

Suicidal-related behaviors and quality of life according to gender in adolescent Mexican high school students

Carlos Hidalgo-Rasmussen ¹
Alfredo Hidalgo-San Martín ²

Abstract *The study of pre-suicidal behaviors is important not only because of their association with suicide but also because of their impact on quality of life (QOL). Given the scarcity of information regarding this relationship in adolescence, the objective of this study was to analyze the association between suicidal-related behavior and QOL according to gender in adolescent Mexican high school students. This cross-sectional study was conducted with participants between 14 and 18 years of age. A translated version of the Youth Risk Behavior Survey and the Spanish version of the Youth Quality of Life Research - Instrument version were used. Non-parametric tests were applied. Informed consent was obtained from parents and students, and ethical committee approval was sought. The developmental-transactional model of suicidal behavior in adolescents by Bridge et al. was used. Separate analyses were conducted for males and females to show the suicidal-related behaviors associated with QOL. The behavior of having felt sad or hopeless generally presented the greatest effect sizes. The regression models showed that some suicidal-related behaviors increase the probability of a lower QOL even after adjusting for covariates.*

Key words *Suicide attempt, Suicidal ideation, Quality of life, Adolescents, Students*

¹ Departamento de Cultura, Arte y Desarrollo Humano, Universidad de Guadalajara. Av. Enrique Arreola Silva 883, 49000 Cd. Guzmán Jalisco México. Centro de Estudios Avanzados, Universidad de Playa Ancha, Valparaíso, Chile. carlosh@cusur.udg.mx

² Unidad de Investigación Epidemiológica y en Servicios de Salud del Adolescente, Instituto Mexicano del Seguro Social.

Introduction

Suicide in youths 15 to 29 years of age is the second leading cause of death worldwide¹. In Mexico, suicide is the third leading cause of death in youths 15 to 19 years of age. Suicidal-related behavior (SRB) increases the likelihood of suicide because of its role in the suicidal causal chain, and therefore, it warrants investigation. The following SRBs are among the factors that increase the probability of commencing the suicidal chain: *hopeless*, which is a symptom of depression^{2,3} and increases the probability of attempting suicide⁴; *suicidal ideation*, which refers to having thoughts of ending one's life; *suicide planning*, which refers to the formulation of a specific method by which one has the intention of dying; and *suicide attempt*, which refers to the participation in a potentially self-destructive behavior in which there is some intention to die⁵. Studying SRB is important for devising and executing preventive measures⁶. These same variables have been introduced by the *transactional model of development for suicidal behavior in youth* proposed by Bridge et al.⁷. This model outlines a sequence that begins with the parents' genetic or environmental influence, in which hopeless is a component of depression and precedes suicidal ideation, leading to a suicide attempt and finally to actual suicide. Quality of life (QOL) is defined by the WHO as "individuals' perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards, and concerns."⁸. Studies regarding QOL and suicide exist for clinical populations⁹ and in adults and older adults¹⁰. However, suicides in adolescents could have different characteristics from those in older persons, such as angrier displays and more impulsive behavior¹¹. In young persons, SRB has been associated with QOL and life satisfaction, which is an indicator of QOL. As such, worse mental health and lower life satisfaction are associated with suicide attempts in North American public high school students¹². Lower life satisfaction has been associated with SRB (ideation, planning, attempt, and an attempt that requires medical care) in North American students 13 to 18 years of age¹³. Additionally, suicidal thoughts and suicidal attempts have been associated with lower QOL related to health among European students 11 to 17 years of age¹⁴. Given that gender is associated with both suicide attempts¹⁵ and QOL¹⁶, it seems fitting to study these phenomena together according to gender.

Suicidal rates and trends in adolescents have been shown to differ by country^{11,17}, just as SRB in adolescents can vary by country and according to gender.

The studies that exist regarding QOL are scarce, are largely based in North America, and are centered on clinical adult or older adult populations. A lack of information exists with regard to SRB and QOL in adolescents in Latin-American countries where distinct sociodemographic, economic, and cultural conditions exist.

Based on this background, our objective is to analyze the association between SRB and QOL according to gender in adolescent Mexican high school students.

Methods

A non-experimental observational cross-sectional study was conducted among high school students in Guzman City, which is considered to be an average-size city in Jalisco according to its economic development (approx. 100,000 inhabitants). Students were also recruited from several small cities (15,000 to 100,000 inhabitants) and from mixed and rural localities (less than 15,000 inhabitants) from the south-central region of Jalisco, Mexico. A non-probabilistic convenience sample was utilized to employ an on-line questionnaire. Participating schools were required to have computer equipment and an internet connection. In addition, it was necessary to have support from the administrative authorities at these schools to distribute informed consent to parents. Nine public and private high schools were ultimately selected. At the time of application, these schools had a total population of 6429 students, of which 13.8% were surveyed. The total number of students by school and the percentage of students analyzed (s) were as follows: s1 (N = 894, 2.3%), s2 (N = 132, 40.9%), s3 (N = 794, 17%), s4 (N = 1689, 5.1%), s5 (N = 1228, 14.6%), s6 (N = 333, 56.5%), s7 (N = 522, 8.6%), s8 (N = 180, 73.9%), and s9 (N = 657, 7.3%). The questionnaire was self-completed online by all students who were available the day of the survey (907) and included 14- to 18-year-old students who agreed to participate after being read the informed consent (899).

Suicide risk behavior. SRB was measured using a 5-item instrument translated into Spanish from the National Center for Chronic Disease Prevention and Health Promotion's *Youth Risk Behavior Survey (YRBS) 2007*¹⁸. Four items were explored

in the last 12 months, including the following: 1) *hopeless*: feeling sad or hopeless almost every day for 2 weeks or more to the point of having ceased normal activities (response options: yes/no); 2) *ideation*: having seriously considered attempting suicide (response options: yes/no); 3) *planning*: having made a plan to attempt committing suicide (response options: yes/no); and 4) *attempt*: the number of times suicide was seriously attempted (response options: 0 times, 1, 2-3, 4-5, 6 or more), which was coded as yes/no. Additionally, 1 question that is not found in the YRBS was included: 5) *ideation or planning in the last month*: having thought about or planned suicide in the last 30 days (response options: yes/no). In our study, an internal consistency analysis using Kuder-Richardson (KR20) was conducted on the 4 items from the YRBS used to score SRB in the last 12 months (hopeless, ideation, planning, and attempt). This analysis obtained a score of 0.69.

Quality of life. Quality of life was measured using the *Youth Quality of Life Instrument Research* questionnaire version (YQOL-R)^{19,20} in its Spanish version with 61 reactivities, selecting perceptual items that are associated with adolescents and that are the primary QOL qualifiers¹⁹. The instrument was formed by 4 domains: general (3 items), with statements about life satisfaction and its value and the feeling of safety in school; personal (14 items), which addressed one's feelings about oneself, with respect to stress, loneliness, feelings and beliefs, difficulties and failures, exclusion, energy, and sexuality; relational (14 items), involving relationships with family, adults, friends, partners, and satisfaction with social life; and, finally, environmental (10 items), which concerned opportunities and obstacles for the future, education and access to information, money, enjoying new things, and safety at home. An 11-point Likert was used for each item. Indexes were created using a T-score rating for the items, which was reflected on a QOL scale ranging from 0 to 100 (in which a higher score signified a higher QOL). The instrument was validated by 236 North American adolescents 12 to 18 years of age with and without impairment. The validity of the construct with the KINDL® Children quality of life questionnaire²¹ attained a correlation of 0.73, indicating a significant association between the 2 methods. Internal consistency, measured using Cronbach's alpha, ranged from 0.77 to 0.96, and reproducibility was measured with the intra-class correlation coefficient, ranging from 0.74 to 0.85^{19,20}. The instrument was used with a Mexican population^{22,23}. When

applied to our population, its internal consistency exceeded the standard²⁴ for the results grouped as the overall index (0.95) and the domains: general (0.88), personal (0.86), relational (0.88), and environmental (0.84).

Ethical

This observational research project on risk behavior and student quality of life was approved by Guadalajara University's Research Center for Dietary Behavior (CICAN, in Spanish), which analyzed the project and supplementary documents according to the Declaration of Helsinki guidelines, from the International Ethical Guidelines for Biomedical Research in Human Beings issued by the Council for International Organizations of Medical Sciences (CIOMS) in 2002. Informed consent was requested from students and their parents. The information was confidential. Participation was voluntary. All data were anonymous and confidential.

Statistical

Non-parametric tests were applied because the data were not normally distributed. Univariate and multivariate logistic regressions were used to analyze the relationship between SRB and QOL. Odds ratios (OR) and 95% confidence intervals were obtained, and the Phi coefficient was calculated as a second effect size. It was interpreted as small when results were less than 0.10, moderate when less than 0.30, and large when less than 0.50. A 5% significance level was adopted in all analyses. To generate low and high QOL values, the 33rd percentile was used as the cut-off point for the overall index or for each of the QOL domains; when the score was less than the 33rd percentile, the QOL was considered to be low. For the multivariate logistic regression models, the interaction between and potential confounding of suicide attempt were verified for each of the following covariates: ideation, planning, and hopeless. The models were performed using the backward stepwise method (likelihood ratio). Multicollinearity was evaluated using the variance inflation factor (which considers a value of up to 10 to be acceptable) and tolerance (which considers a value of less than 0.1 to be problematic). To evaluate goodness of fit, the Hosmer-Lemeshow test was utilized. A significance level of 5% was used in all analyses. The SPSS V20 statistical software package was used (SPSS Inc., Chicago, IL, USA).

Results

The final sample consisted of 899 students. The mean age was 15.45 years (SD0.87), and the range was 14 to 18 years of age. A total of 97.6% were single, and 80.8% of students did not work.

In the last year, 17.2% of the sample reported having felt sad or hopeless every day for 2 or more weeks, 6.4% reported having seriously considered committing suicide, 6.1% had made a plan to commit suicide, and 7.6% actually attempted to commit suicide. Finally, 6.4% reported having thought about or planned on committing suicide in the last month. The results by gender can be found in Table 1. Females had a 1.7 to 2 times higher probability of exhibiting suicidal behavior than males in 4 of the 5 behaviors measured.

The prevalence of low QOL was 33.3% overall, 31.6% in the general domain, 35.5% in the personal domain, 34.3% in the relational domain, and 36.9% in the environmental domain. The prevalence of low QOL according to gender can be found in Table 2. Females had a higher probability of lower scores in the general and personal domains than males.

In terms of SRB in females, the probability of a low QOL overall was between 2.8 and 7.6 times higher overall and in all specific domains compared to males (Table 3). The behavior that most increased the likelihood of a low QOL was having made a plan to commit suicide in the last year, which increased the probability of a low QOL by between 5.6 and 7.6 times and possibly even higher for the relational domain. The effect sizes based on the Phi coefficient were small in all cases (between 0.15 and 0.28), except for the case of having felt sad or hopeless, which attained moderate overall (0.34), personal domain (0.35), relational domain (0.30), and environmental domain (0.34) results.

In the case of males (Table 4), the presence of SRB increased the probability of a low QOL index overall and among all domains by between 2.1 and 13.4 times. The effect sizes based on the Phi coefficient were small in all cases (between 0.12 and 0.29).

To be able to identify which SRB variables studied best explained QOL, multivariate regression models were performed by gender (Table 5). There were no collinearity problems, verified based on tolerance, which was greater than 0.1

Table 1. Prevalence of suicide risk behavior in adolescent high school students by gender.

Suicidal-related behavior	Females ^b (n = 485)	Males ^b (n = 404)	OR	95% CI
Hopeless ^a	20.6	13.1	1.7**	1.2-2.5
Ideation ^a	8.0	4.5	1.9*	1.0-3.3
Planning ^a	7.0	5.0	1.5	0.8-2.6
Attempt ^a	9.7	5.2	2.0*	1.1-3.3
Ideation or planning in the last month	8.2	4.2	2.0*	1.1-3.7

OR, odds ratio; CI, confidence interval.

^a Students were asked whether they presented this behavior in the last 12 months. ^b Percentages are shown in the cells.

* p < 0.05. ** p < 0.01.

Table 2. Prevalence of low quality of life in high school students by gender.

Low quality of life	Females ^a (n = 485)	Males ^a (n = 404)	OR	95% CI
Overall index	36.1	30	1.3	1.0-1.75
General domain	35.1	27.5	1.4*	1.1-2.0
Personal domain	40.4	29.7	1.6**	1.2-2.1
Relational domain	36.9	31.2	1.3	1.0-1.7
Environmental domain	35.5	38.9	0.9	0.6-1.1

Low quality of life is ≤ 33 percentile; OR, odds ratio; CI, confidence interval.

^a Percentages are shown in the cells.

* p < 0.05, ** p < 0.01

Table 3. Suicidal-related behaviors and low quality of life in female high school students (n = 485).

Suicidal-related behaviors	Overall index		General domain		Personal domain	
	I (n = 175)	OR (95% CI)	I (n = 170)	OR (95% CI)	I (n = 176)	OR (95% CI)
Hopeless ^a		5.5 (3.4-8.9)***		4.4(3.0-6.3)***		6.1(3.7-10.1)***
No	27.8		28.3		31.7	
Yes	68.0		61.0		74.0	
Ideation ^a		5.2 (2.5-10.7)***		5.8(3.2-10.4)***		5.6(2.6-12.1)***
No	33.0		32.3		37.2	
Yes	71.8		66.7		76.9	
Planning ^a		5.6 (2.5-12.2)***		6.4 (3.4-11.8)***		6.4(2.7-15.1)***
No	33.3		31.9		37.5	
Yes	73.5		76.5		79.4	
Attempt ^a		3.6 (1.9-6.7)***		3.2(1.9-5.3)***		3.2(1.7-6.0)***
No	33.1		32.6		37.7	
Yes	63.8		57.4		66.0	
Ideation or planning in the last month		4.2(2.1-8.3)***		5.3(3.0-9.4)***		6.8(3.1-15.2)***
No	33.3		31.7		36.9	
Yes	67.5		72.5		80.0	

Suicidal-related behaviors	Relational domain		Environmental domain	
	I (n = 179)	OR (95% CI)	I (n = 171)	OR (95% CI)
Hopeless ^a		4.4(2.7-7.0)***		5.5(3.4-8.8)***
No	29.6		27.0	
Yes	65.0		67.0	
Ideation ^a		4.3(2.1-8.8)***		4.7(2.3-9.6)***
No	34.1		32.3	
Yes	69.2		69.2	
Planning ^a		7.6(3.2-17.8)***		6.9(3.0-15.5)***
No	33.7		32.2	
Yes	79.4		76.5	
Attempt ^a		2.8(1.5-5.2)**		2.8(1.5-5.1)**
No	34.5		32.9	
Yes	59.6		57.4	
Ideation or planning in the last month		6.0(2.8-12.5)***		4.9(2.4-10.0)***
No	33.5		32.1	
Yes	75.0		70.0	

I = Low quality of life \leq 33 percentile.

Percentages are shown in the cells below I; OR, odds ratio; CI, confidence interval. ^aStudents were asked whether they presented this behavior in the last 12 months.

*p < 0.05. **p < 0.01. ***p < 0.001.

in all cases, and on the variance inflation factor, which scored less than 10. The final female model included the behavior of having felt sad or hopeless, which increased the probability of having a low QOL by 4.69 times, and having made a plan in the last year to commit suicide, which increased this probability by 3.13 times. The

male model included 3 variables that increased the probability of a low QOL: having felt sad or hopeless, by 3.56 times; having made a plan in the last year, by 3.68 times; and having attempted suicide in the last year, by 3.72 times. The models seemed to be well adjusted, but the percentage explaining the low QOL was small.

Table 4. Suicidal-related behaviors and low quality of life in male high school students (n = 404).

Suicidal-related behaviors	Overall index		General domain		Personal domain	
	I (n = 121)	OR (95% CI)	I (n = 111)	OR (95% CI)	I (n = 120)	OR (95% CI)
Hopeless ^a		4.9(2.7-9.0)***		4.8(2.6-8.7)***		5.5(3.0-10.2)***
No	25.1		22.8		24.5	
Yes	62.3		58.5		64.2	
Ideation ^a		9.1(2.9-28.3)***		10.4(3.3-32.4)***		13.4(3.8-47.2)***
No	27.7		25.1		27.2	
Yes	77.8		77.8		83.3	
Planning ^a		7.9(2.8-22.2)***		5.4(2.1-14.0)***		8.0(2.8-22.5)***
No	27.6		25.5		27.3	
Yes	75		65		75	
Attempt ^a		5.2(2.0-13.1)***		3.8(1.6-9.3)**		4.2(1.7-10.4)**
No	27.9		25.8		27.9	
Yes	66.7		57.1		61.9	
Ideation or planning in the last month		8.4(2.-26.3)***		4.0(1.5-10.9)**		8.5(2.7-26.7)***
No	27.9		26.1		27.6	
Yes	76.5		58.8		76.5	
Suicidal-related behaviors	Relational domain		Environmental domain			
	I (n = 126)	OR (95% CI)	I (n = 157)	OR (95% CI)		
Hopeless ^a		2.2(1.2-4.0)**		2.1(1.2-3.8)*		
No	28.8		36.5			
Yes	47.2		54.7			
Ideation ^a		3.7(1.4-9.8)**		3.3(1.2-9.0)*		
No	29.8		37.6			
Yes	61.1		66.7			
Planning ^a		4.4(1.7-11.4)**		5.1(1.8-14.4)**		
No	29.4		37			
Yes	65		75			
Attempt ^a		3.1(1.3-7.7)**		3.4(1.3-8.5)**		
No	29.8		37.3			
Yes	57.1		66.7			
Ideation or planning in the last month		5.7(2.0-16.7)***		5.5(1.7-17.1)**		
No	29.5		37.2			
Yes	70.6		76.5			

I = Low quality of life \leq 33 percentile. Percentages are shown in the cells below I; OR, odds ratio; CI, confidence interval.

^a Students were asked whether they presented this behavior in the last 12 months.

* $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$.

Discussion

This study aimed to analyze the association between SRB and QOL according to gender in high school students. The separate analyses among females and males show that SRB was associated with QOL and that it was the behavior of hav-

ing felt sad or hopeless for at least 2 weeks in the last year that presented the greatest effect sizes. The regression models show that some SRBs increased the possibility of a lower QOL even after adjusting for covariates.

The results show a higher prevalence of SRB in females compared to males, except in making a

Table 5. Multivariate logistic regression models between Suicidal-related behavior and quality of life in male and female Mexican adolescents, adjusted for covariates.

Predictor variables	Female model (n = 485)				Male model (n = 404)			
	B	SE	OR _{adjusted}	CI 95%	B	SE	OR _{adjusted}	CI 95%
Hopeless			1				1	
No								
Yes	1.55	0.25	4.69***	2.87-7.65	1.27	0.52	3.56*	1.29-9.86
Planning in the last year			1				1	
No								
Yes	1.14	0.43	3.13**	1.34-7.29	1.30	0.33	3.68***	1.93-7.01
Attempt			1				1	
No	-	-	-	-	1.31	0.60		
Yes	-	-	-	-	1.31	0.58	3.72*	1.19-11.66
<i>Hosmer-Lemeshow</i>				0.71				0.11
<i>goodness-of-fit, X²</i>								
<i>P value</i>				0.40				0.74
<i>Cox & Snell R²</i>				0.12				0.10
<i>Nagelkerke R²_N</i>				0.16				0.14

The hyphen (-) means that the variable did not appear in the final model.

B = B-coefficient, SE = Standard B error.

OR, odds ratio;

CI, confidence interval. QOL = Quality of life: The cut-off point corresponds to the 33 percentile of the entire population.

* p < 0.05, ** p < 0.01, *** p < 0.001.

plan to commit suicide. Although the prevalence of this behavior was greater in females compared to males, the difference was not significant. These results are in the same general direction as those found in previous studies²⁵. The factors that explained the higher prevalence of actual suicide in males compared to females are likely due to the selection of more lethal methods among males. By contrast, it is the perception of negative mental health that seemed to play an important role among females in the decision to attempt suicide, as noted by Thatcher et al.¹² Females most likely have a higher sensitivity to their perceived mental health than men due to their well-formed cultural characteristics and their social and biological role in the care of children. QOL is greater in males compared to females in personal and relational domains, and these results are similar to those in other studies²⁶. The explanation for these differences may be related to the theory proposed by Ferrans et al.²⁷, which states that individual factors, including biological and social characteristics such as the socioeconomic level, might negatively affect females in their perception of QOL in these domains.

The relationship between SRB and QOL was significant, although the effect sizes were small, except for the behavior of feeling sad or hopeless. The finding that the effect sizes were small is not surprising because QOL is a multidimensional behavior, and as such, there are innumerable individual and environmental variables that influence this result. Although SRBs are events that can have an enormous impact on life, there are also other events that are important in explaining a person's perception of his or her life. Indeed, there may have been events that neutralize the manner in which SRBs are associated with QOL, among them the relationship with significant people such as family members and/or friends, as reported by Thatcher et al.¹².

In the regression models separated by males and females, 2 behaviors together seem to increase the possibility of a lower QOL: hopeless and having made a plan to commit suicide in the last year. With respect to having made a plan to commit suicide, this is an advanced step that can feasibly lead to suicide. Most likely the fact that people concentrate on or dedicate time to this action implies that there are specific parts of

their lives that are not going well. With respect to suicide attempt, it is noteworthy that this behavior was present in the male model but not in the female model. International epidemiological research has shown that females attempt suicide more than males, although males are more successful²⁸ due to the methods that they use, increasing their likelihood of success^{29,30}. This phenomenon may partly explain the finding that the multivariate model for females did not include suicide attempt, given that females often use softer methods that might go unnoticed by family members and friends, reducing its impact on the relational domain of QOL. Another hypothesis is that female QOL is not as affected by suicide attempts as male QOL because suicide attempts may be suppressed by females' ability to be interdependent, talk with friends, and accept help, which females seem to exhibit more highly³¹. This situation is very different for males, who are less likely to ask for help through medical care than females³².

One of the limitations of this study is the cross-sectional design, which does not allow causal relationships to be determined. Thus, it is not possible with these data to determine whether a low QOL causes SRB or whether it is SRB that leads to a lower QOL. Another limitation is that some schools had internet signal problems or a reduced quantity of computers available for the study period, which made it difficult to survey a larger student population. This non-probabilistic sample limits the generalizations that can be made from the findings, although the homogeneity of the socioeconomic characteristics of the students may be truly reflective of this region.

Given that the findings of our study show that hopeless and planning are important among both males and females in increasing the likelihood of a low QOL, school administrators should pay as much importance to persons who have made a suicide attempt as to those who show permanently sad behavior, seem absorbed in themselves, stop eating, stop bathing, or miss school. Secondary school mental health services may teach protective prevention strategies that are able to surmount sad or hopeless states using social or school resources by stimulating other quality of life aspects, such as relationships with significant people, or the development of new life skills, such as communicating and expressing emotions. The administration of systematic QOL exams through risk and quality of life observation may allow high-risk cases or groups to be identified in a timely manner to facilitate early intervention.

Collaborations

C Hidalgo-Rasmussen and A Hidalgo-San Martín contributed to the conception, design, development, analysis, and elaboration of the manuscript. The authors approved the final version for publication.

References

1. Organización Mundial de la Salud. *Prevención Del Suicidio: Un Imperativo Global*. Washington: World Health Organization; 2014. [acceso 2014 oct 22]. Disponible en: http://apps.who.int/iris/bitstream/10665/136083/1/9789275318508_spa.pdf?ua=1
2. Beck AT. *Depression: Clinical, Experimental, and Theoretical Aspects*. New York: Harper & Row; 1967.
3. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders*. Washington: American Psychiatric Association; 2013.
4. Bagge CL, Lamis DA, Nadorff M, Osman A. Relations between hopelessness, depressive symptoms and suicidality: mediation by reasons for living. *J Clin Psychol* 2014; 70(1):18-31.
5. Nock MK, Borges G, Bromet EJ, Cha CB, Kessler RC, Lee S. Suicide and suicidal behavior. *Epidemiol Rev* 2008; 30(1):133-154.
6. Borges G, Orozco R, Benjet C, Medina-Mora ME. Suicide and suicidal behaviors in Mexico: Retrospective and current status. *Salud Publica Mex* 2010; 52(4):292-304.
7. Bridge JA, Goldstein TR, Brent DA. Adolescent suicide and suicidal behavior. *J Child Psychol psychiatry* 2006; 47(3-4):372-394.
8. WHOQOL Group. Study protocol for the World Health Organization project to develop a Quality of Life assessment instrument (WHOQOL). *Qual Life Res* 1993; 2(2):153-159.
9. De Abreu LN, Lafer B, Baca-Garcia E, Oquendo MA. Suicidal ideation and suicide attempts in bipolar disorder type I: An update for the clinician. *Rev Bras Psiquiatr* 2009; 31(3):271-280.
10. Kwon J-W, Kim J-H. The Impact of Health-Related Quality of Life on Suicidal Ideation and Suicide Attempts among Korean Older Adults. *J Gerontol Nurs* 2012; 38(11):48-59.
11. Lester D. Youth suicide: a cross-cultural perspective. *Adolescence* 1988; 23(92):955-958.
12. Thatcher WG, Reininger BM, Drane JW. Using path analysis to examine adolescent suicide attempts, life satisfaction, and health risk behavior. *J Sch Health* 2002; 72(2):71-77.
13. Valois RF, Zullig KJ, Huebner ES, Drane JW. Life Satisfaction and Suicide among High School Adolescents. *Soc Indic Res Ser* 2004; 66(1/2):81-105.
14. Resch F, Parzer P, Brunner R. Self-mutilation and suicidal behaviour in children and adolescents: prevalence and psychosocial correlates: results of the BELLA study. *Eur Child Adolesc Psychiatry* 2008; 17(Supl. 1):92-98.
15. Bae S, Ye R, Chen S, Rivers PA, Singh KP. Risky behaviors and factors associated with suicide attempt in adolescents. *Arch Suicide Res* 2005; 9(2):193-202.
16. Michel G, Bisegger C, Fuhr DC, Abel T. Age and gender differences in health-related quality of life of children and adolescents in Europe: a multilevel analysis. *Qual Life Res* 2009; 18(9):1147-1157.
17. Abasse MLE, Oliveira RC de, Silva TC, Souza ER de. Análise epidemiológica da morbimortalidade por suicídio entre adolescentes em Minas Gerais, Brasil. *Cien Saude Colet* 2009; 14(2):407-416.
18. American Psychological Association. Centers for Disease Control and Prevention. State and local Youth Risk Behavior Survey. *PsycExtra* 2007; 1.
19. Patrick DL, Edwards T, Topolski T, Walwick JA. Youth Quality of Life: A New Measure Incorporating the Voices of Adolescents. *QoL Newsl* 2002; (28):7-8.
20. Patrick DL, Edwards TC, Topolski TD. Adolescent quality of Life, Part II: initial validation of a new instrument. *J Adolesc* 2002;25(3):287-300.
21. Wee H-L, Ravens-Sieberer U, Erhart M, Li S-C. Factor structure of the Singapore English version of the KINDL children quality of life questionnaire. *Health Qual Life Outcomes*; 2007; 5:4.
22. Hidalgo-Rasmussen CA, Hidalgo-San-Martín A, Rasmussen-Cruz B, Montaña-Espinoza R. Calidad de vida, según percepción y comportamientos de control del peso por género, en estudiantes universitarios adolescentes en México. *Cad Saude Publica* 2011; 27(1):67-77.
23. Hidalgo-Rasmussen CA, Ramírez-López G, Hidalgo-San Martín A. Actividad física, conductas sedentarias y calidad de vida en adolescentes universitarios de Ciudad Guzmán, Jalisco, México. *Cien Saude Colet* 2013; 18(7):1943-1952.
24. Aaronson N, Alonso J, Burnam A, Lohr KN, Patrick DL, Perrin E, Stein RE. Assessing health status and quality-of-life instruments: attributes and review criteria. *Qual Life Res* 2002; 11(3):193-205.
25. Mann JJ, Currier D. Suicide and attempted suicide. In: Fatemi SH, Clayton PJ, Sartorius N, editors. *The Medical Basis of Psychiatry*. 3th ed. Clifton: Humana Press; 2008. p. 561-576.
26. Vélez Galárraga R, López Aguilà S, Rajmil L. Género y salud percibida en la infancia y adolescencia en España. *Gac Sanit* 2009; 23(5):433-4394.
27. Ferrans CE, Zerwic JJ, Wilbur JE, Larson JL. Conceptual model of health-related quality of life. *J Nurs Schol arsh* 2005; 37(4):336-342.
28. Cibis A, Mergl R, Bramesfeld A, Althaus D, Niklewski G, Schmidtke A, Hegerl U. Preference of lethal methods is not the only cause for higher suicide rates in males. *J Affect Disord* 2012; 136(1-2):9-16.
29. Langhinrichsen-Rohling J, Friend J, Powell A. Adolescent suicide, gender, and culture: A rate and risk factor analysis. *Aggress Violent Behav* 2009; 14(5):402-414.
30. Schrijvers DL, Bollen J, Sabbe BGC. The gender paradox in suicidal behavior and its impact on the suicidal process. *J Affect Disord* 2012; 138(1-2):19-26.
31. Murphy GE. Why women are less likely than men to commit suicide. *Compr Psychiatry* 1998; 39(4):165-175.
32. Addis ME, Mahalik JR. Men, masculinity, and the contexts of help seeking. *Am Psychol* 2003; 58(1):5-14.

Article submitted 17/11/2014

Approved 20/03/2015

Final version approved 22/03/2015

