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Differences in the levels of adaptation, social support and family functionality according to the sex, age and school grade of children and adolescents affected by winter in Sucre, Colombia

Diferencias en los niveles de adaptación, apoyo social y funcionalidad familiar según el sexo, la edad y grado escolar de niños y adolescentes afectados por el invierno en Sucre, Colombia

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SUMMARY

Objective: *The study aimed to establish the differences in the levels of adaptation, social support, and perceived family functionality according to sex, age, and school grade of a sample of 160 children and adolescents affected by floods in the Mojana sub-region of the Department of Sucre, Colombia.*

Method: *Using a quantitative descriptive-comparative methodology, the Multifactorial Self-Evaluation Test of Child Adaptation - TAMAI, the MOS perceived social support questionnaire, and the family APGAR questionnaire was applied, analyzing the data obtained through variance analysis.*

Results: *The results indicated statistically significant differences in social maladjustment according to sex and school grade. As for perceived social support, the*

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differences are statistically significant for age groups in all dimensions of social support: positive social interaction, affective support, informational emotional support, instrumental support, and the overall social support index. Finally, in terms of family functionality, female subjects perceived greater functionality than male subjects.

Conclusion: *Demographic characteristics such as gender, age, and level of schooling condition the adaptation of children and adolescents in vulnerable contexts; there are differences in the levels of social adaptation and family functionality according to gender, and in the levels of family functionality, personal and social adaptation according to age.*

Keywords: *Misadaptation, family functionality, social support, childhood, adolescence, floods.*

RESUMEN

Objetivo: *El estudio tuvo como objetivo establecer las diferencias en los niveles de adaptación, apoyo social y funcionalidad familiar percibida según el sexo, la edad y el grado escolar de una muestra de 160 niños y adolescentes afectados por las inundaciones en la subregión de la Mojana del departamento de Sucre,* **Colombia.**

Método: *Mediante una metodología cuantitativa descriptiva-comparativa, se aplicaron el Test Multifactorial de Autoevaluación de la Adaptación Infantil - TAMAI, el cuestionario de apoyo social percibido MOS y el cuestionario APGAR familiar, analizando los datos obtenidos mediante análisis de varianza.*

Resultados: *Los resultados indicaron diferencias estadísticamente significativas en la inadaptación social según el sexo y el grado escolar. En cuanto al apoyo social percibido, las diferencias son estadísticamente significativas para los grupos de edad en todas las dimensiones del apoyo social: interacción social positiva, apoyo afectivo, apoyo emocional informativo, apoyo instrumental y el índice global de apoyo social.*

Conclusión: *Existen características demográficas como el sexo, la edad y el nivel escolaridad que condicionan la adaptación de niños y adolescentes en contextos vulnerables; existen diferencias en los niveles de adaptación social y funcionalidad familiar según el sexo, y en los niveles de funcionalidad familiar, adaptación personal y social según la edad.*

Palabras clave: *Inadaptación, funcionalidad familiar, apoyo social, infancia, adolescencia, inundaciones.*

INTRODUCTION

Extreme weather events generate unpredictable impacts and repercussions, affecting large areas and a large number of people in a non-quantifiable way (1). Its impact is evident in both the environmental and economic, as well as social and personal aspects (2). Although they occur around the world, they have a greater impact on poor countries, with vulnerable populations, where technology and resources are not enough for the prevention and reconstruction of the damage caused (3).

In Colombia, the most frequent natural phenomena that cause the greatest number of material and human are floods (4,5). One of the subregions most affected by this phenomenon is Mojana, located in the department of Sucre, where its inhabitants faced the phenomenon of the girl child between 2011 and 2012. It is known that 41 % of the affected population in the department were children and adolescents, who are the most vulnerable because they are in full psychosocial development, and according to the age at which they are, their understanding of the event varies but is reflected in a greater number of behavioral problems, distress, sadness, and depression (6,7). Although behavioral problems and emotional instability are addressed with adaptive strategies (8), as long as they are implemented by the respective organisms, the increased risk of suffering difficulties in their mental health, as well as academic and social effects is inevitable (9).

According to research carried out in Colombia, from the phenomenon of the girl child during the winter season of 2010 and 2011, in the population of Mojana and San Jorge of the Department of Sucre, it was established that children and adolescents do not have enough defenses to adapt to the environment. Their health, their emotions, and in general their integral development are greatly affected, so prompt intervention is necessary to obtain improvements in their psychological well-being (10).

However, a previous study shows that the majority of children and adolescents affected by winter in the Mojana subregion are adapted in the personal, social, and school context, as

well as perceive great social support and high family functionality, which could be explained by factors intrinsic to the subjects that allowed their adaptation over time (11), as well as being treated psychosocially in the face of the emergency. This could confirm that all policies that provide protection allow the reduction of the conditions of the vulnerability of children against disaster situations (12). From this perspective, children exposed to disasters are particularly vulnerable to psychological problems, such as anxiety symptoms, post-traumatic stress disorders, panic, phobias, depression, and adaptation problems, all because at this stage they are less prepared to face unexpected situations such as natural disasters, although, they also mention that children exposed to natural phenomena are usually more resilient (13).

In some studies, the difference in the impact of these catastrophes is pointed out according to certain personal and context variables, for example, between sex and age (14), and in relation to the socioeconomic condition. Vulnerability is not equitable because children whose families have financial capital, cover their basic needs, restore their safety and resume their daily activities more quickly compared to those children in a marginalized situation who remain in the problem situation for a longer period of time (6). This situation of socio-economic differences is caused by conditions external to individuals (15), such as income level, quality of housing, social networks, and access to basic services (16). "More than 270 million children currently live in areas extremely prone to flooding in countries where less than half of the population has access to improved sanitation facilities" (17). In accordance with the above, the variables of sex, age, and school grade will be taken into account for this research.

In 2017 Peru faced a natural situation called "El niño Costero", in which both rains and floods affected more than 800 000 people. It was indicated that 30.7 % of poor victims are children and adolescents between 0 - 17 years old and it is assured that in the face of such an event, where there is damage to infrastructure, relocation of housing, shortage of food and basic services, constant loss of classes or physical and psychological effects, the psychosocial well-being, physical integrity, and school achievements of children is compromised. Children and their families could face the impact on their health and nutrition, loss of forms of coping, less education, and therefore lower productivity, risk situations that if not addressed could generate profound consequences that go beyond the disaster itself (18).

Various studies (19-21) indicate that family support, taking into account the parenting method, is extremely important to overcome and achieve adaptability and a positive self-concept in any circumstance. That is, family support also influences emergencies due to natural disasters; although it is determined that this factor is more important for girls than for boys. Otherwise, having support networks made up of friends is a factor given more importance to boys than girls (22).

As for age, it is assumed that the level of importance given to things varies; a child between 0-6 years old may not deeply understand a situation, so he could adapt faster, this has variability due to his degree of self-perception. Social acceptance and behavior play a fundamental role for him in his stage of development (23); the appropriate or inappropriate response to adaptability to changes in the environment depends on how emotions are handled (24).

Regarding social support and the variable sex, previous studies have shown that while in adolescent men self-efficacy predominates due to self-confidence and independence, in women there is a greater tendency to perceive and value instrumental support (25) Similar findings were presented in another study (26), which indicates the existence of differences in the perception of social support according to sex, finding that "the relationships of global psychological well-being with self-esteem and perceived social support are of greater magnitude in women than in men".

Regarding the functional dimensions of social support and the crossing with the age variable, depending on the place of residence, a study carried out (27) found that the age variable does seem to be more related to social support. Other research has found that "the older, the lower the social support received from the family, residential and school contexts, all correlations being negative, although there are cases in which it does not become significant"(28). Other findings

about children and the social support they perceive given the context of vulnerability in which they are immersed show that the family is the primary support network in these conditions since support among family members allows joint help to the individual to face traumatic and stressful moments more effectively (29,30).

Additionally, the research found a negative correlation between family functionality with age and sex (31); likewise, when studying a sample of high school students, sex has been found to influence the perception of the family process of individuation ($p = 0.05$) (32). A study found that "the distribution of the perception of normal family function is similar, regardless of the adolescent's sex. However, there is a change in the results of the Apgar test according to age: the 16-17 age group has the lowest prevalence of familial norm-function" (33).

Considering the elements proposed, this study sought to verify whether the psychosocial adaptation of children and adolescents, their perception of social support, and family functioning after floods, vary according to their sociodemographic characteristics. To do this, as a research question, are there significant differences in the levels of adaptation, social support, and perceived family functionality according to sex, age, and school grade of children and adolescents affected by winter in the Mojana subregion of the department of Sucre, Colombia?

METHOD

Participants

Descriptive-comparative research was carried out, with a non-experimental cross-sectional design. The sample consisted of 160 children and adolescents residing in the Mojana subregion of the Department of Sucre, Colombia, specifically in the municipalities of Buenos Aires, Calzón Blanco, Isla Grande, and El Sedro in the municipality of Sucre - Sucre (53 subjects), Palmaritico and Tierra Santa in the municipality of Guaranda (38 subjects), and Palomar and Pueblo Nuevo in the municipality of Majagual (69 subjeets). This sample was selected based on the Single Registry of Damned by the Winter Emergency (2010-2011) and the report of the Risk Management Office of each municipality for the identification of the areas with the greatest effects in relation to the urban and rural area.

Of the total sample, 71 subjects were male and 89 females between the ages of 8 and 18 and were in between the 2nd and 11th grades of school. As for the age range, 67 subjects were 6 to 12 years old, and 93 were from 12 to 18 years old. Their ages can be adjusted according to the stages of development, corresponding to the Childhood period (0 to 3 years), second childhood (3 to 6 years), intermediate childhood (6 to 9 years), puberty (9 to 12 years old) and adolescence (12 to 18 years old).

Instruments

The Multifactorial Self-Evaluation Test for Child Adaptation, TAMAI

This test measures levels of adaptation of children and adolescents in the social, family, school, and personal spheres, and their respective changes. The instrument is divided into two parts; the first evaluates personal, school, and social maladjustment, and the second evaluates parental educational styles. In this research, only the first part was used, which consists of 105 statements that the subject responds to in a dichotomous way (yes or no). In this research, Cronbach's alpha was 0.86. The scales of this instrument were standardized for the Colombian population through a comparative descriptive study carried out in the city of Barranquilla (34).

Family APGAR Questionnaire

This instrument made it possible to estimate the satisfaction of the family functionality of the subjects through five components: adaptability, cooperation, development, affectivity, and resolution capacity. The five components are evaluated with five questions that are scored from 0 to 2 (0 "almost never"; 1 "sometimes"; 2 "almost always"). This is a valid questionnaire, according to studies carried out (35) where the correlation coefficients were greater than 0.55, thus demonstrating their reliability, and has been used in previous studies on the Colombian population (36,37). The Cronbach alpha was 0.75.

MOS received social support questionnaire

The instrument consists of 21 items and evaluates 4 dimensions of social support: instrumental, emotional/informational, positive social interaction, and affective support. It is answered on a 5-point scale (1=never, 2=rarely, 3=sometimes, 4=most of the time, and 5=always). Cronbach's alpha in this study was 0.90. In Colombia, this instrument is validated and had a Cronbach alpha reliability index of 0.941; for components, alpha was reported between 0.921 and 0.736 (38).

Procedure

First, working meetings were held with the risk management office of the three municipalities that make up the Mojana subregion of the department of Sucre: Sucre-Sucre, Majagual, and Guaranda, to identify the areas with the greatest impact. Once the areas with the greatest effects were identified, the children and adolescents who would be part of the study in the schools of each municipality were selected. Parental consent was obtained, and a pilot test was carried out with 30 students to determine their understanding of the instruments; subsequently, the general application was carried out. Once the information was collected, the answers were typed into a database. For the analysis of the data, the SPSS 20 Statistical Program was used, first performing descriptive statistics and then a multivariate analysis - ANOVA, for comparison of means.

RESULTS

Differences in maladjustment dimensions

In the results shown in Table 1, statistically, significant differences were found between sex and social maladjustment (F=5.601, p=0.019), with male subjects having a higher level of maladjustment. Regarding the age variable, there are no significant differences between age groups and maladjustment dimensions.

On the other hand, Table 2 shows statistically significant differences between school grades and social maladjustment (F=5.457, p=0.005), where students in grades 2 to 5 of primary school have higher levels of social maladjustment than students in grades 6 to 7 and 8th to 11. In addition, significant differences are found between school grade and personal maladjustment (F=3.390, p=0.036), indicating that grades 2-5° of primary basic have high levels of personal maladjustment compared to the other grades.

Table 1

Analysis of variance

		N	Mean	Standard deviation	F	Sig.
Personal maladjustment	Male	71	6.07	3.885	1.147	0.286
	Female	89	6.70	3.498		
	Total	160	6.42	3.676		
School Maladjustment	Male	71	3.99	3.232	1.323	0.252
	Female	89	3.44	2.788		
	Total	160	3.68	2.996		
Social maladjustment	Male	71	4.27	3.363	5.601	0.019
	Female	89	3.11	2.810		
	Total	160	3.63	3.112		

Table 2

Analysis of variance between school grade and maladjustment dimensions

		N	Mean	Standard Deviation	F	Sig.
Personal maladjustment	2 a 5	60	7.02	4.061	3.390	0.036
	6 – 7	58	5.43	3.245		
	8 a 11	42	6.93	3.446		
	Total	160	6.42	3.676		
School maladjustment	2 a 5	60	3.75	3.160	0.617	0.541
	6 - 7	58	3.36	3.088		
	8 a 11	42	4.02	2.627		
	Total	160	3.68	2.996		
Social maladjustment	2 a 5	60	4.62	3.906	5.457	0.005
	6 - 7	58	2.83	2.422		
	8 a 11	42	3.31	2.236		
	Total	160	3.63	3.112		

Differences between the dimensions of social support

As shown in Table 3, the differences in the dimensions of social support perceived between age groups are statistically significant for all dimensions of perceived social support. That is, there are statistically significant differences between age groups in terms of positive social interaction (F=6.293, p=0.013), affective support (F=6.293, P=0.013), informational emotional support (F=9.995, p=0.002), instrumental support (F=14.691, p=0.0001) and the overall social support index (13.691, p=0.0001).

The results indicate that boys and girls, compared to adolescents, perceive greater positive social interaction, greater effective support, greater informational emotional support, and greater instrumental support; hence the overall rate of social support perceived is higher for the child population than for the adolescent population. No differences were found according to the sex of the subjects.

Table 3

Analysis of variance between age and perceived social support dimensions

		N	Mean	Standard Deviation	F	Sig.
Positive social interaction	<= 12	67	16.34	3.918	6.293	0.013
	13 – 18	93	14.88	3.419		
	Total	160	15.49	3.696		
Affective support	<= 12	67	13.28	2.533	6.293	0.013
	13 - 18	93	11.68	2.938		
	Total	160	12.35	2.880		
Informative emotional support	<= 12	67	31.94	7.544	9.995	0.002
	13 - 18	93	28.18	7.325		
	Total	160	29.76	7.624		
Instrumental support	<= 12	67	16.01	3.637	14.691	0.0001
	13 - 18	93	13.67	3.952		
	Total	160	14.65	3.985		
Overall social support index	<= 12	67	73.00	15.126	13.691	0.0001
	13 - 18	93	64.45	13.887		
	Total	160	68.03	14.982		

Differences in family functionality

As indicated in table 4, there are significant differences according to sex with respect to family functionality (F=3.800, p=0.053), with female subjects being the ones who perceive greater functionality in their family. After comparing age groups regarding their family functionality, it was found that there are no significant differences between children and adolescents. There are also no differences between school grades and the level of family functioning.

Table 4

Analysis of variance between sex and family functionality

	N	Mean	Standard deviation	F	Sig
Male	71	6.90	2.445	3.800	0.053
Female	89	7.64	2.332		
Total	160	7.31	2.403		

DISCUSSION

Efforts were made to differentiate in levels of maladjustment, social support, and family functionality according to sex, age, and school grade, in a sample of 160 children and adolescents residing in the Mojana subregion, Colombia. Regarding the maladjustment dimension and its differences according to sex, it was found that there are statistically significant differences, given that female subjects have better levels of adaptation than male subjects. This is corroborated by previous studies in which differences in adaptation levels according to sex were found, finding that women are better adapted than men (39,40), which goes in the same direction as the results obtained in this study where significant differences were evident specifically for the social maladjustment dimension. Similarly, previous research (41) found that there are significant differences in adaptation levels according to sex, where men are better adapted to the family environment and women to the school environment.

In another sense, no significant differences were found in maladjustment levels according to the age of the subjects, which goes in the opposite direction to other studies which, when evaluating the level of psychosocial adaptation in the middle childhood of children at risk by adoption, adaptive differences were found within normal according to the current age of the children (39). This difference could be understood by the context in which the subjects of this study live, and the similar conditions in which both population groups (children and adolescents) develop; it is common to observe a large proportion of adolescents whose behaviors and attitudes are similar to those they had in their childhood so that it is not discriminated with certainty when they move from childhood to adolescence. This can be associated with the way they live and organize socially; the few spaces available to them to develop and advance at each stage of their life cycle, as well as dissatisfaction with their basic needs, can also permeate their physical development. However, this must be studied in depth in future studies.

Regarding the school grade, it was found that boys and girls in grades 2 to 5 have higher scores on the Social maladjustment scale than subjects in grades 6 - 7 and 8-11 of secondary school, which goes in the opposite direction than expected in the hypothesis raised. This could be explained from the theoretical perspective that explains that some minors during middle childhood may experience increased vulnerability to crucial events, which can slow down the schooling process (42). The same is true of the results of the personal maladjustment dimension, in which both children from 2nd to 5th grade and adolescents from 8th to 11th-grade show higher scores of school maladjustment compared to students in grades 6 to 7.

Consistent with the above, studies mention that this type of population could present difficulties with itself and mismatch, characteristics that can cause the subject not to achieve an adequate level of adjustment or balance that allows him to meet his expectations, that is, adapt and therefore respond coherently to the demands that the external environment demands (43).

However, the results found with respect to the school grade, go in the opposite direction to previous results in which primary school students were found to be better adapted to their family and school while high school students present higher levels of personal and social

maladjustment, manifesting common neurotic and psychopathological traits (40). It is striking that in the case of personal maladjustment both grades 2° to 5° and 8°- 11° show high scores of personal maladjustments differing from grades 6° to 7° which obtained notoriously lower scores. This suggests, in a way, that personal adaptation can be complex with the conflicts inherent in the development phase, in which risk situations that may arise at this stage of the life cycle must be faced (25).

In consideration of the dimensions of perceived social support and overall support index, according to the age of the subjects, it was possible to identify statistically significant differences between age groups for all dimensions of perceived social support and the overall social support index. In particular, boys and girls, compared to adolescents, perceive higher levels of positive social interaction, affective support, informational emotional support, and instrumental support, and, therefore, the overall rate of social support perceived is higher for the child population than for the adolescent population. These findings are consistent with other studies (27) that found negative correlations with respect to the functional dimensions of social support and the crossing with the age variable, depending on residential care, indicating that the age variable does seem to be more related to social support. It is confirmed that the older, the lower the social support received (28), therefore, for children the social support received in contexts of socioeconomic vulnerability is represented by the family, which remains the primary support network (29). In the same vein, when comparing the results obtained for men and women, controlling the effect of age, they found with 99 % confidence, that older students reported less perception of support from friends (44).

The same is not true of the dimensions of social support and overall index and variations according to sex, since no statistically significant differences were found between men and women regarding these dimensions. This fact is contrary to what was found in previous studies in adolescent men, self-efficacy predominates due to self-confidence and autonomy, while in women there is a greater tendency to perceive and value instrumental support since they are more dependent and tend to seek help (25). Similar findings were presented in another study that indicates differences according to sex, stating that "the relationships of global psychological well-being with self-esteem and perceived social support are of greater magnitude in women than in men" (26).

An explanation for the non-existence of differences in this study could be the particular context of the subjects; if you observe the poverty conditions in which these families live, which are mostly single-parent, children and adolescents must assume domestic work from an early age for the support of the home, which causes both men and women to generate some independence from their social nucleus, there being a greater concern that would become in the first instance the satisfaction of their immediate needs. However, this must be studied in depth.

Regarding the levels of family functionality and sex, significant differences were found between men and women regarding their family functionality, with women who perceive greater functionality in their family. This finding goes in the same sense of research carried out (32) where sex was found to be decisive in the family process of individuation, in addition to the results of other research in which they found significant differences in family functionality by sex, indicating that male subjects score lower in system maintenance and system change, while female subjects obtained less score in coherence and individuation (31). However, the findings go in the opposite direction to what was found in other research (33); as can be seen, there is no consensus in the findings of these studies regarding the differences raised, suggesting a broader and deeper approach in subsequent studies (45,46).

On the other hand, the results obtained by establishing the differences between age groups with respect to their family functionality are consistent with the findings of other research in which it was obtained that age did not determine differences in the perception of family functionality (31,32), however, they differ from other studies carried out in which differences were found between the two variables (33-47). It is assumed that the variety of research results against this is due to the context in which the

studies were carried out and their particular characteristics, which could be reviewed more accurately and carefully in future studies.

Finally, it was found that there are no significant differences between school grades regarding their level of family functioning, as in other studies (33), indicating that the initial hypothesis of this study is confirmed and is consistent with research carried out.

CONCLUSION

Preliminary investigations carried out in the department of Sucre and in other contexts, have resulted in an impact on the adaptation of children and adolescents who have been exposed to disaster situations, in this case, floods (6,9,10,12,13). Other studies have concluded the opposite, that is, in this population, there are no low levels of adaptation, nor correlations between it and variables such as family functioning and perceived social support (11,19-21). This was the starting point of this research since it was presumed that there could be variations in the level of adaptation of children and their perception of family functioning and social support according to sex, age, and school grade.

The findings of this study allow us to conclude that for these subjects there are demographic characteristics such as sex, age, and schooling level that condition their adaptation in vulnerable contexts. At first, it is observed that male subjects have more difficulties in their social adaptation and perceive less family functionality. Older subjects receive less social support and have more difficulties in their personal and social adaptation. These results allow us to talk about psychological tension (48), given the probability that conflicts typical of the evolutionary phase of the subjects may be occurring, even though younger children (under 12 years old) receive more social support. However, no significant differences were found between the dimensions of social support and the overall social support index by sex. There are also no variations in the levels of family functionality according to age and school grade.

These results allow us to theorize that the levels of psychosocial affectation in relation to school, personal, and social adaptation, as well as the social support and family functionality that children and adolescents perceive after being exposed to recurrent floods, could have variations, in some cases, according to their individual and sociodemographic characteristics. Therefore, based on this finding, intervention plans could be proposed during the emergency or in later phases, aimed at meeting particular psychosocial needs of population groups under a differential approach. Likewise, the need to continue investigating these differences in more representative populations is highlighted and considering variables that could be related such as personality, socioeconomic level, time of exposure to floods, and if they have received some type of psychosocial intervention.

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