderate to severe form of the mental state.



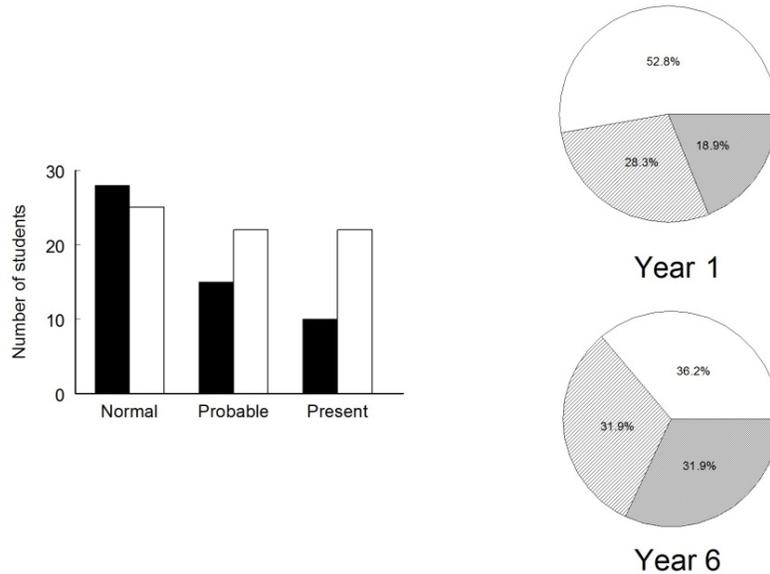
**Fig. 2. The averaged HAD scores for anxiety and depression in the medical students of the Arabian Gulf university in Bahrain. A statistically higher prevalence of both anxiety and depression scores were recorded in Year 6 (white bars) compared to Year 1 (black bars) students**

According to this classification it was found that 33.96% of year 1 students are showing a moderate to severe form of anxiety, 26.42% are having a mild form of anxiety and 39.62 are normal. While in year 6, our results have shown that 55.07% are having a moderate to severe form of anxiety, 27.54% with mild anxiety and 17.39% normal (Fig. 3).



**Fig. 3. The number of students categorized for depression as Normal (when the HAD scores were 0-7 points), Probable presence of mental state (when the score was between 8-10 points) and present indicating a mental state (when the score was above 11 points). Year 6 students (white bars) showed significantly higher number of students than in year 1 (black bars) with category 3 (Present). Pie graphs present: White area for normal, Stripped area for Probable, and crossed lines for Present.**

Examining the data concerning depression, it was noted that 18.87% of year 1 medical students are having a moderate to severe form of depression, 28.30% are having a mild form of depression, and 52.83% are normal. On the other hand, year 6 medical students have shown that 31.88% are in the moderate to severe category for depression, 31.89% are having a mild depression and 36.23% are normal (Fig. 4).



**Fig. 4. The number of students categorized for anxiety as Normal (when the HAD scores were 0-7 points), Probable presence of mental state (when the score was between 8-10 points) and present indicating a mental state (when the score was above 11 points). Year 6 students (white bars) showed significantly higher number of students with third category (Present). Black bars represent year 1 students. Pie graphs represent: White area for normal, Stripped area for Probable, and crossed lines for Present**

Anxiety and depression are two mental states which were analyzed in medical students of the Arabian Gulf University (AGU) in the Kingdom of Bahrain. The data showed that the existence of these clinical states is significant and sometimes prevalent. While medical students in first year of study showed significant anxiety and depression (33.96% and 18.87% respectively), the sixth year students demonstrated even higher incidence of these mental states (55.07% and 31.88% respectively).

These figures are comparable to other studies conducted on medical students in many different countries [13-21]. (see Table 1 for comparison). Our data demonstrated no statistical relationship between the presence of the mental state and the gender. The male students scored an average of  $9.6 \pm 0.4$  in the HADS for anxiety compared to  $9.88 \pm 0.5$  in the female students (ANOVA,  $P=0.762$ ). In depression, the male students scored  $8.01 \pm 0.4$  compared to  $8.13 \pm 0.5$  scored by the female students (ANOVA  $P=0.943$ ). Our results concerning prevalence of anxiety and depression in males and females students support those recorded in Cambridge medical school in the UK [22]. This study stated also that the Cambridge Medical students did not have higher prevalence of depression than students in general or comparable non-student members of the general population. Our study doesn't

compare the prevalence of anxiety and depression in medical students in Bahrain with those in non-medical students or in the general population since there is no previous study examining the prevalence of these mental states in those subjects in the kingdom of Bahrain. In our study we report the HADS that were recorded in medical students and which shows significant numbers of students self-reporting these mental states. We demonstrate as well that this score was getting significantly higher with the progress of the students in their medical study (thus between year 1 and 6 of medical education). Other studies however, show that depression during undergraduate medical education is higher in females [17,20,23,24]. Such results reflects actually the epidemiological studies that show depression to be more common in females [25].

**Table 1. Comparison of the prevalence of anxiety and depression in medical students in this study with other studies from different countries**

| <b>Authors</b>             | <b>Country</b> | <b>% Anxiety</b>                       | <b>% Depression</b>                   |
|----------------------------|----------------|--|---------------------------------------|
| Present study              | Bahrain        | 33.96 in year 1 and<br>55.07 in year 6 | 18.87 in year 1and<br>31.88 in year 6 |
| Dyrbye et al 2007          | USA            |  | 49                                    |
| Bunevicius et al 2008      | Lithuania      | 43                                     | 14                                    |
| Mehanna and Richa 2006     | Libanon        | 69                                     | 27.6                                  |
| Bayram and Bilgel 2008     | Turkey         | 47.1                                   | 27.1                                  |
| Dahlin et al 2005          | Sweden         |  | 12.9                                  |
| Ahmed et al 2009           | UAE            | 28.7                                   | 28.6                                  |
| Facundes and Ludermir 2005 | Brazil         | 34.1                                   |                                       |
| Assadi et al 2007          | Iran           | 44% had psychiatric problems           |                                       |
| Jadoon et al               | Pakistan       | 34.89% had anxiety and depression      |                                       |

The prevalence of anxiety in year 6 is higher (55.07%) than anxiety in year 1 (33.96%) and the prevalence of depression in year 6 is higher (31.88%) than depression in year 1 (18.87%).

The HADS is a well validated widely used self-report instrument. All procedures in this survey were created to insure anonymity and confidentiality [26]. The study is limited by being based on one Bahraini Medical college, which at the time of the survey was the only medical college in the country. There was other very young medical college but with very limited numbers of students and which have students only till year 4 of their study. The students in AGU follows the Problem-base learning (PBL) system in medical education. It would be interesting to perform similar study on medical students who follow the (traditional) medical education system.

This study shows that medical students experiences extra stressors in study years in addition to the normal everyday life stressors. This is proved by the higher prevalence of anxiety and depression. Such fact may bring into attention that specific measures should be taken to address a variety of concerns including the mental states at time of entrance to medical schools, as well as academic and social relations of these students during their studies. Unfortunately, our sample size was too small, and limited to small area in the gulf region, and exploring those mental states in medical students following the PBL system alone. Future work may consider these points and any study should investigate the

generalisability of our results to include other medical universities in the gulf region. One other drawback of our study was the lack of baseline information of these medical students at the time of their commencement in their studies.

#### **4. CONCLUSION**

Screening for mental states in medical students of Arabian Gulf University demonstrated comparable results recorded in other countries medical institutions. Our data did not find any role of gender in the presence of anxiety and depression among the students. However, the prevalence of these mental states was significantly higher in year 6 than in year 1 students.

#### **CONSENT**

All authors declare that every medical student included in this study was aware about publishing the results by a written consent.

#### **ETHICAL APPROVAL**

This study was approved by the Ethical Research Committee of the Arabian Gulf University Medical college in the Kingdom of Bahrain.

#### **ACKNOWLEDGEMENTS**

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#### **COMPETING INTERESTS**

All authors declare that no any financial and personal relationships with other people or organizations could inappropriately influence (bias) this work.

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