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The Prevalence and Co-Occurrence of Depresion, Anxiety and Attention Deficit Hyperactrivity Disorder Among Medical Students in a Tertiary Institution- A Cross Sectional Study

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Abstract:

- ***Background:***

One of the key areas in the 2030 agenda for sustainable development is universal good health and wellbeing. This objective encompasses beyond universal health coverage, access to effective, quality and affordable medical care across all health priorities which include communicable and non-communicable illnesses. Over the past decade there has been mounting concern over the increase of mental health challenges globally indiscriminately. In comparison to the general population, medical students, who are tasked to help meet this SDG, exhibit significantly higher rates of mental health difficulties with depression and anxiety being the most common. Numerous studies have also been conducted to explore the prevalence of Attention Deficit Hyperactivity Disorder (ADHD) among medical students whose outcomes have equally been alarming.

- ***Objectives:***

The broad objective of this study was to investigate the association between depression, anxiety, and ADHD among medical students at the University of Nairobi.

- ***Methodology:***

Quantitative cross-sectional study design was conducted. Yamane's formula was used to determine the stratified cluster sampling method inclusive of all undergraduate academic years in the study of medicine.Systematic sampling was used to recruit eligible study participants who were informed through their respective class representatives totaling the desired sample of 335. The study objective and ethical considerations were explained. After consenting, a link to an online questionnaire incorporating socio-demographic questionnaire, PHQ 9, GAD 7 and the ASRS v1.1 was shared to them, to assess them for depression, anxiety, and ADHD.

- ***Data Collection & Analysis:***

Data was collected through Kobo Collect online questionnaire and analyzed through Stata v14.2.

- ***Results:***

335 respondents were recruited into the study with 51.64% being females and 162 48.35% males. Those aged 18-22 comprised majority of the participants at 62.99%, followed by 23-26 years at 27.76%, 27-30 years 8.06% and above 30 years <2%. Presence and severity of ADHD, assessed using the WHO ASRS v1.1. With the screener, the prevalence of ADHD was 32.54%. Presence and severity of depression were assessed using the PhQ-9. 54% of the participants reported some form of depression ranging from moderate to severe levels. In addition, presence and severity of anxiety were assessed using the GAD-7. Participants who reported moderate to severe symptoms of anxiety were 43% of the total sample. Ordinal logistic regression showed that students who exhibit ADHD symptoms are 9.28 times significantly more likely to develop anxiety compared to those who don't, p = 0.000; and 8.63 times significantly more likely to develop depression severity, p= 0. 000.

- ***Conclusion and Recommendations:***

The prevalence rates reported are significantly higher than those in other similar studies across the world. Consequently pushing the agenda on attempting to understand risk factors towards the development of depression and anxiety as well as adult ADHD within the college of Health Sciences.

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Keywords: *ADHD, Depression, Anxiety, Medical Students.*

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I. INTRODUCTION

One of the key areas in the 2030 agenda for sustainable development is universal good health and wellbeing. This objective encompasses beyond universal health coverage, access to effective, quality and affordable medical care across all health priorities which include communicable and non-communicable illnesses. Over the past decade there has been mounting concern over the increase of mental health challenges globally indiscriminately. In comparison to the general population, medical students, who are tasked to help meet this SDG, exhibit significantly higher rates of mental health difficulties with depression and anxiety being the most common (OY Mousa, 2016) (LN Dyrbye, 2006) (SJ Halperin, 2021). The prevalence of depression globally among medical students is 27.7% (Rotenstein LS, 2016) while anxiety stands at 33.8% (Quek TT, 2019). With the global prevalence of Attention Deficit Hyperactivity Disorder (ADHD) among medical students yet to be pooled the recorded prevalence among university students stands at an alarming 2.8% and 12.3%, and a sub-threshold of symptom patterns in 22.8% of cases (Meng Shi, 2018). The numerous studies conducted to explore the prevalence of Attention Deficit Hyperactivity Disorder (ADHD) among medical students have been a cause of concern.

ADHD arise wholly as a result of a reduction in executive control (Martínez L, 2016) in turn resulting in the development of functional difficulties (B. Franke, 2018) as changes occur at each stage of life with the changes in environmental demands placed on the individual (M. Uchida, 2017). While undergoing medical training, significant tasks are demanded on the students' executive function which has been highlighted as a core deficit in ADHD (Sharma A, 2014). Many studies examining the prevalence of ADHD among medical students do not explore the psychosocial difficulties associated to this disorder. Therefore linking the common mental health conditions facing medical students to ADHD, this study seeks to investigate the relationship between depression, anxiety and ADHD.

II. METHOD

- *Study Design*

This was an online cross-sectional study was conducted from 3 to 22 October 2022 at the University of Nairobi, Kenya College of Health Sciences. Yamane's formula was used to determine the stratified cluster sampling method inclusive of all undergraduate academic years in the study of medicine. This technique allowed for equal participation in the study through random selection from a sampling frame determined by class representatives.

- *Study Population*

Students aged 18 years and above- within the sampling frame- pursuing bachelors in medicine at university and were willing to participate were informed about the study by their respective representatives. Students pursuing other health care specializations including pharmacy, nursing, and dental medicine were excluded.

- *Data Collection and Study Procedure*

The potential subjects were informed through their class representatives about the study. Those interested allowed for their phone numbers or email addresses to be shared with the researcher. A link with the consenting document was shared to them whereby those who clicked they wished to participate and signed the online consent form proceeded to the online questionnaire on Kobo Collect v2021.2.4. This contained the socio-demographic questionnaire, PRIME-MD PHQ 9 (Kroenke, 1999), GAD 7 (Spitzer, 2006) and the 18-item WHO-ASRS v1.1 (Kessler, 2005) to assess for depression, anxiety and ADHD respectively. Only those who presented with positive scores and opted for a call back were contacted. They were taken through the implications of the scores as well as the processes to get further assistance.

- *Definitions*

The cut off points for PHQ-9 and GAD 7 are as follows: 0-4 mild, 5-9 mild, 10-14 moderate symptom pattern, 15-19 moderately severe, and 10-27 severe.

The ASRSv1.1 filter is based on six questions included in Part A of the questionnaire, with four or more questions marked "often/very often." Part B provides further guidance regarding participant symptoms. However, for a clearer picture of ADHD DSM V criterion, the researcher opted to utilize the complete ASRS v1.1 symptom checklist. Two subscales were generated from ASRS V1.1.

The first subscale requires positivity for at least 6 inattention symptoms (questions 1–4 and 7–11 on the ASRS checklist). For the second subscale, at least six hyperactivity/impulsivity symptoms (questions 5, 6, and 12–18 on the ASRS checklist) were required to be positive.

All data was entered through Kobo Collect, cleaned to eliminate errors and inconsistencies in responses. Statistical analysis of data was performed using Stata v14.2. Quantitative data were analyzed using descriptive and inferential statistics. Bivariate and multivariate analyzes were used to determine associations between the examined variables ($p = <0.005$).

- *Ethical Considerations*

This study was approved by the KNH-UoN Ethics and Research Committee (NACOSTI) and the relevant university

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departments. . Codes were applied to protect participant confidentiality.

III. RESULTS

➢ *Sociodemographic Characteristics of the Subjects*

The expected sample was 333, however, a total of 335 students took part in this exercise. Table 1 summarized the descriptive findings.

Table 1 Sociodemographic Characteristics

Gender	**Freq**	**%**
Female	173	51.6
Male	162	48.4
Age	freq	%
18-22 years	211	63
23 -26 years	93	27.8
27-30years	27	8.1
30-35years	2	0.6
Above 35years	2	0.6
Home Residence	freq	%
Rural	125	37.3
Sub-urban	86	25.7
Urban	124	37
How would you rate your academic perfomance?	freq	%
Average	150	44.8
Fair	82	24.5
Good	103	30.7
How satisfied are you with the academic program you are pursuing?	freq	%
Average	200	59.7
High satisfaction	93	27.8
Low satisfaction	42	12.5
How satisfied are you with your quality of life in general?	freq	%
Average	168	50.1
High satisfaction	64	19.1
Low satisfaction	103	30.7
Do you undergo any mental health difficulties?	freq	%
No	117	34.9
Yes	218	65.1
How often do you have negative feelings such as low moods, despair, worries	freq	%
Never	10	3
Often	190	56.7
Rarely	135	40.3

➢ *Prevalence of ADHD*

With the WHO ASRSv1.1 screener, the prevalence of ADHD was 32.54% as portrayed in table 2 below.

Table 2 Prevalence of ADHD

ADHD	**Freq.**	**Percent**
No ADHD signs	226	67.46
Signs of ADHD	109	32.54
Total	**335**	**100**

Borrowing from a study conducted by Prof Atwoli et al (L. Atwoli, 2010) and works by Stanton et al (Stanton et al., 2018), the investigator decided to modify the criterion to incorporate the full ASRS symptom checklist to provide a clearer DSM V diagnosis.

➢ *Modified ASRS:*

Two sub-scales are generated from the modified ASRS scale. The first sub-scale requires at least 6 of the inattentive symptoms (Questions 1-4 and 7-11 on the ASRS checklist) to be positive, and with this 52% reported possible ADHD inattentive type.

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The second sub-scale, requiring at least 6 of the hyperactivity/impulsivity symptoms (Questions 5, 6 and 12-18 on the ASRS checklist) to be positive, 8.66% students exhibited possible ADHD hyperactive/impulsive type. Table 4.3 below displays the modification of the ASRS scale.

Table 3 Modification of the ASRS Scale

i. Inattentive Symptoms Criteria (Items 1-4 & 7-11)		
	N	**%**
No Possible ADHD	283	84.48
Possible ADHD	52	15.52
Total	335	100
ii. Hyperactivity/Impulsivity Symptoms (Items 5,6, & 12-18)		
	N	**%**
No Possible ADHD	306	91.34
Possible ADHD	29	8.66
Total	335	100
iii. Combined ADHD Scale (Showing Both Inattentive and Hyperactive Signs)		
	Freq.	**Percent**
No signs	318	94.93
ADHD signs	17	5.07
Total	**335**	**100**

- *Impact of ADHD on the Quality of Life*

As depicted in Table 4 the impact on one's subjective quality of life varies according to the subtype of ADHD experienced.

Table 4 ADHD and Satisfaction with Quality of Life

Inattentiveness	**Odds Ratio**	**Std. Err.**	**Z**	**P>z**	**[95% Conf.**	
Low satisfaction	ref					
Average satisfaction	0.21	0.055	-4.370	0.000	0.039	0.291
High satisfaction	0.03	0.057	-2.800	0.005	0.007	0.420
Hyperactive symptoms	Odds Ratio	Std. Err.	Z	P>z	[95% Conf.	
Low satisfaction	Ref					
Average satisfaction	0.107	0.069	-4.730	0.000	0.106	0.394
High satisfaction	0.055	0.032	-3.380	0.005	0.004	0.232
Combined ADHD symptoms	Odds Ratio	Std. Err.	Z	P>z	[95% Conf.	
Low satisfaction	Ref					
Average satisfaction	0.03	0.033	-3.30	0.001	0.004	0.250
High satisfaction	-					

- *Multivariable Analysis: Association between Demographic Variables and ADHD*

Table 5 depicts the adjusted odds ratio results of logistical regression analysis on the association between sociodemographic characteristics of the study subjects and ADHD. Fifth year students were 5 times more likely to exhibit ADHD symptoms *(p=0.003)* with the risk increasing to an overwhelming 11 *(p=0.000)* times higher among sixth years students compared to their first year counterparts. Having mental health difficulties increased the risk of positive ADHD symptoms by 4*(p=0.001*).

Table 5 The Association between Demographic Variables and ADHD

ADHD	**Adjusted Odds Ratio**	**Std. Err.**	**Z**	**P>z**	**[95% Conf.**	**Interval]**
Location						
Rural	Ref					
Sub-urban	1.815	0.646	1.670	0.094	0.903	3.646
Urban	2.414	0.793	2.680	0.007	1.267	4.597
Year of study						
Year 1	Ref					
Year 2	2.330	1.279	1.540	0.123	0.794	6.833
Year 3	1.719	1.038	0.900	0.370	0.526	5.616
Year 4	2.214	1.331	1.320	0.186	0.682	7.193
Year 5	5.406	3.107	2.940	0.003	1.753	16.673

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Year 6	11.307	6.390	4.290	0.000	3.735	34.230
Satisfaction with academic program						
Low	Ref					
Average	0.398	0.176	-2.080	0.038	0.167	0.949
High satisfaction	0.718	0.429	-0.550	0.579	0.222	2.318
General quality of life						
Low	Ref					
Average	0.371	0.121	-3.040	0.002	0.196	0.704
High	0.219	0.125	-2.650	0.008	0.072	0.673
Mental health difficulties						
No	Ref					
Yes	3.936	1.695	3.180	0.001	1.692	9.156
_cons	0.149	0.106	-2.670	0.008	0.037	0.603

- *Prevalence of Depression*

54% of the students reported some form of depression ranging from moderate to severe levels. These findings are summarized in table 6 below.

Table 6 Prevalence of Depression by Severity

Level of Depression	**n =335**	**%**
Minimal depression	90	26.87
Mild depression	62	18.51
Moderate depression	87	25.97
Moderately severe depression	58	17.31
Severe depression	38	11.34

- *Multivariable Analysis: Association between Demographic Variables and Depression*

Students hailing from sub urban and urban backgrounds had an increased risk of developing depression by 2.47 *(p=0.002*) and 1.84 *(p=0.019)* respectively compared to their counterparts from rural settings.

Low satisfaction with the academic program pursued increased the risk for depressive symtpoms by 2.55*(p=0.007)* compared to those who were averagely satisfied. Additionally, low satisfaction with quality of life relative to those averagely satisfied increased the odds of developing depression by 3 *(p=0.000)* whereas high satisfaction with the quality of life reduced risk of developing depressive symtpoms by 51% (*p =0.049).*

Subjective reported mental health difficulties increased risk of depressive symptoms by 6 *(p=0.000).* Accordingly, the adjusted odds of developing depression were six times higher among students who reported that they often have negative feelings such as low moods, despair and worries, compared to those who never experience such feelings *(p=0.026*).

Table 7 Multivariate Analysis: Association between Demographic Variables and Depression

	AOR (95CI)	**p-value**
Factor		
Gender		
Male	Ref	
Female	1.23(0.82)	0.300
Age		
18-22	Ref	
23-26	1.44(0.66, 3.16)	0.362
27-30	1.19(0.4,3.56)	0.753
30-35	2.13(0.02,243.92)	0.754
Above 35	1.75(0.08,37.79)	0.722
Location		
Rural	Ref	
Sub-urban	2.47(1.39,4.4)	0.002
Urban	1.84(1.1,3.06)	0.019
Year of study		

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Year 1	Ref	
Year 2	1.21(0.56,2.61)	0.633
Year 3	1.6(0.74,3.45)	0.235
year 4	0.72(0.3,1.75)	0.473
Year 5	1.18(0.39,3.59)	0.771
Year 6	2.08(0.67,6.5)	0.206
Academic performance		
Average	Ref	
Fair	0.95(0.55,1.62)	0.839
Good	0.58(0.32,1.04)	0.067
Satisfaction with academic program pursued		
Average	Ref	
High Satisfaction	0.73(0.39,1.37)	0.333
Low satisfaction	2.55(1.3,5)	0.007
General satisfaction with quality of life		
Average	Ref	
High Satisfaction	0.49(0.25,1)	0.049
Low satisfaction	3.07(1.77,5.3)	0.000
Do you suffer from any mental health difficulties		
No	Ref	
Yes	6.02(3.23,11.24)	0.000
How often do you have negative feelings such as low moods, despair, worries		
Never	Ref	
Often	6(1.24,29.05)	0.026
Rarely	1.23(0.25,6.07)	0.796

- *Prevalence of Anxiety*

Participants who reported moderate to severe symptoms of anxiety were 43% of the total sample (Table 8)

Table 8 Summary of Prevalence of Anxiety

Minimal anxiety	109	32.54
Mild anxiety	81	24.18
Moderate anxiety	86	25.67
Severe anxiety	59	17.61
Total	335	100

- *Multivariate Analysis of Anxiety in Realtion to Sociodemographic Characteristics*

Students aged between 27-30 years there was an increased likelihood of developing anxiety by a factor of 4.19 compared to being in18-22 years, (*p= 0.011*). Hailing from Sub-urban areas increased likelihood of developing anxiety by two (*p=0.027).* Being a sixth-year student was found to significantly increase the chances of developing anxiety by a factor of 4, compared to those in first year *(p=0.028).* Moreover, those students who suffer from mental health difficulties were three times likely to develop anxiety compared to those who don't, *(p=0.001).*

Table 9 Summary of Anxiety in Relation to Socio-Demographic Characteristics

Location	**AOR(CI)**	**p-value**
Rural	Ref	
Sub-urban	1.95(1.08,3.51)	0.027
Urban	1.49(0.87,2.52)	0.144
Year of study		
Year 1	Ref	
Year 2	1.59(0.73,3.48)	0.242
Year 3	1.85(0.84,4.11)	0.129
year 4	0.89(0.36,2.18)	0.801
Year 5	2.17(0.71,6.63)	0.176
Year 6	3.66(1.15,11.65)	0.028
Academic performance		
Average	ref	

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Fair	0.87(0.5,1.51)	0.625
Good	0.57(0.31,1.05)	0.702
Satisfaction with academic program pursued		
Average	ref	
High Satisfaction	1.03(0.56,1.89)	0.933
Low satisfaction	2.01(0.99,4.09)	0.052
General satisfaction with quality of life		
Average	ref	
High Satisfaction	0.62(0.3,1.26)	0.185
Low satisfaction	1.69(0.98,2.91)	0.06
Do you suffer from any mental health difficulties		
No	ref	
Yes	2.94(1.59,5.44)	0.001
How often do you have negative feelings such as low moods, despair, worries		
Never	ref	
Often	1.95(0.49,7.78)	0.347
Rarely	0.41(0.1,1.63)	0.204

- *The Relationship between ADHD, Anxiety and Depression*

Table 10 presents the association between ADHD, depression and anxiety. Multivariable ordinal logistic regression shows that students who exhibit ADHD symptoms are 9.28 times significantly more likely to develop anxiety compared to those who don't, p = 0.000; and 8.63 times significantly more likely to develop depression severity, p= 0. 000.

Table 10 Ordinal Regression Showing Relationship between ADHD, Anxiety and Depression

	AOR	**Std. Err.**	**Z**	**P>z**	**[95% Conf.**
Anxiety levels					
No signs	*ref*				
ADHD signs	9.28	2.25	9.21	0.000	[5.78,14.91]
Depression severity					
No signs	*ref*				
Signs of ADHD	8.63	2.05	9.09	0.000	[5.42,13.74]

- *Relationship between ADHD and an Interaction between Depression and Anxiety*

Table 11 below shows the relationship between ADHD and an interaction between depression and anxiety levels. Overall, the table indicates that the effect of anxiety on ADHD depends on the different levels of depression. Almost all the interaction terms significantly determine whether a student shows ADHD signs or not. The only interaction levels not significantly related to ADHD are minimal anxiety and mild depression (p = 0.056), mild anxiety and minimal depression (p= 0.070), mild anxiety and mild depression (p =0.133), and mild anxiety and moderately severe depression.

Table 11 Relationship between ADHD and an Interaction between Depression and Anxiety

ADHD	**Odds Ratio**	**P>z**	**[95% Conf.**	**Interval]**
anxiety # Depression				
Minimal anxiety#Mild depression	6.167	0.056	0.955	39.803
Mild anxiety#Minimal depression	6.727	0.070	0.855	52.940
Mild anxiety#Mild depression	4.111	0.133	0.649	26.030
Mild anxiety#Moderate depression	18.500	0.000	3.801	90.041
Mild anxiety#Moderately severe depression	12.333	0.065	0.856	177.691
Moderate anxiety#Mild depression	15.857	0.006	2.250	111.779
Moderate anxiety#Moderate depression	22.905	0.000	4.775	109.880
Moderate anxiety#Moderately severe depression	56.923	0.000	11.831	273.873

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Moderate anxiety#Severe depression	37.000	0.000	5.128	266.979
Severe anxiety#Moderate depression	44.400	0.000	7.040	280.036
Severe anxiety#Moderately severe depression	138.750	0.000	23.198	829.876
Severe anxiety#Severe depression	111.000	0.000	21.380	576.281
_cons	0.027	0.000	0.007	0.110

IV. DISCUSSION

The prevalence of ADHD from this study was significantly higher than other similar studies locally (L. Atwoli, 2010) and elsewhere in the world (Willcutt, 2012) (N. Alrahili, 2019) (Njuwa, 2020).The study acknowledges that the self-report method with possibility of recall bias and lack of childhood symptom assessment may have contributed to the high prevalence rate. The implications of COVID 19 on the population under study may also have contributed to high these findings with the possibility of false positives. Neurodevelopmental health is closely associated to flexible adaptations and regulation in meeting the ever-changing environmental demands (Bush, 2020). To this effect, the extreme changes that came about with the COVID 19 pandemic compounded the existing stressors met by the medical students resulting in symptom manifestation of ADHD even to those previously coping who would not have had a positive read.

Researcher agree that there is increased possibility of of ADHD being underdiagnosed , unrecognized and mislabeled among medical students (Geffen & Forster, 2018). There are several reasons for this population to be overlooked in exploration of ADHD. Possibly, significant numbers of medical students do not disclose their diagnosis and struggles due to fear of scrutiny by supervisors and peers as well as perceived and real stigma. With the hallmark symptoms of ADHD as the condition is defined, having a diagnosis would generate an inaccurate perceived barrier or bias that the individual may not be capable to meet the tasks required to successfully complete training in medicine (D Duong, 2022).

As with most neurodevelopmental disorders, if the individual has structure for example in the form of social support and flexibility,high inteelectual abilities which compensate for executive function difficulties (TE Brown, 2009) or low severity; these variables may camouflage the symptom patterns then they may never be recognized until there is a discrepancy between capacity and environmental demands. The overt minor symtpoms would be easily misattributed to personality, character flaws and ultimately be dismissed (D Duong, 2022) (Alv MIlioni, 2014). This observations than serve to further emphasis the limitations of purely qualitative screening tools in the place of individuals with elevated IQ versus those with relatively lower intellectual abilities (Alv MIlioni, 2014).

Studies have found that those with childhood diagnosis of ADHD (inclusive of those whose symptoms persist into adulthood) have higher likelihood towards academic and career underachievement when juxtaposed to their objective IQ due to these executive function deficits. These findings are not accounted for by comorbidity rather they may be exacerbated by them (C Rapinesi, 2018). This study has corroborated this position. This study further supports the need for early detection and care for vulnerable medical students, emphasizing the association between ADHD and low life satisfaction, mental health conditions, and comorbidities. Inattention is reported more than hyperactivity, aligning with the psycho-morphorsis of ADHD across the lifespan.

The prevalence of depression among medical students is found to be significantly higher than the global average, ranging from 27.7% to 70% making findings obtained in this study to fall within the general prevalence range. Senior students exhibit a higher likelihood of depression, indicating a potential decline in mental wellness as they progress in their studies which was comparable to works by Shao et al (R Shao, 2020), Shamsuddin et al (K Shamsuddin, 2013) and Bonstanci et al (M Bostanci, 2005).

Low satisfaction with the academic program and quality of life is associated with depression correlating the findings by Phomprasith (Phomprasith, 2022). It goes without saying that symptoms of depression such as the cognitive symptoms of poor concentration, anhedonia and having a significantly low mood predominantly for at least 2 weeks would have repercussions to one's academic career and their general satisfaction with life. On the other hand, the dissatisfaction in academia and life in general can result in development of symptoms of depression. When unaddressed are associated with unhealthy living which perpetuate and predispose the person to other conditions such as substance use for self-medication, non-adherence to treatment which worsens the depressive symptoms as well as those of the accompanying condition and complications in the neuroendocrine system (A Steffen, 2020). This then furthers the question of the prevalence substance abuse and additctions among medical studetns who are our future doctors.

Previous findings find that prior to joining the school of medicine, the individuals who then are selected to pursue these career path show similarities to the general population. The impact of stressors in medical school, including workload, performance expectations, fear of failure, and exposure to patient suffering on mental health, personality vulnerabilities and burnout during medical training compounded by other life difficulties away from the school fo medicine can be explored as contributing factors to depression among medical students (Lins, 2015) (ZX Low, 2019).

Though as debilitating as its counterpart, anxiety tends to receive sloppy seconds attention to depression especially among the medical student population. Globally, around 33.8% of medical students experience anxiety, with varying rates across regions. The study in question found a prevalence of 43% among medical students, higher than the global

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average but within the range observed in regions outside North America. Factors contributing to anxiety in medical students include high academic workload, poor self-care, exposure to death, financial difficulties, and personality traits such as neuroticism and perfectionism.

The study suggests a correlation between low satisfaction with quality of life and the academic program with anxiety symptoms. Anxiety was found to be more prevalent in the fifth and sixth years of medical school, possibly due to increased academic demands, responsibilities, and the expectation with accompanying worry of of the next part in training of a doctor. Students from suburban regions were more susceptible to anxiety than those from rural areas, possibly influenced by differences in youth difficulties, socialization, and culture. Nevertheless, it begs the question on the impact of adjustment among the students as one would anticipate that those migrating from rural regions would have greater struggles as compared to those living in sub urban and urban regions (A Anjum). Gender did not show a statistically significant difference in anxiety symptoms, aligning with previous studies by Quek et al (Quek TT T. W., 2019).

In many of the studies that explored levels of depression and anxiety, anxiety was found to be higher than depression contrary to this study findings where the rates of for depression and anxiety are 54% and 43% respectively with their reported symptoms ranging from moderate to severe. These findings in addition to the possible explanations brought forth by other studies can also be attributed to dynamic changes that occurred during and after the COVID 19 pandemic.

The National Comorbidity Survey, 2006, found that adults with ADHD have three times more likelihood of developing major depressive disorder. This is consistent with the studies by Njuwa et al. (Njuwa, 2020) and Almeida et al (Almeida Montes, 2007). Findings from this study reported that the students with a positive ADHD score had increased likelihood to develop moderately to severe levels of depression and anxiety. The deficits in emotional self-regulation characteristic of ADHD present a predisposing factor to the development of anxiety and depressive symptoms((Njuwa, 2020) (Michelini, 2015). This is only further compounded by the implications of the executive function deficits across other areas of life. The environmental context in the course of pursuing medicine places significant demands across the board as depicted in this study but with more vulnerability to those who have ADHD.

V. CONCLUSION

Through the Sustainable Development Goals activities to accomplish universal health coverage and access to preventative, promotive and curative facilities to all, massive strides in the field of health care have been seen. A key target within this goal is the reduction of premature mortality from non communicatiable diseases and promotion of mental health and wellness. To accomplish this, effective, efficient and healthy medical personnel would be a vital cornerstone. From this study it is evident that as we place emphasis on the public to which service will be offered, it is important to remember as well the wellness of the medical fraternity tasked to drive this very importand goal. This study draws to attention to the importance of early detection and management of mental health challenges such as ADHD in an attempt to lower possibility of development of cormorbid condtions- depression and anxiety.

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