

Correlation of depression, anxiety and stress symptoms with xerostomia symptoms among medical and dentistry students in pre-clinical and clinical phase

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ABSTRACT

Objective: to observe whether symptoms of depression, anxiety and stress correlates with symptoms of xerostomia among medical and dentistry students.

Material and Methods: this was a cross-sectional study involving 772 medical and dentistry students in pre-clinical and clinical phase of Hasanuddin University, Makassar, Indonesia in January 2022. Chi-square test and Spearman correlation analysis performed on the data that were obtained online via Google Form. DASS 21 questionnaire was used to identify symptoms of depression, anxiety and stress. Fox' questionnaire was used to identify symptoms of xerostomia.

Results: There were mild but significant correlations between occurrence of depression ($r=0.100$; $p=0.006$), anxiety ($r=0.118$;

$p=0.001$), and stress ($r=0.096$; $p=0.008$) symptoms with symptoms of xerostomia among medical and dentistry students. Xerostomia symptoms was significantly higher ($p<0.05$) among dentistry students compared with medical students in both pre-clinical (64.9% vs 44.8%) and clinical (40.4% vs 27.7%) phase. In both pre-clinical and clinical phase, occurrence of depression and anxiety symptoms among medical students were not significantly different from dentistry students ($p<0.05$). Moderate to severe stress tend to occur more among dentistry students ($p<0.05$).

Conclusion: Symptoms of depression, anxiety and stress correlates with symptoms of xerostomia among medical and dentistry students.

Keywords: Anxiety, Depression, Stress, Xerostomia

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Introduction

Mental and physical health are integral part of human wellbeing. Mental health disturbances have been observed among medical and dentistry students in developed as well as developing countries.¹⁻⁴ Depression, anxiety and stress have been implicated with oral health disturbances, such as xerostomia.^{5,6} Xerostomia has been known to poses some risks to gingivitis in young adults.^{4,7,8} This study was conducted to investigate whether symptoms of depression, anxiety and stress correlates with symptoms of xerostomia among young adults attending medical and dentistry school.

Materials and Methods

This study was of cross-sectional design and conducted at Hasanuddin University, Makassar, Indonesia in January 2022. Subjects were recruited from third-year pre-clinical and clinical study programs at both medical and dentistry school. Students consuming long-term medications were excluded because xerostomia mostly happen due to adverse effect of medications.⁹

From 1468 recruited, 772 of them (52.6%) completed the questionnaires via Google Form. Of the

772 subjects, 289 were in pre-clinical phase and 483 were in clinical phase. Of those 289, medical students were 252 subjects and dentistry students were 37. Among 489 clinical students, 327 of them were medical and 156 were dentistry students. All subjects were treated ethically in accordance with Helsinki Declaration.

The questionnaire consists of Depression, Anxiety and Stress 21 (DASS 21) items and Fox' questionnaire items. DASS 21 questions were used to evaluate symptoms of depression (7 questions), anxiety (7 questions) and stress (7 questions). For each question, the subject answers in semi-quantitative scale from 0-3 with 0 means "never or did not apply to me at all", 1 means "some of the times or apply to me to some degree", 2 means "many of the times or apply to me to considerable degree", and 3 means "most of the time or apply to me very much".¹⁰ Severity of depression, anxiety and stress were classified according to Table 1.

Fox' questionnaire was used to evaluate symptoms of xerostomia. There were 5 questions with yes-or-no answer as presented in Table 2. If the subject answers yes in at least one of those 5 questions, they are considered to have xerostomia

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Table 1. Scoring of DASS 21 questionnaire

Severity	Depression	Anxiety	Stress
Mild	0-6	0-5	0-9
Moderate	7-10	6-7	10-12
Severe	>11	>8	>13

Table 2. Fox's questionnaire items

1	Do you often feel that your mouth is dry?
2	Do you feel that your mouth is dry when eating?
3	Do you feel difficult to swallow food?
4	Do you need to sip water to help you swallow?
5	Does your saliva in your mouth feel too little?

Table 3. Correlation of depression, anxiety and stress symptoms with xerostomia symptoms

Variables	Xerostomia (r)	p-value
Depression	0.100	0.006*
Anxiety	0.118	0.001*
Stress	0.096	0.008*

Legend: Spearman correlation; *significance with $p < 0.01$

symptoms

Results

Symptoms of depression, anxiety and stress were each positively and significantly correlated with xerostomia, as shown in Table 3. Depression was 10.0% correlated with xerostomia ($p=0.006$) while anxiety was 11.8% correlated with xerostomia ($p=0.001$) and stress was 9.6% correlated with xerostomia ($p=0.008$).

Xerostomia symptoms were observed among both medical and dentistry students which are detailed in Table 4. Xerostomia was significantly higher among dentistry students when compared with medical students. At pre-clinical phase, 64.9% dentistry students reported at least one symptom of xerostomia while only 44.8% medical students reported similar conditions ($p=0.023$). Similar result observed in clinical students where 40.4% dentistry students reported at least one symptom of xerostomia while only 27.7% medical students reported presence of at least one xerostomia symptoms ($p=0.006$).

Depression, symptoms among medical and

Table 4. Comparison of xerostomia symptoms between medical and dentistry students

Severity	Pre-clinical n (%)		p-value	Clinical n (%)		p-value
	Medical	Dentistry		Medical	Dentistry	
No xerostomia	139 (55.2)	13 (35.1)		236 (72.2)	93 (59.6)	
Xerostomia	113 (44.8)	24 (64.9)	0.023*	91 (27.8)	63 (40.4)	0.006*
Total	252 (100)	37 (100)		327 (100)	156 (100)	

Legend: χ^2 - Chi square; *significance with $p < 0.01$

Table 5. Comparison of depression, anxiety and stress level in pre-clinical phase between medical and dentistry students

Variables	Severity	Pre-clinical n (%)		p-value
		Medical	Dentistry	
Depression	Mild	167 (66.3)	31 (83.8)	0.074
	Moderate	71 (28.2)	4 (10.8)	
	Severe	14 (5.6)	2 (5.4)	
Anxiety	Mild	154 (61.1)	21 (56.8)	0.144
	Moderate	56 (22.2)	13 (35.1)	
	Severe	42 (16.7)	3 (8.1)	
Stress	Mild	139 (55.2)	17 (45.9)	0.000*
	Moderate	28 (11.1)	15 (40.5)	
	Severe	85 (33.7)	5 (13.5)	
Total		252 (100)	37 (100)	

Legend: χ^2 - Chi square; *significance with $p < 0.01$

dentistry students was common. Among medical students, mild depression symptoms were reported in 70.8% students and 78.2% among dentistry students. Moderate depression symptoms were 23.1% among medical students and 15.0% among dentistry students. Severe depression symptoms were 6.0% among medical students & 6.7% among dentistry students.

Anxiety symptoms among medical and dentistry students was also common. For medical students, mild anxiety symptoms were reported in 68.2% students and 72.0% among dentistry students. Moderate anxiety symptoms were 18.1% among medical students and 16.1% among dentistry students. Severe depression symptoms were 13.6% among medical students & 11.9% among dentistry students.

For depression and anxiety symptoms, we observed a trend where the more severe the symptom, the lesser percentage of student whom have the symptom. We found no significant difference

Table 6. Comparison of depression, anxiety and stress level in clinical phase between medical and dentistry students

Variables	Severity	Clinical phase n(%)		p-value
		Medical	Dentistry	
Depression	Mild	243 (74.3)	120 (76.9)	0.681
	Moderate	63 (19.3)	25 (16.0)	
	Severe	21 (6.4)	11 (7.1)	
Anxiety	Mild	241 (73.7)	118 (75.6)	0.560
	Moderate	49 (15.0)	18 (11.5)	
	Severe	37 (11.3)	20 (12.8)	
Stress	Mild	225 (68.6)	100 (64.1)	0.008*
	Moderate	16 (4.9)	20 (12.8)	
	Severe	86 (26.3)	36 (23.1)	
11 total		327 (100)	156 (100)	

Legend: Chi square; * significance with $p < 0.01$

Table 7. Percentage of depression, anxiety and stress level between medical and dentistry students in both pre-clinical and clinical phase

Severity	Depression (%)		Anxiety (%)		Stress (%)	
	Medical	Dentistry	Medical	Dentistry	Medical	Dentistry
Mild	70.8	78.2	68.2	72.0	62.9	60.6
Moderate	23.1	15.0	18.1	16.1	7.6	18.1
Severe	6.0	6.7	13.6	11.9	29.5	21.2

In this study, we observed that depression, anxiety and stress symptoms have some contributions to xerostomia symptoms among medical and dentistry students. This finding was in accordance with Gholami et al. whom observed higher occurrence of xerostomia among patients with stress, anxiety and depression.¹¹

Our data showed higher occurrence of xerostomia symptoms among dentistry students compared to medical students in pre-clinical and also clinical phase. This can be attributed to higher risk of depression and anxiety among dentistry students compared to medical students.² Other studies investigating xerostomia among dentistry students also found that majority of their student have some form of xerostomia.^{1,6}

We also observed that medical and dentistry students have similar pattern of depression and anxiety where the severe symptoms only reported by the smallest percentage of students. Knipe et al also compared among medical and dentistry students but found that dentistry students have higher depression and anxiety risk.¹ This study also found that percentage of moderate to severe stress symptoms was higher among dentistry students

between medical and dentistry student regarding occurrence of depression ($p=0.681$) and anxiety ($p=0.560$).

However, that trend does not apply to stress symptoms. There were 62.9% medical students and 60.6% dentistry students reported having mild stress symptoms. Moderate stress symptoms were reported by only 7.6% medical students and 18.1% dentistry students. What striking was that there were 29.5% medical students and 21.1% dentistry students whom reported having severe stress level. This interesting pattern showed that moderate level of stress tended to occur among dentistry students while mild and severe stress symptoms tend to occur more among medical students ($p < 0.05$). Table 5 - Table 7 summarize these findings.

Discussion

compared to medical students. Gholamreza et al found similar result which showed dentistry students have the highest risk of stress compared to medical and pharmacy students.¹²

There are also some limitations in our study where data was obtained from singular timeframe and highly specific population. However, our findings corroborate previous studies which aligned physical problems with psychological disturbances.

Conclusion

Symptoms of depression, anxiety and stress have positive correlation with symptoms of xerostomia. Depression, anxiety, stress and xerostomia may occur among medical and dentistry students with varying pattern of occurrence according to their academic phase.

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Conflict of Interest

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The authors declare no conflict of interest.

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