MATHEWS JOURNAL OF PEDIATRICS

MATHEWS Open Access Journals

Research Article

ISSN: 2572-6560

Vol No: 4, Issue: 1

Received Date: Jul 1, 2019

Published Date: Oct 11, 2019

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Application of Youth Self-Report for Age 11-18 for Screening of Mental Disorders in the Adolescence

ABSTRACT

Objectives: Mental Disorders (MD) during adolescence are frequent, causing suffering and dysfunction on the psychosocial and educational development of adolescents. The aim of this survey was to detect the prevalence of MD among pupil of 6th to 9th grade and adolescents of high school by application of Youth Self-Report for ages 11-18 (YSR for ages 11-18).

Methods: a cross-sectional study design was used. After parents and adolescents signed an Free Consent Term, the questionnaires YSR for ages 11-18 were obtained from 3518 teenagers of 6th to 9th grade and adolescents of high school from 38 publics school of Cascavel City-state of Paraná-Brazil. This survey had the approval of the Ethics Committee of Western Paraná State University under protocol CR number 955/2010.

Results: 3682 questionnaires were distribuited and 3518 pupils from 38 publics school filled YSR for ages 11-18, age ranged from 11 to 18 years-old (mean: 13.3years), being female: 2283 (64.9%) and male: 1235 (35.1%). About this total, 2105 (92.3%) girls and 1141 (92.4%) boys were normal. A significant association of males with Activities, Social and Total Competence scales was found. Somatic Complaints and Delinquent Behavior on males and Anxious/Depressed, Agressive Behavior and Externalizing Problems on females had a positive association. Belonging middle adolescence also had significant association with Anxious/Depressed, Aggressive Behavior, Internalizing Problems, Externalizing Problems and Total Problems.

Conclusion: Rating scales of mental symptoms can be helpful in assessing adolescents patients, like YSR for ages 11-18. This study showed that the Somatic Complaints, Anxious/Depressed, Delinquent Behavior and Aggressive Behavior were the most significants.

Keywords: Adolescence, Mental disorder, Questionnaire, Prevalence, Evaluation.

INTRODUCTION

The circumstances and lifestyle of modern society, along with individual personality characteristics, often cause anxiety and temporary or permanent mental disorders (MDs). In some individuals, these circumstances alone can undermine their mental serenity and ability to make decisions about daily life activities. Common MDs include stress, anxiety, insomnia, fatigue, irritability and forgetfulness, in addition to somatic complaints such as headache and poor digestion [1].

Adolescence is a distinctive moment in human development. It is an experience of passage that entails an abandonment (of the past childhood) and a bet (on the future adulthood) [2]. The worldwide prevalence of MDs in childhood and adolescence varies between 10 and 20% [3,4]. From a national perspective, it is necessary to investigate the current status of mental health in Brazilian adolescents.

The YSR, a self-report instrument used for tracking psychiatric syndromes, is one of a family of screening tools for behavioural and emotional problems in children and adolescents. The following questionnaires are used to gather Achenbach System of Empirically Based Assessments (ASEBA) information: Child Behavior Checklist (CBCL), Youth Self-Report (YSR) and Teacher's Report Form (TRF). The YSR is recommended for use only with adolescents aged 11 to 18 years, used for self-ratings, and it is the most widely used mental health assessment instrument for adolescents [5].

Considering the scarcity of Brazilian studies evaluating the prevalence of mental health problems during adolescence, this study aimed to evaluate the prevalence of emotional/behavioral problems among adolescents in elementary II and secondary school with application of the questionnaire Youth Self-Report for Ages 11-18 (YSR).

MATERIALS AND METHODS

Population

This was a cross-sectional, epidemiological study with school-based sample, conducted from March 2011 to November 2013 with a cohort representative of the students enrolled in 38 elementary II (grades 6 to 9) and secondary (grades 1 to 4)public schools in the city of Cascavel (Paraná, Brazil), comprising adolescents of both genders and aged between 11 and 18 years. To calculate the sample size for a target population of 34,108 students in the city in 2011, and considering a margin of error of 1%, it was estimated the required number of participants to be 1,732. The invitation to participate in the study was delivered to the students in the classrooms after explanation of the objectives of the research and clarification when needed. A cell phone number was included in the Informed Consent Form (ICF) for questions from parents or guardians.

Inclusion and Exclusion Criteria

The research included adolescents of both genders, aged 11 to 18 years, enrolled in the schools participating in the study. The adolescents enrolled in the study demonstrated interest in participating voluntarily and delivered an ICF signed by them and by their parents or guardians on the day of the YSR application. We excluded from the study those students who missed school on the day of the YSR application, those whose parents did not sign the ICF, students who refused to participate even with parental consent, and those who had their questionnaires canceled for lack of identification or lack of response to one or more YSR item.

Evaluation Instrument

The YSR is one of a family of screening tools for behavioral and emotional problems in children and adolescents, which is part of the Achenbach System of Empirically Based Assessments (ASEBA), that include Child Behavior Checklist (CBCL), completed by parents and the Teacher's Report Form (TRF) by teachers. The initial assessment consisted of completion of the YSR [5], a self-report instrument used for tracking behavioral and emotional problems. The software ADM/ASEBA, in which is the YSR, was bought by Pediatric Neurology Center of Universidade Federal do Paraná, and the questionnaire were corrected there, being used the Bordin, Mari and Caeiro's version, oriented by psychologist of Pediatric Neurology Center. The YSR consists of two main parts. The first part includes information on gender, age, school level and race, in addition to evaluation of Social and Activities Competences (e.g., involvement and performance in sports, games, hobbies, jobs, daily chores, participation in youth groups, performance in school subjects, personal relationship, etc.). The score increases according to the performance in the Social and Activities Competence items evaluated. In this first part, the scores are divided as follows: (A) Activities: normal (>33), borderline (30 to 33) and clinical (< 30); Social Competence (S): normal (>33), borderline (30 to 33) and clinical (< 30); and (TC) Total Competence: normal (>40), borderline (37 to 40) and clinical (<37). The second part of the YSR evaluates emotional and behavioral problems and consists of 112 questions to which the respondent assigns a score of 0 (not true), 1 (somewhat or sometimes true), or 2 (very true or often true). The responses to each item of the questionnaire are then entered into the software Assessment Data Manager® (ADM) and analyzed according to age and gender, resulting in a total score.

The YSR score is divided into three categories: normal (up to 67), borderline (from 67 to 70) and clinical (above 70). Participants with a clinical score are categorized into one of the following psychiatric syndromes: Withdrawal (W), Somatic Complaints (SC), Anxiety/Depression (A/D), Social Problems (SP), Thought Problems (TP), Attention Problems (AP), Rule-Breaking Behavior (RBB) and Aggressive Behavior (AB). To assess Internalizing Problems (IP), we considered the sum of the psychiatric syndromes W, SC and A/D, and for Externalizing Problems (EP), we considered the sum of the psychiatric syndromes RBB and AB. The last item is named Total Problems and has scores divided into normal (< 60), borderline (60 to 63) and clinical (>63).

The time to complete the questionnaire varies between 50 and 90 minutes. The first author was responsible for applying the questionnaire to the participants, and was available for questions by the students during the application. The YSR was adapted and translated into Portuguese by Bordin et al. in 1995 [6,7]. It is easily understandable and reliable as a screening tool for adolescents aged 11 to 18 years and considered a gold standard for screening MDs during adolescence.

In addition to the psychiatric syndromes, we also analyzed the following variables: gender, race, school grade and age, which was strategically divided into early (10 to 13 years), middle (14 to 16 years) and late (17 to 20 years) adolescence [8]. To improve the accuracy of the statistical analysis, we considered ages in months rather than years.

Statistical Analysis

The database was constructed and analyzed with the program Microsoft Excel® 2010 for Windows. Quantitative variables were represented as mean, median, minimum and maximum values and standard deviation. To represent qualitative variables, we used frequencies and percentages. To assess the association between qualitative variables, we used the chi-square test or Fisher's exact test. The homogeneity of the association between gender and YSR score in different age groups was evaluated with the Mantel-Haenszel test. For comparison of quantitative variables between two groups we used Student's t- test for independent samples. The data were analyzed with the software IBM SPSS Statistics®, version 20. *P* values < 0.05 indicated statistical significance.

Ethics Committee

The study was submitted to and approved by the Research Ethics Committee of the Western Paraná State University, Cascavel, PR, Brazil under number 004/2011-CEP, protocol CR number 955/2010 of February 24, 2011. The procedures adopted followed the recommendations of Law number 196/96 of the Brazilian National Health Council. All participants submitted an ICF which was signed by the participants themselves and by their parents or guardians.

RESULTS

Of 3,682 YSR questionnaires distributed from March 2011 to December 2013, 3,518 (95.5%) were completed. The respondents were adolescents of both genders and aged 11 to 18 years, enrolled in elementary II (grades 6 to 9) and secondary (grades 1 to 4) public schools at the city of Cascavel (Paraná).

The majority of the participants (2/3) were female. Most participants self-reported their race as White, followed in frequency by African Brazilian. The Asian and Native races had little representation. With regard to education level, most students who completed the YSR were eighth graders in elementary school II (21.9%), followed by ninth graders (20.2%), seventh graders (18.5%) and sixth graders (10.1%). As for those in secondary school, most were first graders (13.7%), followed by second graders (10%) and first graders (5.6%), fourth graders had little representation. Age ranged from 11 to 18 years, with an average of 13.3 years (160 months). There was greater participation of individuals in early and middle adolescence.

Of 3,518 students who completed the YSR, 3,246 (92.2%) had normal scores and 272 (7.74%) presented a clinical score for one of the psychiatric syndromes **(Table 1)**. In Tables 1, which shows the frequency of YSR psychiatric syndromes according to gender, we observe a similar distribution of the syndromes between males and females. In **Table 2** the male gender showed a higher prevalence in the clinical classification than the female gender on the scales of Activities, Social Competence and Total Competence (p<0.001, p=0.003 and p<0.001, respectively).

There was a higher frequency of SC and RBB in male participants (p<0.001 for both) and A/D (p=0.008) and AB (p<0.001) in female participants **(Table 1)**. These differences in distribution were statistically significant. The **Table 3** show that female gender showed a higher frequency of EP and Total Problems than the male gender (p<0.001 for both).

Table 1: Distribuition of psychiatric syndromes according to gender, assessed by the YSR for ages 11-18 years.

Syndromes	Classification	Gender				Value of *p*
		Male		Female		
		n	%	*n*	%	
Withdrawal	Normal or borderline	1178	95.4	2194	96.1	0.309
	Clinical	57	4.6	89	3.9	
	Total	1235	100	2283	100	
Somatic Complaints	Normal or borderline	1097	88.8	2172	95.1	
	Clinical	138	11.2	111	4.9	< 0.001
	Total	1235	100	2283	100	
Anxiety/ Depresion	Normal or borderline	1112	90	1986	87	
	Clinical	123	10	297	13	0.008
	Total	1235	100	2283	100	
Social Problems	Normal or borderline	1140	92.3	2101	92	
	Clinical	95	7.7	182	8	0.769
	Total	1235	100	2283	100	
Thought Problems	Normal or borderline	1146	92.8	2121	92.9	
	Clinical	89	7.2	162	7.1	0.903
	Total	1235	100	2283	100	
Attention Problems	Normal or borderline	1147	92.9	2095	91.8	
	Clinical	88	7.1	188	8.2	0.243
	Total	1235	100	2283	100	
Rule-Breaking Behavior	Normal or borderline	1171	94.8	2218	97.2	
	Clinical	64	5.2	65	2.8	< 0.001
	Total	1235	100	2283	100	
Aggressive Behavior	Normal or borderline	1130	91.5	1957	85.7	
	Clinical	105	8.5	326	14.3	< 0.001
	Total	1235	100	2283	100	
Prevalence of Psychiatric Syndromes		**95**	**7.6**	**177**	**7.7**	

Table 2: Distribuition of Scales Activities, Social Competence and Total Competence according to gender, assessed by the YSR for ages 11-18 years.

Syndromes	Classification	Gender		Value of *p*
		Male	Female	
		n	*n*	
Activities	Normal or borderline	1141	2242	
	Clinical	94	41	< 0.001
	Total	1235	2283	
Social Competence	Normal or borderline	1115	2125	
	Clinical	120	158	0.003
	Total	1235	2283	
Total Competence	Normal or borderline	902	1852	
	Clinical	333	431	< 0.001
	Total	1235	2283	

Table 3: Distribuition of Internalizing, Externalizing and Total Problems according to gender, assessed by the YSR for ages 11-18 years.

Syndromes	Classification	Gender		Value of *p*
		Male	Female	
Internalizing Problems	Normal or borderline	897	1597	
	Clinical	338	686	0.095
	Total	1235	2283	
Externalizing Problems	Normal or borderline	987	1552	
	Clinical	248	731	< 0.001
	Total	1235	2283	
Total Problems	Normal or borderline	889	1460	
	Clinical	346	823	< 0.001
	Total	1235	2283	

Table 4 shows that the prevalence of psychiatric syndromes according to the stage of adolescence was 7.2% in early, 8.6% in middle and 7.5% in late adolescence. Although the distribution of the syndromes according to stage of adolescence showed no significant difference in the Activities scale, there was a higher prevalence of clinical scores in the Social Competence

Table 4: Distribuition of psychiatric syndromes according to stage of adolescence, assessed by the YSR for ages 11-18 years.

YSR		Adolescence						Value of *p*
		Early		Middle		Late		
		n	%	n	%	n	%	
Activities	Normal or borderline	1921	95.70%	1282	96.80%	180	96.30%	
	Clinical	86	4.30%	42	3.20%	5	3.70%	< 0.262
	Total	2007	100%	1324	100%	187	100%	
Social	Normal or borderline	1878	93.60%	1196	90.30%	166	88.80%	
	Clinical	129	6.40%	128	9.70%	21	11.20%	0.001
	Total	2007	100%	1324	100%	187	100%	

Total Competence	Normal or borderline	1629	81.20%	995	75.20%	130	69.50%	< 0.001
	Clinical	378	18.80%	329	24.80%	57	30.50%	
	Total	2007	100%	1324	100%	187	100%	
Withdrawal	Normal or borderline	1936	96.50%	1258	95%	178	95.20%	0.11
	Clinical	71	3.50%	66	5%	9	4.80%	
	Total	2007	100%	1324	100%	187	100%	
Somatic Complaints	Normal or borderline	1856	92.50%	1234	93.20%	179	95.70%	0.224
	Clinical	151	7.50%	90	6.80%	8	4.30%	
	Total	2007	100%	1324	100%	187	100%	
Anxiety/ Depression	Normal or borderline	1812	90.30%	1121	84.70%	165	88.20%	< 0.001
	Clinical	195	9.70%	203	15.30%	22	11.80%	
	Total	2007	100%	1324	100%	187	100%	
Social Problems	Normal or borderline	1837	91.50%	1235	93.30%	169	90.40%	0.123
	Clinical	170	8.50%	89	6.70%	18	9.60%	
	Total	2007	100%	1324	100%	187	100%	
Thought problems	Normal or borderline	1869	93.10%	1224	92.40%	174	93%	0.755
	Clinical	138	6.90%	100	7.60%	13	7%	
	Total	2007	100%	1324	100%	187	100%	
Attention Problems	Normal or borderline	1877	93.50%	1199	90.60%	166	88.80%	0.002
	Clinical	130	6.50%	125	9.40%	21	11.20%	
	Total	2007	100%	1324	100%	187	100%	
Rule-Breaking behavior	Normal or borderline	1923	95.80%	1283	96.90%	183	97.90%	0.137
	Clinical	84	4.20%	41	3.10%	4	2.10%	
	Total	2007	100%	1324	100%	187	100%	
Aggressive behavior	Normal or borderline	1792	89.30%	1127	85.10%	168	89.80%	0.001
	Clinical	215	10.70%	197	14.90%	19	10.20%	
	Total	2007	100%	1324	100%	187	100%	
Prevalence of Psychiatric Syndromes		**144**	**7.20%**	**114**	**8.60%**	**14**	**7.50%**	
Internalizing Problems	Normal or borderline	1476	73.50%	888	67.10%	130	69.50%	< 0.001
	Clinical	531	26.50%	436	32.90%	57	30.50%	
	Total	2007	100%	1324	100%	187	100%	
Externalizing Problems	Normal or borderline	1508	75.10%	892	67.40%	139	74.30%	< 0.001
	Clinical	499	24.90%	432	32.60%	48	25.70%	
	Total	2007	100%	1324	100%	187	100%	
Total Problems	Normal or borderline	1407	70.10%	823	62.20%	119	63.60%	< 0.001
	Clinical	600	29.90%	501	37.80%	68	36.40%	
	Total	2007	100%	1324	100%	187	100%	

and Total Competence scales in late adolescence. With regard to the various stages of adolescence, we noted that the A/D syndrome was more frequent in middle adolescence than in initial and late adolescence (p<0.001). AP (p=0.002) was more prevalent in late adolescence, whereas AB (p=0.001), IP, EP and Total Problems were more frequent in middle adolescence (p<0.001 for all three).

DISCUSSION

Approximately half of all MDs manifest before the age of 14 years. Adolescents affected with a MD have higher rates of physical abuse, lower household income and worse general health conditions, resulting in low education and remuneration in adulthood [9,10,11]. Adolescence is a period of changing relationships with family, school and peers, which can result in feelings of loneliness, concern and depression predisposing to a MD [12,13].

These facts are concerning in Brazil, where 18% of population are adolescents, which are less aware and knowledgeable about MDs, which results in challenges for psychiatric evaluation and consequent late diagnosis and worse prognosis. Among the 3,518 students who completed the YSR in this study, MD had a prevalence of 7.74% and was slightly higher among females. This rate is below that observed in other Brazilian studies (10 to 13%) conducted in urban and rural areas with children and adolescent students, although in these studies, the diagnosis of a MD was based on the DSM-IV criteria, Child Psychiatric Morbidity Survey (CPMS) and a clinical interview [14,15,16]. Epidemiological studies conducted in the United States indicate a prevalence of any type of MD of 7 to 27% in children and adolescents. In a study conducted in the Houston metropolitan area, the prevalence of at least one MD was 17.1%. A meta-analysis showed a prevalence of 6.46% for psychiatric disorders in children and adolescents in community studies and 23.3% in studies conducted in schools [17,18]. This wide variation in MD prevalence rates may result from the methodology applied, cultural factors, use of different criteria for the definition of "case" and absence of a gold standard that can be uniformly adopted [14,18,19].

The evaluation of Activities (A) and Social Competences (S) showed low percentages when compared with studies conducted in Brazil, United States and Canada in which 10 to 14% of the cohorts showed risk for emotional and psychosocial problems [7,9,20]. In Social Competence, there was a higher percentage of the clinical when compared with the borderline classification, and the difference when only the male gender was considered was significant in both the Activities and Social Competence (S) scales. This result contrasts with findings of a study conducted in Greece that used the same methodology as our study. In the Greek study, there was a prevalence of females in the Activities scale, whereas males achieved a higher score on the Social scale [19]. This may be explained by several factors including low household income in our study participants, low quality education, and heavy influence of external elements (violence, early pregnancy, malnutrition and substance abuse) on the physical and mental development of young individuals[20].

In the analysis divided by stages of adolescence, Social Competence had a positive correlation with late adolescence. This may be explained by the challenges faced by young individuals in discussing their psychosocial problems due to cultural factors, in addition to challenges in adapting to psychological, social and emotional changes particular to adolescence which may take months to years to emerge as a MD [9,13,20,21].

When we analyzed the eight YSR syndromes, we observed that the SC syndrome stratified by gender showed strong association with the male gender. This contrasts with the literature that shows a higher prevalence in females [13]. An increase in SC on male migth have resulted from victimization, learning difficulties, social problems such as violence and low socioecnomic status, situation these more frequente on boys, remenbering that study included neighbourhoods of low income. The transformations of adolescence may act as triggering stimuli or stress perpetrators, and somatic complaints (dyspnea, chest pain, abdominal pain, sleep disorders, headache, etc.) are very frequent at this stage [21,22].

Considering the item A/D, the results are comparable with those of the literature in which the prevalence of depressive symptoms/depression is higher and varies between 1% and 28% [12,16,17,23] depending on the adopted methodology. The item A/D also showed significant difference in female participants in middle adolescence, which was also evidenced in some studies that have shown that the female gender is a predictor of depression, and that depression is twice as frequent in girls around the age of 14 years when compared with boys at the same age [23].

The RBB was the second least frequent syndrome in our study, and when stratified by gender, showed a positive correlation with the male gender, but was not associated with stages of adolescence. This significant difference for males is comparable with the literature which shows a higher incidence of delinquency in men, who demonstrate more distrust, lower communication skills, less empathy and less socialization compared with women [24,25].

The AP syndrome showed an overall prevalence above that from other Brazilian and international studies which considered attention deficit disorder/hyperactivity (ADHD) rather than AP [14,16,17,26]. We also noted that late adolescence was a risk factor for AP without association with gender, which is similar to results reported in the literature [26,27].

The item AB had the highest general percentage, was significantly higher in girls, and showed a positive correlation with middle adolescence. This increased frequency in female adolescents in our study contrasts with the literature in regards to the aggressive stance of women, since they normally socialize less aggressively. Our hypothesis is that these findings might be attributed to amount of computer use with violent games for girls, low parent-adolescent communication, low self-esteem, might be an expression of underlying psychological conflict, however, these diferences sometimes are difficult to interpret. Furthermore, the occurrence of AB in adolescence may not reflect a disease, but rather a "rejection of authority" to the adult world, further of confirming that years of middle adolescence are the most turbulent ones [13,28].

The items IP and EP showed high clinical scores. The score for EP was similar to that found in a study conducted in Brazil and well above those reported in two American studies, both of which used the CBCL and one of which also used the YSR. The analysis of IP in our study showed a higher percentage when compared with the Brazilian and American studies [7,9,10].

IP is better assessed by the individual himself, and in this study, an overestimation of symptoms by the adolescents may have occurred and increased the score. IP shows a tendency to increase with age, which contrasts with our findings of lower percentage in early adolescence, followed by a peak in middle adolescence and decrease in late adolescence [9,13,22].

As for the item EP, our study showed similar results to a research conducted in Alabama using the YSR, which also was significantly higher in girls [10]. This is an interesting finding, since the item EP in other Brazilian studies was more frequent in boys[16,27]. The occurrence of EP tends to decrease with age [13,29], which conflicts with our findings: despite having the largest number of representatives in our study, early adolescence had the lowest EP score percentage when compared with middle and late adolescence.

Some limitations of this study were the use of a questionnaire, which is helpful in assisting but not in diagnosing; the fact that the answers could have been compromised if the adolescent was not having one of "his best days"; the fact that participants can overestimate the diagnoses; the official Brazilian versions of the YSR/11-18 is useful for clinical practice, training and research involving Brazilian adolescents from all socioeconomic strata, however, validation studies of the YSR/11-18 are still required, and the cross-sectional design, which have limitations on the attribution of causality for associations, since studies with this design analyze simultaneously exposure and results. In conclusion, the prevalence of MDs in this study was close to that of the literature, constituting a relevant concern to public health, since MDs affect negatively the health of young individuals. We highlight the importance of creating preventive measures and access to mental health care geared towards adolescents. Considering the increasing psychosocial of mental disorders morbidity, pediatricians should receive training in this regard, which would improve the approach to this topic in routine pediatric consultations.

Acknowledgments

We thank the adolescents who participated in the research, and the principals and teachers of public schools in the city of Cascavel-PR who kindly authorized the study to be conducted in their schools.

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DOI: https://doi.org/10.30654/MJP.10019