Cogitare Enfermagem

ORIGINAL ARTICLE

Mental disorders among adolescents in vocational-technical high school: sociodemographic profile and associated factors*

HIGHLIGHTS

1. The female sex is associated with a higher prevalence of mental disorders.
2. Family factors showed a significant impact on mental health.
3. Students in their final years showed greater psychological vulnerability.

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ABSTRACT

Objective: To analyze the sociodemographic profile and factors associated with the occurrence of mental disorders among adolescents in a vocational-technical high school. **Method:** Quantitative, cross-sectional study conducted with 160 high school students in June 2023. An online questionnaire was used to assess sociodemographic characteristics, mental health aspects, and the Self-Reporting Questionnaire. The data obtained were submitted to descriptive and inferential analysis. **Results:** Factors that increase the likelihood of mental disorders among adolescents were identified, namely: female sex (4.30 times more likely); non-heterosexual orientation (3.72 times more likely); attending the final years of high school (2.05 times more likely compared to those attending the 1st year); having someone in the family with a mental disorder (2.40 times more likely); and having a family member with anxiety (4.50 times more likely). **Conclusion:** A greater predisposition among adolescents to develop mental disorders was observed, pointing to the need for monitoring by educators and health professionals, with a view to prevention and the promotion of mental health.

DESCRIPTORS: Adolescent; Students; Mental Health; Mental Disorders; Risk Factors.

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INTRODUCTION

Throughout life, people are exposed to various individual, social, and structural determinants, which, when combined, can have a protective or harmful effect on mental health. Individual psychological and biological conditions, as well as exposure to harmful social, economic, geopolitical, and environmental contexts, increase the risk of developing psychological disorders. On the other hand, social and emotional skills and attributes, positive social relationships, good education, decent work, and security, among other factors, strengthen resilience and act as protective factors[1].

Within this context of life and health, adolescents experience biological, psychological, and social changes during a complex phase[2]. However, adolescence should not be viewed merely as a transitional phase, nor does it correspond to a specific chronological stage; it constitutes a significant and pivotal subjective experience that is crucial in the life history of each individual. The journey through adolescence is marked by multiple and intense transformations, ruptures, and revisitations of the past, imposed on the present lived experience[3].

Among the reasons for adolescents' greater vulnerability in postmodern societies, marked by inequality, insecurity, and violence, unemployment, poor professional training, and segregation stand out as aspects that affect most young Brazilians. Surrounded by norms and expectations of acceptance and belonging, many young people succumb because they lack sufficient emotional resources, leading to significant psychological suffering[4].

The school environment stands out as a means of protection. Adolescents themselves recognize school as a safe and welcoming space, given that the school environment fulfills an educational function that integrates, in addition to curricular knowledge, citizenship issues and the sociocultural and emotional development of adolescents[5]. Assessing adolescents' well-being in the school environment is of great importance, given its impact on overall health and on healthy, comprehensive, and mentally balanced development[6].

The school, along with other social spaces, becomes a relevant *locus* for actions to promote adolescent health[7]. Nevertheless, it is important to consider that educators, although they have basic knowledge about healthy behaviors, do not have the competence to identify cases of mental illness or even common ailments, which may go unnoticed due to various factors.

Therefore, the implementation of intersectoral approaches is necessary as a strategy to promote the agency of these adolescent subjects in healthcare. Thus, shared actions between education and health need to be planned as an innovative and integrated practice, implemented by a multidisciplinary team, considering individuals' social factors[8].

At the national level, the School Health Program (SHP) aims to integrate and coordinate education and health on an ongoing basis to expand the reach and impact of its actions related to students and their families, optimizing the use of available spaces, equipment, and resources. Primary Health Care teams are linked to the SHP through program enrollment, in accordance with the agreed-upon actions in the schools within the territory[7].

There is also the role of nurses in school health services, a practice that is already well established internationally, with the development of skills and abilities that encompass communication, clinical expertise, leadership, coordination, collaboration, management, and planning[9]. It is observed that the interventions of nurses in schools in Brazil are directed

at students, school workers, and parents, to promote health and academic success among the student population[10].

Thus, it is easy to understand the importance of having a multidisciplinary child and adolescent mental health team that works as a network. Close intersectoral coordination must be maintained between the school community, primary health care professionals, and the family. The role of nurses involves developing skills in mental health promotion and early detection, and referral of risk situations[11].

When considering the worrying reality of mental health problems experienced by adolescents, it is essential to understand the specific characteristics of the target audience and to have a better understanding of the factors associated with psychological disorders. These findings may support the planning and implementation of nursing interventions to promote mental health in the school environment, as well as contribute to the identification, referral, and early treatment of adolescents with mental disorders.

The study aimed to analyze the sociodemographic profile and factors associated with the occurrence of mental disorders among adolescents in a vocational-technical high school.

METHOD

This is a quantitative, cross-sectional study conducted with students enrolled in the vocational-technical high school at a federal public institution in the municipality of Limoeiro do Norte, Ceará, Brazil. The vocational-technical high school is a type of education that combines general high school education with technical and vocational training in the same course and curriculum.

Data collection was conducted in June 2023, during the students' time at the institution, and was scheduled during free periods or with the teachers' cooperation, who released the classes at the beginning or end of lessons to participate in the survey.

The recruitment of adolescents took place after the sample was defined, calculated based on the population of 191 students regularly enrolled in the institution's vocational-technical high school. Initially, the researcher made a preliminary visit to the classrooms, presenting the research objectives, relevance, and procedures, and inviting all eligible adolescents to participate. To ensure the required sample size, an initial calculation determined 125 participants, considering a 5% sampling error and a 95% Confidence Interval (CI), with an additional 28% added to account for potential losses, resulting in a final sample of 160 adolescents. Those aged between 14 and 19 years who were attending classes during the data collection period were considered eligible. Recruitment took place after the Free and Informed Consent Term (FICT) was delivered to the legal guardians, and only adolescents who returned the duly signed document were included. Thus, 31 adolescents who did not submit the signed FICT were excluded from the final sample.

Data collection was carried out using an online questionnaire, which the adolescents answered in the computer labs on campus, as these are quiet, private environments. The questionnaire covered sociodemographic characteristics; personal and family history of mental disorders; situations of mental distress at school; and specific questions from the Self-Reporting Questionnaire (SRQ-20).

The SRQ-20 is a questionnaire developed by the World Health Organization (WHO) consisting of 20 items, self-administered, which aims to screen for non-psychotic mental disorders in community studies and Primary Health Care. It uses a dichotomous scale (yes or no), in which each statement is worth one point, and the result is the sum of the points. The scores range from 0 (no probability of having a non-psychotic mental disorder) to 20 (extreme probability of having a non-psychotic mental disorder), allowing for an initial classification regarding the likelihood of mental distress[12].

Initially, numerical variables, measures of central tendency (mean), and dispersion (standard deviation - SD) were used to describe the participants' characteristics. For nominal variables, the description was based on simple and relative frequencies. Information regarding sociodemographic, educational, professional, and mental health characteristics of the adolescents was presented in tables.

The data related to the SRQ 20 were analyzed in the following ways: descriptive analysis of the responses to each of the questions and, for inferential analysis, mental distress (>7 "yes" responses) or no mental distress (≤ 7 "yes" responses) was considered as the outcome variable[12].

Initially, the normality of the quantitative variables was assessed using the Shapiro-Wilk test. Bivariate analysis was performed using the chi-square test for independent samples. For multivariate analysis, binomial logistic regression was conducted. This type of regression is used when the dependent variable is categorical, such as yes or no, and is commonly employed in epidemiological research[13].

The Akaike Information Criterion (AIC) was used to select the regression model[14]. The Variance Inflation Factor (VIF) was applied to assess the increase in variance due to the presence of multicollinearity. The VIF threshold value for establishing whether a variable is not collinear is 4. In the absence of multicollinearity, the VIF value is equal to 1[15].

Variables with $p < 0.20$ in the bivariate analysis were included in the binomial logistic regression model, and the adjusted Odds Ratio (OR) and 95.0% CI were calculated. A significance level of $p<0.05$ was adopted. All analyses were performed using Jamovi software, version 2.322[16].

The research was approved by the Research Ethics Committee of the *Instituto Federal de Educação, Ciência e Tecnologia do Ceará* (IFCE), under opinion no. 6,034,820. Participants under the age of 18 signed the Free and Informed Assent Term (FIAT), while their guardians and participants aged 18 or older signed the FICT. Before signing these consent terms, they were informed of all research procedures.

RESULTS

160 students from the vocational-technical high school participated in the study, whose sociodemographic, educational, professional, and family characteristics are described in Table 1. The adolescents had a mean age of 16.18 years (standard deviation = 0.98; maximum value = 19; minimum value = 15), with 84 (52.5%) being male, 126 (78.8%) identifying as heterosexual, and 79 (49.4%) self-reporting as mixed race.

Table 1. Adolescents' sociodemographic, educational, professional, and family characteristics. Limoeiro do Norte, CE, Brazil, 2023

Variables	N	%
Age		
Mean	16.18	-
Standard deviation	0.98	-
Maximum value	19	-
Minimum value	15	-
Sex		
Female	73	45.6
Male	84	52.5
Prefer not to say	3	1.9
Sexual orientation		
Heterosexual	126	78.8
Non-heterosexual	23	14.3
Prefer not to say	11	6.9
Race		
White	64	40.0
Mixed race	79	49.4
Black	14	8.7
Indigenous	1	0.6
Prefer not to say	2	1.3
Course		
Electrotechnics	78	48.8
Chemistry	78	48.8
Prefer not to say	4	2.4
High School Year		
1st year	62	38.7
2nd year	48	30
3rd year	50	31.3
Moving out of the family home to study at IFCE		
Yes	16	10
No	142	88.7
Prefer not to say	2	1.3

Source: Prepared by the authors (2023).

Also in Table 1, it was found that 78 (48.8%) adolescents were studying Electrotechnics, and 79 (48.8%) were students of Chemistry. Regarding the high school year in which the participants were enrolled, the 1st year stood out (38.7%), followed by the 3rd year (31.3%). A total of 16 (10%) participants reported having moved out of the family home to study at IFCE.

Table 2 presents data on the mental health of adolescents and their families. Thus, 40 (25%) adolescents reported a history of mental disorder, with anxiety (57%) and depression (20.7%) being the most prevalent. When asked about their current condition, 37 (23.1%) adolescents reported having some mental disorder, with anxiety being the

most prevalent condition (75.6%). A total of 42 (26.2%) participants reported having a family member with a mental disorder, especially on their mother's side (22.2%), with the most prevalent problems being anxiety (36.7%) and depression (20%).

Table 3 presents the bivariate analysis, highlighting the following factors associated with the occurrence of mental distress among adolescents: sex (p<0.001; OR: 4.31; CI: 2.19 - 8.48); sexual orientation (p=0.010; OR: 0.27; CI: 0.09 - 0.77); course (p=0.016; OR: 0.46; CI: 0.24 - 0.87); high school year (p=0.029; OR: 0.49; CI: 0.26 - 0.93); having a family member with a mental disorder (p=0.021; OR: 2.40; CI: 1.13 - 5.10); and anxiety in a family member (p=0.005; OR: 4.50; CI: 1.45 - 14.00).

Table 2. Characterization of adolescent and family mental health. Limoeiro do Norte, CE, Brazil, 2023

Variables	N	%
The adolescent had a mental disorder in the past		
Yes	40	25
No	102	63.7
Don't know/Prefer not to say	18	11.3
Type of mental disorder that occurred in the past		
Anxiety	33	57
Depression	12	20.7
ADHD/hyperactivity	2	3.4
Bullying	1	1.7
Burnout	1	1.7
Other	9	15.5
Current mental disorder		
Yes	37	23.1
No	101	63.1
Don't know/Prefer not to say	22	13.8
Type of mental disorder		
Anxiety	34	75.6
Depression	4	8.9
ADHD/hyperactivity	3	6.6
Other	4	8.9
A family member has a mental disorder		
Yes	42	26.2
No	110	68.8
Don't know/Prefer not to say	8	5
Family member's mental disorder		
Anxiety	22	36.7
Depression	12	20
Schizophrenia	4	6.7
Autism	5	8.3
ADHD/hyperactivity	3	5
Other	14	23.3

Source: Prepared by the authors (2023).

Table 3. Factors associated with the occurrence of mental disorders among adolescents. Limoeiro do Norte, CE, Brazil, 2023

Variables	Case (>7 yes answers)	Non-case (≤ 7 yes answers)	Odds Ratio (OR)	95% Confidence Interval (CI)	p-value*
Sex			4.31	2.19 - 8.48	**<0.001**
Female	53 (72.6 %)	20 (27.4 %)			
Male	32 (38.1 %)	52 (61.9 %)			
Sexual orientation			0.27	0.09 - 0.77	**0.010**
Heterosexual	62 (49.2 %)	64 (50.8 %)			
Non-heterosexual	18 (78.3 %)	5 (21.7 %)			
Course			0.46	0.24 - 0.87	**0.016**
Electrotechnics	34 (43.6 %)	44 (56.4 %)			
Chemistry	49 (62.8 %)	29 (37.2 %)			
High School Year			0.49	0.26 - 0.93	**0.029**
1st year	27 (43.5 %)	35 (56.5 %)			
2nd year/3rd year	60 (61.2 %)	38 (38.8 %)			
Moving out of the family home to study at IFCE			1.49	0.51 - 4.32	0.461
Yes	10 (62.5 %)	6 (37.5 %)			
No	75 (52.8 %)	67 (47.2 %)			
A family member has a mental disorder			2.40	1.13 - 5.10	**0.021**
Yes	29 (69.0 %)	13 (31.0 %)			
No	53 (48.2 %)	57 (51.8 %)			
Family member's mental disorder					
Anxiety			4.50	1.45 - 14.00	**0.005**
Yes	18 (81.8 %)	4 (18.2 %)			
No	69 (50.0 %)	69 (50.0 %)			
Depression			1.75	0.50 - 6.05	0.374
Yes	8 (66.7 %)	4 (33.3 %)			
No	79 (53.4 %)	69 (46.6 %)			
Family member with a mental disorder			2.91	0.53 - 16.10	0.208
Mother/father	11 (84.6 %)	2 (15.4 %)			
Other	17 (65.4 %)	9 (34.6 %)			

Note: *Chi-square test for independent samples.

Source: Prepared by the authors (2023).

In the overall analysis of the Self Report Questionnaire (SRQ-20) applied to adolescents, the average score was 8.18 (standard deviation = 5.28), with a maximum value of 20 and a minimum value of 0. Regarding the probability of mental distress among adolescents, 54.4% of cases and 45.6% of non-cases were observed.

As shown in Table 4, female adolescents were 4.30 times more likely to report mental distress than male adolescents (p<.001; CI: 2.19-8.47).

Table 4. Logistic regression of factors associated with mental distress among adolescents. Limoeiro do Norte, CE, Brazil, 2023

Variables	Adjusted odds ratio (OR)	95% Confidence Interval (CI)	p-value*	VIF**	AIC***
Sex					
Female vs Male	4.30	2.19-8.47	**< 0.001**	1.00	201
Sexual orientation					
Non-heterosexual vs. heterosexual	3.72	1.30-10.62	**0.014**	1.00	203
Course					
Chemistry vs Electrotechnics	2.19	1.15-4.15	**0.017**	1.00	214
High school year					
2nd year/3rd year vs 1st year	2.05	1.07-3.90	**0.030**	1.00	220
A family member has a mental disorder					
Yes vs No	2.40	1.13-5.10	**0.023**	1.00	208
Family member's anxiety					
Yes vs No	4.50	1.45-13.98	**0.009**	1.00	216

Note: *Binomial logistic regression, with multicollinearity assumption analysis; **Variance Inflation Factor; ***Akaike Information Criterion.

Source: Prepared by the authors (2023).

Non-heterosexual adolescents were 3.72 times more likely to report mental distress than heterosexual adolescents (p=0.014; CI: 1.30-10.62). Adolescents studying Chemistry were 2.19 times more likely to develop mental distress compared to those studying Electrotechnics (p=0.017; CI: 1.15-4.15). Adolescents in their 2nd and 3rd years were 2.05 times more likely to experience mental distress compared to those in their 1st year (p=0.030; CI: 1.07-3.90). Adolescents with family members suffering from mental disorders were 2.40 times more likely to have the same problem (p=0.023; CI: 1.13-5.10). Finally, adolescents with family members suffering from anxiety were 4.50 times more likely to experience mental distress (p=0.009; CI: 1.45-13.98).

DISCUSSION

The study's results showed that 23.1% of adolescents had been diagnosed with some form of mental disorder, a percentage that exceeds the global estimate of 14%, reflecting the reality experienced worldwide by children and adolescents in relation to their mental health[17].

It should be noted that an even greater number of participants (54.4%) were likely to have a common mental disorder, a rate higher than that observed in another study of adolescents from a public school in Salvador, in northeastern Brazil (52.2%)[18]. This situation also reflects the post-COVID-19 pandemic period, in which there was an increase in mental health disorders - a fact confirmed by a study conducted in this context, which revealed changes in anxiety and depression symptoms over time[19].

Mental disorders in childhood and adolescence are a serious public health problem, as they are strong predictors of mental disorders in adulthood, as well as suicidal behavior and adverse social outcomes[17,20-21].

This scenario is complex and challenging, as it involves several factors that hinder access to and provision of quality mental health services for children and adolescents, such as systemic and structural barriers, limited financial resources, professional intervention limitations, and biomedical model weaknesses[22] and specific barriers to seeking help, such as the stigma associated with mental disorders and negative beliefs about mental health services[23].

To address this problem, it is necessary to recognize that mental health manifests itself on a complex continuum, encompassing experiences ranging from an optimal state of well-being to debilitating states of intense suffering and emotional pain, in which a combination of individual, family, community, and structural factors can affect mental health[17]. This makes it possible to offer greater availability of mental health support and encourage people to seek help - strategies that are necessary given the current health service reality[23].

It is essential to understand which risk factors are related to the development of mental disorders to guide possible interventions that reduce cases of illness among adolescents. Therefore, it is necessary to pay attention to the aspects that influence women's mental health, since females are more likely to suffer from mental illness, as evidenced in this and other studies, which point to a higher prevalence in all age groups. This greater vulnerability among women occurs mainly in relation to depressive and anxiety disorders, the causes of which are not yet fully understood, but are believed to result from a combination of cultural, social, neuroendocrine, and gender-based violence factors[24].

Furthermore, adolescents who identify as non-heterosexual are three times more likely to develop mental disorders than heterosexuals, which highlights the influence of sexual orientation in developing these conditions. Similar results were found in another study, which emphasized the strong correlation between poorer mental health indicators among non-heterosexual youth and the occurrence of prejudice against sexual and gender diversity[25].

The increased risk of mental disorders among students may be due to distance from family, excessive workload, relationship difficulties, bullying, and the pressure to succeed at school[26]. Moreover, adolescence is marked by the demand for choosing a professional career, which implies a phase characterized by a greater number of school activities, as well as personal and family expectations[27]. It is worth noting that personal, family, and socioeconomic factors can lead to situations of distress or illness among students[26].

Adolescents' mental suffering is particularly related to the presence of family mental disorders, especially in mothers. This is to be expected, as parental mental illness impacts young people's cognitive development and school performance, resulting in mental disorders and intergenerational poverty[20,28-29].

Also, parental mental distress, conflicts, and domestic violence, substance abuse by family members, divorce, migration, and parental incarceration are associated with mental disorders in adolescents[20]. This happens because children and adolescents' development is influenced not only by their own characteristics, but also by the environments they live in, and by macro-social and cultural factors[29].

Conflictual situations in the family context are directly associated with mental distress, such as negative parenting practices, parental mental disorders, substance abuse, divorce, and parental incarceration. On the other hand, strengthening the emotional bond between parents and children is an important measure for protecting

adolescents' mental health, even in adverse conditions, especially when families are based on affection, nonviolent communication, and trust[20].

In the results of this study, no significant statistical correlation was observed between age, approximate monthly family income, and the number of family members. Furthermore, there was no association between mental disorder and race, nor between mental illness and receipt of social benefits. However, living in multidimensionally poor families, belonging to the black race/color, having a partner, smoking, and being a bullying victim increase the chances of adolescents presenting common mental disorders[17,18].

Although the SRQ-20 Scale does not directly address the influence of excessive technology and social media use, negative impacts on social interactions, with significant risks to mental health, can be observed in the school environment of children, adolescents, and even in academia. Recent research suggests that the spread of social media and digital technologies can also harm mental health, especially among adolescents[28].

Generally speaking, people exposed to vulnerable conditions, such as poverty, violence, and inequality, are at greater risk of developing mental disorders and are also less likely to receive adequate treatment[17]. Studies show that adolescents in multidimensionally poor families are 50% more likely to develop mental disorders, strongly associated with the deprivation experienced by them and their families[2]. Moreover, these adolescents are more susceptible to trauma, violence, and poor living conditions, which increase stress levels[2].

As this study included a sample of adolescents from a single educational institution, it presents limitations, requiring caution when generalizing its results. Nevertheless, the findings reinforce the need for actions to protect and promote mental health in diverse contexts, especially among adolescents who are in school, with responsibilities, and under pressure to make decisions about their professional future.

CONCLUSION

The study's findings showed that mental health issues are a big deal for this group, with about one-fifth of adolescents having a diagnosed mental disorder, and half of them likely to have a common mental disorder that hasn't been diagnosed yet.

Furthermore, the study provided evidence that school, family, and social contexts have a significant impact on adolescents' mental health and that some of them are more likely to have mental health issues, like being female, non-heterosexual, having a family member with a mental disorder, as well as attending the final years of high school and one of the vocational-technical courses.

In addition, mental health promotion should be considered a relevant strategy to be developed with adolescents in the school environment, as well as the early identification of mental distress cases and referral to health care services for the necessary treatment as soon as possible.

The findings may provide support for improving adolescent mental health by identifying those at higher risk of mental disorders early on and planning specific intervention strategies for them. Also, this evidence may support the implementation

of intersectoral actions aimed at expanding mental health promotion programs, as well as opportunities for attention and care for adolescents in school.

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Substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work - **Oliveira CLBS, Marques JF, Dutra FCS, Carneiro MGO, Queiroz MVO.** Drafting the work or revising it critically for important intellectual content - **Oliveira CLBS, Marques JF, Dutra FCS, Carneiro MGO, Queiroz MVO.** Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved - **Oliveira CLBS, Marques JF, Dutra FCS, Carneiro MGO, Queiroz MVO.** All authors approved the final version of the text.

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