Prevalence and associated factors of alexithymia among medical students: A cross-sectional study from Saudi Arabia

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ABSTRACT

الأهداف: تحديد مدى انتشار اللامفرداتية الوجدانية والعوامل المرتبطة بها بين طلبة الطب في جامعة الملك سعود، الرياض، المملكة العربية السعودية.

المنهجية: باستخدام استبيان إلكتروني، اُجريت دراسة مقطعية في جامعة الملك سعود وشملت عينة الدراسة 420 من طلبة الطب من جميع السنوات (السنة الأولى إلى الخامسة). وتم توزيع الاستبيان خلال شهر أغسطس سنة 2021. ويتألف الاستبيان من أسئلة اجتماعية – ديمغرافية ومقياس تورنتو لالكسيثيميا.

النتائج: بناءً على نتائج الدراسة، وُجد أن مستوى انتشار اللامفرداتية الوجدانية هو%26.9 بين المشاركين. ودلت النتائج على وجود ارتباط بين اللامفرداتية الوجدانية والجنس ذو دلالة إحصائية (*p*=0.013). كما دلت النتائج على أن التشخيص بأي حالة نفسية أو مرض نفسي (*p*=0.026) والتعرض إلى إساءة المعاملة أثناء الطفولة (*p*=0.006) وعدم ممارسة النشاط البدني مرتبطين باللامفرداتية الوجدانية.

الخلاصة: مستوى انتشار اللامفرداتية الوجدانية بين طلبة الطب في جامعة الملك سعود أعلى بكثير مقارنةً بما وجد بالعامة في الدراسات السابقة. وأشارت نتائج الدراسة إلى أن الإناث والمعاناة من مرض نفسي والتعرض إلى إساءة المعاملة أثناء الطفولة وعدم ممارسة النشاط البدني عوامل ذات ارتباط باللامفرداتية الوجدانية. نوصي بزيادة التوعية عن اللامفرداتية الوجدانية والعوامل المرتبطة بها والكشف المبكر عنها بين طلبة الطب.

Objectives: To assess the prevalence of alexithymia and its associated factors among medical students at King Saud University (KSU), Riyadh, Kingdom of Saudi Arabia.

Methods: A cross-sectional study was conducted at KSU, including 420 medical students from all years of medical college (i.e., first to the fifth year), by using an electronic questionnaire distributed during August 2021. The questionnaire consisted of sociodemographic-related questions and the 20-item Toronto alexithymia scale (a validated scale in the literature).

Results: The prevalence of alexithymia among the participants was found to be 26.9%. A statistically significant association between alexithymia and gender (*p*=0.013) was found. A diagnosis with any psychiatric condition (*p*=0.026), history of abuse during childhood (*p*=0.006), and lack of physical activity were associated with alexithymia.

Conclusion: The prevalence of alexithymia among medical students at KSU was significantly higher than general population in literatures. It was indicated in the results that being female, having a psychiatric condition or history of childhood abuse, and lack of physical activity were all associated with alexithymia. We recommend increasing awareness of and screening for alexithymia and its associated factors among medical students.

As described in the literature, alexithymia is a multi-facet construct with difficulty in recognizing, describing, and distinguishing between emotions and bodily tensions related to emotional excitement and having difficulty expressing feelings for others.[1] The common signs of this construct include (a) trouble recognizing emotions and feelings, (b) difficulty recognizing vibes of passionate excitement, and (c) limitation in imagination and dreaming.[2] The

prevalence of alexithymia has been found in most previous studies to be approximately 10% among the general population.[2-6] However, the literature regarding gender association with alexithymia is conflicting. The prevalence of alexithymia was higher in males than in females in some studies.[2,7,8] However, the results were contrary in other studies,[1,3,9] and no significant differences were found in some.[4,10] Compared to the general population, the prevalence of alexithymia in medical students has been found to be higher.[1,11] Alexithymia is associated with several mental health conditions. For instance, it is associated with anxiety and depression,[1,12] eating disorders,[13-15] and addiction.[16] Of note, mental disorders could lead to emotional suppressiveness and reduced communication skills,[5,13] which could cause the inability to recognize having a problem.[11]

Alexithymia has also been associated with other factors. For instance, alexithymia is associated with childhood trauma.[17] The prevalence of alexithymia also appears to be affected by lifestyle, cultural beliefs, and socioeconomic status.[7] Single or isolated individuals, those who lack family support, and populations with low socioeconomic status all have a higher risk of developing alexithymia.[11,13] Face-to-face relationships and social, linguistic, and neuroscience exploration have been suggested in previous studies as possible treatments by which alexithymia might be improved.[2,16] Despite the significance of alexithymia, there are few studies regarding its prevalence and associated factors in Saudi Arabia. Therefore, we examined the prevalence of alexithymia among medical students and its related factors in this study. For this, we used a questionnaire and the 20-item Toronto alexithymia scale (TAS-20 scale). There are 3 factors (e.g., identifying the feeling, communicating feelings, and externally oriented thinking) and 20 stable and correlated items in the TAS-20 scale.[18]

Methods. *Literature search method.* PubMed, ResearchGate and GoogleScholar websites were searched to find relevant articles. The inclusion criterion were published articles from 2017 to 2022. Multiple keywords were used to identify articles including, but not limited to, alexithymia and medical students.

Study design and participants. This quantitative cross-sectional study was conducted at the College of Medicine, King Saud University (KSU), Riyadh, Saudi Arabia. The measure used consisted of an online questionnaire distributed during August 2021. The targeted population comprised medical students from the first to fifth (last) year in the College of Medicine. Students with any communication barriers were excluded from the study. Any missing data resulted in the elimination of participants. Participants were selected by a stratified sampling technique, in which we obtained the list of all the medical students at KSU and then divided them into 2 strata, according to their gender. The sample size was calculated based on the literature review, using the precision of 5% and proportion of 49%, an alpha (α) value of 0.05. The estimated sample size was 384. An additional 20% was taken for any non-respondents, totaling 461 students. After that, we randomly selected 300 students from the male strata and 161 from the female strata. The number of male students chosen was higher due to the higher proportion of individuals from this gender in the targeted population.

Data collection. An electronic questionnaire was distributed to the selected medical students during the research period. The questionnaire consisted of informed consent, sociodemographic questions, and TAS-20 scale questions.

The sociodemographic part of the questionnaire consisted of 13 questions. The following characteristics were assessed: age, gender, family income, smoking status, academic year, grade point average (GPA), marital status, marital status of parents, housing, childhood abuse, physical activity, history of mental illness, and living with parents during childhood.

The TAS-20 is a validated and commonly used scale for measuring alexithymia, consisting of 20 items rated from one to 5. On this scale, one indicates "strongly disagree," whereas 5 means "strongly agrees" on this scale. It consists of 3 critical sub-scales, which are "difficulty in identifying feelings," "difficulty in describing a feeling," and "externally oriented thinking".[13] Due to the COVID-19 pandemic, the questionnaires were distributed as an electronic soft-copy using Google Forms.

Variables. One dependent or outcome variable, the prevalence of alexithymia, was considered in this study. The sociodemographic variables considered in this research included age, gender, education, income, marital status, marital status of parents, housing, and smoking. Sociodemographic variables were considered to understand the associated factors of alexithymia. The

Table 1 - Distribution of demographic and clinical characteristics of study subjects (n=420).

Characteristics	n (%)
Age	
18-20	161(38.3)
21-23	243(57.9)
24-26	14(3.3)
26-28	2(0.5)
Gender	
Female	153(36.4)
Male	267(63.6)
Years	
First year	72(17.1)
Second year	88(21.0)
Third year	119(28.3)
Fourth year	78(18.6)
Fifth year	63(15.0)
Family income	
1,000-10,000	44(10.5)
11,000-20,000	94(22.4)
21,000-30,000	90(21.4)
Lower than 1,000	17(4.0)
More than 30,000	175(41.7)
Grade point average	
3.49–2	9(2.1)
4.49–3	127(30.2)
Above 4.5	283(67.4)
Below 2.5	1(0.2)
Marital status	
Divorced	2(0.5)
Married	2(0.5)
Single	416(99.0)
Parents marital status	
Divorced	17(4.0)
Married	382(91.0)
Widow	21(5.0)
Smoking status	
Ex-smoker	8(1.9)
Non-smoker	389(92.6)
Smoker	23(5.5)
Housing	
House	371(88.4)
Rented house	40(9.5)
Students' dormitory	9(2.1)
Clinical characteristics variables	**n (%)**
Have you lived most of your childhood with your parents?	
Yes	401(95.5)
No	19(4.5)
Have you ever experienced emotional, physical, or sexual abuse during childhood?	
Yes	111(26.4)
No	309(73.6)
Have you been diagnosed with any psychiatric condition?	
Yes	64(15.2)
No	356(84.8)
How often do you take part in physical training?	
More than three times a week	81(19.3)
Never	139(33.1)
Once a week	97(23.1)
Two to 3 times a week	103(24.5)

Table 2 - Prevalence of probable alexithymia.

Probable alexithymia	n (%)
Non-alexithymia	205(48.8)
Alexithymia	113(26.9)
Possible alexithymia	102(24.3)

independent variable considered in this research was medical students.

Ethical considerations. The study was approved by the Institutional Review Board (IRB) at the College of Medicine, KSU (approval number E-21–6156). All students in the study agreed to participate voluntarily, and their information was kept strictly confidential.

Data analysis. The data were computed and analyzed using the IBM statistical package for health sciences version 23 (IBM SPSS version 23).[19] Descriptive analysis and inferential statistics were applied. The results for categorical variables were reported as frequencies and percentages, while the results for continuous variables were reported as mean and standard deviation. An independent t-test (Student's t-test) was used to compare the mean values of the quantitative outcome variable. A chi-square test was used to assess the significance between the variables of the study.

Results. Four hundred and sixty-one (n=461) medical students attending KSU were approached, and 420 were eventually included in the study. The other 41 students (8.67%) were excluded due to fulfilling the exclusion criteria, being unwilling to participate, or being non-respondents. Of the excluded students, 13 were difficult to contact, and 28 did not respond or refused to participate in the study. Of the eligible participants, there was no missing data whatsoever.

The demographic and clinical characteristics of the participants are illustrated in **Table 1**. A total of 57.9% of the respondents (n=243) belonged to the age group of 21–23 years. Around 63.6% of the participants were male (n=267). Nearly 28.3% of respondents (n=119) belonged to the third year. Approximately 41.7% of the respondents (n=175) had more than 30,000 Saudi Riyals (SR) as monthly family income. The majority of respondents (n=283; 67.4%) had secured a GPA above 4.5. The majority of respondents (n=416; 99.0%) were single. Regarding parental marital status, most respondents (n=382; 91.0%) were married. Most respondents (n=389; 92.6%) were nonsmokers. Most of the respondents (n=371; 88.4%) owned the house where they lived. Most of the respondents (n=401; 95.5%) answered "yes" that they lived most of their childhood with their parents. Most respondents (n=309;

Table 3 - Association between alexithymia and socio-demographic characteristics of study subjects.

Demographics	Non-alexithymia	Alexithymia	Possible alexithymia	Chi-Square value	*P*-value
Age					
18-20	65 (31.7)	49 (43.4)	47 (46.1)		
21-23	130 (63.4)	63 (55.8)	50 (49.0)	12.329	
24-26	8 (3.9)	1 (0.9)	5 (4.9)		0.055
26-28	2 (1.0)	0 (0.0)	0 (0.0)		
Gender					
Female	65 (31.7)	54 (47.8)	34 (33.3)		0.013
Male	140 (68.3)	59 (52.2)	68 (66.7)	8.691	
Year					
First year	26 (12.7)	27 (23.9)	19 (18.6)		
Second year	42 (20.5)	24 (21.2)	22 (21.6)	14.109	
Third year	53 (25.9)	35 (30.9)	31 (30.4)		0.079
Fourth year	47 (22.9)	13 (11.5)	18 (17.6)		
Fifth year	37 (18.0)	14 (12.4)	12 (11.8)		
Family income					
1,000-10,000	13 (6.3)	16 (14.2)	15 (14.7)		
11,000-20,000	41 (20.0)	29 (25.7)	24 (23.5)		
21,000-30,000	48 (23.4)	18 (15.9)	24 (23.5)	14.642	0.066
Lower than 1,000	12 (5.9)	2 (1.8)	3 (2.9)		
More than 30,000	91 (44.4)	48 (42.5)	36 (35.3)		
Grade point average					
3.49–2	4 (2.0)	1 (0.9)	4 (3.9)		
4.49–3	69 (33.7)	29 (25.7)	29 (28.4)	6.097	
Above 4.5	131 (63.9)	83 (73.5)	69 (67.6)		0.066
Below 2.5	1 (0.5)	0 (0.0)	0 (0.0)		
Marital status					
Divorced	0 (0.0)	2 (1.8)	0 (0.0)		
Married	1 (0.5)	1 (0.9)	0 (0.0)	6.636	0.174
Single	204 (99.5)	110 (97.3)	102 (100.0)		
Parents marital status					
Divorced	8 (3.9)	6 (5.3)	3 (2.9)		
Married	188 (91.7)	102 (90.3)	92 (90.2)	1.742	0.786
Widow	9 (4.4)	5 (4.4)	7 (6.9)		
Smoking status					
Ex-smoker	5 (2.4)	3 (2.7)	0 (0.0)		
Non-smoker	191 (93.2)	102 (90.3)	96 (94.1)	3.686	0.450
Smoker	9 (4.4)	8 (7.1)	6 (5.9)		
House type					
House	185 (90.2)	99 (87.6)	87 (85.3)		
Rented house	16 (7.8)	12 (10.6)	12 (11.8)	6.047	0.749
Students' dormitory	4 (2.0)	2 (1.8)	3 (2.9)		
Have you lived most of your childhood with your parents?					
No	9 (4.4)	8 (7.1)	2 (2.0)		0.213
Yes	196 (95.6)	105 (92.9)	100 (98.8)	3.269	
Have you ever experienced emotional, physical, or sexual abuse during childhood?					
No	164 (80.0)	72 (63.7)	73 (71.6)		0.006
Yes	41 (20.0)	41 (36.3)	29 (28.4)	10.211	
Have you been diagnosed with any psychiatric condition?					
No	179 (87.3)	87 (77.0)	90 (88.2)		0.026
Yes	26 (12.7)	26 (23.0)	12 (11.8)	7.272	
How often do you take part in physical training?					
More than 3 times a week	40 (19.5)	16 (14.2)	25 (24.5)		
Never	56 (27.3)	49 (43.4)	34 (33.3)	12.707	
Once a week	51 (24.9)	27 (23.9)	19 (18.6)		0.048
Two to 3 times a week	58 (28.3)	21 (18.6)	24 (23.5)		

Table 4 - Comparison of mean values of Alexithymia items between male and female study subjects.

Items	Gender Male (n=267)	Gender Female (n=153)	T-test of mean difference		
	Mean±SD	Mean±SD	*P*-value	CI of 95%	T-value
Alexithymia	51.434±11.560	54.843±13.147	0.006	0.984 – 5.832	88.071
Describing feelings	13,58±3.777	13.74±3.873	0.690	0.605 – 0.914	73.405
Identifying feelings	18.80±5.473	18.95±4.891	0.775	0.897 – 1.203	73.431
Oriented thinking	20.206±4.981	20.13±4.636	0.879	0.893 – 1.043	85.281

73.6%) answered that they had never experienced emotional, physical, or sexual abuse during childhood. Most respondents (n=456; 84.8%) answered that they were not diagnosed with psychiatric conditions. Of the respondents, 139 (33.1%) never participated in any physical activity.

The alexithymia groups are described in **Table 2**. Among the respondents, 205 (48.8%) belonged to the non-alexithymia group. At the same time, 113 (26.9%) were from the alexithymia category, and 102 (24.3%) possibly had alexithymia.

The chi-square test of significance performed among the alexithymia groups, demographics, and clinical characteristics are shown in **Table 3**. It was found that among demographics, gender had a statistically significant association with alexithymia groups (*p*=0.013; chi-square=8.691). Among clinical characteristics, experienced emotional, physical, or sexual abuse during childhood, and individuals diagnosed with any psychiatric condition and never taking part in physical training were significantly associated with alexithymia groups (*p*<0.05).

The independent t-test (Student t-test) results used to analyze the statistical significance of the mean difference of alexithymia and gender (*p*=0.006; 95% confidence interval of 0.984–5.832) are demonstrated in **Table 4**. The dependent variable was influenced by gender.

Discussion. The study aimed to determine the prevalence of alexithymia and its associated factors among medical students at KSU. Alexithymia prevalence among medical students was around 26.9%, and those with possible alexithymia accounted for 24.3% of the sample. These figures are more than the (10%) prevalence found in the general population claimed by other previous studies.[2-6]

In previous studies conducted in the Middle East, a higher prevalence than the general population (10%) has also been found, including those conducted in Lebanon, Jordan, and Saudi Arabia (specifically in Jeddah city), with a prevalence of alexithymia of 20.8%,

24.6%, and 49%, respectively.[7,8,11] The results of these 3 particular studies could be due to cultural and social views and how the participants in these studies differ from other demographical areas, as noted in previous studies concerning how inhabitants from Arab nations may face difficulties identifying their feelings describing them.[8,16]

A higher prevalence than the general population has also been found in previous studies on medical students.[6,11,20] This could result from the stresses that medical students may face compared to other university students and the uncertainty of future employment. The high prevalence of alexithymia in our study sample could result from the participants being medical students and because of the culture to which they belong.

In our study, there were statistically significant gender associations that affect the prevalence of alexithymia in medical students, showing a higher prevalence in females than males, with respective means of 54.84 and 51.43 on the TAS-20 scale. Our finding is consistent with some previous studies, in which a higher prevalence in females was claimed.[3,8,9] Our results were also in conflict with other studies, in which it was claimed a higher male prevalence,[2,7,13] and those denying a significant difference.[4,10,11]

The results of our study indicate that having a psychiatric condition, currently or previously, is associated with noticeable difficulties in identifying emotions and describing them. This supports previous research that found similar results.[2,11,13,17] Still, it has been claimed in some other studies that alexithymia has a higher prevalence in males.[2,7,13] This also suggests that even though multiple studies have conflicting results in terms of gender associations, they agree that the psychiatric condition is highly correlated with alexithymia. Concerning abuse, including emotional, physical, or sexual, the results of our study indicated a significant association between having a history of abuse and alexithymia, which is consistent with the findings of another study conducted in Jeddah, Saudi Arabia.[11]

We noticed that individuals who never participated in any physical activities were more likely to suffer from

alexithymia and had higher TAS-20 scores than those who participated. This pattern has also been noted in previous studies.[6] The sedentary lifestyle and reduced social interaction—from lack of physical activity—could be contributing to this noticeably increased score in TAS-20.

Our study has its limitations. First, only one medical school was involved in this study, which could have affected the generalizability of the findings. Second, the design of the study, which was cross-sectional, prevented the observation of time-related changes in alexithymia. Therefore, further multicenter longitudinal studies based on larger samples are necessary. Third, the COVID-19 pandemic led us to gather the data electronically rather than in person, resulting in some non-respondents refusing to participate.

Conclusion/recommendations. The prevalence of alexithymia among medical students at KSU was significantly higher than what was previously reported in the general population in other studies. The average mean TAS-20 among female medical students was higher than in male students. Alexithymia rates were higher among those with a psychiatric condition and those who had experienced emotional, physical, or sexual abuse during childhood. Also, the rate was significantly higher among those who never participated in physical activities. Based on these results, we recommend increasing awareness of the risk factors of alexithymia among medical students. We also recommend attempting to stratify the samples according to the physical health of the participants.

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