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Frequency of Bullying and Its Effects on Self-Esteem, Anxiety, and Depression among Medical and Health Sciences Students at Universities in Ras Al Khaimah, UAE

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ABSTRACT

Bullying and peer victimization among students in medical and health sciences pose a serious public health concern, given their long-term psychological consequences and increased susceptibility to mental health disorders throughout life. This study employed a descriptive cross-sectional design to assess the prevalence of bullying and its association with self-esteem, anxiety, and depression among university students in Ras Al Khaimah, United Arab Emirates. A total of 369 participants from MBBS, BDS, B Pharm, and BSN programs completed questionnaires covering sociodemographic information, bullying experiences, the Rosenberg Self-Esteem Scale, and the Primary Care Anxiety and Depression Scale. The average age of participants was 21.49 ± 2.95 years. Results indicated that 34.1% of students experienced bullying, with verbal abuse—such as being called insulting names—reported by 44.4%, making it the most prevalent form. Analysis revealed that female students (53.2%) were more frequently targeted than males (46.8%). Students who were bullied had higher levels of anxiety and depression (mean score: 43.30 ± 19.74) and lower self-esteem (mean score: 44.62 ± 9.94). Significant relationships were found between bullying and factors including year of study, maternal education, and prior bullying experiences (P = 0.002, 0.038, 0.001). These findings underscore the necessity for universities to develop structured strategies to identify bullying and offer effective support to affected students and their families.

Keywords: University, Self-esteem, Health sciences, Students, Anxiety, Bullying

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Introduction

Bullying is a form of targeted harassment or interpersonal aggression characterized by an imbalance of power between the perpetrator and the victim. This behavior encompasses various forms, including mistreatment, offensive language, harassment, as well as more specific manifestations such as mobbing and horizontal or lateral violence [1, 2]. Scholars emphasize that these types of bullying are unique, with distinct features and consequences, rather than interchangeable terms [3].

Although mental health among students has become a growing concern, research addressing bullying in higher education (HE) remains limited compared to studies focused on school environments [4]. On college campuses, attention has often prioritized gender-based violence over other forms of bullying [5]. Bullying does occur among university students [6], and its negative psychological effects are recognized across all age groups [7]. Students frequently lack a clear understanding of power dynamics within HE institutions. It remains unclear whether bullying frameworks developed for childhood or adulthood are more applicable, as most university students are emerging adults (EAs), displaying traits of both adolescence and adulthood [8]. Within university settings, emerging adults experience a distinct ecological environment compared to schools or workplaces [9] and are predominantly aged 18–25, placing them at a vulnerability level comparable to younger students, yet higher than older adults [10].

Although bullying can occur in various contexts, healthcare settings have reported a rising incidence of harassment [11], with medical faculties showing higher prevalence than other university departments [12, 13]. Studies in the USA and Scandinavian countries report bullying rates among medical students of 42% and 75%, respectively [14, 15], while Middle Eastern countries such as Jordan and Pakistan report rates of 61% and 52% [16, 17]. Nursing students, due to the hierarchical nature of their training, are particularly at risk, especially those new to clinical environments or international placements [18, 19]. The psychological consequences for victims include anger, distress, pressure, and even suicidal thoughts, and can lead to social maladjustment or harmful behaviors [20]. The impact often extends beyond graduation, contributing to workplace stress, increased absenteeism, reduced productivity, impaired performance, weakened teamwork, and workforce shortages in the medical field [20, 21].

Theoretical background

Bullying is pervasive throughout college and remains a recognized concern within universities. For instance, a cross-sectional study at Abu Dhabi University found that 26% of students experienced bullying [22], while another study reported cyberbullying among 50% of medical students [23]. Despite its prevalence and negative consequences, research on bullying in Middle Eastern and Arab nations is scarce. Available studies report bullying rates ranging from 20.9% in the UAE to 44.2% in Jordan [24], with 31% of Egyptian adolescents frequently involved in physical fights [25]. Limited data exist regarding the types and frequency of bullying in higher education, particularly among medical students, who often face high-stress situations that may exacerbate bullying and its effects [26].

Bullying has been linked to depression, anxiety, low self-esteem, and suicidal thoughts [27]. Systematic reviews consistently show a strong association between cyberbullying and suicidal behavior, with many victims reporting suicidal ideation [28, 29]. Peer victimization is associated with lower self-esteem, which in turn contributes to social anxiety and depressive symptoms [30–33].

While global efforts to prevent bullying are increasing [34], the problem persists. Bullying represents a critical issue that warrants further research, particularly in medical education, where it can negatively affect students' mental health, empathy, morale, and retention in the profession [35]. However, there is limited evidence from the Middle East on the prevalence of bullying among medical students, the forms it takes, and its impact on self-esteem and mental well-being. Understanding the factors linking bullying to anxiety and depression is essential for developing effective interventions.

Study design

This study employed a descriptive cross-sectional design to assess the prevalence of bullying and its effects on self-esteem, anxiety, and depression among medical and health sciences university students in Ras Al Khaimah, United Arab Emirates.

Sample and data analysis

The study sample consisted of undergraduate students from four colleges at RAK Medical and Health Sciences University—MBBS, BDS, B Pharm, and BSN—located in Ras Al Khaimah, United Arab Emirates. The sample size was determined using the Raosoft sample size calculator [36], based on a total student population of 1,200, a 5% margin of error, a 95% confidence level, and a 50% response distribution, resulting in a required sample of 369 students. A stratified random sampling approach was employed, with the following distribution: 153 MBBS students, 86 BDS students, 36 B Pharm students, and 94 BSN students.

Students who agreed to participate were provided with detailed information regarding the study objectives, duration, and potential benefits. Inclusion criteria included being an undergraduate at RAKMHSU, consenting to participate, and having the ability to comprehend the consent form and complete the questionnaire. Exclusion criteria consisted of students who declined to participate. Data collection took place between January and April 2023, with the survey requiring approximately 15–20 minutes to complete.

Research questions

Based on the study objectives, four research questions (RQ1–RQ4) were formulated:

- RQ1: What is the prevalence of bullying among university students in Ras Al Khaimah, UAE?
- RQ2: What are the most common forms of bullying among university students in Ras Al Khaimah, UAE?

- RQ3: Which factors contribute to the occurrence of bullying among university students in Ras Al Khaimah, UAE?
- RQ4: Do students who have experienced bullying differ in levels of depression, anxiety, and self-esteem compared to those who have not?

Survey instruments

The survey consisted of four components:

1. Socio-Demographic Questionnaire: Collected information on gender, age, nationality, marital status, college, year of study, parental education and occupation, family income, household size, and family type.
2. Bullying Questionnaire: Developed by the researchers after reviewing relevant literature, this section began with the question, "Have you been bullied at the university?" Respondents answering "Yes" were asked ten additional questions regarding bullying frequency, perpetrators, forms, emotional responses, coping mechanisms, and causes. Those answering "No" proceeded to questions exploring general perceptions of bullying causes and university responses. The tool demonstrated strong reliability with a Cronbach's alpha of 0.90 [22].
3. Rosenberg Self-Esteem Scale (RSES): A 10-item, 4-point Likert scale assessing global and current self-esteem, with higher scores indicating stronger self-esteem. The scale is widely used and demonstrated reliability of 0.76 [37, 38].
4. Primary Care Anxiety and Depression Scale (PCAD): A 12-item instrument measuring anxiety and depression on a 4-point Likert scale from 0 (not at all) to 3 (always), with higher scores indicating greater symptoms. The scale is validated for use in Arab populations, with a Cronbach's alpha of 0.91 [39].

Statistical analysis

Qualitative data were summarized using frequencies and percentages. Normality was assessed with the Kolmogorov-Smirnov test. Quantitative data were presented as mean, standard deviation, and range (min–max). Statistical significance was set at $p < 0.05$. Mann-Whitney, Kruskal-Wallis tests, and Pearson correlation coefficients were used for inferential analysis.

Results and Discussion

Socio-demographic characteristics

The study included students from various medical disciplines **(Table 1)**, with 41.5% from the medical program, 25.3% nursing, 23.2% dental, and 10% pharmacy. Most respondents (41.7%) were in their fourth year of study. **Table 2** presents socio-demographic characteristics by gender. Males constituted 75.39% of the sample, predominantly aged 20–24 years, while females made up 71.35%. The majority were from non-Arab countries (70.68% of males and 68.54% of females). Parental occupation, education, and family income details are also reported in **Table 2**.

Table 1. Distribution of the study population (N = 369) based on the study course and year of the study at the University.

College	N	%
Medical	153	41.5
Nursing	94	25.3
Dental	86	23.2
Pharmacy	36	10.0
Year of the University	**N**	**%**
1	48	13.0
2	71	19.2
3	68	18.4
4	154	41.7
5	28	7.6

Table 2. Socio-demographic characteristics of the study population (N = 369) categorized between males and females.

Socio-demographic characteristics	Status	Female N (%) (n = 178)	Male N (%) (n = 191)
Age	15–19	40 (22.47 %)	34 (17.80 %)
	20–24	127 (71.35 %)	144 (75.39 %)
	25–30	11 (6.18 %)	13 (6.81 %)
Marital Status	Married	168 (94.38 %)	177 (92.67 %)
	Unmarried	10 (5.62 %)	14 (7.33 %)
Family Type	Nuclear	113 (63.48 %)	120 (62.83 %)
	Extended	65 (36.52 %)	71 (37.17 %)
Nationality	Arab	56 (31.46 %)	56 (29.32 %)
	Non Arab	122 (68.54 %)	135 (70.68 %)
Maternal Education	Elementary School	37 (20.79 %)	25 (13.09 %)
	High School	67 (37.64 %)	67 (35.08 %)
	Secondary School	35 (19.66 %)	35 (18.32 %)
	University	39 (21.91 %)	64 (33.51 %)
Paternal Education	Elementary School	31 (17.42 %)	29 (15.18 %)
	High School	67 (37.64 %)	61 (31.94 %)
	Secondary School	33 (18.54 %)	38 (19.90 %)
	University	47 (26.40 %)	63 (32.98 %)
Maternal Job	Housewife	144 (80.90 %)	137 (71.73 %)
	Officer	20 (11.24 %)	26 (13.61 %)
	Self-employed	14 (7.87 %)	28 (14.66 %)
Paternal Job	Officer	37 (20.79 %)	41 (21.47 %)
	Worker	41 (23.03 %)	50 (26.18 %)
	Self-employed	68 (38.20 %)	68 (35.60 %)
	Unemployed	32 (17.98 %)	32 (16.75 %)
Monthly Income	Good	49 (27.53 %)	61 (31.94 %)
	High	6 (3.37 %)	10 (5.24 %)
	Middle	90 (50.56 %)	94 (49.21 %)
	Minimum	33 (18.54 %)	26 (13.61 %)

Types and frequency of bullying

Analysis of the study data indicated that 34.1% of participants reported experiencing bullying at the university **(Table 3a)**, with 61.9% of these students having been bullied at least once during their college tenure. Among the various forms of bullying, verbal abuse was the most prevalent, with 44.4% of students reporting being subjected to offensive or derogatory names. Cyberbullying affected 23.8% of students, making it the second most common type, while emotional bullying—excluding typical social interactions—was reported by 19.8% of students. Physical bullying, including harsh jokes or actions targeting one's body, was experienced by 19.0% of participants.

When analyzed by gender **(Table 3b)**, emotional bullying was reported most frequently by female students (76.92%), followed by physical bullying (64.18%) and verbal bullying (53.85%). In contrast, male students experienced verbal bullying most often (46.15%), followed by physical bullying (35.82%), with emotional bullying reported less frequently (23.08%). These differences in the prevalence of bullying types between male and female students were statistically significant. Sexual harassment and cyberbullying were slightly more common among male students than females, although these differences were not statistically significant.

Table 3a. Distribution of the study sample according to experiences and types of bullying (N = 369). *Multiple responses were allowed.

Variable	Category	n	%
Have you experienced bullying at the university?	Yes	126	34.1
	No	243	65.9
Frequency of bullying (N = 126)	Once	78	61.9
	Twice	18	14.3
	Three times	6	4.8

	More than three times	24	19.0
Perpetrator of bullying (N = 126)	Individual student	69	54.8
	Group of students	33	26.2
	Faculty or instructor	24	19.0
	University staff	0	0.0
Type of bullying experienced (N = 126)*	**Physical bullying**		
	Pushed by classmates	14	11.1
	Kicked or slapped	13	10.3
	Assaulted with dangerous object	2	1.6
	Hair or ear pulled	14	11.1
	Harsh jokes targeting body	24	19.0
Verbal bullying	Called offensive or derogatory names	56	44.4
	Addressed with inappropriate or abusive names	8	6.3
	Mocked by classmates	12	9.5
	Teased or made fun of	12	9.5
	Criticized or dissed	10	7.9
	Subjected to insults or swear words	8	6.3
	Gossip about me	11	8.7
Emotional bullying	Excluded from social activities	25	19.8
	Humiliated	8	6.3
	Experienced discrimination	11	8.7
	Property damaged	8	6.3
Sexual bullying	Sexually explicit remarks	0	0.0
	Molestation	6	4.8
	Physical harassment (hand)	2	1.6
Electronic (Cyber) bullying	Cyberbullying	30	23.8

Table 3b. Types of bullying observed between the male and female population.
NS- Non significant.

Types of Bulling	Female	Male	*P*-value
Physical bullying	43 (64.18 %)	24 (35.82 %)	* *(p=0.047)*
Verbal bullying	63 (53.85 %)	54 (46.15 %)	* *(p=0.021)*
Emotional bullying	40 (76.92 %)	12 (23.08 %)	* *(p=0.028)*
Sexual bullying	1 (12.5 %)	7 (87.5 %)	*NS*
Cyber bullying	13 (43.33 %)	17 (56.67 %)	*NS*

Reactions and emotional responses to bullying

Students who experienced bullying were asked about their emotional reactions and coping behaviors **(Table 4)**. Among those affected, 29.4% reported feeling depressed following bullying incidents, while 28.6% indicated no noticeable reaction. About 27.0% of students disclosed that they had informed a family member or academic advisor about the situation. Reasons for being targeted included physical appearance (27.9%) and feelings of dislike or jealousy from others (22.2%). Regarding preventive measures, 35.8% of respondents suggested that new policies should be introduced to address bullying and violence on campus. Additionally, 37.4% of students reported having experienced bullying during their primary school years.

Table 4. Distribution of the studied sample according to emotional reactions, responses, and reasons for bullying (N = 126).
*Multiple responses allowed

Variable	Category	n	%
Emotional response after experiencing bullying (N = 126)	Scared	11	8.7
	Anxious	9	7.1
	Depressed	37	29.4
	Difficulty concentrating on studies	17	13.5

	Angry	33	26.2
	Other emotions	19	15.1
Response to bullying	No reaction	36	28.6
	Told a friend	24	19.0
	Reported to Student Affairs	18	14.3
	Sought revenge or self-defense	14	11.1
	Informed a family member or advisor	34	27.0
Perceived reasons for being bullied	Jealousy	103	27.9
	Physical appearance	82	22.2
	Hate or dislike	82	22.2
	Nationality	34	9.2
	Other reasons	68	18.4
Suggested university measures against bullying	Dismissal for aggressive students	84	22.8
	Awareness programs	98	26.6
	Warning issued	55	14.9
	Implement new rules to manage bullying on campus	132	35.8
Past bullying experiences*	Experienced bullying in primary school	138	37.4
	Experienced bullying in secondary/high school	120	32.5
	Experienced bullying at home	93	25.2

Univariate logistic regression analysis and determinants of bullying

The univariate logistic regression **(Table 5a)** revealed that slightly more than half of the bullied students were female (53.2%), while males accounted for 46.8%; however, this gender difference was not statistically significant. Students who reported being bullied demonstrated notably higher levels of anxiety and depression, reflected by a mean PCAD score of 43.30 ± 19.74, compared to their non-bullied counterparts. Their self-esteem was also lower, with a mean Rosenberg Self-Esteem score of 44.62 ± 9.94.

Previous exposure to bullying was more prevalent among students who experienced bullying at university, with 54.0% reporting incidents in primary school, 45.2% in secondary school, and 40.5% within the family setting. These findings indicate a significant relationship between earlier and current experiences of bullying.

Additional analysis **(Table 5b)** identified that factors such as the student's academic year, maternal education, and history of prior bullying were significantly associated with bullying at university (p = 0.002, 0.038, 0.001), suggesting that these variables may influence the likelihood of being targeted.

Table 5a. Univariate logistic regression analysis of factors associated with being a perpetrator of bullying in the study sample (N = 369)

Variable	Category	Non-perpetrators (n = 243)	Perpetrators (n = 126)	p-value	Odds Ratio (95% CI)
Gender	Female	111 (45.7%)	67 (53.2%)	0.172	1.350 (0.877–2.079)
	Male (reference)	132 (54.3%)	59 (46.8%)		1.000
Age (years)	Mean ± SD	21.60 ± 2.99	21.27 ± 2.88	0.313	0.963 (0.895–1.036)
University Year	Year 1	26 (10.7%)	22 (17.5%)	0.002*	0.746 (0.621–0.894)[1]
	Year 2	44 (18.1%)	27 (21.4%)		
	Year 3	30 (12.3%)	38 (30.2%)		
	Year 4	127 (52.3%)	27 (21.4%)		
	Year 5	16 (6.6%)	12 (9.5%)		
Maternal Education	Low (reference)	96 (39.5%)	36 (28.6%)	0.038*	1.000
	High	147 (60.5%)	90 (71.4%)		1.633 (1.026–2.597)
Paternal Education	Low (reference)	92 (37.9%)	39 (31.0%)	0.189	1.000
	High	151 (62.1%)	87 (69.0%)		1.359 (0.860–2.149)

Maternal Employment	Not employed (reference)	188 (77.4%)	93 (73.8%)	0.447	1.000
	Employed	55 (22.6%)	33 (26.2%)		1.213 (0.737–1.996)
Paternal Employment	Not employed (reference)	39 (16.0%)	25 (19.8%)	0.362	1.000
	Employed	204 (84.0%)	101 (80.2%)		0.772 (0.443–1.347)
Rosenberg Self-Esteem Scale	Mean ± SD	45.93 ± 19.24	44.62 ± 9.94	0.391	1.007 (0.991–1.022)
Primary Care Anxiety and Depression Scale	Mean ± SD	39.70 ± 14.86	43.30 ± 19.74	0.052	1.013 (1.000–1.026)
Previous Bullying Victimization					
• Victimized in primary school	Yes	70 (28.8%)	68 (54.0%)	<0.001*	2.898 (1.853–4.531)
• Victimized in secondary/high school	Yes	63 (25.9%)	57 (45.2%)	<0.001*	2.360 (1.500–3.713)
• Victimized at home	Yes	42 (17.3%)	51 (40.5%)	<0.001*	3.254 (2.000–5.296)

Table 5b. The predictors of bulling.

	Univariate		**[a]Multivariate**	
	p	**OR (LL – UL 95 %C.I)**	**p**	**OR (LL – UL 95 %C.I)**
Female	0.172	1.350 (0.877–2.079)		
Age	0.313	0.963 (0.895–1.036)		
Year of the University	0.002*	0.746 (0.621–0.894)	0.016*	0.787 (0.647–0.957)
High Mothers' education	0.038*	1.633 (1.026–2.597)	0.022*	1.785 (1.085–2.936)
High Fathers' education	0.189	1.359 (0.860–2.149)		
Maternal job (Working)	0.447	1.213 (0.737–1.996)		
Paternal job (Working)	0.362	0.772 (0.443–1.347)		
Rosenberg Self-Esteem	0.391	1.007 (0.991–1.022)		
The Primary Care Anxiety and Depression	0.052	1.013 (1.000–1.026)		
Bullying experience at primary school, secondary and home#				
Were you subjected to any form of bullying during primary school?	<0.001*	2.898 (1.853–4.531)	0.061	1.749 (0.974–3.142)
Were you subjected to any form of bullying during secondary or high school?	<0.001*	2.360 (1.500–3.713)	0.478	1.236 (0.689–2.217)
Have you experienced any type of bullying at home?	<0.001*	3.254 (2.000–5.296)	0.001*	2.563 (1.498–4.384)

OR: Odds Ratio

C.I: Confidence Interval; LL: Lower Limit; UL: Upper Limit

*All variables with $p < 0.05$ were included in the multivariate analysis.

p: p-value for the odds ratio comparison between study groups

*Statistically significant at $p \leq 0.05$

a More than one response allowed

Relationship between rosenberg self-esteem scale and primary care anxiety and depression scale

A negative correlation was identified between the Rosenberg Self-Esteem Scale scores and the Primary Care Anxiety and Depression Scale **(Table 6)**, indicating that higher self-esteem is associated with lower anxiety and depression levels. This inverse relationship was stronger among students who had experienced bullying ($r = -0.5867$, $p < 0.0001$) compared to those who had not been bullied ($r = -0.2136$, $p = 0.0008$).

Table 6. Correlation Matrix between Rosenberg self-esteem scales and the primary care anxiety and depression scale between the bullying and the non bullying population.

	The Primary Care Depression Scale Anxiety and			
	Bullying		Non Bullying	
Rosenberg Self-Esteem Scale	r	p	r	p
	−0.5867	<0.0001	−0.2136	0.0008

r: Pearson coefficient.

*: Statistically significant at $p \leq 0.05$.

Internal consistency of questionnaires (Cronbach's alpha)

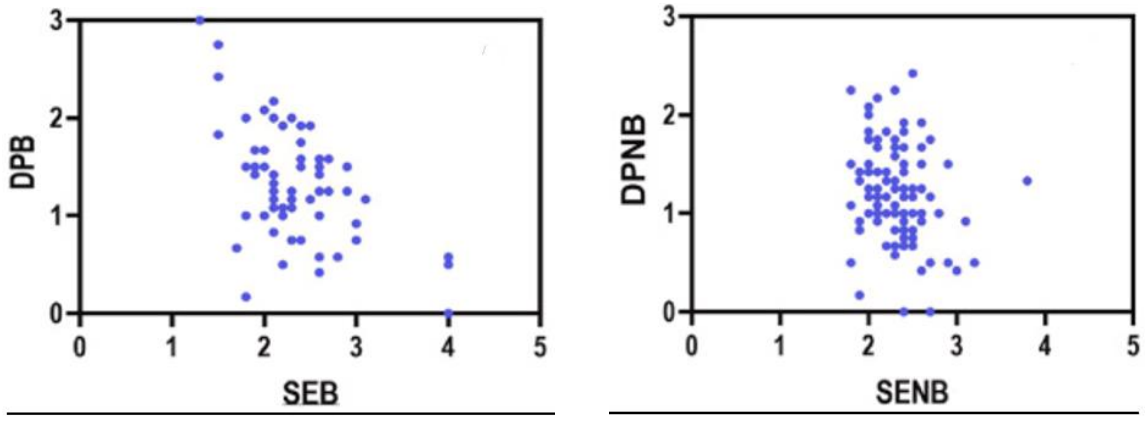
To evaluate the reliability of the study instruments, Cronbach's alpha was calculated for both the Rosenberg Self-Esteem Scale and the Primary Care Anxiety and Depression Scale **(Table 7)**. The Rosenberg Self-Esteem Scale demonstrated a Cronbach's alpha of 0.62, while the Primary Care Anxiety and Depression Scale showed a higher internal consistency with a Cronbach's alpha of 0.81.

Table 7. Cronbach's alpha representing the internal consistency of the study questionnaires for Rosenberg self-esteem scales and the primary care anxiety and depression scales.

	Cronbach's alpha (α)
Rosenberg Self-Esteem Scale	0.622
The Primary Care Depression Scale Anxiety	0.816

Comparison of rosenberg self-esteem and primary care anxiety and depression scores between bullied and non-bullied students

The mean self-esteem scores were compared between students who experienced bullying and those who did not. Across both genders, non-bullied students exhibited higher self-esteem than their bullied counterparts **(Table 8).** Similarly, average anxiety and depression scores were lower among students who had not experienced bullying compared to those who had. The correlation matrix plots **(Figures 1a and 1b)** illustrated a more dispersed distribution for bullied students, reflecting greater variability in their psychological outcomes, whereas non-bullied students formed a tighter cluster, indicating more consistent psychological well-being.



a) b)

Figure 1. Correlation matrices between the Primary Care Anxiety and Depression Scale (PCAD) and the Rosenberg Self-Esteem Scale (RSES) for (a) students who experienced bullying and (b) students who did not experience bullying.

Table 8. Rosenberg self-esteem scores and the primary care anxiety and depression scores between males and females of bullying and non bullying population.

	Average Score	Non Bullying Males (N = 132)	Bullying Males (N = 59)	Non Bullying Females (N = 111)	Bullying Females (N = 67)
Average Self Esteem score	**2 and less than 2**	18.18 %	22.03 %	15.31 %	26.86 %
	More than 2	81.81 %	77.96 %	84.68 %	73.13 %
Average Depression score	**1.5 and less than 1.5**	81.82 %	69.49 %	81.98 %	70.15 %
	More than 1.5	18.18 %	30.51 %	18.02 %	29.85 %

Prevalence of bullying among the studied population

Bullying represents a critical psychosocial problem with far-reaching negative consequences. Among medical and health sciences students, experiences of bullying and victimization can disrupt the educational process and contribute to psychological distress and functional impairments. Medical professionals and students form a distinct subgroup in terms of bullying experiences. Evidence suggests that medical students encounter mistreatment at roughly twice the rate of students in other fields [40]. Previous primary studies have documented the prevalence of bullying in this population, with reported rates ranging widely from 30% to 95% [41–47]. Consequently, the current study primarily focused on medical students **(Table 1)** across various disciplines in the UAE.

In the present study, 34.1% of participants reported experiencing bullying **(Table 3a)**. More than half of the respondents (61.9%) indicated at least one incident of bullying during their college years. This reflects the cyclical nature of bullying, in which bystanders may act as "assistants/henchmen" or "reinforcements" [48]. These findings align with previous research in the UAE, which reported that 26.3% of university students experienced bullying [22]. Another study across 19 countries noted that UAE middle school students had the lowest bullying prevalence [24]. Conversely, other research reported that 50% of participants had experienced bullying [49]. In Turkey, a 2019 survey found that half of the university students had been victims of cyberbullying in the previous six months [50]. Differences in reported rates across studies can be partly attributed to variations in measurement tools, definitions of bullying, subjective perceptions of bullying behaviors, cultural norms, and student characteristics.

Most common types of bullying among medical and health science students

Face-to-face bullying, particularly verbal aggression, along with relational or indirect bullying such as rumor-spreading and social exclusion, continues to be the most prevalent forms of bullying [26]. The current study found that verbal bullying was the most common, with 44.4% of participants reporting harsh and offensive name-calling **(Table 3a)**. Research in Saudi Arabia similarly indicated that verbal harassment, including yelling, humiliation, and belittlement, is the predominant form of bullying [49]. Improvements in verbal and interpersonal skills may have contributed to a reduction in direct physical aggression while indirectly increasing relational bullying in this population. Physical bullying victims might more easily seek help from peers and adults, thereby reducing their distress, whereas verbal bullying is often more challenging to identify and intervene in, allowing it to persist.

This study also found that 23.8% of participants experienced cyberbullying, consistent with other UAE-based research [22]. A study conducted in the Midwestern United States among 439 students reported that 8.6% had experienced cyberbullying, with 21.9% being victims [50]. Notably, approximately 60% of university students have witnessed cyberbullying, though many of these witnesses do not report it [51].

Gender differences were observed in bullying experiences **(Table 3b)**. Verbal bullying affected females more frequently (53.58%) than males (46.15%). However, a study in Egypt reported that males were more commonly the victims of verbal bullying [22]. In contrast, sexual bullying was reported by a higher percentage of male students (87.5%) compared to females (12.5%). Another study also indicated that males are more likely to be physically victimized and to engage in physical bullying [52]. Cultural factors may contribute to the underreporting of sexual bullying and cyberbullying, and students may also be unaware of reporting channels for cyberbullying incidents.

Reaction of the bullied participants

The reactions of students subjected to bullying varied. Around 28.6% of participants did not respond or report the incident, likely due to feelings of guilt or shame **(Table 4)**. Other students reported experiencing sadness, anxiety,

fear, impaired concentration, anger, stress, and a sense of helplessness following bullying incidents. These results are supported by studies linking bullying, victimization, and bullying cycles to increased depressive symptoms, lower self-esteem, and suicidal ideation [27, 53], as well as findings from other research [22]. The influence of peer opinions on university students may undermine self-confidence and increase vulnerability to bullying, highlighting a core factor in the phenomenon.

Conversely, 27% of students reported incidents to family members, while 19% confided in friends, indicating reliance on familial and peer support in such situations. However, one study found a negative association between bullying and support from classmates or family [54]. Only a small number of reports were officially documented by student affairs departments, potentially due to shame and the anticipation of negative repercussions [55].

Participants' previous experience with bullying

In the present study, 37.4% of participants reported experiencing bullying during primary school **(Table 4)**. Additionally, 25.2% experienced bullying at home, while 32.5% reported being bullied in high school. Consistently, another study found that 35% of participants endured severe childhood bullying [56]. Preventing bullying during adolescence is critical to reducing the risk of long-term psychological consequences, as mental health symptoms can persist into adulthood. Early intervention can help reduce bullying among children and prevent its escalation later in life.

More than one-third of students (35.8%) suggested that institutions should implement new policies to address bullying and aggressive behavior on campus. Administrative and counseling services at universities could also establish support groups and conduct lectures to identify, inform, and assist students facing harassment.

Regression analysis and factors influencing bullying

Linear regression analysis of bullying data **(Table 5a)** indicated that females were bullied more frequently (53.2%) compared to males (46.8%), which aligns with previous findings [57]. Nevertheless, other studies have shown that males are more likely than females both to experience and perpetrate bullying. Empirical evidence also suggests that younger students and males are more inclined to identify with offenders than older students or females [58]. Overall, no significant gender differences in bullying were observed.

Factors such as year of university enrollment, mother's education level, and previous experiences with bullying were significantly associated with bullying **(Table 5b)**, suggesting that these elements strongly influence bullying occurrences. Higher maternal education often corresponds with better socioeconomic status, which may partially explain the effect. Parents' education reflects their knowledge, cultural values, literacy, and problem-solving skills, which can shape child-rearing practices and influence children's social and coping abilities. Additionally, exposure to violent content on social media may contribute to bullying and peer aggression as students grow older. Accumulating evidence indicates that childhood bullying can have lasting negative effects on an individual's well-being [59], and students who experienced bullying before college are more likely to report depression, anxiety, and poorer perceptions of their mental and physical health [60, 61].

Relationships between depression, anxiety, and self-esteem

The study revealed a significant inverse correlation ($r = -0.5867$, $P < 0.0001$) between scores on the primary care anxiety and depression scale and the Rosenberg self-esteem scale in the bullied population compared to non-bullied peers **(Table 6)**, consistent with prior research [30, 31]. This suggests that self-esteem may play a key role in mediating the relationship between social anxiety and bullying. Bullying has been shown to elevate levels of depression, anxiety, and stress among adolescents [54], with a strong and significant association observed between bullying, anxiety, and depressive symptoms [38]. One study specifically examined how depression in male students during their sophomore year affected self-esteem in their junior year, highlighting variations in depression's impact over time [62].

Cronbach's alpha values for the Rosenberg self-esteem and primary care anxiety and depression scales indicated acceptable internal consistency **(Table 7)**. Although the alpha value for the Rosenberg Self-Esteem Scale was 0.62, values between 0.6 and 0.8 are considered adequate [63]. The study also highlighted elevated anxiety and depression levels among students who had been bullied. The correlation matrix plots of self-esteem and depression scores between bullied and non-bullied populations **(Figures 1a and 1b)** demonstrated clear differences, aligning with previous studies [27, 38]. Moreover, students subjected to bullying exhibited lower self-esteem and higher

depression levels than their non-bullied peers **(Table 8)**. Several studies have consistently shown that low self-esteem is associated with a higher likelihood of experiencing bullying [64, 65].

Conclusion

This study provides insight into bullying among students in medical and health sciences colleges in the United Arab Emirates and offers implications for future research in this field. Collecting accurate data is essential to identifying bullying among university students. The findings also establish links between bullying and elevated anxiety and depression levels. Given the high prevalence of bullying, universities should implement comprehensive strategies to identify victims and provide support. Prevention of bullying requires education, enforcement of appropriate consequences, and regulation of violent media. Collaboration among governments, educational institutions, and schools is necessary to promote anti-bullying policies [66].

The study equips educators, policymakers, and parents with vital information to enhance understanding of bullying behaviors in university students. The conclusions can guide scholars and decision-makers in recognizing patterns of problematic behavior and in developing effective psychosocial interventions, school-based mental health programs, and anti-bullying initiatives. Programs designed to prevent bullying should aim to boost victims' self-esteem to mitigate feelings of inadequacy and apathy. Universities should strengthen legal and policy frameworks, while future research could benefit from comprehensive questionnaires addressing underreported forms of bullying, including cyberbullying and sexual harassment, to identify root causes and provide actionable solutions.

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