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Received: 10 March 2023 | Revised: 1 May 2023 | Accepted: 14 May 2023

DOI: 10.1111/jcap.12429

ORIGINAL ARTICLE

WILEY

Prevalence of depression symptoms among female adolescents in Saudi Arabia

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Abstract

Objective: Epidemiological studies on the prevalence of elevated depression symptoms among female adolescents in Saudi Arabia report a wide variation, ranging from 13.9% to 80.2%. However, different methods of assessment and sampling have been used. The aim of the current study is to estimate the prevalence of elevated depression symptoms amongst female adolescents in Saudi Arabia using a gold-standard self-report measure, the Mood and Feelings Questionnaire (MFQ).

Design and Measures: A cross-sectional study was conducted with 515 female students aged 13–18 years, recruited from public schools. Participants completed the Arabic versions of the MFQ, Rosenberg Self-Esteem Scale and Multidimensional Scale of Perceived Social Support.

Results: Mean MFQ score for this sample was 26.35 and almost half of participants (48.2%) had scores above the cut-off. Severity of depression varied with age, with those aged 13 showing reduced symptoms, and was negatively correlated with self-esteem and perceived social support. There were no associations with other demographic factors.

Conclusion: Elevated levels of depression symptoms were common in this sample. This highlights the need to improve public mental health in this community and to improve methods of identifying and treating depression in female adolescents.

KEYWORDS

adolescence, depression, females, Kingdom of Saudi Arabia, prevalence

1 | BACKGROUND

Depression is the most common mental disorder, affecting more than 250 million people of all ages around the world (World Health Organization, 2021). Major depressive disorder is characterized by anhedonia, low mood (and, in adolescents, and irritability), fatigue, change of appetite, sleeping problems, psychomotor retardation or agitation, negative self-evaluation, cognitive difficulties, and suicidal thoughts (American Psychiatric Association, 2013). To be diagnosed with depression, an adolescent must report one of two core symptoms: low mood or irritability, or loss of interest or pleasure (anhedonia), and a minimum of five symptoms in total, that have been present for at least 2 weeks (American Psychiatric Association, 2013) and which interfere with functioning.

A meta-analysis of studies from 27 countries indicated that the prevalence of depressive disorder among children and adolescents aged 6–18 years was 2.6% (Polanczyk et al., 2015). During childhood, rates of depression are low and similar in both girls and boys (Kessler

et al., 2001); girls start to experience more depression than boys from age 13 to 15 (Twenge & Nolen-Hoeksema, 2002; Wade et al., 2002). Across the lifespan, females are twice as likely to experience depression as males (Hyde et al., 2008), and, although this ratio may be culture-dependent, a value of approximately 2:1 has been found in most nations (Angst et al., 2002; Kuehner, 2003). Despite the prevalence and impact of depression, many adolescents with depression receive no treatment, with barriers including lack of knowledge and the stigma that is attached to mental illness (Gulliver et al., 2010; Radez et al., 2021).

Epidemiological studies that focus on elevated symptoms of depression typically report higher rates than those that identify cases of "depressive disorder." For example, a review of 20 studies of young people living in the US, Canada, Sweden, Finland and New Zealand noted that the prevalence of elevated depression symptoms amongst young people aged 11–19 years varied from 5.6% to 44.0% (Johnson et al., 2018). These results are suggestive of some variation in prevalence across cultures and countries which may be influenced by variability in the risk factors for depression, including adversity, low education, and other social and cultural factors (Kessler & Bromet, 2013).

The Kingdom of Saudi Arabia (KSA) is a developing country of more than 36 million people, of whom young people (aged 15–24 years-old) make up around 15.4% of the population (Central Intelligence Agency, 2019). Several studies have reported the prevalence of elevated depression symptoms amongst female adolescents in the KSA. Using a variety of instruments, including the Beck Depression Inventory (e.g., Desouky et al., 2015), Depression Anxiety Stress Scales (e.g., Hakamy et al., 2017), the Symptoms Checklist (e.g., Ahmed & Alrowaily, 2015) and the Mini International Neuropsychiatric Interview-Kid interview (MINI-Kid interview) (Alatiq et al., 2017), they reported a wide range of estimates from 13.9% (Mahfouz et al., 2009) to 80.2% (Alharbi et al., 2019).

This wide range may reflect methodological differences between studies. For example, when assessing the prevalence of elevated depression symptoms using a continuous measure, researchers must apply a cut-off score to estimate prevalence. Several studies did not report the cut-off used to identify elevated depression symptoms (e.g., Ahmed & Alrowaily, 2015; Raheel, 2015). It is possible that in selecting a low cut-off which enhances sensitivity, (i.e., the chance of correctly detecting individuals with depression) some studies have reduced specificity (i.e., the chance of correctly detecting individuals without depression) and thus inflated prevalence rates. Furthermore, many of these instruments have not been validated for use in young people under 18 years and thus the validity of the measures is not known. Despite these variations in research methods, where gender differences were compared, in all but one study (Mahfouz et al., 2009), rates of elevated depression symptoms were significantly higher in female adolescents compared with male adolescents.

To help increase the precision with which we can estimate the level of elevated depression in adolescent girls in the KSA, it would be of benefit to use a measure of depression symptoms that has been specifically designed for use with young people. The Mood and Feelings Questionnaire (MFQ) (Angold et al., 1995; Costello & Angold, 1988) is recommended as the gold standard self-report measure of depression symptoms in adolescents (NICE, 2019). The MFQ was developed to identify symptoms of depressive disorder in young people aged 8-18 years and is based on DSM-III-R diagnostic criteria for major depressive disorder (American Psychiatric Association, 1987). The MFQ has demonstrated high internal consistency (Cronbach's $\alpha = 0.94$ [Wood et al., 1995]), has been validated for use in clinical and community settings (Burleson Daviss et al., 2006; Kent et al., 1997) and has been recommended as a screening instrument for depression in children and adolescents (e.g., Kent et al., 1997). The MFQ has been widely used in epidemiological and clinical research (e.g., Park et al., 2002; Wood et al., 1995). with a cut-off score of 27 suggesting the best diagnostic confidence based on sensitivity and specificity (Wood et al., 1995).

An Arabic version of the MFQ has been developed (Tavitian et al., 2014) although its construct validity has not been reported. In this paper we propose to examine the construct validity of the MFQ by exploring associations between this measure of depression and well-established correlates of depression which are particularly salient to female adolescents living in Saudi Arabia: self-esteem and social support.

Low self-esteem is strongly associated with depression in adolescents in Western societies (Lee & Hankin, 2009; Overholser et al., 1995; Sowislo & Orth, 2013). In the KSA women's roles in their family, and as caregivers and mothers, are highly valued and may be a source of self-esteem. In spite of this, some aspects of Saudi society may be conducive to low self-esteem in adolescent and adult females. However, since 2019 women have been treated legally as equals when compared to men and no longer have to obtain permission from their legal guardian (male relative) to work, or travel outside the country (Al-Asfour & Khan, 2014). To our knowledge, self-esteem has not been investigated among Saudi adolescents, although the consistency of this relationship across cultures suggests that it will be a strong correlate of depression symptoms.

Social support is also a well-established correlate of symptoms of depression in women (Dalgard et al., 2006). and, although social support has been widely investigated in relation to symptoms of depression in the West, to our knowledge it has been examined only once in Saudi adolescents (Al-Marri & Al-Qahtani, 2017). In a sample of 500 female high school students in Al-Khobar City, those with high social support—assessed using the Multidimensional Scale of Perceived Social Support (MSPSS; Zimet et al., 1988)—reported fewer symptoms of depression than those with less support. Therefore, to examine the construct validity of the Arabic version of the MFQ we will also examine the relationship between MFQ score and perceived social support. Two main research questions are therefore addressed in this study.

1. What is the prevalence of elevated depressive symptoms among female students in KSA? and
2. Is there evidence of construct validity for the Arabic version of the MFQ?

2 | METHOD

This is a cross-sectional study.

2.1 | Sample

A total of 515 of participants aged 13–18 were selected from five schools. Three middle and two high schools from a variety of areas throughout the city including working, middle and higher classes were selected as a purposive sample. A power calculation indicated that assuming a population prevalence of elevated depression symptoms of 25%, an accuracy of estimation of 4%, and a confidence interval of 95%, a minimum sample size of 451 would be required. These values follow the same ones used by Raheel (2015).

2.2 | Recruitment

There are 25 middle schools (13–15 years) and 17 high schools (16–18 years) for females in Unaizah, Saudi Arabia. All 25 schools received information about the study from the Ministry of Education in Unaizah. The researcher called each school on the two lists of middle and high schools provided by the Ministry in the order on the list and selected those schools which replied to the call until over 500 participants had been recruited. No schools refused to take part. Because it was the examination period and some students were absent, the principal asked the teachers to select those students who were present and available in each grade to take part in the study while the researcher was present at the school.

An information sheet about the study was given to the head teachers of all the schools. Following agreement from head teachers, written information about the study was sent a week before the study to the parent(s) or guardian(s) or husband (if appropriate) of each girl in the school; the students were also given an information sheet. Parents or guardians of girls aged 13–15 were asked to return an "opt-out" form to the school if they did not wish their daughter to take part, or to call the school or researcher to indicate their refusal. The girls were asked to confirm that they had given their parents or guardian the form and that they had read it before they were invited to take part in the study. Each student signed an assent form if they were aged 13–15 or a consent form if they were aged 16–18.

2.3 | Procedure

Data were collected in April and May 2018. The researcher obtained consent and assent and collected the data by visiting each school. Of a potential sample of 1564 across the five schools, 515 girls (32.9%) completed the study. All the girls who were present agreed to take part; however, three students from intermediate schools did not complete the questionnaire, and two students from high schools refused. The response rate was therefore 99.0% (515/520).

The study was explained to each class verbally by the researcher. Students were informed that taking part was completely voluntary and they could withdraw from the study at any time. The researcher gave them the three self-report questionnaires and a sheet collecting information about demographic variables (see Section 2.4). Students were told that they could leave the name section blank or put a nickname; if they put their real name, this was related to a number during data analysis, to ensure anonymity. This was done by putting these details in a separate document which was kept in a secure filing cabinet. After completing the study, each student was given a debrief sheet.

2.4 | Measures

Participants were asked to complete three self-report questionnaires, as well as information about demographic variables.

2.4.1 | Depression symptoms

The MFQ (MFQ; Angold et al., 1995) is a 33-item self-report questionnaire that is used to assess the severity of depressive symptoms in young people. Each symptom is rated on a three-point scale, 0 (not true), 1 (sometimes true) and 2 (true). The Child Self-report long version MFQ is designed specifically for use with children and adolescents aged 6-17 (Angold et al., 1995; Costello & Angold, 1988). The Arabic version was used, which has good reliability and validity, and excellent internal consistency (MFQ-Children $\alpha = 0.92$, Tavitian et al., 2014). Two items of the MFQ (items 17 and 19) were removed for the 13–15 years old girls because the Education Administration in Unaizah considered them to be too sensitive for younger students ("I thought about death or dying" and "I thought about killing myself"). Scores for participants aged 13–15 years were then pro-rated to ensure that the equivalent cut-off could be used for older and younger participants. A cut-off of 26 was used based on the validation study of the Arabic version (Tavitian et al., 2014), which favors sensitivity.

2.4.2 | Social support

The 12-item Multidimensional Scale of Perceived Social Support (MSPSS; Zimet et al., 1988) was used to measure how much support the girls perceived from their family, friends, or others. Each item is rated on a 7-point Likert scale: 1 (very strongly disagree), 2 (strongly disagree), 3 (mildly disagree), 4 (neutral), 5 (mildly agree), 6 (strongly agree), 7 (very strongly agree). The Arabic translation of the MSPSS has good reliability and validity, with high internal consistency for all three subscales (Family, Friends, and Significant Others, $\alpha = 0.82$, $\alpha = 0.86$ and $\alpha = 0.85$, respectively [Merhi & Kazarian, 2012]).

2.4.3 | Self-esteem

The Rosenberg Self-Esteem Scale (RSES) (RSES; Rosenberg, 1965) was used, with higher scores indicating higher self-esteem. This is a 10-item measure with each item rated on a 4-point Likert rating scale (strongly agree, agree, disagree, strongly disagree). The Arabic translation of the RSES has good reliability and validity, with Cronbach's $\alpha = 0.92$ in one study (Zaidi et al., 2015).

2.4.4 | Demographic variables

Information was collected about the participants' age, school grade, marital status, parents' marital status, parents' education, parents' occupation, accommodation, nationality, number of their siblings, and birth order.

2.5 | Data analysis

SPSS version 25 was used for data analysis, adopting a significance level of $p \leq 0.05$. Participants were excluded from the analysis of the MFQ, RSES, and MSPSS if they missed more than 25% of items on any of the questionnaires. As a result, 22 participants were excluded from the MSPSS analysis as they missed four or more items; no participants were excluded from the MFQ or RSES analyses. Although the participants aged 13–15 were not given two of the 33 MFQ items, the total number of missing MFQ data (taking this into account as well as items missed by the participants) remained below 25% for all participants. Where missing values for the MFQ, MSPSS and RSES were below 25%, missing values were replaced by the mean values of the other items for that individual participant.

The main findings are presented using descriptive statistics. In addition, correlation coefficients were calculated using Pearson's *r*. Differences between means were assessed using an analysis of variance (ANOVA) and the Bonferroni correction for multiple comparisons.

2.6 | Ethical considerations

Ethical approval to conduct the study was obtained from the University of Reading Research Ethics Committee, and from the Education Administration in Unaizah, a city in Saudi Arabia.

3 | RESULTS

The mean age of participants ($N = 515$) was 15.63 years (SD = 1.64; range = 13–18). Nearly all the participants were single (99.4%), the remainder being married. Most students were Saudi nationals (94.4%). Most participants lived in a house (84.1%) while the rest lived in a flat (15.9%).

The mean MFQ score for this sample was 26.35, and 248 (48.2%) individuals scored above the cut-off of 26 (95% CIs 43.8%–52.6%). With a cut-off of 31 (favouring specificity, Tavitian et al., 2014), 181 scored above threshold, giving a prevalence rate of 35.1% (95% CIs 31.0%–39.4%). Descriptive statistics and Cronbach's α for the MFQ, MSPSS, and RSES are presented in Table 1. As hypothesized, there were significant negative correlations between severity of depression and perceived social support and self-esteem (see Table 1).

Eight demographic variables (parents' status, mother's education, father's education, mother's occupation, father's occupation, type of accommodation, number of siblings, birth order) were tested in relation to MFQ scores using one-way ANOVAs and showed no statistically significant associations. The MFQ scores were also examined in relation to the students' age (Table 2). Participants who did not state their exact date of birth ($n = 57$) were excluded from the analysis, leaving a sample of 458 students. An ANOVA of the MFQ scores for all six age groups was significant, $F(5, 452) = 2.87$, $p = 0.014$. Post hoc Bonferroni comparisons indicated that two differences were significant: the mean for students aged 13 was significantly lower than that for those aged 14 (21.82 vs. 29.31, $p = 0.020$), and for those aged 17 (28.85; $p = 0.025$). Using a cut-off of 26 on the MFQ the 13 year-old group had a prevalence of 40.3%, compared with a mean prevalence for the older students of 50.1%.

TABLE 1 Descriptive statistics and correlation coefficients for the MFQ, RSES, and MSPSS.

	MFQ	RSES	MSPSS
Mean	26.35	19.40	60.58
SD	13.51	4.76	15.50
Range	0–61	1–29	13–84
Cronbach's α	0.91	0.76	0.89
Pearson's *r*			
MFQ	-	−0.54[a]	−0.42[a]
RSES	-	-	0.46[a]

Note: $N = 515$ for MFQ and RSES; $N = 493$ for MSPSS.

Abbreviations: MFQ, Mood and Feelings Questionnaire; MSPSS, Multidimensional Scale of Perceived Social Support; RSES, Rosenberg Self-Esteem Scale.

[a]$p < 0.001$, 2-tailed.

TABLE 2 Mean and SD of mood and feelings questionnaire (MFQ) scores and prevalence of elevated symptoms by age.

Age (years)	13	14	15	16	17	18
n	62	67	75	92	81	81
Mean	21.82	29.31	27.23	26.04	28.85	25.36
SD	13.24	15.66	13.03	13.00	12.48	11.82
Prevalence[a] %	40.3	52.2	49.3	50.0	56.8	42.0

[a]MFQ cut-off of 26 used to estimate prevalence.

4 | DISCUSSION

To the researchers' knowledge, this is the first study to examine the prevalence of depressive symptoms among female adolescents in the KSA using the gold standard self-report measure, the MFQ (Angold et al., 1995; Tavitian et al., 2014). In this sample of 515 females aged 13–18 years, 48.2% of the sample scored above the cut-off. The level of depression symptoms reported by this sample is at the upper end of the range of worldwide prevalence reported previously (Johnson et al., 2018). Thus, female adolescents in Saudi Arabia may be at high risk of experiencing depression symptoms, particularly when taken alongside previous studies, which, using different measures and samples, found similarly high rates of elevated depression symptoms (e.g., Ahmed & Alrowaily, 2015; Al-Gelban et al., 2009; Alharbi et al., 2019; Asal & Abdel-Fattah, 2007; Desouky et al., 2015).

Given convergence of results from multiple independent studies, we can be more confident that the prevalence of depression symptoms amongst adolescent females in the KSA is likely to be high relative to that reported by adolescent females living in other countries (e.g., England (Hards et al., 2020) and Norway (Sund et al., 2001). This could be due to several factors relating to Saudi culture, including the high level of bullying in Saudi schools (AlBuhairan et al., 2015; Al-Eissa et al., 2019), the authoritative style of parenting (Alshehri et al., 2020), and the lack of knowledge about mental illness (Abolfotouh et al., 2019).

There was a nonlinear relationship between severity of depression and age; participants aged 13 reported lower MFQ scores than those aged 14 and 17, with no significant differences in severity of depression in participants aged 14–18 years. This is in line with the findings in Western countries that the prevalence of depression increases among adolescents between the ages of 13 and 16 (Thapar et al., 2012).

The present study found no significant relationship between any further measured demographic factor and depression severity, in line with some previous studies looking at parental education and occupation (Al-Gelban et al., 2009), and number of siblings (Asal & Abdel-Fattah, 2007). However, one previous study did find a significant association between depression symptoms and birth order (Asal & Abdel-Fattah, 2007), which was not found in the current study. Unlike the present study, another found that elevated depression symptoms among female adolescents were significantly related to their type of accommodation and living with a single parent (Raheel, 2015). The present study may not have found a relationship with accommodation due to the limited variability in living situations reported.

The data also offer some support for the use of the Arabic version of the MFQ as a measure of depression amongst female adolescents. As expected, the MFQ had excellent internal reliability and significant negative associations with self-esteem and social support; girls with higher perceived social support and higher levels of self-esteem reported fewer symptoms of depression.

The results of this study, and those reported previously, reinforce the need for improvements in services to help identify and treat depression in the KSA. Increased attention to preventing depression is also important, as is raising awareness about depression in adolescents among teachers, school counselors and general practitioners in Saudi Arabia, as well as the students and their parents. Strengths of the study include the sample size exceeding 451 that was required based on an a priori power calculation. A further strength was the use of an instrument, the MFQ, which was developed for use among this age group and has been validated for Arabic adolescents.

Some limitations of the study should be noted. First, the sample comprised female adolescents from one city in the KSA and rates may differ in more rural settings, or in settings where people have more traditional religious beliefs. Although the MFQ has been widely used for epidemiological purposes, there was no validation with, for example, a clinical interview. The study did not assess the length of time that participants had experienced their symptoms (the MFQ is concerned with the previous 2 weeks), and the data were collected during a school examinations period and so the students' symptoms may have reflected that specific and stressful event.

Although the findings of this cross-sectional self-report study must be interpreted cautiously, the results suggest that depression symptoms may be common in female adolescents in the KSA. Further studies (e.g., those supplemented with structured diagnostic interviews) are needed to confirm the suspected prevalence in this population and to consider the public health significance of the findings.

ACKNOWLEDGMENTS

We are very grateful to all the students who took part in this study, and all the head teachers for granting their permission. The study was funded by the Saudi Arabia Ministry of Higher Education.

CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

ETHICS STATEMENT

The study was approved by the University of Reading Research Ethics Committee and the Education Administration in Unaizah, Saudi Arabia.

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How to cite this article: Binsaif, S., Reynolds, S., & Jenkins, P. (2023). Prevalence of depression symptoms among female adolescents in Saudi Arabia. *Journal of Child and Adolescent Psychiatric Nursing*, 1–7. https://doi.org/10.1111/jcap.12429