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## Adolescent depression in Trinidad and Tobago

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■ **Abstract** This study investigates depression in adolescents in Trinidad and Tobago and identifies any significant trends associated with its occurrence. A stratified random sample of 1,845 adolescent students from 24 schools was administered a questionnaire requesting demographic information and responses to the Reynolds Adolescent Depression Scale. In all, 14% of the sample was depressed. Depression was 2.18 times more likely to occur in females than males (17.9% vs. 8.2%). The peak age was 16 years with a rate of 15.9%. Both attendance at a religious institution and prayer with the family resulted in lower depression rates. Intact families had the

lowest rate (11.7%), while the re-constituted family had the highest rate (25.7%). Individuals who had alcohol abuse in their family were 1.8 times more likely to be depressed than those without abuse. Adolescents from non-prestige schools were more likely to be depressed than those from prestige schools ( $p < 0.01$ ). There were no ethnic differences in depression. The findings of this study are comparable to those of developed countries and provide guidelines for the planning and development of strategies for fighting depression in developing countries.

■ **Key words** adolescent – depression – Trinidad and Tobago

### Introduction

Adolescence is a critical period of development and represents a period of high risk for depression [12, 24]. Rates of depression are often related to the diagnostic instruments utilized, i.e., self-rating or observer-rating scales. In addition, the training, gender and status, for example, of the teacher or parent may influence the scoring rates. Self-report instruments are in popular use for collecting information on depressive symptomatology and can also capture the raters depressive experiences. It is important to get more data and information on adolescent depression since the presence of adolescent depression predicts a continued risk for recurrences of depressive episodes, negative consequences and suicidal risk into adulthood [28]. Internationally, overall rates of

adolescent depression have varied across countries and cultures. Low rates were reported in Western Europe, Asia and Australia. In a Swedish study of high school students aged 16–17 years, a depression score of 12.3% was found [18]. Lower rates were reported from Italy with rates of depression in adolescents as low as 3.8% [4]. Stavrakaki et al. [27] reported rates of 10% in Canadian adolescents, while a similar rate was found in British adolescents (10%) [17]. Separate studies of Chinese adolescents have reported rates of 13% [7] and 11% [25] as being depressed, while Boyd et al. [3] have reported rates of 14.2% in Australia. In Guatemala, a neighbouring Caribbean country, a high rate of adolescent depression (35.1%) was found [2]. These differences in prevalence rates of depression in developed countries vary from 3.8 to 14%. As mentioned above, possible explanations are the instruments used [the

Child Depression Inventory (CDI), the Child Depression Rating Scale-Revised (CDRS-R), the Diagnostic Interview Schedule for Children-child informant (DISC-child) and the Child Behaviour Check List (CBCL) and also the definition of depression (according to DSM-IV criteria or appearance of depressive symptoms).

In two European studies, the prevalence of depression among children and young adolescents was measured using different tests and definitions. This resulted in rates varying from 1.8% in Spain for depression and 10.6% for risk for depression in Italy [31, 32]. Cultural differences is another explanation for differences in rates of adolescent depression in different countries. This is supported by a study comparing self-reported depressive symptoms between schoolchildren in Russia and the UK, which showed significantly higher scores on both the Child Depression Inventory (CDI) and the Depression Self-Rating Scale (DSRS) in Russia, suggesting that different culture can influence the ratings [32].

In Trinidad and Tobago, few studies have focused on the measurement of depression in the community. Maharajh and Montane-Jaime [16] found that the incidence of major depression was 4.86 per 10,000 in a well-defined geographical sector. In a recent survey done on adolescents in Tobago, the sister isle of Trinidad, 10.1% suffered from a depressive disorder of which 6.06% was dysthymia and 4.04% major depression [14]. Inclusive rates of depression for adolescents in Trinidad and Tobago are not known. This study measures depression in adolescents in Trinidad and Tobago and identifies any significant trends associated with its occurrence. It is hoped that such a study will be invaluable and will assist in the treatment and the management of such disorders among adolescents in Trinidad and Tobago.

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## Method

### ■ Trinidad and Tobago

Trinidad and Tobago is the most southerly of all Caribbean islands; it has a total population of approximately 1.3 million with 40.3% of the population being of East Indian descent, 39.6% of African descent, 18.4% mixed and 1.7% belonging to other ethnic groups [5]. In 2000, the total number of schools was 480 (Trinidad: 447 schools, Tobago: 33 schools).

### ■ The school system

The school system in Trinidad and Tobago comprises either government or government-assisted schools both at the primary level and secondary level. At the secondary level, the schools are classified as government secondary, assisted secondary, junior secondary, senior

comprehensive and composite schools. The government-assisted secondary schools, which are managed by denominational boards, are generally considered to be prestige schools, while the others are categorized as non-prestige schools. In 2001, there were 111,781 students enrolled in the secondary level schools; with 22,251 in government-assisted secondary schools [5].

### ■ Sample

A stratified random sample was chosen, with the strata being defined as the counties of Trinidad and Tobago. All counties of Trinidad and Tobago were utilized and defined in seven strata consistent with strata utilized by the Central Statistical Office, and the distribution was as follows: San Fernando/Victoria 18.01%, Caroni 17.62%, Nariva/Mayaro 7.4%, St. Andrew/St. David 4.19%, St. Patrick 8.5%, St. George 33.3% and Tobago 10.9%. Adolescents were sampled from all seven strata and no significant differences were found between the population ratios to be attained for each strata and the attained sample ratios for this study ( $p = 0.23$ ). The strata were also consistent with the ethnic breakdown of the country.

This random sample of schools for each strata was selected via Microsoft Excel. A total sample of 1,845 respondents between the ages of 14 and 20 (Form 4 – Upper 6) was selected within the various schools in each stratum.

### ■ Sample characteristics

The age of the sample ranged from 14 to 20 with a mean of 16.03 and a standard deviation of 1.13. Females accounted for 60% of the sample, while males made up 40%. With respect to ethnicity, Indians accounted for 40% ( $n = 722$ ) of the sample, Africans 34% ( $n = 609$ ), Mixed 24% ( $n = 431$ ) and Other 2% ( $n = 34$ ). The ethnic distribution of the sample was not statistically different to that of the Trinidad and Tobago population [5]. Of the sample, 66% was from non-prestige schools and 34% was from prestige schools. This distribution is expected as, overall, there are more non-prestige schools in Trinidad and Tobago.

A total of 65% ( $n = 1,177$ ) of the sample lived with both parents, while 16% ( $n = 290$ ) lived with their mother only. The remaining 19% comprised other family structures (reconstituted family, living with relatives).

### ■ Research instruments

The Reynolds' Adolescent Depression Scale (RADS) [22] is a 30-item self-report instrument designed specifically

for adolescents, and measures depressive symptomatology. In order to judge severity of depressive symptomatology, a cut-off score of 77 and above is used. The cut-off was set this way because this cut-off point has been measured to be valid in a population of adolescents in the United States. By using this cut-off point, a clinically relevant level of symptomatology is operationalized. This allows for the assessment of a clinically relevant (i. e. of sufficient severity to be considered pathological) level of depressive symptomatology. In addition, to distinguish between clinically depressed and non-depressed adolescents, six critical items have been identified. These critical items were item numbers 6, 14, 20, 26, 29 and 30 corresponding with "I feel like hiding from people", "I feel like hurting myself", "I feel I am no good", "I feel worried", "I like eating meals" and "I feel like nothing I do helps any more". Cases in which four or more of these items are endorsed were regarded as serious, regardless of total RADS score. In diagnosing depression, the RADS measure includes the six critical items in order to get the 14% depressed from our sample. The relevance of using the four out of six critical items was to zoom in on individual cases within the sample who were at risk even though their total score on the RADS may be low. The four out of six measure identified individuals who were in need of urgent intervention and may have been clinically depressed. The students identified in this study were urgently forwarded to the Ministry of Education for follow-up. These critical items were, therefore, not used in the statistical analysis since it was already included in the calculations and it was not meant to be used as an additional or alternative measurement.

The criteria of a score above the cut-off score or four out of six critical items were defined as positive criteria for depression. Internal consistency reliability ranges from a Cronbach's coefficient alpha of 0.909–0.939.

There were no refusers though 35 questionnaires (1.90%) were excluded because 28 questionnaires were incomplete or humorous and 7 excluded their ages. A final number of 1,810 questionnaires were used for analysis.

Data were also collected on age, gender, ethnicity, family structure, religious behaviours (attendance at a religious institution and prayer with the family), type of school and alcohol abuse in the family.

Gender was defined as being either male or female. Ethnicity was self-reported and was one of the following ethnic groups: Indian, African, Mixed or Other. Ethnicity was defined on the basis of three or more grandparents belonging to the same race. Family structure was coded into one of the following categories: living with an intact family (both mother and father), one-parent family (either mother or father), single step-parent family (step-father or step-mother), step-parent family (father and step-mother or mother and step-father) or living

with relatives. Attendance at a religious institution and prayer with the family were self-reported for the period of the past 6 months. The family's history of alcohol abuse was assessed with a response set of either 'yes' or 'no'. The respondent's school was categorized as being either prestige or non-prestige.

## ■ Procedure

Permission was requested from the Ministry of Education, school district supervisors and school principals. The questionnaire was then piloted on a sample of students from a secondary school in Central Trinidad. This allowed the detection of any unforeseen problems in the data collection and the analysis of data. Subsequent to the review of the pilot, the questionnaire was then administered to the targeted schools from the random sample. The questionnaires were placed in brown envelopes to ensure confidentiality among the students. Students completed the questionnaires and returned them within the sealed brown envelope. On average, students took 25 min to complete the questionnaire. In all, 24 schools were surveyed over a 1-month period. The questionnaires were completed during sessions in school, thereby ensuring a low attrition rate.

## ■ Statistical analysis

All statistical analysis was done with the use of SPSS (Statistical Package for the Social Sciences, Version 11). ANOVAs and independent sample t-tests were used to examine the differences between groups. The level of significance was set at  $p < 0.05$ . Tukey test was used for calculating pairwise comparisons.

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## Results

A total of 1,845 students were sampled across Trinidad and Tobago. However, due to the fact that some research instruments were incomplete or humorous, 35 questionnaires had to be excluded. Therefore, 1,810 questionnaires were used for the analysis.

## ■ Depression rates

Utilizing the required cut-off point to specify adolescents that are depressed, 14% ( $n = 254$ ) of the sample was identified as depressed by the RADS. For the use of cross-country comparison (Trinidad vs. Tobago), individuals from Trinidad were sub-selected and the depression rate calculated. The depression rate for the Trinidad sample was 14.6%. The difference in depres-

sion rates between Trinidad and Tobago was statistically significant (Fisher's Exact Test,  $p = 0.03$ ).

### Gender

Overall, significant gender differences were identified in depression,  $F(1,807) = 103.148, p < 0.001$ ; with females accounting for 76.3% of all depressed respondents and males 23.7%. The rate of depression in females was 17.9% and 8.2% in males (Table 1). Depression was 2.18 times more likely to occur in females than males ( $OR = 2.18, 95\% CI 1.66-2.87$ ).

### Age

Fig. 1 reveals the significant differences between depression and age,  $F(1,802) = 2.415, p < 0.05$ . Tukey HSD tests revealed that there was a significant trend between the ages of 14 and 16 ( $p = 0.06$ ); with individuals at age 16

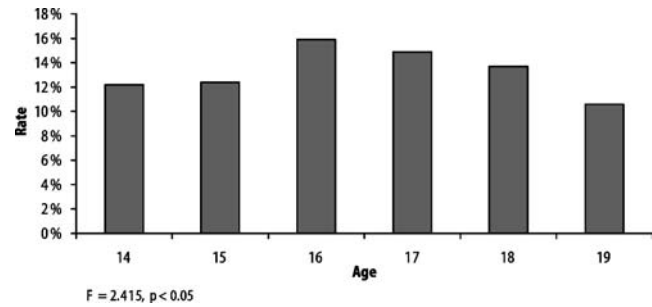


Fig. 1 Rates of depression in age cohorts

having higher mean depression scores compared to those at age 14 (62.24 vs. 57.32).

### Family structure

Family structure was shown to produce significant variations in depression,  $F(1,801) = 12.321, p < 0.001$ , see

Table 1 Trends in adolescent depression in Trinidad and Tobago

	(Total numbers)	Depression rate (%)	Number depressed	Mean RADS	p
Age <sup>a</sup>	14 (74)	12.2	9	57.32	< 0.05
	15 (588)	12.4	73	60.88	
	16 (622)	15.9	99	62.24	
	17 (308)	14.9	46	62.12	
	18 (161)	13.7	22	59.60	
	19 (47)	10.6	5	29.32	
	20 (3)	—	—	55.00	
Attendance at a religious institution <sup>b</sup>	No time	15.4		62.43	< 0.05
	More than 7 times	13.4		60.67	
Alcohol abuse present in family <sup>b</sup>	Yes	23.1		66.57	< 0.001
	No	12.6		60.39	
	(Total numbers)	Depression rate (%)		Mean RADS	p
Ethnicity <sup>a</sup>	African (609)	12.6		60.96	NS
	Indian (722)	13.2		60.97	
	Mixed (431)	17.4		62.05	
	Other (34)	11.8		60.21	
Family structure <sup>a</sup>	Intact (1177)	11.7		59.79	< 0.001
	One-parent (290)	13.5		62.28	
	Single step-parent	16.7		62.83	
	Reconstituted	25.7		67.00	
	With relatives	22.6		64.79	
Gender <sup>a</sup>	Male (724)	8.2		57.31	< 0.001
	Female (1086)	17.9		63.88	
		Depression rate (%)		Mean RADS	p
Prayer with family <sup>b</sup>	No time	18.8		63.74	< 0.001
	More than 7 times	11.2		58.68	
Type of school <sup>b</sup>	Prestige	11.5		60.02	< 0.01
	Non-prestige	15.3		61.88	

<sup>a</sup> ANOVA; <sup>b</sup> t-test; NS not significant

Table 1. Tukey HSD tests revealed that individuals from a reconstituted family had significantly higher mean depression scores than individuals from intact ( $p < 0.001$ ) and one-parent families ( $p < 0.05$ ). Living with relatives also produced significantly a higher mean depression score when compared to an intact family ( $p < 0.01$ ).

### ■ Religious behaviours

Both attendance at a religious institution and prayer with the family were shown to have a significant effect on adolescent depression. Adolescents who attended a religious institution more than seven times had significantly lower depression scores than their counterparts who never attended a religious institution,  $t = 2.029$ ,  $d.f. = 1.271$ ,  $p < 0.05$ ; and adolescents who prayed with their family had a significantly lower mean depression score than those adolescents who never prayed with their family,  $t = 5.788$ ,  $d.f. = 1.113$ ,  $p < 0.001$ . Fig. 2 highlights the effect of religious behaviours on the rates of depression in adolescents. Adolescents who were not involved in any religious behaviours had higher rates of depression than those who engaged in such behaviours.

### ■ Alcohol abuse

The relationship between depression and the presence of alcohol abuse in the family revealed significant findings,  $t = 6.6$ ,  $d.f. = 1.808$ ,  $p < 0.001$ . Individuals with alcohol abuse present in their family had higher mean RADS scores (66.57) compared to other individuals (60.39). In addition, individuals with alcohol abuse present in the family were 1.8 times more likely to be depressed than those without abuse present (OR = 1.84, 95% CI 1.42–2.39).

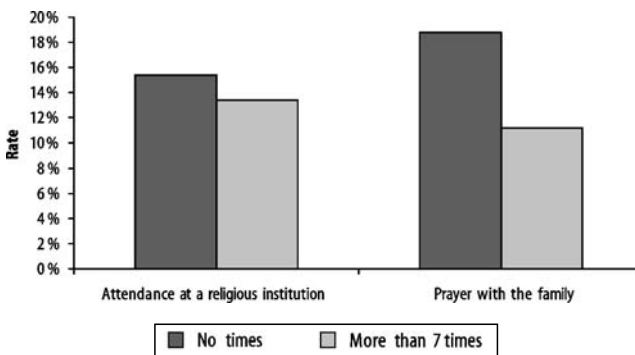


Fig. 2 Depression and religious behaviour

### ■ Type of school

Significant differences existed between depression and type of school,  $t = 2.692$ ,  $d.f. = 1.808$ ,  $p < 0.01$ ; with non-prestige schools having a higher mean of 61.88 compared to the mean of 60.02 for prestige schools.

### ■ Ethnicity

There were no significant differences between depression and ethnicity ( $p = 0.533$ ). Table 1 shows a summary of the identified trends with adolescent depression.

## Discussion

This study reports rates of depression in adolescents in Trinidad and Tobago and its association with other socio-demographic variables. In this study, 14% of the sample experienced depressive symptoms. This finding falls within the range reported in Australia (14.2%) and worldwide data of 3.5–35.7% [3]. Significant gender differences were found between female and male adolescents (17.9% vs. 8.2%), giving a male:female ratio of 2.18:1. This is similar to the ratio of 2.14:1 (females 12.6%, males 5.9%) by Rushton et al. [23] in the United States, and slightly lower than that of Olsson and von Knorring [18] who found a rate of 2.95:1 (females 14.2%, males 4.8%) in Sweden.

In a critical review [20], the following factors were identified as being likely to account for the gender difference in depression: adverse childhood experiences, sociocultural factors, psychological attributes related to vulnerability to adverse life events and coping skills. Genetic and biological factors and poor social support were cited as having little or no effect in explaining the emergence of the gender difference. Gender differences have also been attributed to gender-related psychopathology with females having higher rates of internalizing disorders (anxiety, depression) when compared to males [8], and the effect of recall [29]. It is noteworthy that, in Trinidad and Tobago, the sociocultural differences are protected by the ethos of school cultures.

A significant trend was identified between depression and age ( $p = 0.06$ ); with adolescents at age 16 having a higher mean RADS score than adolescents at age 14. Fig. 1 highlights that adolescents at age 16 had the highest rate of depression (15.9%) of all age groups, while those at age 14 had a rate of 12.2%. This increase in both the rate of depression and the mean depression score at age 16 compared to younger ages is consistent with the literature, which states that there are not only higher depression scores but also an excess in symptoms in adolescents aged 16–20 [6, 21]. Additionally, Fleming and Offord [9] have concluded that major depressive



disorders which occur in less than 3% of school-age children almost double in adolescence (6%).

The reconstituted family structure resulted in significantly higher mean depression scores than the intact and one-parent family structure. This supports research findings by Garnefski and Diekstra [11], where children from step-parent families reported more depressed mood than children from intact families. Adolescents from a reconstituted family structure also reported the highest rate of depression (25.7%) followed by adolescents living with their relatives (22.6%). Intact families reported the lowest rate (11.7%). Parental disharmony and quality of family relationships have been identified as a potential contributory factor for depression among young people [19], and family conflict has been identified as a major risk factor for internalizing behaviour in adolescents [10]. The intact family structure represents a stable and important support for adolescents and communication with parents remains an element of protection against distress, problem behaviour and poor psychosocial health. Family stress, which is inevitable in any family structure, is likely to increase in family structures where both parents are not present and where the adolescent has to adjust to a 'new' reconstituted family structure. It has been suggested that family stress and parent-child conflict could lead to adolescents' lower sense of control and higher levels of emotional distress and depression [21]. In Trinidad and Tobago, family structures are varied and complex. Further investigations are currently being done.

Lease [13] reports that drinking behaviours disrupt family functioning and directly influence family processes, resulting in difficulties in forming healthy relationships. This disruptive style of behaviour not only applies to the individual who engages in the drinking behaviour, but to other family members who are affected by the behaviour. The rate of depression (23.1%) and the mean depression score (66.57) for adolescents who had alcohol abuse present in their families were significantly different to those of their peers without abuse present ( $p < 0.001$ ; mean 60.39, rate 12.6%). The relationship of adolescent exposure to alcohol use in drinking families were previously investigated in Trinidad and Tobago [26]. They reported an association between adolescent and adult use of alcohol. Depression appears to be a contributory factor. Drinking behaviour disrupts family functioning [13], and it is closely associated with psychiatric illnesses such as bipolar disorder [33] or other mood disorders, thus increasing the risk for depression in the children. In this study, the children were not tested on the existence of bipolar disorder. In this age group, there is an undifferentiated mood lability which falls into categories of dysthymic, cyclothymic and bipolar diseases.

Adolescents who attended a religious institution or prayed with their family more than seven times over a 6-

month period had lower mean depression scores and lower rates of depression than their counterparts who never engaged in these activities (Table 1). Although attendance at a religious institution resulted in a depression rate of 2% less than those who never attended, it seems as though prayer with the family has a stronger effect on the rate of depression in adolescents, with the depression rate being 7.6% lower than those who never prayed with their family (Fig. 2). These findings can also be discussed in the context of possible confounding variables such as family structure. It may be possible that intact families have the tendency to pray more and pay more attention to the importance of attending a religious institute. In this study, the association of religion and depression was not corrected for family type since the structure of Caribbean families is often complex and requires detailed study.

Type of school was also shown to significantly affect adolescent depression, with adolescents in non-prestige schools having a higher rate of depression than those from prestige schools (15.3% vs. 11.5). Students who attend prestige schools in Trinidad and Tobago are in the upper percentile group of academic achievers. Additionally, prestige schools in Trinidad and Tobago are mostly denominational in nature and smaller in size compared to non-prestige schools. Students in non-prestige schools face the additional stress of overcrowding, poor ventilation in classrooms and an increase in school violence, which may add to their personal distress. Other factors contributing to a higher level of depression in students in non-prestige schools can be that the average student is from a lower economic state compared to those from prestige schools. This low economic state is known to be a risk factor for adult depression. Another hypothesis can be that religion is another aspect that differs among these two different schools, with prestige schools being more religious, acting as a protective factor for depression.

No differences were found between gender and ethnic groupings among Africans, Indians, Mixed and Others suffering from depression. Findings of ethnic differences in depression in the adult population in Trinidad and Tobago [15] are not seen in the adolescent population. The adolescent school population remains a homogeneous group with decreased ethnic polarization or race-thinking. Adolescent depression in Trinidad and Tobago appears to be unrelated to ethnicity.

In comparing depression rates for the Trinidadian adolescents (14.6%) to those found in Tobagonian adolescents (10.1%) [14], the rates of depression were significantly different ( $p < 0.05$ ), with adolescents in Tobago being 1.5 times more likely not to be depressed compared to Trinidadian adolescents (OR = 1.54, 95% CI 0.98–2.42). These rates are directly comparable to the Tobago study as the RADS was utilized as the depression instrument. The depression rate for Trinidad is higher in

comparison to Tobago. There are huge differences between Trinidad and Tobago with Trinidad being more multicultural with a much larger population. Trinidad is more industrialized and has a more hectic and demanding lifestyle. There is also a higher crime rate related to drug trafficking in Trinidad. These factors may be involved in the higher prevalence of adolescent depression.

There are limitations to this study. The Reynolds Adolescent Depression Scale (RADS) is a self-report scale designed to test depressive symptomatology in adolescents. Respondents were not screened for substance abuse and general medical conditions. Caution must be exercised in the interpretation of RADS scores since they are more characteristically female [1] and these scores on the RADS may be higher among the female gender. Another limitation could be that the RADS was tested and designed in an American adolescent population which may not be applicable to a developing country. This study was conducted on students in secondary schools. It does not include those who have dropped out of the system or those attending vocational schools, therefore the results cannot be used for all adolescents and community rates are expected to be higher. There is a lack of control of comorbid conditions. As mentioned above, attending a religious institution can

be related to the family structure just as alcohol use can also be related to the family structure. More specific factors that are present in the different school classes are not investigated.

However, this study provides important findings which should be considered invaluable in terms of both the treatment and the prevention of depression among adolescents in Trinidad and Tobago. The following contributory factors have been identified as having an effect on depression in adolescents in Trinidad and Tobago: female gender, middle adolescence (age 16), being either in a reconstituted family or living with relatives, having alcohol abuse present in the family, no attendance at a religious institution or praying with the family, and attending a non-prestige school. The significant difference in depression in Trinidad and Tobago sets the stage for further investigation of socio-cultural factors in adolescent depression. It also suggests that future research should be directed towards any possible interactional effects between variables that may contribute towards the presentation of depression in adolescents. Since the management of adolescent depression affects the outcome in adulthood, an understanding of early depression in diverse communities will be helpful in reducing the global burden of common diseases.

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