A Community Study of Depression in Adolescent Girls: Prevalence and Its Relation to Age

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Key Words

Depression · Adolescent girls · Prevalence · Relation to age

Abstract

Objective: To conduct a two-stage epidemiological survey in order to measure the prevalence rate of major depressive disorder in girls 12–19 years of age and to relate it to age. **Subjects and Methods:** The Beck Depression Inventory (BDI) questionnaire was administered to 1,107 girls from 3 elementary and 3 secondary schools in Khartoum, Sudan, 272 of whom were selected for intensive interviews. **Results:** The estimated prevalence of major depressive disorder for the population was 4.2%. Using a cutoff point of 15 on a short BDI, 11% of the adolescent girls reported severe depression. The BDI scores increased with age. A proportion of girls interviewed reported depressive symptoms which did not meet the criteria of Diagnostic and Statistical Manual IV (DSM-IV) for major depressive disorder, and the estimated prevalence of this 'partial syndrome' was 8.6%. **Conclusion:** The findings indicate a high rate of depression. Considering the fact that none of the girls who were identified with major depression reported to the health system, a surveillance system is recommended to identify depression among adolescent girls.

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Introduction

Childhood depression is a focus of considerable clinical and research interest, as some researchers reported a dramatic increase in suicide attempts and death by suicide among adolescents and young adults [1, 2]. Depression in Sudan has not been adequately studied, and much of what is known depends on personal impressions and information gleaned from general hospitals. The examination of patients for depressive symptoms is obviously important, but studies of unrefereed populations are required to establish reasonable estimates of the prevalence and incidence of depression in children and adolescents. The lack of adequate information and the desire to plan future child mental health services in the Sudan prompted a series of studies in this important field [3–5]. Hence, the purpose of the present study is to present estimates of the prevalence of depression for a population sample of adolescent girls in Khartoum, Sudan, and to relate it to age.

Subjects and Methods

This study was conducted in Khartoum Governorate, Sudan, with a target population of adolescent schoolgirls, 12–19 years of age in grades 7 and 8 of elementary school and in the first 3 years of secondary school. Of the 6 elementary girls' schools in the 7 localities of Khartoum Garb, 3 were randomly selected, with 189 students from grade 7 and 210 from grade 8 participating in the study. Of the 21 girls' secondary schools, 3 were randomly selected. For the 1st,

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2nd and 3rd years, 222, 241 and 255 students, respectively, were included. Of the total 1,117 students, 1,107 completed the questionnaire.

A two-stage epidemiological procedure [6] was adopted for this study, so that a large population could be screened and a selected number interviewed in detail [7]. To screen for depressive symptoms, the short Beck Depression Inventory (BDI) self-report questionnaire (13 items) was used. The BDI was developed according to the cognitive theory on depression of Aaron T. Beck, and it is widely used in Sudan because of its acceptable levels of reliability and validity. A score of 8–15 on the BDI is rated as moderate depression, and 16–39 as severe.

The BDI was administered to the students who were present in class at the beginning of the first lesson. The research team consisted of a registrar of psychiatry, 3 clinical psychologists and 5 social workers, who supervised the process and answered any questions that the students had. Completed questionnaires were collected immediately and the response rate was noted. Sixteen absent students completed the questionnaires within a week.

Of the 1,107 adolescent schoolgirls who took part in extensive screening, a stratified random procedure was used to select 272 stu-

dents for intensive interviews, during which they were elaborately studied. For each grade or year within each school, subjects to be interviewed were divided into 3 groups based on BDI scores: all in the top 10% (a total of 123 students; stratum A), 62 students of the next 10% (stratum B), and 87 of the remaining students (stratum C). Each student was subjected to 2 individual interviews, one clinical and the other sociodemographic, which were conducted blind to the BDI score. The sociodemographic findings will be reported separately.

A registrar of psychiatry conducted the clinical interview based on the Arabic version of Present State Examination [8] in order to derive DSM-IV diagnostic categories [9].

Responses for estimates of prevalence were weighted to probability of selection in the 3 strata. Data were analyzed using the SPSS/PC software. For the purpose of analysis of independent categorical variables presented in a contingency table, the χ^2 test of association was used. The level of significance was set at $p < 0.05$. Tests of significance were based on actual unweighted responses.

Results

Table 1 shows the mean and median BDI scores for each age category. A marked rise in the mean and median scores from ages 12 to 19 years was observed: the mean BDI score was 5.3 at 12 years of age and reached 6.4 at 18 years, while the corresponding median score was 3 at 12 years old and rose to 8 at 18 years. Table 2 presents the range of the BDI scores also by age. The BDI ranges were significantly associated with age ($\chi^2 = 70.4$, $p < 0.001$).

The prevalence of self-reported BDI depression among the schoolgirls by age is shown in table 3. Severe depression above the cutoff point of 15 was reported by 8.4% of 12-year-old girls, reaching 13 and 15.2% by the ages of 17 and 18 years, respectively. The prevalence rate of severe depression was 11.2% among the total population. The

Table 1. The mean/median BDI scores of the 1,107 adolescent schoolgirls by age

Age, years	n	Mean (SD)	Median
12	83	5.3 (6.5)	3
13	173	5.3 (6.4)	4
14	143	6.1 (6.7)	4
15	163	7.3 (6.4)	6
16	140	6.9 (5.5)	6
17	175	8.2 (6.9)	7
18–19	230	9.0 (6.4)	8
Total	1,107		

Table 2. The ranges of the BDI scores of the adolescent schoolgirls by age

Age years	BDI score				Total
	0–4	5–7	8–15	16–39	
12	48	15	13	7	83
13	97	38	25	13	173
14	74	25	27	17	143
15	67	29	49	18	163
16	51	28	50	11	140
17	62	27	63	23	175
18–19	70	40	85	35	230
Total	469 (42.4)	202 (18.2)	312 (28.2)	124 (11.2)	1,107 (100.0)

$p < 0.001$. Figures in parentheses indicate percentages.

Table 3. Prevalence of BDI-based severe depression among the total population of adolescent schoolgirls by age

Age years	n	Prevalence of depression		
		overall 8–39	moderate 8–15	severe ≥ 16
12	83	20	13	7 (8.4)
13	173	38	25	13 (7.5)
14	143	44	27	17 (11.9)
15	163	67	49	18 (11)
16	140	61	50	11 (7)
17	175	86	63	23 (13)
18–19	230	120	85	35 (15.2)
Total	1,107 (100)	436 (39.4)	312 (28.2)	124 (11.2)

Short (13-item) BDI. Figures in parentheses indicate percentages.

Table 4. The weighted prevalence of depressive disorders among adolescent schoolgirls (n = 1,107)

Depressive disorder	n	Percentage
DSM-IV major depression	47	4.2
Partial depressive syndrome	97	8.7
Total	144	13

overall prevalence, including both moderate and severe depression, was very high at 39.4%. Of the 1,107 adolescent schoolgirls, 47 (4.2%) met the criteria for DSM-IV major depression, while 97 (8.7%) were classified as having ‘partial depressive syndrome’ (table 4). The ‘partial syndrome’ was defined as: (a) fulfilling all criteria for major depression except duration (disturbance present for at least 14 days) or (b) fulfilling the duration criteria but having only 1–3 of the symptoms, in addition to depressed mood or loss of interest (as opposed to the 4 required for the diagnosis of major depression).

Discussion

The prevalence of childhood depression is difficult to estimate due to several factors, including the issue of diagnostic certainty or caseness, respondent disagreement, and the discrepancy between self-reports and professional diagnoses. Although comparable diagnostic criteria for

identifying major depression have been used for research in this field, caseness has been defined differently in various studies; sometimes diagnostic criteria alone were used to define caseness, while other times diagnostic criteria plus considerations of impairment in social function, severity and duration of symptoms, and responses to depression scales were used [10]. This inconsistency in case definition makes it very difficult to compare estimates of prevalence reported in various studies, as evidenced by the wide range of estimates obtained (0.5–4%) [6, 10–13]. Respondent disagreement is also an important issue, as some studies demonstrated that parents and children differ in their identification of depressive disorder [10].

The most common approach to measuring depression in adolescents has been a self-report checklist, with the adolescent as the sole data source [14, 15]. Self-report is particularly important in assessing depression since it reflects subjective feelings and self-perception, but major differences exist between those studies that rely on self-report scales and those that make categorical diagnoses based on semi-structured interviews. The latter approach results in much lower rates of depression than the former [16]. This suggests that at least some of the symptoms derived from the self-report scale may be normal sadness.

In this study, the self-report methodology was used. The point prevalence (in the past month) of the DSM-IV major depressive disorders is estimated at 4.2%, which is similar to the rate found in comparable studies [6, 13, 17, 18]. The point prevalence of the ‘partial syndrome’ of depression identified in this study (8.7%) is consistent with 8.9% prevalence reported in another epidemiological study [12]. These findings of partial syndrome may represent transient mood disturbances of normal sadness [16] or a prodromal stage of a full major depressive disorder. Studies have shown that the BDI rates are more plausible when only severe cases of depression are included [10]. Severe depression, defined as above the cutoff point of 15 on the short BDI, was reported among 11% of adolescent girls in this study, compared with 7.3% reported in another study [19]. The overall rate of moderate to severe depression in the Sudanese adolescents is also higher (39.4%) than that reported in other studies (8.6–36.5%) [7, 20]. Apparently, the rate of depression among adolescent girls in Sudan is one of the highest in the world.

The older adolescents were found to have higher depression scores, consistent with the findings of previous studies [20–24] and thus indicating the effect of age on rates of self-reported depression. The higher depression

scores of the older adolescent could be explained by the fact that the expression of emotional symptoms and behavior may change with growth and maturation, altering the prevalence of mental disorders in the child population over time. This age effect is apparent when depression is assessed by symptom scales, according to which older children and adolescents report more depressive symptoms [25]. However, when depression is assessed by clinical categories based on structured interviews, there is no increase in prevalence with age. As individuals grow older, they experience more losses, and depression may be explained by the psychodynamic concept of object loss and narcissism [25].

It is important to note that none of the girls who were identified as suffering from major depressive disorder was known to the health care services, which is consistent with other epidemiological reports from the United States [6] and England [12], and is a cause for concern. Some major depressive disorders in young people evolve into relapsing conditions with significant impairments in social devel-

opment and an increased risk of major depression in adulthood [26, 27]. It is therefore important that current child health surveillance procedures include strategies for the detection of major depressive disorder in the community.

A limitation of this study was that information was obtained only from one source, namely the adolescent herself. Another limitation of the current research is that only girls were included, and the findings cannot therefore be generalized to adolescents in general.

Conclusion

Sudan has a high prevalence rate of depression among adolescent girls, but none of the girls who were identified as suffering from major depressive disorder was known to the health care services. A surveillance system is therefore recommended to identify depression among adolescent girls.

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