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"Anxiety Levels and Eating Behaviour Assessment in Indian Students Studying Abroad"

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Abstract*— The prevalence of anxiety disorders has significantly increased in recent years on a global scale. The outcomes of Covid-19 pandemic have clearly demonstrated the negative influence of abrupt lifestyle changes towards the mental health of population. The most significant contribution to mental equilibrium is made by change in place of residence, community, occupation and health changes. Combination of some of these negative factors can be seen in students studying abroad. Adaptation issues include cultural mismatch, linguistic hurdles, academic stress, and major dietary changes lead to various degrees of psychological imbalance in Indian medical students studying abroad. Eating disorders are one of the most common manifestations of high level of anxiety. In addition to having an effect on physical health, irregular eating habits can worsen mood swings, coping mechanisms, and general psychosocial development. The effects of lifestyle changes and the relationship between eating habits and anxiety are highlighted in this study, which looks at how Indian medical students adjust in Russia over the course of several academic years. The study aims to identify trends across several phases of medical education by examining the ways in which nutritional and cultural changes affect mental health and coping strategies.

The highest prevalence of elevated academic anxiety was observed in junior girls compared to boys (50% vs 16% respectively, p= 0.01), however, one third of the students, regardless of the duration of study at the university, have an increased level of academic anxiety. But for juniors, anxiety levels are higher for situations like expectation from the exam whereas in seniors it is based on their ability to perform in the classes. Statistics from Spielberger-Hanin test showed that the reactive anxiety is the leading type of anxiety in all the groups but personal anxiety is the most prominent in junior girls. Additionally, nearly half of the participants demonstrated the presence of clinical anxiety. Eating pattern was found impaired in most of the students, where restrained and combined (emotional+restrained) type of eating is often observed in seniors and juniors respectively.

The results are intended to offer practical guidance for enhancing adaptation tactics, building resilience, and advancing the mental well-being and standard of living of students going through such changes.

***Index Terms:* Anxiety, Adaptation, Dutch Eating Behaviour Questionnaire, Foreign students.**

I. INTRODUCTION

A person's mental health and general well-being are greatly impacted by the difficult process of adapting to a new environment [1]. This transition entails adjusting to significant changes in daily routines, communication styles, and cultural norms for Indian medical students studying abroad. Although these changes might be beneficial, the difficulties of acclimating to new environments frequently result in psychological anguish. The disruption of eating patterns is a crucial part of this adaptation process because overseas students usually have to adapt to a new cuisine and change their diets due to restricted access to familiar items, which includes adjusting to a diet heavy in bread, dairy, and cold cuts, affecting their daily nutritional balances, mood, energy levels, and psychosocial development.

The one of the important sign of psychological distress is increasing of anxiety, which leads to diminished ability to cope with personal and academic demands [2]. These difficulties are exacerbated by social isolation, cultural disparities, and language hurdles, especially for first-year students who frequently experience homesickness and cultural dissonance. A cycle of physical and mental health problems can be exacerbated by maladaptive coping strategies [3] including pathological eating patterns such as overeating, undereating, or relying on bad food choices.

A certain amount of adjustment is anticipated as students move through their academic careers. As middle-year students get used to the academic and cultural environment, they frequently demonstrate improved coping strategies. Even for senior students, delayed eating patterns and high level of anxiety as a result of lifestyle changes continue to be major concerns. Even though they are more adjusted in certain ways, final-year students may feel more stressed because of their upcoming professional obligations and future uncertainties.

A. Purpose of the Study

The aim of this study is to investigate the changes in anxiety level and eating behavior in the process of adaptation of Indian medical students studying at Russian university. This article intends to present the results of first phase of study; to highlight the initial level of anxiety and eating behaviour in the very first months of adjustments after shifting to Russia, which aims to present adaptation as a holistic process impacted by both physiological and

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emotional elements. And in order to get to the more individualised approach, the surveillance needs to be extended, throughout a year, majorly focusing on the behaviour after mid-year exams, the final exam at the end and in between the study process. This will not only yield into personal and specific insight but will add on to the distinguished potential of the students to perform and learn better by clubbing the analyses of all the three phases, and it can be used to focus on timely screening, treatments and initiatives to promote improved diet, anxiety control, and easier adaption.

II. METHODS

In order to achieve a comprehensive analysis, stratified participant grouping and standardized evaluation instruments to examine the relationship between anxiety and eating patterns are determined.

A. Groups of Participants

160 participants in all are evaluated for the study and are split up into four groups:

- First-year students (n = 60) – 1st group, showing early difficulties with adaption.
- Fifth-year students (n = 60) – 2nd group, demonstrating professional preparedness and progressive adaption.
- Midway evaluation for transitional insights for third-year students (n = 20).
- Sixth-Year Students (n = 20): Seniors who are getting close to finishing and dealing with the last stages of adaptation.

B. Anxiety Assessment Tools

Three validated tools are used to measure anxiety:

1. **Text Anxiety Questionnaire:** Exam preparation and time management are two examples of academic stressors that are measured by a 48-item Likert-scale questionnaire; scores of ≥160 indicate considerable academic anxiety.[3]
2. **Spielberger-Hanin Test:** Using 20 items per scale with scores ranging from 20 to 80, it distinguishes between transitory (state) and habitual (trait) anxiety, providing information on situational and entrenched anxiety patterns.[4]
3. **Hamilton Anxiety Rating Scale (HAM-A):** A clinical test that uses a 5-point rating system to classify anxiety severity as mild, moderate, or severe (0–56) and measures 14 anxiety symptoms (such as tension and physical complaints).[5]

C. Eating Patterns Assessment

The **Dutch Eating Behaviour Questionnaire (DEBQ)**[6] evaluates the psychological underpinnings of eating habits through three subscales:

- **Emotional Eating:** Assesses eating driven by negative emotions like anxiety and sadness.
- **External Eating:** Examines eating triggered by environmental cues such as the sight or smell of food.
- **Restrained Eating:** Measures deliberate control of food intake for weight management. Responses are rated on a 5-point Likert scale, with higher scores indicating stronger tendencies for each behaviour.

For statistical analyses the software “Statistica.tab” is used to interpretate the results.

III. RESULTS

The elevated level of academic anxiety among 1st year students was found in 32% of respondents. In girls the number of respondents with high level of anxiety was significantly higher than in boys (50% vs. 16%, p=0,01). The average level of anxiety in the first and second groups was not significantly different (32% vs 33%, respectively, p=0.35).

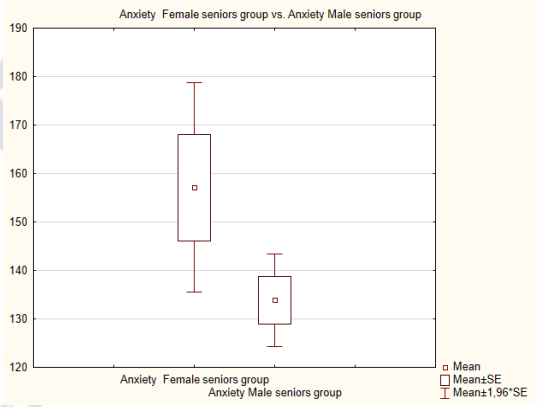

Fig.1.1 Box and whisker plotfor anxiety in juniors

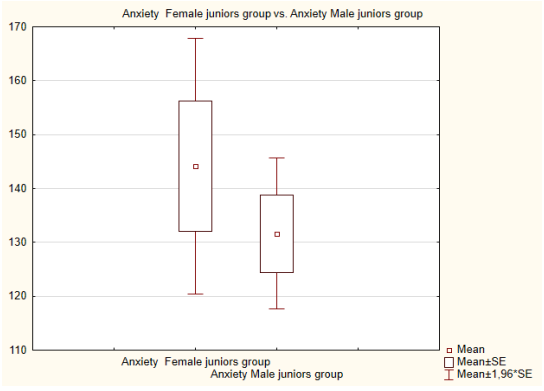

Fig.1.2 Box and whisker plotfor anxiety in seniors

Surprisingly, the number of respondents with a high level of anxiety among 5th year students was the same as among first year students - 33%, with the same unevenness by gender with the predominance of girls (60% girls vs. 23% boys, p= 0.023).

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In-depth analysis revealed that in juniors*(42.8%)*, academic situation like "*thinking about the exam one hour before it is scheduled or studying for final exams"* are most stressful situation whereas the triggers in seniors*(46%)* is mostly formed on the opinion of "*how difficult the professor is and preparation quotient before the exam"*, these characteristics explain that seniors are mostly concerned about classes because of their experience about the impact and usefulness of '*throughout the year'* preparation in exams, the thought redeems itself as a sign of growth, however the least notable trait of anxiety in both groups (1%) is *"Making an appointment to see the professor regarding some course problem"*. Moreover, the average values of academic anxiety in girls significantly exceeded the results of boys.

Analysis for the Spielberger-Hanin test revealed that the reactive anxiety is highest in junior girls, with a comparable status in junior boys and senior girls, however is least in senior boys. On the other hand, the personal anxiety in junior boys trails behind junior girls and the same can be seen in seniors.

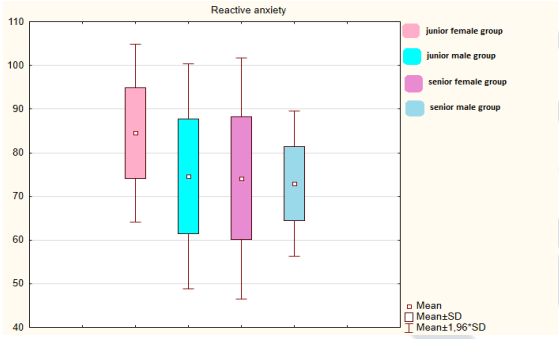

Fig.2.1 Box and whisker plotfor reactive anxiety

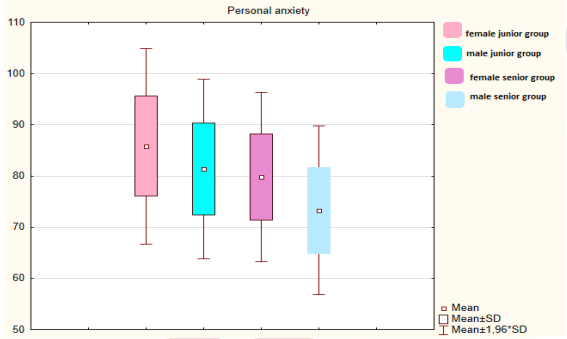

Fig.2.2 Box and whisker plotfor personal anxiety

Additionally, the analysis showed that a sizable percentage of participants had high and very high levels of anxiety, with junior girls and junior boys reporting high and very high levels of reactive anxiety at 23.7% and 35.6%, respectively, compared to 35% of senior girls and 22.7% of senior boys. Likewise, personal anxiety was shown to be common among these groups, with 28.5% of junior girls, 71.3% of junior boys, 41% of senior girls, and 36% of senior boys falling into the high and very high categories of personal anxiety. According to these results, anxiety levels fluctuate considerably between age and gender categories, with reactive anxiety being higher in junior girls and boys and personal anxiety being higher in junior boys and senior girls' groups.

Evaluation of HAM-A revealed that, clinical anxiety, juniors (56%) outperformed seniors (40%), without any significant differences between gender; in junior group, level of clinical anxiety in girls is 17.3±7.1 and in boys is 15±9.9(p=0.6), on the contrary in seniors it is 15.1±6.7 and 12.7±6.9 (p=0.4) respectively.

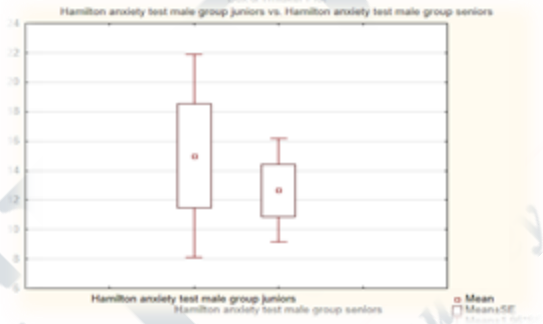

Fig.3.1 Box and whisker plot for HAM-A female group

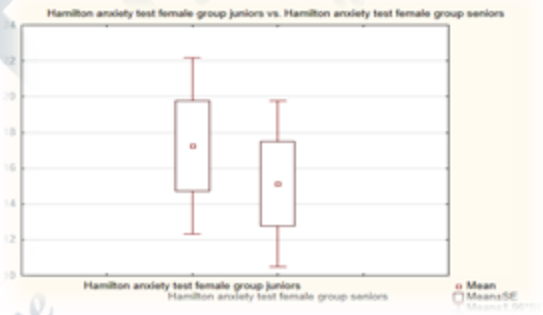

Fig.3.2 Box and whisker plot for HAM-A male group (junior vs senior) (junior vs senior)

Furthermore, the results revealed that while none of the senior girls, senior boys, or junior girls were categorized as having high or very high level of clinical anxiety, a notable number of junior boys (25%) did. This indicates junior boys may be especially at risk, and specific interventions may be required to meet their special needs and encourage good adaptability and anxiety control. These findings highlight the need of taking age and group-specific aspects into account when creating anxiety therapies and support plans.

The findings of the Dutch Eating Behaviour Questionnaire (DEBQ) evaluation revealed that juniors and seniors had different eating patterns with relatively a smaller percentage 4.26% and 5.88% of participant showing no pathological eating pattern in senior and junior group respectively. In the senior group, 27.65% showed restrained eating, whereas 4.26% showed emotional eating. A mix of external and emotional eating was also seen in 27.65% of seniors, and 8.51% of seniors have combined eating disorder (restrained

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and external). Juniors, on the other hand, were more likely to engage in emotional eating (14.71%) and external eating (8.82%), with 14.71% showing restrained eating and 20.59% combining both emotional and external eating. The prevalence of all three types of eating behaviours is seen in 25.53% of seniors and 20.59% of juniors.

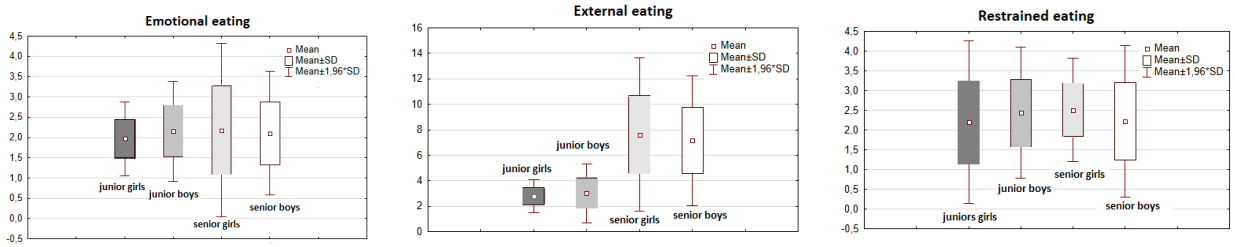

Fig. 4.1 Box and whisker plot for comparative study of emotional, external and restrained eating

DEBQ evaluation in juniors revealed the numerous significant changes; external: emotional, external:restrained with p=0.00006 and p=0.159 respectively. Whereas in seniors it revealed more stronger significant differences, with p values, 0.0000001 for each parameter.

External eating between girls and boys in juniors is p=0.000008 and seniors is p=0.0000001, relatively a little higher.

These results imply that eating behaviour patterns differ between seniors and juniors, with seniors displaying more restrictive eating behaviours and juniors displaying a combination of emotional and external eating behaviours. This emphasizes the significance of taking age-related factors into account when creating interventions meant to encourage healthy eating habits and avoid eating disorders.

As discussed earlier, pathological eating pattern coexists with increased anxiety, which is seen in junior girls, where there is a moderate correlation between emotional eating – academic anxiety and personal anxiety, ρ= -0.576 and ρ= 0.54 respectively which indicates that the personal anxiety provokes the emotional eating, which in turn works a as a medicine to decrease the academic anxiety. Additionally, junior girls with disordered emotional and restrained eating pattern, often have high clinical anxiety (ρ= 0.8 and ρ= 0.7, respectively).

Whereas, in senior group, there is a positive correlation between restrained eating and academic anxiety, ρ=0.4, indicating a warning sign of adverse health outcomes due to food deprivation. In senior girls, the negative correlation between academic anxiety and emotional eating (ρ=-0.6), shows the same tendency of decreasing the food intake with increase in anxiety level, but increase in reactive anxiety has a strong positive and negative correlation with emotional eating(ρ=0.7) and external eating(ρ=-0.8) respectively.

IV. CONCLUSION

Anxiety is becoming more and more widespread and significant in the modern world. Increased levels of anxiety reduces the quality of life for both individuals and society as a whole [7]. In many countries, there is an increase in anxiety among young people, especially among medical students [8]. Changes in place of residence, changes in occupation, abandonment of habitual traditions, separation from family, and societal demands to constantly succeed in daily competition—each of these factors can lead to increased anxiety. In the case of a young person moving to study in another country, these factors combine and most likely cause excessive anxiety, which can lead to clinically significant disorders of psychological stability [9]. The aim of presenting study is to investigate the changes in anxiety level and eating behaviour in the process of adaptation of Indian medical students studying at Russian university. In the first stage of our study we found that one-third of the newly arrived students have increased academic anxiety, with girls being more affected compared to boys (50% vs. 16%, p=0,01). Half of the respondents, regardless of gender, felt more anxious when preparing for exams, as well as on the day of the exam just before it started. Among students who have been studying for four years, we found similar results by prevalence of increased academic anxiety (33%), with significant female prevalence (60% girls vs. 23% boys, p= 0.023). But, unlike the 1st year students, in the fifth year, the most significant triggers were the personal characteristics of the teacher and fear of presenting a lower level of knowledge in the exam. Changes in academic anxiety, in our opinion, are not related to the process of adaptation of foreign students, but are associated with the peculiarities of studying in a medical university which is consistent with the data of our colleagues [7].

When assessing long term anxiety (reactive and personal), we found that both personal and reactive anxiety were most often elevated in junior boys, compared to the girls (reactive anxiety- 23.7% vs 35.6%, personal anxiety-71.3% vs 28.5%, respectively), while the minimum level of personal anxiety was observed in senior boys. The study of clinically significant anxiety according to Hamilton's test revealed comparable results in the group of juniors and seniors, with moderate and pronounced anxiety present in half of those examined. However, it should be noted that only in the freshman boys' group it was found to be very high, requiring additional counselling sessions.

A frequent «remedy» used to reduce anxiety is eating. Eating causes the release of dopamine, which contributes to the feelings of pleasure and reduces anxiety. This can lead to the formation of various eating disorders, which are defined, for example, by the Dutch Eating Behaviour Questionnaire. Among the surveyed students, regardless of the duration of study, the presence of impaired eating behaviour was found to be near the absolute in medical students (73% in juniors and 68% in seniors).

In both groups, the external type of eating behaviour significantly prevailed, followed by a combination of external and emotional behaviours. Our results indicate a high level of anxiety in students studying abroad, which may contribute to the development of depressive states and eating disorders.

Although anxiety levels were higher in freshman boys, the correlation between anxiety and eating disorders was only demonstrated in girls. In freshman girls a kind of protective pattern of eating behavior was revealed - the emotional type, which, most likely, somewhat mitigates the negative impact of high personal anxiety. On the other hand, a combined eating disorder (emotional + restrictive) contributed to a more pronounced increase in clinical anxiety. Among seniors; girls revealed an increasing influence of elevated academic anxiety on restrained eating behavior, and decreasing on emotional eating behavior, which may have a more pronounced effect on health.

This situation requires the development of comprehensive programs to support the adaptation of students studying abroad to improve the learning process and quality of life.

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