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ORIGINAL ARTICLE

Prevalence and Associated Risk Factors of Depression among Public Secondary School Females Students in Majmaah, Saudi Arabia

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ABSTRACT

Introduction: Depression is a state of low mood for more than two weeks associated with feelings of sadness or a loss of interest in activities once enjoyed. It can lead to a variety of emotional and physical problems and can decrease a person's ability to function at work and home**.** Depression is more common among females than males and many risk factors contribute to depression.

Objectives: To study the prevalence and associated risk factors of depression among public secondary school female students in Majmaah city in the duration of 2019-2020.

Methodology: Descriptive cross-sectional institutional-based study among public secondary school female students in Majmaah city was performed from 2019-2020. The sample was 400 students, randomly selected from 6 secondary schools, and the consent form was taken from each participant. The permission was taken from the ethical committee in the university.

Result: There were 400 students involved in this study, based on findings shows that 32.25% of the students were having depression while 67.75 have no depression. It was found that most of the students had the risk factors that could be associated with depression such as losing an important person in their life, 38.8% (n=155); life stress, 26.5% (n=106); previous episodes of depression or anxiety, 26.8% (n=107); problems at school or with friends, 20.5% (n=82); family problems, 14% (n=56); and exposure to bullying, 11.3% (n=45).

Conclusion: Based on findings, 32.25% of the students were having depression while 67.75 have no depression. The majority of them had mild depression 36.50%, 17.75 % had moderate depression, 11.75% had moderately severe depression, and 2.75% had severe depression.

INTRODUCTION

The Diagnostic and Statistical Manual of Mental Disorders 5th Edition defines depression (major depressive disorder) as a common and serious medical illness that negatively affects how you feel, think, and act. Feeling sad or depressed, losing interest or pleasure in activities once enjoyed, changes in appetite - weight loss or gain unrelated to dieting, trouble sleeping or sleeping too much, loss of energy or increased fatigue, increased in purposeless physical activity (e.g., hand-wringing or pacing) or slowed movements and speech, feeling worthless or guilty, feeling worthless or guilty, difficulty thinking, concentrating or making decisions, thoughts of death or suicide. A gloomy mood or a loss of interest or pleasure are at least two symptoms [1].

Although it is not always apparent what causes depression in a person, several risk factors appear to enhance the likelihood of a child or adolescent developing depression. These include a parent or sibling's history of depression, family dysfunction or conflict with a caregiver, early adversity (such as abuse, neglect, or the loss of a loved one when young), problems with friends or school, a negative outlook or poor coping skills, previous bouts of depression, anxiety disorders, learning disabilities, history of brain injury, and chronic medical illness [2]. Low parental warmth, excessive maternal antagonism, and growing adolescent-parent conflict are all major characteristics related with depression in adolescents; in addition, perceived rejection by peers, parents, and teachers predicts an increase in depressive symptoms in children and adolescents. Another key issue is lifestyle, since elements related with the adoption of a non-traditional lifestyle have been linked to an increase in the prevalence of depression [3].

Poor familial ties, smoking, substance use, bullying, physical aggression, suicide ideation and behavior, and other factors that have a direct impact on adolescents' health and wellbeing have been reported to be connected with mental health disorders such as depression and anxiety among teenagers [4]. Only a few studies in the Arab world have looked into the topic of bullying and physical violence in schools. Various prevalence percentages were discovered in these investigations, ranging from 20.9 percent in the United Arab Emirates to 44.2 percent in Jordan. A nationally representative sample of Egyptian teens found similar proportions (31%) as well. The first nationally representative sample of adolescents in the Kingdom of Saudi Arabia (KSA) was recently revealed to have a prevalence of 25.0 % bullying and 20.8 % physical violence at schools [5].

Between 2005 and 2015, the total estimated number of people living with depression increased by 18.4%, and the global prevalence of depressive disorders among females aged 15 to 19 was 4.5 percent [6]. Depressive symptoms may impact as much as 30% of the general population, with women being twice as likely as men to be affected [7]. According to a recent study of 1245 Saudi Arabian high school students, 34 percent were mildly depressed, 306 (24.6%) were moderately sad, 129 (10.4%) were moderately severe depressed, and 62 (5.0%) were seriously depressed [8]. In children and adolescents, depressive disorders are prevalent [9]. It is the tenth largest

cause of sickness and disability among all adolescents, according to the World Health Organization (WHO). Around 16% of adolescents worldwide suffer from mental health issues. Mental health illnesses affect around 20% of children and adolescents in the United States. Another example is a study conducted in 2010 and 2011 in the United States of adolescents aged 12 to 17 years old (n >45,000), which indicated that the one-year prevalence of serious depression was 8% [10].

Youth who are depressed are at a higher risk of mental disorders such as anxiety, conduct disorders, and substance abuse. Therefore, early screening to identify and treat depression is needed to prevent the development of adulthood depression and other mental disorders [11].

The objectives include studying the prevalence and associated risk factors of depression among public secondary school female students in Majmaah city. The other objectives include: identifying the socioeconomic status of the female students attending public secondary schools in Majmaah city, during 2019-2020. Also, determining the prevalence of depression among female students of public secondary schools in Majmaah city, during 2019-2020. Finally, the assessment of risk factors associated with depression among female students of public secondary schools in Majmaah city, during 2019-2020.

MATERIALS AND METHODS

Study design: Descriptive cross-sectional institutional based study.

Study area: Majmaah city has a total of 12 secondary schools for girls distributed as 1 Islamic school (Tahfez al-Quran) ,8 public schools, 2 private schools and one for adult education. Each school has a different distribution of students, but the average is between 140-250 secondary school female students. Each school has about 7 classes and each class has about 22-25 students. The total number of the secondary female students is about 1754 students.

Study population: The study population was female students of public secondary schools of Majmaah city which has about 1605 students.

Inclusion criteria:

- Public secondary schools.
- Female students.
- Saudi and non-Saudi.
- First-year, second-year, and third-year students

Exclusion criteria:

- Secondary school male students.
- Private schools.
- Islamic school.
- Adult school education

Sampling

Sample type: Cluster sampling, the number of schools that included in our research was 8 public schools, out of which 6 schools were selected by simple random sample.

Sample size: The sample size was calculated using the following formula

$$n = \frac{NZ^2 \times P\,(1-P)}{Nd^2 + Z^2\,P\,(1-P)}$$

Where; n = sample size, N = study population, P = prevalence, and Z = standard Error

Calculation: $n = \frac{8\times(1.96)^2\times0.5\times(1-0.5)}{8\times(0.05)^2+(1.96)^2\times0.5\times(1-0.5)} = \frac{7.68}{1.12} = 6$

The number of students was calculated by using the sample size calculation formula

$$n = \frac{z^2 \times pq}{d^2}$$

Calculation:

$$\frac{1.96^2 \times (0.6265)(0.3735)}{0.05^2} = 360$$

Sample size in each school: We considered as 400 students for better results.

Table 1: Sample size in school.

SCHOOL	NUMBER OF FEMALE STUDENTS
The third secondary school in Majmaah	400 × (12.23%) = 49
The first secondary school in Majmaah	400 × (10.66%) = 43
The fifth secondary school in Majmaah	400 × (13.47%) = 54
The sixth secondary school in Majmaah	400 × (20.17%) = 81
The first secondary school in Harmmah	400 × (20.08%) = 80
The second secondary school in Majmaah	400 × (23.39%) = 93
Total	400

Data collection instruments: We used "The Patient Health Questionnaire-9" (PHQ-9) to assess the depression; The PHQ-9 incorporates DSM-IV depression diagnostic criteria into a brief self-report tool. The cut point of the PHQ9 is equal or greater than 10.

The PHQ-9 has five categories:

- 0–4 as 'none'
- 5–9 as 'mild'
- 10–14 as 'moderate'
- 15–19 as 'moderately severe'
- 20–27 as 'severe'

The assessment of the risk factors was collected by using self-administered anonymous checklist.

Study variables:

- Age
- Social state
- Prevalence of disease
- Residence
- Level education of family
- Number of family members

Data analysis: Data were analyzed by using SPSS program.

RESULTS

400 students were voluntarily involved in this study. The age range of the students was from 14-22 years old, where 48.8% (n=195) of students were from 17-19 years old, 38.8% (n=155) were between 14-16 years old, and 12.5% (n=50) were between 20-22 years old.

Most of them have 5-10 family members 81% (n=332), 12% (n=48) have more than 10 family members, and 7% (n=28) have 1-4 members in their family. 40% of

students the level of father's education was Bachelor's degree, 32.5% of were secondary school, 13.8% was intermediate school, 8.8% was a primary school, and 5% was illiterate. 36% of students the level of mother's education was Bachelor's degree, 22.5% was secondary school, 17.3% was intermediate school, 13.5% was a primary school, and 10.8% was illiterate. Most of the students their fathers' work 71% (n=284), and their mothers don't work (66.5%). 90.3% of students their parents were married and 89.9% were alive.

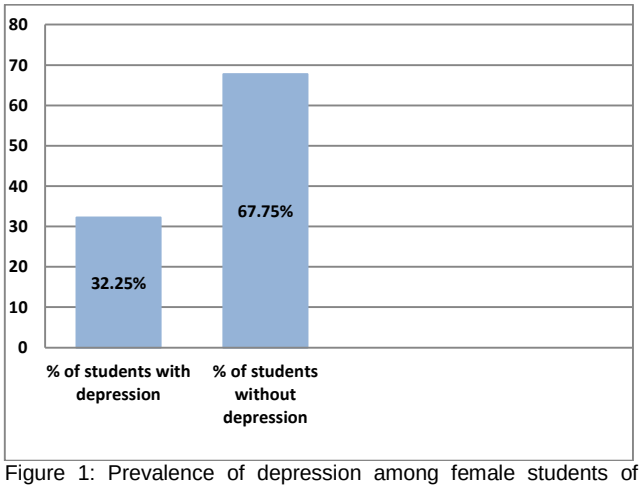

Figure 1: Prevalence of depression among female students of public secondary school in Majmaah, KSA in 2019-2020.

This figure shows the overall prevalence of depression among female students of public secondary schools, 32.25% of the students were having depression while 67.75% have no depression **(Figure 1)**.

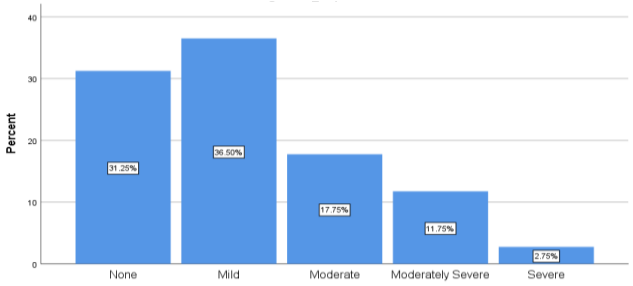

Figure 2: Level of depression among female students of public secondary school in Majmaah, KSA in 2019-2020.

Among those who were depressed majority had mild depression 36.50%, 17.75% had moderate depression, 11.75% had moderately severe depression, and 2.75% had severe depression **(Figure 2)**.

Table 2 shows that most of the students had the risk factors that may be associated with depression such as losing an important person in their life, 38.8% (n=155); weak handling of life stress, 26.5% (n=106); previous episodes of depression or anxiety, 26.8% (n=107); problems at school or with friends, 20.5% (n=82); family problems, 14% (n=56); and exposure to bullying, 11.3% (n=45).

Table 2: Risk factors of depression among female students of public secondary schools in Majmaah city, KSA in 2019-2020.

Risk Factors	Yes n (%)	No n (%)	I don't know n (%)
History of depression.	14(3.5%)	320(80%)	66(16.5%)
Family problems.	56(14%)	325(81.3%)	19(4.8%)
Family neglect.	34(8.5%)	346(86.5%)	20(5%)
Losing an important person in your life.	155(38.8%)	236(59%)	9(2.3%)
Problems at school or with friends.	82(20.5%)	302(75.5%)	16(4%)
Satisfaction with personal appearance.	344(86%)	42(10.5%)	14(3.5%)
Life stress	106(26.5%)	246(61.5%)	48(12%)
Previous episodes of depression or anxiety.	107(26.8%)	266(66.5%)	27(6.8%)
Learning problems.	29(7.2%)	361(90.3%)	10(2.5%)
History of head injury.	34(8.5%)	354(88.5%)	12(3%)
Chronic diseases.	21(5.3%)	368(92%)	11(2.8%)
Smoking or using illegal substances.	8(2%)	386(96.5%)	6(1.5%)
Exposure to violence.	11(2.8%)	382(95.5%)	7(1.8%)
Exposure to bullying.	45(11.3%)	343(85.8%)	12(3%)
Total	1046(261.7%)	4277(1069.4%)	277(69.5%)

Table 3: Association of mild depression with risk factors of depression among female students of public secondary schools in Majmaah city KSA in 2019-2020.

No.	Risk factor	Number of students with mild depression	Percentage	P-value
1	History of depression	6	4.1%0	0.000
2	Family problems	20.4	2.3%	0.000
3	Family neglect	4	2.7%	0.000
4	Losing an Important Person	56.6	15.3%	0.010
5	Problems at school or with friends	25	17.1%	0.000
6	Satisfaction with personal appearance	126	86.3%	0.000
7	Life stress	30	20.5%	0.000
8	Previous episode of depression or anxiety	36	24.7%	0.000
9	Learning problems	6	4.1%	0.000
10	History of head injury	13	8.9%	0.008
11	Chronic disease	14	9.6%	0.001
12	Smoking and using of illegal substance	3	2.1%	0.142
13	Exposure to violence	2	1.4%	0.000
14	Exposure to bullying	13	8.9%	0.000
	Total	355	223.5%	

Table 3 shows that there was a significant association between mild depression and risk factors among secondary school female students. 4.1% of students had a family history of depression (p<0.001) while 2.3% of students had a family problem (p<0.001) and 2.7% had family neglect (p<0.001). 15.3% of students had been losing an important person in their life (p=0.010). 17.1% of students had problems at school (p<0.001) and most of the students were satisfied with their personal appearance 86.3% (p<0.001), 20.5% had life stress (p<0.001) while 24.7% had the previous episodes of depression or anxiety (p<0.001), 4.1% of student had learning problems (p<0.001), 8.9% of student had a history of head injury (p=0.008), 9.6% of student had the chronic disease (p=0.001), 2.1% of student

were smoking and using an illegal substance, and 1.4% of student had been exposed to violence while 8.9% exposed to bullying (p<0.001).

Table 4: Association of moderate depression with risk factors of depression among female students of public secondary schools in Majmaah city, KSA in 2019-2020.

No.	Risk Factors	Number of students with moderate depression	Percentage	P-value
1	History of depression	3	4.2%	0.000
2	Family problems	9.9	5%	0.000
3	Family neglect	9	12.7%	0.000
4	Losing an important person in your life	27.5	9%	0.010
5	Problems at school or with friends	19	26.8%	0.000
6	Satisfaction with personal appearance	65	91.5%	0.000
7	Life stress	34	47.9%	0.000
8	Previous episodes of depression or anxiety	29	40.8%	0.000
9	Learning problems	6	8.5%	0.000
10	History of head injury	7	9.9%	0.008
11	Chronic diseases	4	5.6%	0.001
12	Smoking or using illegal substances	2	2.8%	0.142
13	Exposure to violence	3	4.2%	0.000
14	Exposure to bullying	8	11.3%	0.000
	Total	226.4	280.2%	

Table 5: Association of moderately severe depression with risk factors of depression among female students of public secondary schools in Majmaah city KSA in 2019-2020.

No.	Risk factor	Number of students with moderately severe depression	Percentage	P-value
1	History of depression	4	8.5%	0.000
2	family problems	6.6	4.0%	0.000
3	family neglect	14	29.8%	0.000
4	Losing an important person in your life	18.2	4.8%	0.010
5	Problem at school or with friends	21	44.7%	0.000
6	Satisfaction with personal appearance	35	74.5%	0.000
7	Life stress	27	57.4%	0.000
8	Previous episodes of depression or anxiety	29	61.7%	0.000
9	Learning problems	9	19.1%	0.000
10	History of head injury	4	8.5%	0.008
11	Chronic disease	2	4.3%	0.001
12	Smoking or using illegal substances	1	2.1%	0.142
13	Exposure to violence	4	8.5%	0.000
14	Exposure to bullying	18	38.3%	0.000
	Total	192.8	366.2%	

Table 4 shows that there was a significant association between moderate depression and risk factors among secondary school female students. 4.2% of students had a family history of depression (p<0.001) while 5% of students had a family problem (p<0.001) and 12.7% had family neglect (p<0.001), 9% of students had been losing an important person in their life (p=0.010). 26.8% of students had problems at school (p<0.001) and most of the students were satisfied with their personal appearance 91.5% (p<0.001). 47.9% had life stress (p<0.001) while 40.8% had the previous episodes of depression or anxiety (p<0.001), 8.5% of students had learning problems (p<0.001), 9.9% of students had a history of head injury (p=0.008), 5.6% of student had the chronic disease (p=0.001), 2.8% of student were smoking and using an illegal substance, 4.2% of student had been exposed to violence while 11.3% exposed to bullying (p<0.001).

Table 5 shows that there was a significant association between moderately severe depression and risk factors among secondary school female students. 8.5% of students had a family history of depression (p<0.001) while 4.0% of student had a family problem (p<0.001) and 29.8% had family neglect (p<0.001). 4.8% of students had been losing an important person in their life (p=0.010). 44.7% of students had problems at school (p<0.001) and most of the students were satisfied with their personal appearance 74.5% (p<0.001), 57.4% had life stress (p<0.001) while 61.7% had the previous episodes of depression or anxiety (p<0.001), 19.1% of students had learning problems (p<0.001), 8.5% of students had a history of head injury (p=0.008), 4.3% of student had the chronic disease (p=0.001), 2.1% of student were smoking and using an illegal substance, 8.5% of students had been exposed to violence while 38.3% exposed to bullying (p<0.001).

Table 6: Comparison between severe depression and risk factors of depression among female students of public secondary schools in Majmaah city KSA in 2019-2020.

No.	Risk factor	Number of students with severe depression	Percentage	P-value
1	History of depression	1	4.1%	0.000
2	Family problems	7	2.3%	0.000
3	Family neglect	6	2.7%	0.000
4	Losing an Important Person	6	15.3%	0.010
5	Problems at school or with friends	6	17.1%	0.000
6	Satisfaction with personal appearance	5	86.3%	0.000
7	Life stress	7	20.5%	0.000
8	Previous episode of depression or anxiety	10	24.7%	0.000
9	Learning problems	4	4.1%	0.000
10	History of head injury	4	8.9%	0.008
11	Chronic disease	0	9.6%	0.001
12	Smoking and using of illegal substance	1	2.1%	0.142
13	Exposure to violence	2	1.4%	0.000
14	Exposure to bullying	5	8.9%	0.000
	TOTAL	64	208%	

Table 6 shows that there was a significant association between severe depression and risk factors among secondary school female students. 9.0% of students had a family history of depression (p<0.001) while 63.6% of students had a family problem (p<0.001) and 54.5% had family neglect (p<0.001), 54.5% of students had been losing an important person in their life (p=0.010). 54.5% of students had problems at school (p<0.001) and most of the

students were satisfied with their personal appearance 45.5% (p<0.001). 45.5% had life stress (p<0.001) while 90.0% had the previous episodes of depression or anxiety (p<0.001), 36.4% of student had learning problems (p<0.001), 36.4% of student had a history of head injury (p=0.008), 0.0% of student had the chronic disease (p=0.001), 9.1% of student were smoking and using an illegal substance, 18.2% of student had been exposed to violence while 45.5% exposed to bullying (p<0.001).

DISCUSSION

There were 400 students chosen and voluntarily involved in this study. The age range of the students was from 14 to 22 years old, where 48.8% of students were from 17-19 years old, 38.8% were between 14-16 years old, 12.5% were between 20-22 years old. Most of them have 5-10 family members 81%, 12% have more than10 family members, 7% have 1-4 members in their family. 40% of students the level of father's education was Bachelor's degree, 32.5% of were secondary school, 13.8% was intermediate school, 8.8% was a primary school, and 5% was illiterate. 36% of students the level of mother's education was Bachelor's degree, 22.5% was secondary school, 17.3% was intermediate school, 13.5% was a primary school, and 10,8% was illiterate. Most of the students their fathers' work 71%, and their mothers don't work 66.5%. 90.3% of students their parents were married and 89.9% were alive.

This cross sectional-study explored the prevalence of adolescent depression among female secondary students in Majmaah city, KSA. We used the PHQ-9 questionnaire to assess students' depression symptoms. Scores ≥10 on the PHQ-9 represent clinically significant depression. Based on our findings, 32.25% of the students were having depression while 67.75% have no depression. Similar results were found in a study done in US in 2004, which showed that 25% of female adolescents reported symptoms of depression [12]. Also, a study done in Qatar 2017, showed that 34.5% of Qatari adolescents in secondary schools have depression [13].

Internationally, the prevalence of depression has generally been found to be better: 7.1% in Hungary, 7.6% in Austria, 7.6% in Romania, 7.9% in Estonia, 8.5% in Ireland, 8.6% in Spain, 9.2% in Italy, 11.4% in Slovenia, 12.9% in Germany, 15.4% in France, and 19.4% in Israel [14].

However, a study from Bangladesh had a different result, 42.9% of female adolescents reported depressive symptoms [15]. These variations could be related to using different measurement tools, and different sample sizes. While in the Kingdom of Saudi Arabia specifically in Riyadh there was another study manifested a result, which was a 30% of the participants were found to be depressed and it's almost similar to our results [11].

Therefore, at Qassim region among 1245 high school students participated in a study and by using (PHQ-9) the result has shown that 325 (26.0%) were not depressed, 423 (34%) were mildly depressed, 306 (24.6%) were moderately depressed, whereas 129 (10.4%) were moderately severe depressed and 62 (5.0%) were severely depressed. In comparison to our results, the moderate and moderately severe were higher with 17.75% and 11.75% respectively. While the percentage of the severe was lesser 2.75% and this difference in the total of the outcome may be due to geographical locations and due to the different customs and traditions and the level of social openness, which makes girls under greater pressure in this period towards their future, their careers, and their limited available options [8].

On the other hand, in Abha, a study was done among 545 secondary school female students and shows that the prevalence of symptoms of depression was 41% [10]. This showed a difference from our results, perhaps because of the weak income of individuals in that region, and perhaps because it tends as a rural area, so the level of awareness of its population is also weak. One of the aims of this study is to assess the risk factors associated with depression among female students of public secondary schools in Majmaah city. It was found that most of the students had the risk factors that may be associated with depression such as losing an important person in their life 38.8% (n=155), life stress 26.5% (n=106), previous episodes of depression or anxiety 26.8% (n=107), problems at school or with friends 20.5% (n=82), family problems 14% (n=56), and exposure to bullying 11.3% (n=45).

Family problems showed one of the risk factors of depression14% (n=56), which is similar to another study done to assess risk factors for depressive symptoms and major depressive episodes (MDE) in adolescence. Participants were 648 males, 674 females from 12-19 years. The result showed that decreases in social support and increases in smoking were both linked to increases in depressive symptoms [16].

Bullying is one of the risks that has been linked to depression. In this study, 11.3 percent (n=45) of the participants were bullied or victimized, which is similar to another study that involved 785 teenagers and looked into the links between bullying and victimization and non-suicidal self-injury (NSSI). All of the participants filled out surveys about bullying, victimization, NSSI, depression, and parental support. Nearly 21% of adolescents participated in at least one form of NSSI, according to the findings. Both bullying and being bullied increased the risk of engaging in NSSI, and the researchers discovered that the relationships between bullying and victimization, as well as the relationship between depressive mood and NSSI, were moderated by parental support, indicating that these relationships were less pronounced in adolescents who had high parental support [17].

Also, life stress (n=106) and a previous episode of depression (n=107) show a significant association with depression in this study, which is similar to another study that looked at the specificity of a wide range of psychosocial risk factors in older adolescents with 1,507 students randomly selected from high schools to determine the specificity to major depressive disorder (MDD) [18].

According to our findings, parental neglect is associated with a lower rate of depression (8.6%), which differs from another study conducted in the United States to determine the incidence of child maltreatment. The results revealed that supervisory neglect was the most common (41.5%), followed by physical assault (28.4%), and physical neglect (11.8%). Each sociodemographic feature was linked to more than one type of abuse, and this difference

can be attributed to students' good socioeconomic situation and the fact that most of them had family support [19].

Compared to another study that aimed to investigate the associations between different levels of depression with different aspects of school performance and The target population were 2516, 7th–9th grade (13-17 years), and results showed that depression was associated with difficulties in concentration, social relationships, self-reliant school performance [20], which is the difference from our result this could be related to prevalence of depression and good social relationship of students.

CONCLUSION

Based on findings, 32.25% of the students were having depression while 67.75% have no depression. It was found that most of the students had the risk factors that could be associated with depression. The majority of them had mild depression and very few had severe depression. A regular depression screening in the female adolescent population is required to identify those adolescents who require counseling or treatment to improve their coping skills and problem-solving abilities. Adolescents' coping strategies can be improved by such programs, which can help them overcome depression and prevent mental health problems in this sensitive group.

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