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Original Research Article

Exploring the Prevalence of Alexithymia Among Medical Students and Its Impact on Their Academic Performance: A Cross-Sectional Study in Peshawar, Pakistan

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Abstract: *Transitioning from high school to medical college presents various psychological challenges for students, including alexithymia, a condition characterized by difficulties in identifying and expressing emotions. This study investigates the prevalence of alexithymia among medical students in Peshawar, Pakistan, and explores its potential impact on academic performance.* ***Objective:*** *To determine the prevalence of alexithymia among medical students, compare alexithymia levels across different academic years, and assess its association with academic performance.* ***Methods:*** *A descriptive cross-sectional study was conducted at Khyber Medical College, Peshawar, from September 2023 to September 2024, involving 227 medical students. Alexithymia was assessed using the Toronto Alexithymia Scale (TAS-20). Academic performance was measured based on annual marks and attendance. Data were analyzed using descriptive statistics, t-tests, and chi-square tests.* ***Results:*** *The study found that 122 (52.4%) students exhibited alexithymia, with a higher prevalence among female students (57.3%, n = 70 out of 122). Despite the notable prevalence of alexithymic traits, no significant association was observed between alexithymia and academic performance (p = 0.47). Most participants reported that emotional difficulties did not affect their studies, and very few sought psychiatric consultation or took leave due to emotional disturbances.* ***Conclusion:*** *Alexithymia is prevalent among medical students in Peshawar, particularly among females. However, the lack of a significant impact on academic performance suggests a level of resilience in students. Further research into coping strategies and support systems is recommended. Addressing alexithymia within medical education may improve both emotional well-being and academic outcomes.*

Keywords: alexithymia; medical students, academic performance

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Introduction

Students after entering from high school to college may suffer a variety of difficulties, including loneliness, alexithymia, substance addiction, and anxiety (1-3). Researchers discovered that alexithymia is one of the most common problems encountered by students, and it outnumbers other academic and non-academic problems in student populations due to its non-clinical nature, which means that sufferers are frequently unable to recognize they have a problem unless they know about mental health awareness (3-5). Alexithymia means 'I cannot express how I am feeling'. Alexithymia is a subclinical condition characterized by a lack of emotional awareness, or, more particularly, difficulties in identifying and characterizing feelings (6).

Medical students are more susceptible to alexithymia due to the nature of their coursework and training, and female students are generally more prone to alexithymia than male students (4-7).Another study was conducted in which no significant differences between male and female were found in the relevance of alexithymia (8).Some researchers suggest that there are significant links between alexithymia and various conditions, such as autism, chronic pain, type 2 diabetes, and inflammatory bowel disease. Additionally, a strong correlation has been found between alexithymia and issues like depression, self-harm, and aggression. Certain studies indicate that alexithymia is also closely related to addictive behaviors, including problematic alcohol consumption, gambling, and internet addiction. It is frequently observed in individuals struggling with substance abuse. Furthermore, the capacity to recognize and express emotions is differentially associated with experiences of childhood abuse and personality disorders (9).

In Saudi Arabia, A study was conducted at King Abdul Aziz Khan University to know the prevalence. The prevalence of alexithymia among medical students was 49%. Prevalence among men was 51%, while among women, it was 49%. A binary logistic regression model showed significant associations between autism and academic year of study, smoking, grade point average, history of childhood abuse, and history of psychiatric illness (10). In China, the overall prevalence of alexithymia was 36.6% (males: 34.3% and females: 40.0%). Among 1606 adolescent participants, 24.8% were not alexithymic (males: 25.2%, females: 24.1%) (11). In Jordan, the prevalence of alexithymia in Jordanian universities was higher in female students (20.2% for males and 28.8% for females) (4).In a study conducted in Iran, 49 subjects (21%) were found to have alexithymia(12). Alexithymia was 3.6% among Turkish medical students, 14.8% among UK nursing students, 7% among Italian high school students, and 16.92% among British undergraduate students. However, few other studies found slightly higher rates of alexithymia than those found in this study, such as Lala et al., who found it to be 26.1% of their undergraduate students (13-17).

In Pakistan, a study was conducted in the general adult population of Quetta, Baluchistan, to know the prevalence of alexithymia. Alexithymia was more prevalent in males (93%) than females (87%) (18). University students who had alexithymia had a prevalence of 29.7% in Islamabad, and it was favorably correlated with smart phone addiction but not significantly with physical activity (19).

Although alexithymia is linked to a number of somatic and mental health issues, the precise mechanism that predisposes an alexithymic person to mental or physical illness has not yet been identified. The current study investigates the mediating function of positive negative emotional experiences in the link between alexithymia and health. This is based on past findings that alexithymic persons are characterized by anhedonia and a propensity to negative emotional experiences (20). In this study, we explored the prevalence of alexithymia among male and female medical students of Peshawar and compared the levels of alexithymia among different academic years of medical college. We also observed that to what extent their Academic performance is affected.

Methodology

This study was conducted at Khyber Medical College Peshawar, Pakistan, after approval from the Institutional Research and Ethical Review Board of Khyber Medical College. A descriptive cross-sectional study was conducted from September 2023 to September 2024, involving 227 medical students. Medical students of other medical colleges were excluded. Medical students who fulfilled the inclusion and exclusion criteria were recruited in the study. A total of 240 students were approached to participate in the study, out of which 8 refused to give consent. Of the 232 students who gave consent, 5 left the questionnaire incomplete. Therefore, the cooperation rate was 94.5%. No imputation method was used, and only those 227 students were included, of whom we had complete data. All students within strata who were willing to participate were included to eliminate selection bias.

All the participants filled out a validated Toronto Alexithymia Scale (TAS-20)-based questionnaire to measure alexithymia. According to this scale, a score of 61-100 indicates the presence of alexithymia, 52-60 suggests possible alexithymia, and 0-51 suggests no alexithymia. Academic performance based on annual marks and attendance was assessed. A good academic performance was defined as an individual's measurable and quantifiable achievement in an educational setting, typically assessed through annual marks ≥70% and attendance ≥ 75%.

A sample size of 227 was arrived at using the sample size calculator OpenEpi Software. A prevalence of 49% was used from a previous study conducted in Saudi Arabia. Samples were collected via stratified sampling, which is a probability technique. 44 students from 1st year, 46 from 2nd year, 47 from 3rd year, 45 from 4th year, and 45 from final year participated in this study.

The statistical analysis for our study was carried out using SPSS software version 22 for Windows. Data were expressed in terms of frequency and percentages. Multivariate regression analysis and chi-square tests were performed to assess the association between alexithymia and academic performance. A P value of less than 0.05 was considered to show significant effect for chi square test and less than 1 shows significant association of multiple regression analysis.

Results

A total of 227 Medical students participated, with a mean age of 21.46 years. Of the respondents, 108 (47.5%) were male and 119 (52.4%) were female. Approximately 50 questionnaires were distributed to students in each academic year. A total of 227 questionnaires were completed. The breakdown of student participation by academic year is presented in Table 1. According to the scoring guidelines of Toronto Alexithymia Scale (TAS-20), a score of 0-51 indicates no alexithymia, a score of 52-60 suggests possible alexithymia, and a score of 61-100 confirms the presence of alexithymia.

PREVALENCE OF ALEXITHYMIA:

Our analysis showed that approximately 122 out of 233 (52.4%) fell into the category where alexithymia was present. This indicates that more than half of the participants experience difficulty in identifying and expressing emotions, a key feature of alexithymia.

Additionally, 59 students (25.9%) scored in the range for possible alexithymia, indicating that they may exhibit some characteristics of the condition, though not to the same extent. Meanwhile, 46 students (20.3%) scored in the no alexithymia range, reflecting a lack of significant alexithymic traits.

Breaking this down by gender, we found that 70 of the 122 students (57.3%) were female, while 52 (42.6%) were male, suggesting that alexithymia is more prevalent among female students. The details are given in Table 2.

In our study, Alexithymia level across different academic years shows highest prevalence among first year medical students (Table 3), potentially reflecting the emotional challenges faced by students as they transition into medical school. Final-year students also showed a relatively high prevalence, which could be attributed to the stress and emotional strain associated with nearing graduation and clinical responsibilities. In contrast, second-year students had the lowest prevalence, possibly indicating better emotional adjustment after their first year. Notably, the prevalence was equal among third- and fourth-year students, suggesting a steady level of emotional difficulties as they progress through the clinical phases of their education.

PSYCHIATRIC CONSULTATION:

Most of the students reported that they had not consulted a psychiatrist for emotional difficulties. Again, a chi-square test was conducted, and no significant association was found, with a p-value of 0.137 as given in Table 4.

LEAVE FROM COLLEGE:

The majority of students responded negatively. A chi-square test was applied, and the results showed no significant association, with a p-value of 0.36 as given in Table 4.

These findings suggest that while alexithymia is present among the students, it does not appear to significantly affect their academic performance, psychiatric consultation, or the likelihood of taking leave from college due to emotional difficulties.

ACADEMIC PERFORMANCE:

The majority of students responded that these challenges had not impacted their studies. To assess any potential association between alexithymia and academic performance, a chi-square test was performed. The result was not statistically significant, with a p-value of 0.47 as mentioned in Table 4.

The multiple regression model demonstrated that "last year's attendance" and "how would you rate your overall academic performance in the past year" were significant predictors of the dependent variable, academic performance, with $p < 0.01$. Additionally, the adjusted R-squared value of 0.271 indicated that the model accounted for 27% of the variance in academic performance as shown in supplementary Table 1.

The correlation analysis between Academic performance and the listed variables shows weak but significant correlations with Only Q2 (IT IS DIFFICULT FOR ME TO FIND RIGHT WORDS FOR MY FEELINGS) and Q5 (= I PREFER TO ANALYZE PROBLEMS RATHER THAN JUST DESCRIBE THEM.), while Q22 (LAST YEAR ATTENDANCE,) (-0.436) and Q24 (HAVE YOU EVER TAKEN LEAVE FROM COLLEGE DUE TO YOUR EMOTIONAL DISTURBANCES?) (0.332) show moderate and highly significant correlations with A3 as shown in Table 5. (Supplementary file)

Table 1. Student participation by academic year

Year of MBBS	Male n (%)	Female n (%)	Total n (%)
1st Year MBBS	12 (5.2)	32 (14.1)	44 (19.3)
2nd Year MBBS	31 (13.6)	15 (6.6)	46 (20.3)
3rd Year MBBS	16 (7.1)	31 (13.6)	47 (20.7)
4th Year MBBS	21 (9.3)	24 (10.6)	45 (19.8)
Final Year MBBS	28 (12.3)	17 (7.5)	45 (19.8)

Table 2: Frequency of Alexithymia

	Male n (%)	Female n (%)	Total n (%)
No Alexithymia	29 (12.8)	17 (7.5)	46 (20.3)
Possible Alexithymia	27 (11.9)	32 (14.1)	59 (25.9)
Alexithymia Present	52 (22.9)	70 (30.8)	122 (53.7)

Table 3: Prevalence of Alexithymia across different Academic levels

Year of MBBS	No Alexithymia n (%)	Possible Alexithymia n (%)	Alexithymia Present n (%)	Total
1st Year	5 (11.3)	7 (15.91)	32 (72.72)	44
2nd Year	16 (34.78)	11 (23.91)	19 (41.03)	46
3rd Year	9 (19.15)	14 (29.79)	24 (51.06)	47
4th Year	8 (17.78)	14 (31.11)	23 (51.11)	45
Final Year	8 (17.78)	13 (28.8)	24 (53.33)	45

Table 4: Association of Alexithymia

Questions asked		No Alexithymia	Possible Alexithymia	Alexithymia Present	Total n (%)	p Value
Do you believe that your difficulty recognizing and expressing emotions have affected your academic performance?	Yes	21	15	52	88 (38.7)	0.47
	No	25	44	70	139 (61.2)	
Have you ever been to psychiatrist due to your emotional disturbance?	Yes	11	6	25	42 (18.5)	0.137
	No	35	53	96	184 (81.5)	
Have you ever taken leave from college due to your emotional disturbances?	Yes	14	8	37	59 (25.9)	0.36
	No	31	51	84	166 (73.1)	

Discussion

Alexithymia is a condition that is prevalent both in the general population and among individuals with mental health disorders. Medical students, in particular, face an increased risk of developing alexithymia due to the rigors demands of their coursework and clinical experiences (21).

The prevalence of alexithymia in our study is 52.4%. This study finding is in consistent with that conducted in Saudi Arabia, which showed a prevalence of 49% (10). However, a study conducted in Nepal and Tunisia among medical students showed a prevalence of 22.89% and 16.5% respectively which is much less than our study (2, 10, 21). A study conducted in Karachi Pakistan showed a prevalence of 64.7% while 15.9% were in the category of Possible alexithymia, however in this study 25.9% of the students scored in the range of possible alexithymia (22). Given the high rates of alexithymia, medical students should be mindful of its presence and potential impact on their personal lives, as it may affect their performance and ultimately shape their future careers as physicians.

In our study the prevalence of alexithymia is more in females (57.3%) which are consistent with the study findings among the King Khalid medical university students of Saudi Arabia which explains that may be females are more likely to develop emotional problems (23). While in Nepal there was not any statistically significant difference of alexithymia among gender (21).

Our study did not find any statistically significant relationship between alexithymia and academic performance as the regression model shows only 27% variance in academic performance; however, a study conducted among medical students in Karachi found a significant association between alexithymia and GPA scoring of students (22).

Table 5: Correlation Analysis between Alexithymia and Academic Performance.

	YOM	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25
A3	0.051	.253*	0.217	-0.094	.281*	0.046	0.082	-0.009	0.024	0.025	0.132	0.062	-0.132	0.093	-0.147	0.166	0.08	0.073	-0.089	0.147	-0.075	-.436**	-0.134	.332**	0.121	-0.014
YOM		-0.129	-.165*	-0.025	0.072	-0.077	-0.004	-0.05	.154*	0.054	-0.058	-0.039	0.031	0.012	0.034	0.064	0.058	-0.075	0.077	-0.014	-0.024	-0.002	-0.056	-.521**	-0.079	-.161*
Q1			.718**	.380**	-.231**	0.051	.380**	.361**	0.105	.372**	0.059	.322**	.208**	.300**	.173**	.230**	.154*	.333**	0.083	0.126	0.128	0.055	-0.125	-0.084	0.07	0.035
Q2				.396**	-.282**	.142*	.358**	.406**	.148*	.349**	.166*	.353**	.156*	.310**	.312**	.221**	0.099	.297**	0.111	0.097	.142*	-0.014	-.182**	0.033	0.002	-0.093
Q3					-.160*	0.114	.251**	.520**	.228**	.368**	-.177**	.283**	.290**	.248**	.136*	.163*	0.115	.236**	.206**	0.08	.159*	.139*	-.200**	-.368**	-0.129	-0.076
Q4						0.014	-.203**	-0.104	-0.009	-0.118	0.071	-0.114	-.143*	-0.108	-.170*	0.125	0.098	-0.03	0.011	.207**	-0.06	-0.11	0.049	0.085	-0.022	0.041
Q5							.199**	.238**	0.01	.142*	.312**	.153*	.223**	0.063	0.102	.135*	-0.003	0.096	.294**	.234**	.209**	0.122	-0.112	0.14	-0.008	-0.062
Q6								.464**	.145*	.404**	0.061	.345**	.360**	.397**	.384**	.186**	0.107	.175**	.171**	-0.013	.263**	0.071	-.136*	-0.065	0	-.230**
Q7									.246**	.522**	0.065	.371**	.360**	.356**	.251**	.248**	.141*	.287**	.227**	.181**	.321**	.175**	-.177**	-.297*	-0.116	-.227**
Q8										.367**	-0.081	.279**	.250**	.234**	.176**	0.122	.198**	.226**	0.088	0.054	0.107	.149*	0.051	-0.176	-0.095	-0.02
Q9											.139*	.325**	.266**	.349**	.290**	.238**	.140*	.217**	.228**	.162*	.271**	0.096	-0.037	-0.227	-0.028	-.144*
Q10												.157*	-0.069	.171**	.142*	.168*	-0.032	0.056	0.055	0.123	0.048	-0.052	-0.046	.262*	0.03	-.143*
Q11													.341**	.323**	.242**	.269**	.226**	.312**	.225**	0.021	.192**	0.095	-.162*	-0.233	-0.127	-.185**
Q12														.340**	.197**	0.118	.356**	.265**	.279**	0.01	.189**	.189**	-0.04	-.433**	-0.007	-0.059
Q13															.446**	.315**	.266**	.350**	.223**	0.073	.348**	0.021	0.03	-.242*	-0.063	-0.082
Q14																.171**	0.084	.198**	0.124	-0.103	.228**	0.082	-.209**	-0.166	-0.097	-.210**
Q15																	.209**	.230**	0.102	.242**	.212**	0.002	0.042	-0.191	0.085	0.066
Q16																		.248**	.188**	.177**	.211**	0.035	0.104	-.397**	0.067	-0.021
Q17																			.212**	.190**	0.05	0.127	-0.017	-0.124	0.077	0.007
Q18																				.385**	.345**	0.068	0.085	-0.144	0.058	0.029
Q19																					.251**	-0.044	0.041	0.048	0.074	0.018
Q20																						.212**	-0.005	-0.106	-0.027	-0.106
Q21																							-.131*	-.372**	-0.022	-0.105
Q22																								0.338**	.252*	0.16
Q23																										.373**

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

A3= LAST YEAR PERCENTAGE, YOM=YEAR OF MBBS, Q1= I'M OFTEN CONFUSED ABOUT WHAT EMOTION I'M FEELING.Q2=IT IS DIFFICULT FOR ME TO FIND RIGHT WORDS FOR MY FEELINGS. Q3=I HAVE PHYSICAL SENSATIONS THAT EVEN DOCTORS DONT UNDERSTAND.Q4=IM UNABLE TO DESCRIBE MY FEELINGS EASILY. Q5= I PREFER TO ANALYZE PROBLEMS RATHER THAN JUST DESCRIBE THEM. Q6=WHEN IM UPSET, I DONT KNOW IF IM SAD, FRIGHTENED OR ANGRY. Q7= IM OFTEN PUZZELED BY SENSATIONS IN MY BODY. Q8=I PREFER TO JUST LET THINGS HAPPEN RATHER THAN TO UNDERSTAND WHY THEY TURNED OUT THAT WAY. Q9= I HAVE FEELINGS THAT I CAN'T QUITE IDENTIFY.Q10=BEING IN TOUCH WITH EMOTIONS IS NECESSARY, Q11=I FIND IT HARD TO DESCRIBE MY FEELINGS MORE. Q12=PEOPLE TELL ME TO DESCRIBE MY FEELINGS MORE, Q13=I DONT KNOW WHAT'S GOING ON INSIDE ME., Q14= I OFTEN DON'T KNOW WHY I'M ANGRY. Q15=I PREFER TALKING PEOPLE ABOUT THEIR DAILY ACTIVITIES RATHER THAN THEIR FEELINGS, Q16= I PREFER TO WATCH LIGHT ENTERTAINMENT SHOWS RATHER THAN PSYCHOLOGICAL DRAMAS., Q17=IT IS DIFFICULT FOR ME TO REVEAL MY INNERMOST FEELINGS ' EVEN TO CLOSE FRIENDS., Q18= I CAN FEEL CLOSE TO SOMEONE , EVEN IN MOMENTS OF SILENCE., Q19=I FIND EXAMINATION OF MY FEELINGS USEFUL IN SOLVING PERSONAL PROBLEMS., Q20= LOOKING FOR HIDDEN MEANINGS IN MOVIES OR PLAYS DISTRACTS FROM MY ENJOYMENT. Q21= HOW WOULD YOU RATE YOUR OVERALL ACEDAMIC PERFORMANCE IN THE PAST YEAR.Q22 = LAST YEAR ATTENDACE, Q23= HAVE YOU EVER BEEN TO PSYCHIATRIST DUE TO YOUR EMOTIONAL DISTURBANCES? Q 24: HAVE YOU EVER TAKEN LEAVE FROM COLLEGE DUE TO YOUR EMOTIONAL DISTURBANCES?

In our study Alexithymia level across different academic years shows highest prevalence among first year medical students, potentially reflecting the emotional challenges faced by students as they transitioninto medical school. Final-year students also showed a relatively high prevalence, which could be attributed to the stress and emotional strain associated with nearing graduation and clinical responsibilities. In contrast, second-year students had the lowest prevalence, possibly indicating better emotional adjustment after their first year. Notably, the prevalence was equal among third- and fourth-year students, suggesting a steady level of emotional difficulties as they progress through the clinical phases of their education. These results are in contrast to another study in which higher levels of alexithymia were observed among medical students in their third and fourth years, which marks the beginning of their clerkship when they start interacting with real patients, witnessing patient suffering, and managing an increased academic workload(22).

In this study, nearly 25.9% of participants showed signs of potential alexithymia, highlighting the need for ongoing evaluation to monitor whether their scores improve or worsen over time. Some individuals may benefit from self-help strategies. Future research should explore the influence of cultural practices and beliefs on depressive symptoms and alexithymia, particularly in vulnerable groups such as students, children, mothers, and the elderly.

Due to the limited sample size and single-centered study, the results could not be generalized over the whole population.

Conclusion

In conclusion, 52.4% of the medical students in this study exhibited alexithymic traits, with a higher prevalence among females. However, chi square showed no significant relationship between alexithymia and academic performance, psychiatric consultation, or taking leave from college. Multiple regression model showed moderate relationship between alexithymia and academic performance. This suggests that while alexithymia is common, it does not appear to notably affect these aspects of students' lives in this sample.

Declarations

Data Availability statement

All data generated or analysed during the study are included in the manuscript.

Ethics approval and consent to participate

Approved by the department concerned. (IRBEC-MMNCS-0331d-24)

Consent for publication

Approved

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Conflict of interest

The authors declared the absence of a conflict of interest.

Author Contribution

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References

1. Bratis D, Tselebis A, Sikaras C, Moulou A, Giotakis K, Zoumakis E, et al. Alexithymia and its association with burnout, depression and family support among Greek nursing staff. Human resources for health. 2009;7:1-6.
2. Messedi N, Feki I, Saguem B, Masmoudi R, Masmoudi J. Alexithymia and coping strategies among medical students. European Psychiatry. 2017;41(S1):S695-S.
3. Martínez-Sánchez F, Ato-García M, Ortiz-Soria B. Alexithymia—state or trait? The Spanish journal of psychology. 2003;6(1):51-9.
4. Hamaideh SH. Alexithymia among Jordanian university students: Its prevalence and correlates with depression, anxiety, stress, and demographics. Perspectives in psychiatric care. 2018;54(2).
5. McGillivray L, Becerra R, Harms C. Prevalence and demographic correlates of alexithymia: A comparison between Australian psychiatric and community samples. Journal of clinical psychology. 2017;73(1):76-87.
6. Jc N. Alexithymia: A view of the psychosomatic process. Modern trends in psychosoamtic medicine. 1976;3:430-9.
7. Schmitz MJ. Alexithymia, self-care, and satisfaction with life in college students: University of Missouri-Columbia; 1999.
8. Scimeca G, Bruno A, Crucitti M, Conti C, Quattrone D, Pandolfo G, et al. Abnormal illness behavior and Internet addiction severity: The role of disease conviction, irritability, and alexithymia. Journal of behavioral addictions. 2016;6(1):92-7.
9. Li L, Niu Z, Griffiths MD, Wang W, Chang C, Mei S. A network perspective on the relationship between gaming disorder, depression, alexithymia, boredom, and loneliness among a sample of Chinese university students. Technology in Society. 2021;67:101740.
10. Alzahrani SH, Coumaravelou S, Mahmoud I, Beshawri J, Algethami M. Prevalence of alexithymia and associated factors among medical students at King Abdulaziz University: a cross-sectional study. Annals of Saudi medicine. 2020;40(1):55-62.
11. Ng CS, Chan VC. Prevalence and associated factors of alexithymia among Chinese adolescents in Hong Kong. Psychiatry Research. 2020;290:113126.
12. Aryan H, Faridhosseini F, Gharavi M, Tamiztousi T, Ziaee M. Prevalence of Generalized Anxiety Disorder, Alexithymia, and Defense Mechanisms Among Medical Students of Northeastern Iran in 2020. Iranian Journal of Psychiatry and Behavioral Sciences. 2023;17(1).
13. Balaban H, Semiz M, Şentürk İA, Kavakçı Ö, Cınar Z, Dikici A, et al. Migraine prevalence, alexithymia, and post-traumatic stress disorder among medical students in Turkey. The journal of headache and pain. 2012;13:459-67.
14. Katsifaraki M, Tucker P. Alexithymia and burnout in nursing students. Journal of Nursing Education. 2013;52(11):627-33.
15. Lală A, Bobîrnac G, Tipa R. Stress levels, alexithymia, type A and type C personality patterns in undergraduate students. Journal of medicine and life. 2010;3(2):200.
16. Mason O, Tyson M, Jones C, Potts S. Alexithymia: its prevalence and correlates in a British undergraduate sample. Psychology and Psychotherapy: Theory, Research and Practice. 2005;78(1):113-25.
17. Scimeca G, Bruno A, Cava L, Pandolfo G, Muscatello MRA, Zoccali R. The relationship between alexithymia, anxiety, depression, and internet addiction severity in a sample of Italian high school students. The Scientific World Journal. 2014;2014(1):504376.
18. Khan N. Prevalence of alexithymia in the general adult population of Quetta, Balochistan in Pakistan. Cloning Transgenes. 2017;6:2.
19. Nadeem K, Tehreem IZ, Ahmad N, Masood R, Shafique MS, Rafi A. Alexithymia and its association with smartphone addiction and physical activity in

university students of Islamabad. Pakistan Journal of Medical & Health Sciences. 2022;16(10):619-.
20. Dubey A, Pandey R. Mental health problems in alexithymia: Role of positive and negative emotional experiences. Journal of Projective Psychology & Mental Health. 2013;20(2):128-36.
21. Karki S, Shrestha O, Thapa N, Gupta S, Chaudhary A, Yadav A, et al. Prevalence of alexithymia among medical students in Nepal: A cross-sectional study based on a self-administered questionnaire. Health Science Reports. 2023;6(5):e1262.
22. Aftab M, Ahmed RA, Tirath K, Jawad A, Saleem R. Prevalence of Alexithymia and Depression in Medical Students Necessitate Attention. Journal of Psychiatry and Psychiatric Disorders. 2023;7:191-200.
23. Aleisa MA, Abdullah NS, Alqahtani AAA, Aleisa JAJ, Algethami MR, Alshahrani NZ, editors. Association between alexithymia and depression among King Khalid University Medical students: An analytical cross-sectional study. Healthcare; 2022: MDPI.