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Depression associated with family functioning and vulnerability among of adolescent students, Tolima

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ABSTRACT

Introduction: Depression is considered a common disease worldwide. In Colombia, especially in Villahermosa (Tolima) there are endless social problems that worsen the situation as far as mental health is concerned. The objetive of this study is to explore the potential association of depressive symptoms with family functioning and family vulnerability in adolescents from the municipality of Villahermosa in 2013. Methods: A descriptive cross sectional study was conducted with a survey of 544 students with their consent to participate in the study. A logistic regression was used to determine the association of depressive symptoms with some familiar indicators. Results: The presence of any depressive symptoms was 27,4 % in the total population of adolescents. In addition, the logistic model showed important association with some familiar indicators. Conclusion: Depression in adolescents is a problem with high prevalence, and should be implemented institutional responses to improve mental health and quality of life.

Keywords: mental health, depression, vulnerability, Family.

INTRODUCTION

During the last decades, mental health problems have drastically increased, to the point of contributing significantly to the global burden of disease and disability. Epidemiological studies have consistently shown worldwide that mental and behavioral disorders affect about 20% of boys, girls and adolescents [1]. The group of adolescents living in difficult contexts, which to some extent puts them at risk of being affected by a mental disorder. It is reported that suicide attempts, anxiety, dietary risk behaviors and depression are among the most common disorders in this group [2].

According to the World Health Organization (2016) [3]: "depression is considered a common disease worldwide, and is estimated to affect about 350 million people; It is seen as a serious health problem, especially when there are not effective treatments, which could cause great suffering and disrupt work, school and family activities". The WHO report on Mental Health Resources for Children and Adolescents highlighted the lack of mental health services appropriate for this age group, although most countries are signatories to the Convention on the Rights of the Child; the regions with the highest percentage of population under 19 years are those that have fewer mental health resources [1].

Some researchers claim that depression is related to biological characteristics, physiological vulnerabilities of a person and the repetition of stressful events or overcome difficult circumstances in their life [4]. Epidemiological data indicate that the age at which is starting this disorder is falling increasingly on people born recently and is 1.5 to 3 times more common in first-degree biological relatives of people with this disorder in the general population [5]. Women have a higher prevalence in relation to men, because they are more vulnerable because of their emotionally sensitive condition; teens are not easily diagnosed because they do not seek help and are resisting consulting a health professional [6].

A constant in the different approaches of research on the family is the recognition of its importance in the socialization of children through interpersonal relations established by parents and children allowing to acquire the values, beliefs, norms and forms conduct appropriate and accepted in the social context. Therefore, the family, as the first social group, is showing the various distinctive elements of culture: what is valuable, what rules should be followed to be a member of society and which parameters will determine the social success of a person [7] [8]. School, peers and social relations also play an important role in the origins of adolescent depression [9].

Some investigations point an inverse relationship between depressive symptoms and family conflict, suggesting that the higher rate of depression there is less support to the adolescent and they prefer to take shelter in their friends than their parents [10] [11]. This situation reflects a lack of social support, which affects adolescent psychosocial process, and lead to problems such as low self-esteem, impulsiveness and aggressive use of confrontation responses.

In a government report [12] about the health situation in Tolima, Colombia in 2016, social coexistence and mental health represented one of the dimensions of the identified health issues, with critical problems in general population, like the increase in the rate of incidence of domestic violence (123.05) and violence against women (111.03) , impact on suicide mortality (89 cases for 2014), prevalence of consumption of psychoactive substances and alcohol, incidence in homicide mortality (343 cases for 2014).

The municipality of Villahermosa belongs to the department of Tolima, Colombia. In particular, in Villahermosa there are endless social problems that worsen the situation as far as mental health is concerned. The most alarming problem is substance abuse in adults and adolescents of both genders; this event is on the rise especially in the younger female population, causing family discussions, health problems, among others.

It is developing the mental health project that is part of the Public Health Plan with strategies to coordinate and articulate sporting and cultural activities for preventing drug, domestic violence, sexual and child abuse. The mental health network with self-training for life cycle is strengthened, and has been articulating the mental health component in all programs and all

entities of the municipality performing frequently cultural and recreational workshops for the community in general; however it is not established as policy.

Therefore, it was considered important to explore the potential association of depressive symptoms as indicators of mental health: family functioning and family vulnerability in adolescents enrolled in basic vocational secondary education and secondary educational institutions in the municipality of Villahermosa -Tolima 2013.

METHODS

A descriptive cross-sectional study was conducted in 2013, by means of the research study of public health measures: "Salud mental de los adolescentes escolarizados del municipio de Vilahermosa-Tolima 2013" of the National Faculty of Public Health at the University of Antioquia [13].

Data were obtained through a self-administered survey of high school adolescents aged between 11 and 19 years of the municipality. The study population consisted of 544 teenager students enrolled in all Villahermosa schools, in 2013 as institutional records, students surveyed of which 275 (50.5%) were men and 269 women (49.5%), with an average age of 14 years (SD = 1.9) for both sexes.

The scales used for data collection were: Children's Depression Inventory-CDI [14] for depressive symptoms which is classified in High, Slight and None; the second one, How is your family? [15] for household vulnerability (vulnerable and not vulnerable) and the family APGAR [16] for perception of family functioning that identifies a good family function, dysfunction mild, moderate and severe dysfunction; these scales have been validated nationally. Upon application of the questionnaire, informed consent letter was delivered to students over 18 years old and letter of assent to under 18 that should be signed by the parent or caregiver and student, in this letter was explained and emphasized the confidentiality agreement. The protocol was approved by the ethics committee investigation of the National School of Public Health, University of Antioquia (record 76 07/06/2013), which assessed the research as minimal risk.

An exploratory analysis was performed with simple frequencies and bivariate analysis to describe the relationship between depressive symptoms and some variables of interest. Because the dependent variable, depressive symptoms, have 3 levels and there was interest only in a dichotomous one, it was necessary to reclassify the variable presence of depressive symptoms in 0 = "none" and 1 = "high or mild", with rates 72.6% (395 students) and 27 , 4% (149 students) respectively; as independent variables possible predictors of household vulnerability and family functioning were considered, in addition to sociodemographic variables such as age, sex, family type and area of residence. After a first bivariate analysis between the dependent variable and each independent, the degree of association was determined using the chi-square test ($\chi 2$) of independence for two-level variables and chi-square ($\chi 2$) trend for variables over two categories, considering as statistically significant those whose p value was less than 0.05.

To identify possible variables to enter the logistic regression model we take as cutoff p value <0.25 (Hosmer and Lemeshow criterion) and the Stepwise method was applied, in which we considered a parameter as significant if the p value in the model was less than 0.05. To verify multicollinearity in the binary logistic regression model, various models in which each of the covariates acted as the dependent variable and the remaining variables as independent covariates that were run. For each of the models the pseudo coefficient Nagelkerke and

tolerance was calculated. If tolerance is less than 0.1 there is no evidence of multicollinearity (Kleinbaum, 2010).In none of the models estimated tolerance is less than 10%, therefore it can be said that multicollinearity in the model of binary logistic regression is not an issue to be concerned about and this model can be considered as an explanatory model of depression in adolescents from the municipality of Villahermosa Tolima. For data processing and statistical calculations SPSS version 21.0 was used.

RESULTS

According to the level of depressive symptoms and sex, the presence of any depression in men was 26.3% and for women 28, 6% (the prevalence for men and women at the high level was of 12.8% and 14.4% respectively); no statistical differences were observed in previous groups (p-value=0.523). Regarding the age group of adolescents was observed that the presence of any depression in the group of 11 to 14 years was 28.4% and 25.3% between 15 and 19 years (at the level of high depression the prevalence in adolescents group 11 to 14 years old was 14.8% and in adolescents aged 15 to 19 years old was 11.2%). In the above-described groups no statistical differences were found (p value > 0.05).

Looking at the prevalence of familial vulnerability in adolescents in Villahermosa, they were considered problematic factors scored above 50%: symptoms and problems, which indicate the presence of a large number of symptoms and risk behaviors of adolescents and / or other family members; the importance of personal effort, making this reference to the importance for the life of the fact to achieve a high level of education and to find fulfillment in work activity the person chooses; accumulation of tensions, which represents the sum of events that have occurred in the family in the last year, plus the intensity with which have affected the family; family cohesion, referring to greater emotional attachment greater sense of unity and a more explicit expression of affection among family members; and life satisfaction related to satisfaction with personal relationships and quality of life in economic, housing and services to which the family has access.

Faced with the perception of family functioning across students with some depression level, 17.3% of adolescents perceived some kind of family dysfunction, (5.3% of them perceived a severe family dysfunction in their families).

To verify the association of independent variables with the presence of depressive symptoms, were identified as candidates to enter to the model those variables that obtained a p value <0.25 in the Chi-square test. These were: the student grade level, family type, area of the municipality, family cohesion, participation in problem solving, communication with the mother, communication with the parent, seeking religious support, redefining problems, sources of support adolescent, family routines, life satisfaction, importance of personal effort, feeling of happiness, academic achievement, accumulation of stress, symptoms and problems, family functioning (Table 1).

Table 1. Description of sociodemographic and family characteristics related to the presence of depression in adolescents enrolled in the municipality of Villahermosa-Tolima, 2013.

Characteristics		Depression?			OR (CI 95%)	Chi²	p-value
		Yes	No	Total			
Grade	Sixth	37	81	118	1,22 (0,6-2,4)	0,3	0,562
	Seventh	35	88	123	1,06 (0,5-2,1)	0,0	0,863
	Eighth	20	79	99	1,22 (0,6-2,4)	0,3	0,562
	Ninth	24	33	57	1,94 (0,9-4,1)	3,0	0,084
	Tenth	15	66	81	0,61 (0,3-1,3)	1,6	0,206
	Tenth first	18	48	66	1	-	-
family Typology	Incomplete	35	88	123	1,23 (0,8-2,0)	0,7	0,398
	Mixed	6	21	27	0,88 (0,3-2,3)	0,1	0,793
	Extensive	23	30	53	2,36 (1,3-4,3)	8,1	0,005
	Other	13	34	47	1,18 (0,6-2,4)	0,2	0,641
	Nuclear	72	222	294	1	-	-
Zone	City	92	199	291	1,81 (1,2-2,7)	8,1	0,004
	Rural	45	176	221			
family cohesion	Vulnerable	35	31	66	3,61 (2,1-6,1)	24,8	0,000
	Not vulnerable	114	364	478			
Participation in solution of problems	Vulnerable	69	119	188	2,00 (1,4-3,0)	12,5	0,000
	Not vulnerable	80	276	356			
Communication with mother	Vulnerable	82	125	207	2,64 (1,8-3,9)	25,1	0,000
	Not vulnerable	67	270	337			
Communications with father	Vulnerable	112	239	351	1,98 (1,3-3,0)	10,2	0,001
	Not vulnerable	37	156	193			
Search religious support	Vulnerable	139	353	492	1,65 (0,8-3,4)	1,9	0,165
	Not vulnerable	10	42	52			
Redefining the problem	Vulnerable	105	250	355	1,38 (0,9-2,1)	2,5	0,117
	Not vulnerable	44	145	189			
Sources of support teenager	Vulnerable	93	177	270	2,05 (1,4-3,0)	13,4	0,000
	Not vulnerable	56	218	274			
family routines	Vulnerable	84	116	200	3,11 (2,1-4,6)	33,9	0,000
	Not vulnerable	65	279	344			
Satisfaction with life	Vulnerable	71	68	139	4,38 (2,9-6,6)	52,7	0,000
	Not vulnerable	78	327	405			
Importance of personal effort	Vulnerable	22	18	40	3,63 (1,9-7,0)	16,5	0,000
	Not vulnerable	127	377	504			
Feeling of happiness	Vulnerable	91	213	304	1,34 (0,9-2,0)	2,2	0,134
	Not vulnerable	58	182	240			
Academic performance	Vulnerable	43	48	91	2,93 (1,8-4,7)	21,7	0,000
	Not vulnerable	106	347	453			
Accumulation of stress	Vulnerable	12	10	22	3,37 (1,4-8,0)	8,5	0,004
	Not vulnerable	137	385	522			
Symptoms and Problems	Vulnerable	34	15	49	7,67 (4,0-14,6)	49,0	0,000
	Not vulnerable	112	379	491			
Family Operating level	Mild Dysfunction	42	92	134	2.12(1.3,3.4)	10.25	0.0014
	Moderated Dysfunction	23	35	58	3.06(1.6,5.6)	14.15	0.0002
	severe Dysfunction	29	12	41	11.25(5.4,23.4)	56.1	<0.05
	Good	55	256	311	-		

After trying several models with the above candidates' variables, it was found that the final logistic regression model that provided more information on the probability of some depressive symptoms (high or mild), is the one with the independent variables (see Table 2):

- Belong to extended families: OR = 0.44, 95% CI = (0.23 to 0.8)

- Vulnerability present in family routines: OR = 2.5, 95% CI = (1.6 to 3.8),
- Present vulnerability in life satisfaction: OR = 2.9, 95% CI (1.8 to 4.7),
- Vulnerability present in the importance of achievement: OR = 2.272, 95% CI (1.3 to 3.9) and
- Vulnerability present symptoms and problems: OR = 4.6 (95% CI 2.25 to 9.5)

Table 2. Multivariate logistic regression for the risk of depressive symptoms in teenagers students (Reference category for Typology was taken as Nuclear and for the rest of the categorical variables was the category "vulnerable"). Hosmer-Lemeshow goodness of fit: Chi2=5.6 (p=0.587); Nagelkerke's R2 = 0,271

		Statistics						95% CI.for EXP(B)	
Variables	Category	B	S.E.	Wald	df	Sig.	Exp(B)	Lower	Upper
Typology	Incomplete	,274	,280	,962	1	,327	1,316	,760	2,276
	Mixed	,360	,526	,470	1	,493	1,434	,512	4,019
	Extended	**-,806**	**,348**	**5,375**	**1**	**,020**	**,446**	**,226**	**,883**
	Other	,727	,447	2,645	1	,104	2,069	,861	4,971
family vulnerability	Rutines(1)	**,895**	**,229**	**15,231**	**1**	**,000**	**2,448**	**1,562**	**3,838**
	Satisfaction(1)	**1,063**	**,243**	**19,103**	**1**	**,000**	**2,894**	**1,797**	**4,660**
	Effort(1)	,790	,411	3,690	1	,055	2,204	,984	4,935
	Performance(1)	**,821**	**,272**	**9,109**	**1**	**,003**	**2,272**	**1,333**	**3,871**
	Symptoms(1)	**1,533**	**,369**	**17,236**	**1**	**,000**	**4,633**	**2,247**	**9,556**
		-3,072	,582	27,900	1	,000	,046		

It is noted that controlling the effect of variables included in the model, the risk of this being high depressive symptoms or mild, is (Table 2):

- almost one half times, if the student belongs to an extended family compared with those who belongs to a nuclear family,
- Two-fold risk if the student have vulnerability in family routines,
- almost 3 times compared to those without vulnerability, regarding the vulnerability in satisfaction with life,
- Two times compared to teens who do not have vulnerability with the importance of academic achievement, where the teenager seeks to overcome academic and professional level;
- Have a risk of 4.6 times to present some depressive symptoms in relation to those adolescents who have no symptoms and vulnerability problems.

The statistical significance of each Odds ratio is supported by the confidence intervals of 95%, which do not pass through 1. According to the goodness of fit test of Hosmer and Lemeshow, this model is appropriate, because the observed probabilities are equal to the expected probabilities (p = 0.587). Meanwhile, according to statistical variability Nagelkerke the presence of depressive symptoms is explained by 27.1% for: belong to extended families and be vulnerable in: family routines in life satisfaction, academic performance and symptoms and problems. So 72.9% of the variability is explained by other variables.

DISCUSSION

Part of the presence of depression in school adolescents in the municipality of Villahermosa, Tolima can be explained by the formation of the family, where it seems that families with several generations presence inside become a protective factor. On the other hand, it was found that a risk factor was the problematic daily activities and how the students define strategies for solving their problems; if the environment is not favorable for the teenager, their

value system does not provide personal effort and achievement as aspects that give satisfaction to their life.

Depression, seen as a mental maladjustment, triggers many other mental disorders; According to the findings, depression in the municipality of Villahermosa (Tolima) affects equally men, women, and the age groups of 11 to 14 years and 15 to 19 years. A prevalence of 27.4% in these adolescents was found to be very similar to that obtained in the northwestern Medellín zone [17], with a 26.5% prevalence; Current studies show that there are no gender differences in the occurrence of these symptoms shortly before the age of 12, which somehow explains the similarity in the percentages between men and women [18].

In this study, the presence of depressive symptoms is statistically associated with vulnerability in the following family aspects: adolescents' participation in solving family problems, family routines, adolescents' satisfaction with their lives, academic performance, the symptoms and problems present in the family, among others. These results agree with those obtained by Loboa and Morales (2016) [13] in the municipality of Villahermosa, Tolima, but with the difference that in that study, the suicide was the dependent variable in the logistic model, and the authors found a prevalence of high or moderate suicide of 52.1%.

On the other hand, the prevalence of depression in this study contrasts with the results obtained in a study performed in Chia, Cundinamarca [19] to a group of 538 adolescents between 10 and 17 years old, where the prevalence of depression was 12.2%, although the authors found differences in the prevalence between boys and girls in opposite to this study.

The main contexts where an adolescent is found are the school and the family, and it is important to assess how the relationships established between these two systems are in those adolescents who present a major problem. For this study, vulnerability was found in the importance of academic performance, which is related to that obtained in the National Youth Survey conducted in Mexico City in 2000 [20], where the existence of a statistically significant association between depressive symptoms and academic performance in subjects such as Mathematics, Language and English, where as levels of depression increased, scores on academic performance decreased. In addition, the time that the adolescents dedicate to the family (53.1%) surpasses the other activities that are important to them, which can be evidenced in our study, since those adolescents who presented vulnerability in family routines, were at risk of presenting depressive symptoms twice.

This study has as its strength the construction of a model that explains the depression of an educated adolescent of the municipality of Villahermosa in which it is observed that there are associated variables; the weakness of the study is because there is no clinical assessment of depression in these students.

CONCLUSIONS AND RECOMMENDATIONS

In Villahermosa, there are endless social problems that worsen the situation as far as mental health is concerned. The most alarming problem is substance abuse in adults and adolescents of both genders; this event is on the rise especially in the younger female population, causing family discussions, health problems, among others. It is developing the mental health project that is part of the Public Health Plan with strategies to coordinate and articulate sporting and cultural activities for preventing drug, domestic violence, sexual and child abuse. The mental health network with self-training for life cycle is strengthened, and has been articulating the mental health component in all programs and all entities of the municipality performing frequently cultural and recreational workshops for the community in general; however it is not established as policy.

Depression in adolescents is a problem with high prevalence. Only in 2003, on the department of Tolima, Colombia, Zung's test found a 40.17% of depressive symptoms on adolescents and adults. The results of this study reveal that the prevalence of depressive symptoms is of 27.4% in the population of adolescents of Villahermosa, Tolima, without differences between sexes. According to the logistic model, depression is associated mainly with the factors: family typology, family routines, life satisfaction, importance of achievement, and symptoms and problems.

Although in Tolima, the government and local health organizations have interests in promotion of health and prevention of mental disease, until the point to consider social coexistence and mental health one of the dimensions of the identified health issues, still there is evidence of the increase in the rate of incidence of domestic violence, and incidence of suicide mortality , prevalence of consumption of psychoactive substances and alcohol, factors that affect to the adolescents and their mental health. So, depression in adolescents deserves special monitoring by families and educational authorities because this mental disorder is associated with other problems such as suicide and the use of psychoactive substances that form a lethal triad for their lives, and should be implemented institutional responses to improve mental health and quality of life.

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