

## Suicidal Ideation and its Association with Social Support Perceived by Adolescents

### *Ideación suicida y su asociación con el apoyo social percibido en adolescente*

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#### Summary

**Objective:** to know the prevalence of suicidal ideation and to determine the association between suicidal ideation and social support perceived by adolescents. **Methods:** analytical cross-sectional study. 267 adolescents between twelve and seventeen years old, both genders were evaluated, all beneficiaries of the General Regional Hospital with Family Medicine No.1, of the Mexican Institute of Social Security (IMSS), in Cuernavaca, Morelos, Mexico, who attended the external Family Medicine consultation for any reason other than a mental disorder. The information on the main variables of interest was obtained through Beck's suicide ideation questionnaire and Vaux's perceived social support scale. A descriptive analysis was carried out and a logistic regression model was adjusted to assess the strength of association between suicidal ideation and social support. **Results:** the prevalence of suicidal ideation was 16.48%. The estimated protection for suicidal ideation odds ratio (OR) was OR = 0.37 (IC 95% 0.16, 0.84,  $p = 0.018$ ) and 0.30 (IC 95% 0.12, 0.71,  $p = 0.006$ ) medium and high social support, respectively, in comparison to low social support. Additionally, it was noted that as more social support perceived by adolescents higher protection for suicidal ideation ( $p$  trending  $<0.05$ ). **Conclusion:** it was detected a high prevalence of suicidal ideation and also that the more perceived social support the less suicidal ideation in adolescents. These findings could help at the primary care level to support preventive programs that could be added to suicide prevention efforts.

**Keywords:** suicidal ideation, social support, adolescents

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## Resumen

**Objetivo:** conocer la prevalencia de la ideación suicida y determinar la asociación entre la ideación suicida y el apoyo social percibido en adolescentes.

**Métodos:** estudio transversal analítico. Se evaluaron 267 adolescentes de doce a diecisiete años de edad, ambos sexos, derechohabientes del Hospital General Regional con Medicina Familiar No.1, del Instituto Mexicano del Seguro Social (IMSS), en Cuernavaca, Morelos, México, que acudieron a la consulta externa de medicina familiar por cualquier motivo diferente de un trastorno mental. La obtención de la información de las principales variables de interés fue a través del cuestionario de ideación suicida de Beck y la escala de apoyo social percibido de Vaux. Se realizó un análisis descriptivo y se ajustó un modelo de regresión logística para evaluar la fuerza de asociación entre la ideación suicida y el apoyo social.

**Resultados:** la prevalencia de ideación suicida fue de 16.48%. Se estimó una razón de momios (RM) de protección para ideación suicida  $RM = 0.37$  (IC 95% 0.16, 0.84,  $p = 0.018$ ) y 0.30 (IC 95% 0.12, 0.71,  $p = 0.006$ ) del apoyo social medio y alto, respectivamente, en comparación con el apoyo social bajo. Asimismo, se observó que a mayor apoyo social percibido en los adolescentes mayor protección para ideación suicida ( $p$  de tendencia  $< 0.05$ ). **Conclusión:** se detectó una alta prevalencia de ideación suicida y se determinó que a mayor apoyo social percibido menor ideación suicida en adolescentes. Estos hallazgos podrían ayudar a sustentar programas preventivos en el primer nivel de atención y sumarse a los esfuerzos de prevención del suicidio.

**Palabras clave:** ideación suicida, apoyo social, adolescentes

## Introduction

Suicide is a public health problem that has increased in recent decades, and is one of the leading causes of death in adolescents.<sup>1</sup> Annually, there are 800,000 deaths worldwide related to suicide and represents the second leading cause of death between the ages of 15 and 29.<sup>2</sup> In Mexico, suicide ranks the third leading cause of death in adolescents.<sup>3</sup> It is estimated that up to twenty suicide attempts are reported for each suicide.<sup>4</sup> Suicidal behavior is a complex phenomenon that includes those behaviors ranging from suicidal ideation (thinking about suicide), suicide planning, suicide attempt and suicide itself.<sup>2</sup> Some researches emphasize that suicidal ideation, while not a determining factor, is the first indicator for a possible suicide attempt or completed suicide.<sup>2,5</sup>

According to the Pan American Health Organization (PAHO) data, the prevalence of suicidal ideation in adolescents in Latin America is 13.8%.<sup>6</sup> In developed countries, such as Canada, it is 9.5%;<sup>7</sup> and in the United States the estimated range is 17% to 36.1%.<sup>8,9</sup> In Mexico, epidemiological research with national representativeness conducted on Mexican adolescents aged twelve to seventeen years reported a similar prevalence. Borges et al.<sup>10</sup> noted that 10.01% of the population aged twelve to seventeen reported suicidal ideation in the last twelve months. Pérez Amezcua et al.<sup>11</sup> estimated that 47% of middle high-school students had at least had a symptom of suicidal ideation in their life. Benjet et al.<sup>12</sup> through the Mexican Adolescent Mental Health Survey, found a prevalence of 13.3% in adolescents.

The development of suicidal behavior is considered multi-causal and complex,<sup>13</sup> however, there are well-

defined risk factors for developing this behavior, which include: female, living alone, religion, low social and family support, and the group from fifteen to 34 years of age.<sup>14-16</sup> In this regard, it is known that 50% of mental health conditions appear at approximately at the age of fourteen, but most of these are not diagnosed and therefore untreated.<sup>17</sup>

On the other hand, it is worth remembering that the closest social networks in adolescents are family, school and friends. Evidence suggests that the presence of social support perceived by adolescents is associated to positive mental health outcomes, helps them feel connected, valued and cared for, and that day-to-day stress is mitigated among individuals with good social media.<sup>18</sup> It has also been reported that increased social support has protective effects against some forms of suicidal behavior.<sup>19</sup>

Therefore, it is necessary to generate up-to-date evidence on protective factors that could prevent the development of suicidal ideation or progression of suicidal behavior in adolescents, with a prevention approach from the primary care level, which serves as a basis for designing and planning strategies to reduce the trend of this problem. Hence, this study aimed to understand the prevalence of suicidal ideation and determine the association between suicidal ideation and perceived social support.

## Methods

An analytical cross-sectional study was conducted. Adolescents from twelve to seventeen years of age took part, both genders, beneficiaries of the General Regional Hospital with Family Medicine No.1, of the Mexican Institute of Social Security (IMSS) in Cuernavaca, Morelos, Mexico. Participants attended an exter-

nal Family Medicine consultation for different of reasons. Those individuals with a history of known psychiatric and neurological diseases were excluded. The sample size was calculated using a ratio for infinite population formula, accuracy of 6% and confidence level of 95%. The sample size was 267 adolescents, who were recruited using non-probabilistic sampling technique. The collection of the data took place from April to July 2018, after voluntary acceptance and signed informed consent by the father, mother or guardian and informed assent of the adolescent. The protocol was authorized by local ethics and research committees number R-2018-2103-20.

The information was obtained through a questionnaire evaluating sociodemographic, clinical and family characteristics. Beck's suicide ideation scale, which is validated in Mexican adolescents with a Cronbach alpha of 0.82, was used for the suicidal ideation variable. The questionnaire consists of nineteen questions, each goes in a range of 0 to 2 response options, in case of answering 0 in questions 4 ("desire to make an active suicide attempt in the last 12 months") and 5 ("passive desire for suicide in the last 12 months") the application of the questionnaire was suspended by coding as "without suicidal ideation". A score of 1 or more on any of these questions was considered a "presence of suicidal ideation". The variable was dictated to "yes" or "no". In addition, the severity of suicidal ideation was assessed in those adolescents who reported having had it; this was done by summing the scores of each of the questions, which ranged from 1 to 38 points (discrete scale):<sup>20</sup> the highest score obtained the greatest severity of suicidal ideation.

To learn about social support, Vaux's perceived social support scale was used, in its short and validated version in Mexico for adolescents. It consists of fifteen questions with structured Likert questions, each one goes from 1 (completely disagree) to 4 (completely agree), its score ranges from 15 to 60 points maximum. The assessment of social support was carried out in two ways: the first, by categories (in tercils) in low, medium and high social support, because there are no predefined cut-off points. The second, according to the total obtained score (discrete scale) with which the highest score indicates the highest social support.<sup>21</sup>

A descriptive analysis was performed to examine the characteristics of the participants. The average age and its interquartile range (IR) were reported, because it did not meet a normal distribution. Categorical variables are reported in frequencies and percentages. The Wilcoxon range test was used for difference among quantitative variables. The statistical test  $\chi^2$  or Fisher's exact test was used for the bivariate analysis between suicidal ideation, in its dichotomous form, its relationship with perceived social support (in tercils) and the rest of the categorical covariates. The Spearman's correlation was used to perform a correlation analysis between severity of suicidal ideation, in adolescents with suicidal ideation, and perceived social support (both in their original discrete quantitative score). For the analysis of association between the main variables of interest, two logistic regression models were performed, one crude (unadjusted) and one adjusted for confounding. Statistical significance was established considering the confidence intervals at 95% and the p value <0.05.

All analyses were developed using the statistical program Stata version 14.0.

## Results

A prevalence of suicidal ideation was obtained of 16.48% (n=44) of the 267 adolescents where women's participation dominated with 51.69%, average age 13 years (IR 13.14 years), 80.92% are middle high school students, 42.70% were Catholic and 67.04% lived with both parents. When stratifying by suicidal ideation, no statistically significant differences were observed with the analysis covariates, see Table 1.

Analyzing the relation between suicidal ideation and social support perceived by category, it was observed that among those adolescents who submitted suicidal ideation (n=44), 54.55% reported having low social support and only 20.45% high social support, as opposed to those who had no suicidal ideation (n=223), where it was observed that 29.15% and 34.98% reported low and high social support, respectively. These percentage differences were statistically significant ( $p < 0.05$ ), see Table 2.

Estimating the correlation between the severity of suicidal ideation score with an overall score of social support perceived, a negative statistically significant correlation was determined (Rho -0.298,  $p = 0.04$ ) in those adolescents who presented suicidal ideation (no = 44), which means that, the more social support perceived, the less severity of suicidal ideation.

Table 3 shows the estimation of the odds ratio (OR) with confidence intervals (CI95%), to assess the association strength between suicidal ideation and perceived social support, using both crude (unadjusted) and adjusted logistic regression models by gender, age, educa-

**Table 1. Sociodemographic Characteristics and its Relation with Suicidal Ideation**

| Variable                     | Suicidal Ideation         |                           |                           | p Value            |
|------------------------------|---------------------------|---------------------------|---------------------------|--------------------|
|                              | No<br>n = 223<br>(83.52%) | Yes<br>n = 44<br>(16.48%) | Total<br>N= 267<br>(100%) |                    |
| <b>Sex</b>                   |                           |                           |                           | 0.932 <sup>£</sup> |
| Men                          | 108 (48.43)               | 21 (47.72)                | 129 (48.31)               |                    |
| Women                        | 115 (51.57)               | 23 (52.28)                | 138 (51.69)               |                    |
| <b>Age</b>                   |                           |                           |                           | 0.604 <sup>¥</sup> |
| 12                           | 46 (20.63)                | 14 (31.82)                | 60 (22.47)                |                    |
| 13                           | 84 (37.67)                | 14 (31.82)                | 98 (36.70)                |                    |
| 14                           | 43 (19.28)                | 8 (18.18)                 | 51 (19.10)                |                    |
| 15                           | 15 (6.72)                 | 1 (2.27)                  | 16 (5.99)                 |                    |
| 16                           | 16 (7.18)                 | 4 (9.09)                  | 20 (7.49)                 |                    |
| 17                           | 19 (8.52)                 | 3 (6.82)                  | 22 (8.24)                 |                    |
| Median age (p25, p75*)       | 13 (13, 14)               | 13 (12, 14)               | 13 (13, 14)               | 0.236 <sup>°</sup> |
| <b>Education Level</b>       |                           |                           |                           | 0.603 <sup>¥</sup> |
| None                         | 1 (0.45)                  | 0 (0.00)                  | 1 (0.37)                  |                    |
| Elementary                   | 2 (0.90)                  | 1 (2.27)                  | 3 (1.12)                  |                    |
| Middle high-school           | 181 (81.17)               | 35 (79.55)                | 216 (80.90)               |                    |
| High-school                  | 39 (17.49)                | 8 (18.18)                 | 47 (17.60)                |                    |
| <b>Religion</b>              |                           |                           |                           | 0.792 <sup>¥</sup> |
| None                         | 74 (33.18)                | 15 (34.09)                | 89 (33.33)                |                    |
| Catholic                     | 95 (42.60)                | 19 (43.18)                | 114 (42.70)               |                    |
| Jehovah's Witness            | 8 (3.59)                  | 2 (4.55)                  | 10 (3.75)                 |                    |
| Christian                    | 44 (19.74)                | 7 (15.91)                 | 51 (19.10)                |                    |
| Other**                      | 2 (0.89)                  | 1 (2.27)                  | 3 (1.12)                  |                    |
| <b>Person they live with</b> |                           |                           |                           | 0.149 <sup>¥</sup> |
| Father                       | 7 (3.14)                  | 0 (0.00)                  | 7 (2.62)                  |                    |
| Mother                       | 57 (25.56)                | 8 (18.18)                 | 65 (24.34)                |                    |
| Both parents                 | 147 (65.92)               | 32 (72.73)                | 179 (67.04)               |                    |
| Other**                      | 12 (5.38)                 | 4 (9.09)                  | 16 (6.00)                 |                    |

\*Other religion: Spiritualist, Adventist.

\*\*Other person they live with: grandparent, sibling, aunt, uncle.

\*p25, p75 = Interquartile range (IR). £ Test  $\chi^2$ , ¥ Fisher o° Wilcoxon exact Test

tion, religion and persons they live with. In the adjusted model, a protection or for suicidal ideation was observed OR=0.37 (IC95% 0.16, 0.84) and 0.30 (IC95% 0.12, 0.71) of medium and high social support, respectively, compared to low social support. A statistically significant trend was also observed in which, the more social support, greater protection against suicidal ideation (p trending < 0.05).

## Discussion

The prevalence of suicidal ideation estimated in this study was 16.64%, which correlates with Orozco et al.,<sup>22</sup> who reported a prevalence of 13.3% suicidal ideation in Mexican adolescents. Similar data were generated by the National Institute of Statistics and Geography (INEGI, 2016),<sup>23</sup> whose reported prevalence was 11% in adolescents aged ten to fourteen years and up to 23% at ages fifteen to nineteen years. Other authors also report a similar prevalence in this study.<sup>24,25</sup> In general, previous research in Mexican adolescents estimates prevalence in a range running from 10.01% to 47%.<sup>10-12</sup> However, in the most representative national survey, National Survey of Drug, Alcohol and Tobacco Use (ENCODAT, 2016-2017),<sup>4</sup> a prevalence of 2.3% was observed. In contrast, to the data obtained in this study it could be explained mainly by the age group analyzed by the survey (12 to 65 years of age). However, other explanations for the wide variety of prevalence reported by other authors are the different scales used to measure suicidal ideation, the extent of the question used (e.g. “ever in a lifetime” vs. “in the last 12 months”), the age group under study and the selection of participants. This study estimates that, despite methodological difficulties in co-

**Table 2. Relation between Suicidal Ideation and Social Support Perceived**

|                       | Suicidal Ideation |                   |                      | p Value |
|-----------------------|-------------------|-------------------|----------------------|---------|
|                       | No<br>n = 223 (%) | Yes<br>n = 44 (%) | Total<br>N = 267 (%) |         |
| <b>Social Support</b> |                   |                   |                      | 0.005   |
| Low                   | 65 (29.15)        | 24 (54.55)        | 89 (33.33)           |         |
| Medium                | 80 (35.87)        | 11 (25.00)        | 91 (34.08)           |         |
| High                  | 78 (34.98)        | 9 (20.45)         | 87 (32.58)           |         |

Statistic Test:  $\chi^2$

**Table 3. Association Analysis between Suicidal Ideation and the Social Support Perceived by Adolescents n = 267**

|                          | Spearman's Rho      |         |                         | p Value |
|--------------------------|---------------------|---------|-------------------------|---------|
| Social Support Perceived | -0.298              |         |                         | 0.04    |
|                          | Crude OR<br>(IC95%) | p Value | Adjusted OR*<br>(IC95%) | p Value |
| <b>Social Support</b>    |                     |         |                         |         |
| Low                      | 1.00                | -       | 1.00                    | -       |
| Medium                   | 0.37 (0.16, 0.81)   | 0.014   | 0.37 (0.16, 0.84)       | 0.018   |
| High                     | 0.31 (0.13, 0.71)   | 0.006   | 0.30 (0.12, 0.71)       | 0.006   |
| P trending               |                     | 0.004   |                         | 0.04    |

\*Adjusted Logistic Regression Model by: gender, age, school level, religion and person they live with

rectly determining the prevalence of suicidal ideation in adolescents, it is important the continuance of studies from different perspectives and methodological approaches. This is due to it is considered a common problem among adolescents, often misdiagnosed and under registered, which is one of the main predictors for carrying out a suicide attempt or reaching suicide *per se*.

On the other hand, this study estimated a protection association between medium and high social support for suicidal ideation, with a significant trend in which the greater social support perceived by adolescents the more protection for suicidal ideation. In addition, it was found that, the more social support perceived, the less severity of suicidal

ideation during the last twelve months. These findings are consistent with those of other studies<sup>26,27</sup> that found that adolescents who receive high social support have less willingness to present suicidal ideation. As Farrel et al.<sup>28</sup> reported the increase of social support reduced the risk of a suicide attempt on African-American adolescents. Macrynika et al.<sup>29</sup> also reported that greater social connection protects against suicidal ideation OR 0.26 (IC 95% 0.21-0.33). Furthermore, it has been established that low social support represents a risk factor for the adolescent to develop some form of suicidal behavior.<sup>30</sup> Miller et al.<sup>31</sup> found that those adolescents who had a lower perception of school and parents support showed the highest levels of suicidal ideation.

Similar to what Mackin et al.<sup>32</sup> found that the lack of support from parents increases the risk of suicidal ideation. Therefore, the obtained results in this study are particularly important from an elementary prevention perspective, because strengthening the adolescents' social media bonds would have a positive impact on their mental health and particularly in the development of suicidal ideation.

The main limitation of this study was to use non-probabilistic sampling due to lack of economic resources and operational difficulty, so the sample is not representative of all adolescents, which limits the generalization of results. One of the greatest strengths of this study was the use of validated instruments for measuring the main variables of interest.

## Conclusions

This research found a high prevalence of suicidal ideation in adolescents. Suicidal ideation was lower in those participants who reported having greater perceived social support. While more research is required, these results could help support preventive programs at the primary care level, with an emphasis on mental health on specific groups of risk, such as adolescents, and add evidence to taking decisions on suicide prevention efforts. It is suggested to implement awareness-raising strategies for primary care level physicians and all first-contact health personnel on mental health issues, to timely achieve multidisciplinary detection and care.

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