Jordan Journal of Nursing Research, Volume **2**, No. **1**, **2023**
DOI: https://doi.org/10.14525/JJNR.v2i1.08

Jordan Journal of Nursing Research

Journal homepage: https://jjnr.just.edu.jo/jjnr/

Depression and Depression Literacy among Adolescent School Students

Yasmin Al-Shannaq, RN, PMHCNS, PhD [1*]; Sajeda Darwish, RN, MSN [2]; Anas A. Mohammad, RN, PhD [3]; Diana Jaradat, RN, PhD [4]

1 *Assistant Professor, Community and Mental Health Nursing Department, Faculty of Nursing, Jordan University of Science and Technology, Irbid, Jordan. * Corresponding Author: Email: ymshannaq@just.edu.jo*
2 *Registered Nurse, Faculty of Nursing, Jordan University of Science and Technology, Irbid, Jordan.*
3 *Assistant Professor, Adult Health Nursing Department, Faculty of Nursing, Jordan University of Science and Technology, Irbid, Jordan.*
4 *Assistant Professor, Community and Mental Health Nursing Department, Faculty of Nursing, Jordan University of Science and Technology, Irbid, Jordan.*

ARTICLE INFO

Article History:
Received: September 7, 2022
Accepted: November 27, 2022

ABSTRACT

Background: Adolescent mental health is a major public health issue. It is important to educate adolescents and their families about mental illnesses. However, very little attention has been paid to mental health literacy among individuals, particularly among adolescents. ***Purpose:*** The aim of this study is to assess depression and depression literacy levels, as well as their correlations among a sample of school students. ***Methods:*** Anonymous self-report questionnaires were used to conduct a cross-sectional study. This was to gather data from three public schools in the northern region of Jordan. ***Results:*** The study sample included a total of 225 participants, with 55.6% being female and the mean age being 15.09 (SD = 1.89). About 45% of these students were found to have depression symptoms and 27.6% of them had moderate and severe levels of depression. The participants were also found to have very low levels of depression literacy. A significant positive correlation was found between depression symptoms and depression literacy. The predictors of depression symptoms were gender, grade point average and monthly family income. The predictors of depression literacy were fathers' educational level, physical exercise and family history of mental health problems. ***Conclusion:*** The findings highlight the urgent need for improving knowledge about mental illness among adolescents. Further research and strong support are highly recommended, specifically regarding issues that affect adolescents' mental health. ***Implications for Nursing:*** The discussion covers several intervention implications and suggestions aiming to maintain adolescents' psychological well-being. For example, nursing leaders should develop and implement programs for assessing depression, providing counselling and enhancing mental health literacy among adolescent school students.

Keywords: Depression, Depression literacy, Mental health, Adolescents, School students.

What does this paper add?

1. Adolescent school students have very low depression literacy levels.
2. There is a significant positive correlation between depression symptoms and depression literacy among adolescents.
3. More attention is required for enhancing mental health literacy (MHL) in school students by ongoing support and research.
4. Nurses' efforts need to be directed towards effectively improving and integrating mental health programs and services in schools to both meet and support adolescents' mental health needs.

Introduction

Adolescence is a crucial transitional period in an individual's life, since it is linked to many issues and challenges in various aspects (Dardas et al., 2018). As defined by the World Health Organization (WHO), adolescence is "the transitional period of life with specific health and developmental needs and rights between childhood and adulthood" (WHO, 2022). The development of social and emotional behaviors, which are crucial for an individual's psychological well-being, problem-solving, coping and interpersonal abilities, occurs during adolescence (Wei et al., 2013). This helps build a healthy foundation for life (Wei et al., 2013). Such a foundation can incorporate aspects of both mental and physical health among adolescents to become healthy citizens (Wei et al., 2013). Research has proven that an adolescent's psychological and physical health, as well as his/her social and academic achievements, are both negatively affected by mental health problems (Carrellas et al., 2017; Steptoe et al., 2007). Depression is a very common mental health problem amongst adolescents (Perre et al., 2016; Reavley et al., 2012). Sadly, the onset of depression is not recognized or is misdiagnosed in adolescents and when diagnosed, it is often not properly treated (Arbanas, 2008). Any untreated mental health problems among adolescents are considered a significant risk factor for low academic performance, a high absence rate and a low desire to continue study (Aluh et al., 2018). They may also have poor communication skills and defective interpersonal and familial relationships (Bhatia & Bhatia, 2007; Rugulies, 2002 as cited by Wei et al., 2015). Consequently, they become more vulnerable to exhibiting risky behaviors, such as smoking, substance abuse and suicide when compared to other age groups (Aluh et al., 2018; Carrellas et al., 2017; Steptoe et al., 2007). Ultimately, this can result in lower life expectancy and they may develop chronic conditions, such as diabetes mellitus (DM), hypertension (HTN) and heart disease (Bhatia & Bhatia, 2007; Rugulies, 2002 as cited by Wei et al., 2015). Therefore, mental health during adolescence has gathered plenty of attention, as it is a major global public health problem (Carrellas et al., 2017).

The level of mental health literacy (MHL) can determine the state of mental health. Having good MHL affects an adolescent's help-seeking attitudes and may have lower stigma (Al-Shannaq & Aldalaykeh, 2021; Amarasuriya et al., 2015; Lam, 2014; Perre et al., 2016; Wei et al., 2016). Higher levels of MHL among adolescents may improve their mental health status and early help-seeking attitudes before the development of mental health issues/disorders (Lam, 2014; Perre et al., 2016). Moreover, MHL draws attention to the significance of developing and supporting the skills to cope with life stressors, as well as providing and knowing available support services for this age group (Okello et al., 2014). MHL is defined as "knowledge and beliefs about mental disorders which aid their recognition, management or prevention" (Jorm et al., 1997, p. 182). This concept includes the following components: "(a) the ability to recognize specific disorders or different types of psychological distress; (b) knowledge and beliefs about risk factors and causes; (c) knowledge and beliefs about self-help interventions; (d) knowledge and beliefs about professional help available; (e) attitudes which facilitate recognition and appropriate help seeking and (f) knowledge of how to seek mental health information" (Jorm, 2000, p. 396). Based on its definition and components, MHL is conceptualized as a broad and multi-dimensional concept (Jorm, 2000). In this study, the researchers narrowed MHL to focus only on depression literacy. Depression literacy is defined as "knowledge about depression as a psychiatric disorder and about the epidemiology, etiology, symptomatology, treatment and prognosis of depression" (Nijam et al., 2013, p. 2). Increasing the knowledge about depression should be a key approach when it comes to preventing depression among adolescents (Aluh et al., 2018; Lam, 2014). Higher levels of depression literacy may help prevent depression, recognize it early and offer opportunities for early management (Arafat et al., 2019; Lam, 2014). Such timely identification and management can prevent any complications of depression, such as substance abuse, suicide and subsequent injury or disability (Arafat et al., 2019; Steptoe et al., 2007). Further, research indicates that socio-demographic characteristics may be related to depression and depression literacy, including gender and age. For instance, Dardas et al. (2018) discovered that among a representative sample of Jordanian adolescents aged 12-17 years, males were less likely to report depression symptoms than females. This same study found that age had a significant relation to the adolescents' depression scores. Reavley et al. (2012) found that depression

literacy was associated with age and gender among students.

Despite the interest in MHL increasing across the world (Carrellas et al., 2017), evidence shows that middle-income and low-income countries have low levels of MHL (Tibebe & Tesfay, 2015). To date, very little attention has been paid to MHL in adolescents. To address issues that affect adolescents' mental health, further research and strong support are crucial. In Jordan, there are no studies that have investigated both depression symptoms and depression literacy among adolescent school students, which indicates a knowledge gap. Hence, this current study seeks to assess depression symptoms and depression literacy and their correlations among a sample of Jordanian adolescent school students. More specifically, this study intends to:

1. Assess the levels of depression and depression literacy among a sample of adolescent school students.
2. Identify gender-based differences in depression and depression literacy scores.
3. Examine the relationships between depression, depression literacy and age.
4. Identify the predictors of depression and depression literacy among a sample of adolescent school students.

Methods

Design and Sample

A quantitative, descriptive, correlational, cross-sectional design was employed to investigate depression and depression literacy among a sample of adolescent school students in Jordan. Three public (governmental) schools from northern Jordan were chosen for the recruitment of the participants. These schools were chosen due to their convenient geographic proximity to the researchers and the availability of the target population. This study adopted the convenience-sampling technique. Therefore, the following inclusion criteria had to be met in order to participate in this study: (a) students aging from 12 to 18 years; (b) being healthy (i.e., without any known physical or mental illnesses); and (c) students with no known learning or cognitive disabilities. The exclusion criteria were: (a) not belonging to the set age range (12-18 years); (b) having any history of diagnosed physical or mental illnesses and (c) having a history of learning or cognitive difficulties. Those with learning or cognitive difficulties were excluded, because they may have problems in understanding, reading and answering this study's questionnaires. The sample size was determined by using the G*power 3.1 software (Faul et al., 2009). For multiple linear-regression analysis, a medium effect size was used (Cohen's f =0.15) (Cohen, 1988). Statistical power was set at 0.80 and alpha was 0.05. The number of students who finished the survey totaled 225 students, with the minimum required sample size being n=163.

Ethical Considerations

The principal investigator's affiliated university, the Ministry of Education (MOE) and the schools from where data was collected all gave institutional review board (IRB) approvals. The students' participation was totally voluntary. Their participation did not interfere with their academic achievement and they are free to pull out of this study at any time. Further, their parents signed an informed consent form (parent's consent) and verbal agreement from each participant was also obtained (adolescent's assent). The printed questionnaires were answered confidentially, with ID numbers and results reported anonymously. No identifying information was collected on the study questionnaires. Considering the possibility that some survey questions could awaken unfavorable feelings or negative emotions, students were given the freedom to choose not to answer any questions that might be upsetting to them.

Data Collection Procedures

The recruitment and data collection processes took place in person at the selected schools. One of the researchers verbally explained the study protocol (i.e., the study's purpose, methods, inclusion and exclusion criteria and any possible benefits or risks involved) to potential participants through a meeting with them in one of their school classrooms. The data was collected physically in the classroom using a printed questionnaire, from September 10th to September 23rd, 2020, the two weeks before school closure due to the ongoing COVID-19 pandemic restrictions. The same researcher remained available to collect the completed questionnaires and answer any of the students' questions.

Measures

Demographic Data

The sample characteristics were gathered using a demographic questionnaire. It included the student's age, gender, grade, grade point average (GPA), physical exercise, smoking status and the nature of the relationship with his/her parents. It also questioned the family's monthly income, parents' educational level, parents' employment status and any history of attending educational sessions or seminars on mental health. Further, the questionnaire asked about the existence of any mental illnesses in the student's family.

Beck Depression Inventory-II (BDI-II)

The severity of depression and any symptoms experienced by the participant during the last two weeks were measured by the BDI-II, which contains 21 items (Beck et al., 1996). This scale was a 4-point Likert scale for scoring, ranging between 0 (no symptoms present) and 3 (symptoms strongly present). The total score ranges between 0 and 63, with 13 being the cut-off score signifying depression (Beck et al., 1996). Normal (i.e., no depression) scores range from 0 to 13; scores indicating mild depression range from 14 to 19; scores indicating moderate depression range from 20 to 28 and scores indicating severe depression range from 29 to 63 (Beck et al., 1996). This study used a validated Arabic version of the BDI-II scale (Al-Kaabi et al., 2017; Al-Shannaq et al., 2021; Dardas et al., 2018). The BDI-II scale in this study had a Cronbach's α value of 0.93.

Depression Literacy Questionnaire (D-Lit)

The participants' knowledge and familiarity with depression were assessed using the D-Lit scale, which consists of 22 items (Gulliver et al., 2012). Each correct answer per item received 1 point from three possible answers, which include true, false or I don't know. The incorrect and "I don't know" answers received 0 points, and the correct answer received 1 point. The overall score ranged between 0 and 22, with a higher score indicating a higher level of depression literacy (Gulliver et al., 2012). This study used a validated Arabic version of the D-Lit scale (Darraj et al., 2016; Elsheshtawy et al., 2020).

Data Analysis

The Statistical Package for Social Sciences software (SPSS, version 25.0) was used to analyze the collected data. The characteristics of the sample and the study measures (BDI-II and D-Lit) were described using descriptive statistics. Ranges, means and standard deviations were used for the continuous variables, while percentages and frequencies were used for the categorical variables. The relationships between depression, depression literacy and age were examined by using the Pearson product-moment correlation coefficient. The differences in the mean total depression and the depression literacy scores were examined based on gender, using the independent-sample t-test for the two groups (males and females). Finally, to determine the significant factors that predict the sample's depression and depression literacy scores, we ran simultaneous multiple regression. Depression and depression literacy scores were entered as the outcome variable, whilst demographic characteristics were entered as potential predictors. The dummy codes comprised four categorical variables (namely, grade, GPA, father's educational level and mother's educational level). The reference group was the most frequent category, whereby the reference group for gender, as an example, was the group of females. Additionally, based on the preliminary analysis, there was no violation of the regression assumptions, which included linearity, homoscedasticity and normality. The level of significance (p value) was less or equal to 0.05.

Results

Sample Characteristics

Two hundred and twenty-five students participated in the study. Most of the students were females (n=125, 55.6%), in the seventh grade (n = 43, 19.1%) and had a very good GPA (80-89) (n = 94, 41.8%). The students' ages ranged between 12 and 18 years, with the mean age being 15.9 (SD = 1.89). The families' monthly income ranged from 300 to 1600 JOD and the mean of monthly family income was 508.71±220.85 Jordanian Dinars (JOD) [U.S.= $705]. About a half of the students did not do any physical exercise (n = 117, 52%). The majority of the students were non-smokers (n = 206, 91.6%), had a good relationship with their parents (n = 194, 86.2%) and did not attend lectures/seminars on mental health issues (n = 195, 86.7%). Only 21 (9.3%) students reported a member of their family having a history of mental illness. Table 1 shows the students' characteristics.

Table 1. Socio-demographic characteristics of the participants (n = 225)

Variable	Category	n (%)	M (SD)
Age (years)			15.09 (1.90)
Monthly family income			508.71 (220.58)
Gender	Female	125 (55.6%)	
	Male	100 (44.4%)	
Grade	7th	43 (19.1%)	
	8th	32 (14.2%)	
	9th	34 (15.1%)	
	10th	35 (15.6%)	
	11th	40 (17.8%)	
	12th	41 (18.2%)	
GPA	90-100 (Excellent)	60 (26.7%)	
	80-89 (Very good)	94 (41.8%)	
	70-79 (Good)	58 (25.8%)	
	≤ 69 (Fair)	13 (5.8%)	
Father's educational level	High school and below	64 (28.4%)	
	Undergraduate degree	148 (65.8%)	
	Graduate degree	13 (5.8%)	
Mother's educational level	High school and below	72 (32%)	
	Undergraduate degree	145 (64.4%)	
	Graduate degree	8 (3.6%)	
Father's employment status	Yes	178 (79.1%)	
	No	47 (20.9%)	
Mother's employment status	Yes	93 (41.3%)	
	No	132 (58.7%)	
Physical exercise	Yes	108 (48%)	
	No	117 (52%)	
Smoking	Yes	19 (8.4%)	
	No	206 (91.6%)	
Relationship with parents	Good	194 (86.2%)	
	Bad	31 (13.8%)	
Family history of mental illness	Yes	21 (9.3%)	
	No	204 (90.7%)	
Attending lectures/seminars on mental health	Yes	30 (13.3%)	
	No	195 (86.7%)	

Note. GPA: Grade Point Average.

Depression

Table 2 shows the depression symptom severity levels among the participants by using the Beck Depression Inventory II (BDI-II) scale. The analysis revealed that the mean total score was 13.92 (SD = 12.60), with scores ranging from 0 to 55. Regarding the depression severity levels, the results showed that about 45% (n = 101) of the students were suffering from depression symptoms and 62 (27.6%) students reported scores that indicate moderate and severe depression levels.

Table 2. Depression symptoms severity (n = 225)

Cuto-ff Scores	Depression Severity	n	%
0-13	Normal	124	55.1
14-19	Mild	39	17.3
20-28	Moderate	31	13.8
29-63	Severe	31	13.8

Depression Literacy

Table 3 shows the correct answers to items from the Depression Literacy (D-Lit) scale. The analysis showed that the mean (SD) for the total D-Lit scores among participants was 6.77 (SD = 3.16), with scores ranging from 0 to 16. This reflects relatively low levels of depression literacy among the study sample. Additionally, the participants found it difficult to answer the items correctly. Over 50% of the participants could correctly identify only four items at most. These four items were as follows: eating problems (53.8%), feeling guilt (52.9%), loss of confidence and poor self-esteem (50.2%) and sleeping problems (50.2%).

Table 3. Correct responses to items from the depression literacy scale (D-Lit) (n = 225)

Item	Percentage of correct responses
People with depression often speak in a rambling and disjointed way (F)	20.9
People with depression may feel guilty when they are not at fault (T)	52.9
Reckless and foolhardy behavior is a common sign of depression (F)	38.2
Loss of confidence and poor self-esteem may be a symptom of depression (T)	50.2
Not stepping on cracks in the footpath may be a sign of depression (F)	32.0
People with depression often hear voices that are not there (F)	36.9
Sleeping too much or too little may be a sign of depression (T)	50.2
Eating too much or losing interest in food may be a sign of depression (T)	53.8
Depression does not affect your memory and concentration (F)	40.9
Having several distinct personalities may be a sign of depression (F)	22.2
People may move more slowly or become agitated as a result of their depression (T)	42.7
Clinical psychologists can prescribe antidepressants (F)	20.4
Moderate depression disrupts a person's life as much as multiple sclerosis or deafness (T)	22.7
Most people with depression need to be hospitalized (F)	27.1
Many famous people have suffered from depression (T)	33.3
Many treatments for depression are more effective than antidepressants (F)	16.9
Counseling is as effective as cognitive behavioural therapy for depression (F)	16.0
Cognitive behavioural therapy is as effective as antidepressants for mild-to-moderate depression (T)	24.9
Of all the alternative and lifestyle treatments for depression, vitamins are likely to be the most helpful (F)	21.3
People with depression should stop taking antidepressants as soon as they feel better (F)	19.1
Antidepressants are addictive (F)	16.4
Antidepressant medications usually work straight away (F)	17.8

Differences in Depression and depression literacy Scores based on Gender

The gender-based differences in depression and depression literacy scores were compared using the independent sample t-test. According to the analysis, depression scores were lower among females than they were among males (mean 12.44 ± 11.30 *vs.* mean 15.76 ± 13.90, p = 0.04, respectively). However, there was no

significant difference in the total depression literacy scores between female students and male students (mean 6.60 ± 3.13 *vs.* mean 6.98 ± 3.21, p = 0.37, respectively).

Correlations between Depression, Depression Literacy and Age

The strength and the direction of the liner relationship between depression, depression literacy and age were examined using the Pearson's correlation coefficient. The analysis revealed that there was a significant positive correlation between depression and depression literacy (r = 0.204, p < 0.01), but there was no significant correlation found between age, depression and depression literacy (r = 0.036, p > 0.05 *vs.* r = 0.088, p > 0.05, respectively).

Factors Predicting Depression and Depression Literacy Scores

Table 4 shows the results of regression analysis performed to determine the predictors of depression and depression literacy scores among the participants. The total variance for depression that was explained by the model was about 8% (F (22, 202) = 1.87, p = 0.013, adjusted R^2 = 0.079). The predictors were as follows: gender, GPA and monthly family income. The total variance for depression literacy that was explained by the model was 18.3% (F (22, 202) = 3.28, p < 0.001, adjusted R^2 = 0.183). The predictors were as follows: father's educational level, physical exercise and family history of mental health problems.

Table 4. Regression analysis for the predictors of depression and depression literacy scores

	Depression Scores	**Depression Literacy Scores**
Independent Variable	**B (95% CI)**	**B (95% CI)**
Age	0.29 (-1.02–4.79)	-0.09 (-0.84–0.54)
Monthly family income	0.16* (0.00–0.02)	0.14 (0.00–0.01)
Gender[a]	0.21** (1.35–9.38)	0.03 (-0.75–1.15)
Grade[b]:		
7th *vs.* 8th	-0.04 (8.02–4.99)	-0.09 (-2.31–0.77)
7th *vs.* 9th	0.03 (-6.95–8.70)	-0.13 (-3.01–0.69)
7th *vs.* 10th	-0.17 (-16.67–4.60)	-0.09 (-3.27–1.79)
7th *vs.* 11th	-0.27 (-21.94–4.32)	0.16 (-1.75–4.46)
7th *vs.* 12th	-0.42 (-29.68–2.04)	0.11 (-2.82–4.67)
GPA[c]:		
Very good *vs.* Fair	-0.16* (-16.05– -1.39)	-0.05 (-2.35–1.11)
Very good *vs.* Good	-0.10 (-7.14–1.51)	-0.12 (-1.85–0.20)
Very Good *vs.* Excellent	-0.11 (-7.52–0.96)	0.05 (-0.64–1.37)
Father's educational level[d]:		
Undergraduate degree *vs.* High school and below	0.05 (-3.01–5.50)	0.12 (-0.18–1.83)
Undergraduate degree *vs.* Graduate Degree	0.14 (-0.54–15.50)	0.25** (1.44–5.23)
Mother's educational level[e]:		
Undergraduate degree *vs.* High school and below	-0.08 (-6.09–1.94)	-0.07 (-1.43–0.47)
Undergraduate degree *vs.* Graduate Degree	-0.08 (-15.63–5.20)	-0.01 (-2.66–2.26)
Father's employment status[f]	-0.02 (-4.82–3.36)	0.08 (-0.32–1.62)

Mother's employment status[g]	-0.07 (-5.69–2.02)	0.11 (-0.23–1.60)
Physical exercise[h]	0.00 (-3.44–3.55)	0.18** (0.28–1.93)
Smoking[i]	-0.09 (-10.22-2.41)	-0.08 (-2.43–0.56)
Relationship with parents[j]	0.08 (-1.99–8.10)	0.06 (-0.67–1.72)
Family history of mental problems[k]	0.08 (-2.44–9.11)	0.15* (0.27–3.00)
Attending lectures/seminars on mental health[l]	0.05 (-3.30–6.86)	-0.11 (-2.17–0.23)
Adjusted R^2	0.079	0.183
F	1.874*	3.283***

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$; B: beta coefficient (standardized); 95% CI: 95% Confidence interval; [a]: Females were the reference group; [b]: 7th grade students were the reference group; [c]: Very good GPA (80-89) was the reference group; [d]: Fathers with an undergraduate degree were the reference group; [e]: Mothers with an undergraduate degree were the reference group; [f]: Employed fathers were the reference group; [g]: Unemployed mothers were the reference group; [h]: Participants who did not practice physical exercise were the reference group; [i]: Non-smoker participants were the reference group; [j]: Participants who had good relationship with parents were the reference group; [k]: Participants with no family history of mental health problems were the reference group; [l]: Participants who did not attend lectures/seminars on mental health were the reference group.

Discussion

Two hundred and twenty-five adolescent school students in northern Jordan completed a survey on depression and depression literacy. Depressive symptoms were identified among 45% of the participants, with 27.6% of these participants suffering from moderate and severe levels of depression. These findings support the findings of previous studies among adolescents and school students (Al-Kaabi et al., 2017; Dardas et al., 2018; Dardas et al., 2019; Masjedi, 2018). For example, in a study conducted in Iran, 34% of the participants suffered from depression (Masjedi, 2018). Similarly, in a study conducted in Qatar, 34.5% of the participants reported depression (Al-Kaabi et al., 2017). In a study among Jordanian adolescents aged 12-17 years, 34% of the participants were found to suffer from moderate to severe levels of depression, with a total mean BDI-II score of 16.3 ± 11.2 (Dardas et al., 2019). In the present study, the time during which the study was conducted (i.e., the COVID-19 pandemic) may explain the relatively high depression prevalence rates. This also supports the findings of a recent study in Jordan which was carried out during the COVID-19 lockdown period among adolescent school students. The study reported that 55.2% of the participants had moderate, moderate to severe and severe levels of depression, whereby the total mean Patient Health Questionnaire (PHQ-9) score was 11.2 ± 7.0 (AlAzzam et al., 2021). The evidence indicates that the COVID-19 pandemic placed school students at a higher risk of psychological problems, such as depression, due to the lockdowns imposed, the transition to distance learning, social restrictions and changes in living arrangements (Cao et al., 2020; Wang et al., 2020). Thus, when the current study was conducted, the participants were experiencing significant stressors related to school closure, distance learning and other COVID-19 pandemic-related restrictions. Another explanation for our findings may be the limited psychosocial skills and coping strategies among adolescents, which made it difficult for them to manage their social, academic and psychological problems (Alfoukha et al., 2019; Cao et al., 2020) and hence made them more vulnerable to mental health issues.

Low depression literacy levels were identified among the study participants, which is in line with the findings reported by previous studies in Saudi Arabia (Darraj et al., 2016), India (Nijam et al., 2013; Ram et al., 2016), Bangladesh (Arafat et al., 2019; Mamun et al., 2020), Oman (Elsheshtawy et al., 2020) and Egypt (Abdelsalam & Said, 2022). For instance, a recent study in Bangladesh conducted by Mamun et al. (2020) reported that the participants had low levels of depression literacy, with a total mean D-Lit score of 9.30

± 2.75. Similarly, in a study conducted in Saudi Arabia, the participants had low levels of depression literacy, with a total mean D-Lit score of 8.6 ± 4.48 (Darraj et al., 2016). The very low depression literacy levels among our participants may be attributed to their young ages, as well as to the fact that most of the participants (90.7%) had no family history of mental health problems. The lack of family history of mental illness may limit adolescents' knowledge of mental health issues, an explanation which is consistent with previous-study findings that family history of mental illnesses and higher depression literacy scores are significantly associated (Abdelsalam & Said, 2022; Elsheshtawy et al., 2020). The literacy level for any given diseases may affect the help-seeking attitudes and behaviors of those affected (Darraj et al., 2016), as well as their stigma towards mental illness (Lam, 2014). A recent study conducted among a sample of Jordanian youth reported suicide literacy as being the strongest predictor of help-seeking attitudes (Al-Shannaq & Aldalaykeh, 2021), whilst another study found that increased levels of MHL were associated with reduced stigma towards people with depression among the public (Svensson & Hansson, 2016). There is a limited number of mental health awareness programs, services and professionals in Jordan, which may be attributed to the low levels of depression literacy (Al-Shannaq & Aldalaykeh, 2021; Lam, 2014). This was also supported by our sample characteristics, whereby 86.7% (n = 195) of the participants had not attended any sessions/seminars on mental health issues specifically designed for adolescents. All of these factors may have contributed to the low depression literacy scores among our sample.

The evidence indicates that developing and implementing mental health awareness programs or workshops may increase MHL among students, including depression literacy (Lam, 2014; Mamun et al., 2020). There is a need for online educational interventions and programs for this age group, especially during this unprecedented time (Al-Shannaq et al., 2021; Naal et al., 2020). Such interventions and programs may be a more feasible and cost-effective way to improve help-seeking attitudes, mental health knowledge and the use of mental health services (Al-Shannaq & Aldalaykeh, 2021; Lam, 2014; Naal et al., 2020). Since the outbreak of the COVID-19 pandemic and the transition to distance learning, many adolescent students may now have better access to the internet and social media. Arab culture may have also had an influence on the findings of this study. Family and society in Arab culture play a vital role in helping the individual deal with mental health problems (Dardas et al., 2019). Most Arabs are reserved in their communities when it comes to their personal and private issues; so they tend to keep these issues to themselves (Dardas et al., 2019). This may then affect a person's MHL level and mental health status. Due to the outbreak of the COVID-19 pandemic, the participants spent more of their time at home with their families and less of their time with other people (Al-Shannaq et al., 2021). Therefore, further research is recommended to examine the relationships of such factors with mental health status and MHL among adolescents.

This study's findings showed that female students had lower depression scores than male students. However, these findings contradict those of previous studies which found that females had higher levels of depression than males (AlAzzam et al., 2021; Al-Kaabi et al., 2017; Al-Shannaq et al., 2021; Dardas et al., 2018; Masjedi, 2018). The chances of experiencing depression are greater in females than in males, which may be explained by the fact that females are more biologically and physically predisposed to depression (Lam, 2014; Martin et al., 2013). For example, puberty changes and fluctuating hormone levels affect the female body both physically and psychologically (Martin et al., 2013). Moreover, psychological aspects may significantly contribute to a female's susceptibility to depression, including the roles, responsibilities, obligations (e.g. taking care of others and doing household chores) and the social and familial restrictions within their communities (AlAzzam et al., 2021; Al-Kaabi et al., 2017; Al-Shannaq et al., 2021). While gender-based differences were noted on depression literacy scores, the findings showed no significant gender-based differences regarding the total depression literacy scores among our sample. This result supports those of previous studies which reported no significant differences between the total scores of male and female students on depression literacy (Arafat et al., 2019; Mamun et al., 2020).

There was a significant positive relationship between depression and depression literacy. This means that participants who suffered from depression symptoms knew more about depression. Further research is needed to investigate the effect of having depression symptoms of depression literacy. Due to the cross-sectional nature

of this study, it was difficult to assess the casual association between depression literacy and depression symptoms. A recent study by Naal et al. (2020) found no significant correlation between current psychological symptoms, including depression and MHL of depression. However, Kim et al. (2015) and Lam (2014) found a significant relationship between depression symptoms and MHL of depression among students, suggesting an association between low level of MHL and higher levels of depression symptoms. Interestingly, we found no significant correlation between age and depression or depression literacy among the sample. These findings align with Masjedi's study (2018) conducted among high-school and pre-university students in Iran, whereby there was no statistically significant correlation between the depression prevalence rate and age. Adolescents' help-seeking attitudes and literacy levels may be negatively affected by their young ages (Alonzo et al., 2011; Lam, 2014). Adults and parents must pay more attention to recognizing and detecting depression symptoms among this age group, as it is at a high risk of developing mental health problems.

The findings indicated that gender, GPA and monthly family income were the significant predictors of depression among the sample. More specifically, higher depression scores were predicted by participants who were males, had a fair average GPA and those who had a low monthly family income. In contrast, a previous study conducted in Jordan during the outbreak of the COVID-19 pandemic found that the significant predictive factors of depression among adolescents were as follows: gender, age, father's educational level and mother's educational level and perceived difficulties in online education (AlAzzam et al., 2021). Another study conducted among Qatari adolescent school students showed that the significant predictors of depression were as follows: being female, having a family history of depression, having family conflicts, suffering from psychological abuse and having a bad relationship with peers, parents and teachers (Al-Kaabi et al., 2017). It seems that the variations in sample size, demographic data and the study design and measures may explain the differences in the predictors of depression among adolescents. Monthly family income was notably found to be a significant predictor of the depression scores in this study. This supports the findings of previous studies, in which a low socio-economic status was associated with higher depression levels among adolescents (Dardas et al., 2018; Masjedi, 2018). Inconsistent with our findings, Al-Kaabi et al. (2017) found no significant association between monthly family income and depression among adolescent school students. The evidence indicates that low-income levels among children are related to limited coping strategies, less access to healthcare services and an increased risk for developing medical and mental health problems, including depression (Lin et al., 2012). This current study reported that age was not found to predict depression scores among adolescent students, which is in line with other study findings (Al-Kaabi et al., 2017; Masjedi, 2018). One possible explanation could be that our participants were within the same age range (Al-Kaabi et al., 2017). Our findings also indicated that gender was found to be a significant predictor of depression among the sample, as males reported significantly higher depression scores than females. Interestingly, this finding was different from the findings of AlAzzam et al. (2021), Al-Kaabi et al. (2017), Al-Shannaq et al. (2021), Dardas et al. (2018) and Masjedi (2018) who reported an association between being female and having higher depression scores. Further, the findings indicated that physical exercise, father's educational level and family history of mental problems were the significant predictors of depression literacy among adolescents. More specifically, participants who did physical exercise, whose fathers had an undergraduate degree and those who had a family history of mental health problems achieved higher depression literacy total scores. This finding was inconsistent with that of a previous study conducted by Naal et al. (2020), which reported that gender and enrollment in psychology courses were the only two factors that significantly predicted depression literacy among college students (Naal et al., 2020). Nevertheless, a significant predictor of depression literacy scores was family history of mental health problems. This supports previous studies that found having a family history of depression was associated with higher depression literacy scores among students (Abdelsalam & Said, 2022; Elsheshtawy et al., 2020). This variety in the predictors might be attributed to the differences in socio-economic status among the samples, the geological locations of the study participants and the utilization of various instruments and methods in various studies.

Limitations

This current study has many limitations. First, using a cross-sectional design only provides information about the levels of the major study variables and their relationships. It unfortunately does not provide casual inferences. Second, social desirability may have had an influence on the students' responses to the self-report questionnaires. Third, we used a convenience-sampling method to recruit participants from public (governmental) schools in the northern region of Jordan. Therefore, the findings cannot be generalized to students from other Jordanian regions or to private school students. Fourth, the study sample only included adolescent students. Fifth, this current study did not assess other factors which could have an impact on the students' depression literacy levels; such factors include: access to social media and the internet, cultural beliefs, religion, stigma towards mental illness, help-seeking attitudes and behaviors and living arrangements. Finally, the findings of this study may have been impacted by the fact that data was collected during the outbreak of the COVID-19 pandemic. During this study, parents and children were restricted to staying at home, thus limiting their social life and possibly altering their mental health. In response to these limitations, conducting further studies in the future is recommended. These studies should include qualitative and experimental designs among different ages (i.e., adults, elderly people and children), populations and regions, which may elicit different results.

Implications for Nursing

This study has several implications. The results may benefit nursing domains, including research, clinical practice, education and administration. The results need to be verified by further studies in the future. Other issues and concerns that were not investigated in this current study may be addressed using different populations and more representative samples at different levels in order to attend to mental health needs among this age group. It is highly recommended that researchers conduct experimental and longitudinal studies to examine and evaluate the effectiveness of educational interventions regarding mental health among adolescent school students. Conducting qualitative studies, such as descriptive phenomenology, may be needed for a better understanding of mental health needs and concerns among this age group. Nurses are already in a key position in meeting the various needs and concerns for different populations (e.g. adolescent school students) in various settings (e.g. schools). Nurses play a critical role in the regular assessment of psychological symptoms, minimizing the risk of developing other symptoms, preventing the occurrence of symptoms and enhancing the psychological well-being of adolescents and their families. However, nurses should be aware of adolescents' mental health literacy (MHL) and their mental health needs and concerns. The results also highlight the need for providing intensive continuous education and training workshops on adolescents' mental health for nurses and other healthcare providers at their healthcare settings. Further, school nurses, teachers and directors should provide counseling and appropriate support at schools based on the available resources for families of students who have psychological symptoms or problems and for the students themselves. (Dardas et al., 2018). Their efforts also need to be directed towards routine screening of depression and providing primary preventive care for students in their schools (Dardas et al., 2019). Additionally, nurse leaders and policy makers should advocate for recruiting school nurses and providing mental health services in all Jordanian schools (Dardas et al., 2019). The results also demonstrate the significance of creating and giving top priority to educational programs that are appropriate for students in schools and that take into account the students' culture (Al-Shannaq & Aldalaykeh, 2021). A multi-disciplinary approach that deals with the challenges and concerns associated with implementing and evaluating adolescents' mental health needs is essential to maintain their psychological well-being. Finally, such implications and support regarding adolescents' mental health would improve their mental health status, increase mental health knowledge and enhance the use of mental health services among adolescent students.

Conclusion

Despite the preliminary nature of this current study, the findings highlight the critical need for Jordanian adolescents to improve their knowledge about mental illness and mental health. The evidence shows that many problems and challenges may be associated with any untreated, undetected or delayed detection of mental health problems, such as functional impairments and

risk for suicide and substance abuse (Carrellas et al., 2017). This current study assessed the levels of depression symptoms and depression literacy and their correlations among a sample of adolescent school students in northern Jordan. The results revealed very low depression literacy levels, with about 45% of the participants suffering from depressive symptoms. These results may be explained by the participants' young ages, an absence of family history of mental diseases among most of them and the absence of any mental health-related lectures or seminars. Further, this study was carried out during the outbreak of the COVID-19 pandemic, which affected people in general. The quarantine might have resulted in mental health issues, such as depression symptoms. But, given this population's vulnerability, the findings show that it is urgently necessary to create and implement educational interventions or programs on mental health. Adolescents' mental health needs and concerns, within the context of their community, should also receive increased attention from governments, healthcare leaders, professionals, educators and researchers. Lastly, the results need to be verified by further large-scale multi-center studies with large sample sizes before developing any interventions targeting this population.

Acknowledgments

The authors acknowledge school students who participated in this study, all directors and teachers at the selected schools who facilitated the data-collection process and Jordan University of Science and Technology for funding the study.

Conflict of Interest

The authors declare that they have no conflict of interest.

Funding or Sources of Financial Support

This work was supported by Jordan University of Science and Technology (IRB# 9/134/2020).

REFERENCES

Abdelsalam, N.M., & Said, R.M. (2022). Level and predictors of mental health literacy of depression and suicide among undergraduate medical students. *Middle East Current Psychiatry*, *29* (1), 1-8. https://doi.org/10.1186/s43045-022-00229-6

AlAzzam, M., Abuhammad, S., Abdalrahim, A., & Hamdan-Mansour, A.M. (2021). Predictors of depression and anxiety among senior high-school students during COVID-19 pandemic: The context of home quarantine and online education. *The Journal of School Nursing*, *34* (4), 241-248. https://doi.org/10.1177/1059840520988548

Alfoukha, M.M., Hamdan-Mansour, A. M., & Banihani, M.A. (2019). Social and psychological factors related to risk of eating disorders among high-school girls. *The Journal of School Nursing*, *35* (3), 169-177. https://doi.org/10.1177/105984051773 7140

Al-Kaabi, N., Selim, N.A.A., Singh, R., Almadahki, H., & Salem, M. (2017). Prevalence and determinants of depression among Qatari adolescents in secondary schools. *Family Medicine and Medical Science Research*, *6* (219), 2-8. https://doi.org/10.4172/2327-4972.1000219

Alonzo, D.M., Harkavy-Friedman, J.M., Stanley, B., Burke, A., Mann, J.J., & Oquendo, M.A. (2011). Predictors of treatment utilization in major depression. *Archives of Suicide Research*, *15* (2), 160-171. https://doi.org/10.1080/13811118.2011.566052

Al-Shannaq, Y., Mohammad, A. A., & Aldalaykeh, M. (2021). Depression, coping skills and quality of life among Jordanian adults during the initial outbreak of COVID-19 pandemic: Cross-sectional study. *Heliyon*, *7* (4), e06873. https://doi.org/10.1016/j.heliyon.2021.e06873

Al-Shannaq, Y., & Aldalaykeh, M. (2021). Suicide literacy, suicide stigma and psychological help-seeking attitudes among Arab youth. *Current Psychology*, 1-13. https://doi.org/10.1007/s12144-021-02007-9

Aluh, D.O., Anyachebelu, O.C., Anosike, C., & Anizoba, E.L. (2018). mental health literacy: What do Nigerian adolescents know about depression? *International Journal of mental health Systems*, *12* (1), 8. https://doi.org/10.1186/s13033-018-0186-2

Amarasuriya, S.D., Jorm, A.F., & Reavley, N.J. (2015). Depression literacy of undergraduates in a non-western developing context: The case of Sri Lanka. *BMC Research Notes*, *8* (1), 593. https://doi.org/10.1186/s13104-015-1589-7

Arafat, S.Y., Al Mamun, M.A., & Uddin, M.S. (2019). Depression literacy among first-year university students: A cross-sectional study in Bangladesh. *Global Psychiatry*, *2* (1), 31-36. https://doi.org/10.2478/gp-2019-0002

Arbanas, G. (2008). Adolescents' attitudes toward schizophrenia, depression and PTSD. *Journal of Psychosocial Nursing and Mental Health Services, 46* (3), 45-51. https://doi.org/10.3928/02793695-2008 0301-01

Beck, A.T., Steer, R.A., & Brown, G.K. (1996). Beck depression inventory-II. *San Antonio*, *78* (2), 490-498. https://doi.org/10.1037/t00742-000

Bhatia, S. K., & Bhatia, S. C. (2007). Childhood and adolescent depression. *American Family Physician*, *75* (1), 73-80.

Cao, W., Fang, Z., Hou, G., Han, M., Xu, X., Dong, J., & Zheng, J. (2020). The psychological impact of the COVID-19 epidemic on college students in China. *Psychiatry Research*, *287*, 112934. https://doi.org/10.1016/j.psychres.2020.112934

Carrellas, N.W., Biederman, J., & Uchida, M. (2017). How prevalent and morbid are sub-threshold manifestations of major depression in adolescents? A literature review. *Journal of Affective Disorders*, *210*, 166-173. https://doi.org/10.1016/j.jad.2016.12.037

Cohen, J. (1988). *Statistical power analysis for behavioral sciences*. Second edn., Erlbaum, Hillsdale, NJ., 281, 284, 285.

Dardas, L.A., Silva, S.G., Smoski, M.., Noonan, D., & Simmons, L.A. (2018). Adolescent depression in Jordan: Symptom profile, gender differences and the role of social context. *Journal of Psychosocial Nursing and mental health Services*, *56* (2), 44-55. https://doi.org/10.3928/02793695-20171027-04

Dardas, L.A., Silva, S.G., van de Water, B., Vance, A., Smoski, M.J., Noonan, D., & Simmons, L.A. (2019). Psychosocial correlates of Jordanian adolescents' help-seeking intentions for depression: Findings from a nationally representative school survey. *The Journal of School Nursing, 35* (2), 117-127. https://doi.org/10.1177/1059840517731493.

Darraj, H. A., Mahfouz, M. S., Al Sanosi, R. M., Badedi, M., Sabai, A., Al Refaei, A., & Mutawm, H. (2016). Arabic translation and psychometric evaluation of the depression literacy questionnaire among adolescents. *Psychiatry Journal*, *2016*, 1-7. https://doi.org/10.1155/2016/8045262

Elsheshtawy, E., Simon, M., Golchinheydari, S., & Al Kharusi, J. (2020). Assessment of mental health literacy of depression and suicide among undergraduate medical students: A cross-sectional study. *Arab Journal of Psychiatry*, *31* (2), 159-168.

Faul, F., Erdfelder, E., Buchner, A., & Lang, A.-G. (2009). Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. *Behav. Res. Methods*, *41*, 1149-1160. https://www.gpower.hhu.de https://doi.org/10.3758/BRM.41.4.1149

Gulliver, A., Griffiths, K.M., Christensen, H., Mackinnon, A., Calear, A.L., Parsons, A., …, & Stanimirovic, R. (2012). Internet-based interventions to promote mental health help-seeking in elite athletes: An exploratory randomized controlled trial. *Journal of Medical Internet Research*, *14* (3), e69. https://doi.org/10.2196/jmir.1864

Jorm, A.F., Korten, A.E., Jacomb, P.A., Christensen, H., Rodgers, B., & Pollitt, P. (1997). mental health literacy: A survey of the public's ability to recognize mental disorders and their beliefs about the effectiveness of treatment. *Medical Journal of Australia*, *166* (4), 182-186. https://doi.org/10.5694/ j.1326-5377.1997.tb140071.x

Jorm, A.F. (2000). mental health literacy: Public knowledge and beliefs about mental disorders. *The British Journal of Psychiatry*, *177*(5), 396-401. https://doi.org/10.1192/bjp.177.5.396

Kim, J.E., Saw, A., & Zane, N. (2015). The influence of psychological symptoms on mental health literacy of college students. *American Journal of Orthopsychiatry*, *85* (6), 620. https://doi.org/10.1037/ort0000074

Lam, L.T. (2014). mental health literacy and mental health status in adolescents: A population-based survey. *Child and Adolescent Psychiatry and Mental Health*, *8* (1), 1-8. https://doi.org/10.1186/1753-2000-8-26

Lin, F.G., Hsieh, Y.H., & Tung, H.J. (2012). Interactive effects of family socio-economic status and body mass index on depression in school-aged children. *Asia Pacific Journal of Clinical Nutrition*, *21* (1), 64-72. https://search.informit.org/doi/10.3316/informit.004461522335720

Mamun, M.A., Naher, S., Moonajilin, M.S., Jobayar, A.M., Rayhan, I., Kircaburun, K., & Griffiths, M. D. (2020). Depression literacy and awareness programs among Bangladeshi students: An online survey. *Heliyon*, *6* (9), e04901. https://doi.org/10.1016/j.heliyon.2020.e04901

Martin, L.A., Neighbors, H.W., & Griffith, D.M. (2013). The experience of symptoms of depression in men *vs.*

women: Analysis of the national comorbidity survey replication. *JAMA Psychiatry*, *70* (10), 1100-1106. https://doi.org/10.1001/jamapsychiatry.2013.1985

Masjedi, M.F.K. (2018). Prevalence depression among adolescents in north Iran. *EC Psychology and Psychiatry*, *7*, 738-743.

Naal, H., Tavitian-Elmadjian, L.R., & Yacoubian, H.A. (2020). Predictors of mental health literacy in a sample of university students in Lebanon. *International Journal of Mental Health*, 1-23. https://doi.org/10.1080/00207411.2020.1838239

Nijam, T., Pole, R., & Vankar, G.K. (2013). Depression literacy among high-school adolescents. *Archives of Indian Psychiatry*, *15*, 37-41.

Okello, E.S., Abbo, C., Muhwezi, W.W., Akello, G., & Ovuga, E. (2014). mental health literacy among secondary-school students in north and central Uganda: A qualitative study. *World Cultural Psychiatry Research Review: Official Journal of World Association of Cultural Psychiatry*, *9* (3), 70.

Perre, N.M., Wilson, N.J., Smith-Merry, J., & Murphy, G. (2016). Australian university students' perceptions of mental illness: A qualitative study. *Journal of the Australian and New Zealand Student Services Association*, *24* (2), 1092.

Ram, D., Benny, N., & Gowdappa, B. (2016). Relationship between depression literacy and medication adherence in patients with depression. *Psychiatry and Behavioral Sciences*, *6* (4), 183. https://doi.org/10.5455/jmood.20161123023646

Reavley, N.J., McCann, T.V., & Jorm, A.F. (2012). mental health literacy in higher-education students. *Early Intervention in Psychiatry*, *6* (1), 45-52. https://doi.org/10.1111/j.1751-7893.2011.00314.x

Steptoe, A., Tsuda, A., & Tanaka, Y. (2007). Depressive symptoms, socio-economic background, sense of control and cultural factors in university students from 23 countries. *International Journal of Behavioral Medicine*, *14* (2), 97-107. https://doi.org/10.1007/BF03004175

Svensson, B., & Hansson, L. (2016). How mental health literacy and experience of mental illness relate to stigmatizing attitudes and social distance towards people with depression or psychosis: A cross-sectional study. *Nordic Journal of Psychiatry*, *70* (4), 309-313. https://doi.org/10.3109/08039488.2015.1109140

Tibebe, A., & Tesfay, K. (2015). Public knowledge and beliefs about mental disorders in developing countries: A review. *Journal of Depression and Anxiety S*, *3*, 1-4. https://doi.org/10.4172/2167-1044.S3-004

Wang, C., Pan, R., Wan, X., Tan, Y., Xu, L., Ho, C. S., & Ho, R. C. (2020). Immediate psychological responses and associated factors during the initial stage of the 2019 coronavirus (COVID-19) epidemic among the general population in China. *International Journal of Environmental Research and Public Health*, *17* (5), 1729. https://doi.org/10.3390/ijerph17051729

Wei, Y., Hayden, J. A., Kutcher, S., Zygmunt, A., & McGrath, P. (2013). The effectiveness of school mental health literacy programs to address knowledge, attitudes and help-seeking among youth. *Early Intervention in Psychiatry*, *7* (2), 109-121. https://doi.org/10.1111/eip.12010

Wei, Y., McGrath, P.J., Hayden, J., & Kutcher, S. (2015). mental health literacy measures evaluating knowledge, attitudes and help-seeking: A scoping review. *BMC Psychiatry*, *15* (1), 291. https://doi.org/10.1186/s12888-015-0681-9

Wei, Y., McGrath, P.J., Hayden, J., & Kutcher, S. (2016). Measurement properties of tools measuring mental health knowledge: A systematic review. *BMC Psychiatry*, *16* (1), 297. https://doi.org/10.1186/s12888-016-1012-5

World Health Organization. (2022). *Recognizing adolescence*. https://apps.who.int/adolescent/second-decade/section2/page1/recognizing-adolescence.html