ORIGINAL ARTICLE

Suicidal ideation estimated with the Plutchik Suicide Risk Scale among resident physicians from two health institutions in Ciudad Obregon, Sonora, Mexico

Juan Antonio Lugo Machado* [1]; Marcela Morales Escobar [1]; Martha Lucía Gutiérrez Pérez [2,a]; Elizabeth Medina Valentón [3]; Patricia Emiliana García Ramírez [3]; Ana Luisa Escobar Morales [4,b]

ABSTRACT

Objective: To evaluate the incidence and factors associated with suicidal ideation in a sample of resident physicians from two institutions.
Materials and methods: A descriptive, observational, prospective and cross-sectional study was carried out to estimate the suicidal ideation and associated factors with the Plutchik Suicide Risk Scale among resident physicians from two hospitals between September and October 2022. Descriptive statistics were used with measures of central tendency and dispersion, as well as relative and absolute frequencies. In addition, Pearson's chi-square goodness of fit test and Kruskal-Wallis *H* test were used to examine the differences between specialties, and Tukey's Honest Significant Difference test to determine which specialty was different.
Results: A total of 225 surveys were answered, out of which 20 were eliminated due to inadequate completion, leaving 205 complete surveys for analysis. The average age was 28.66 years (SD ± 2.360) and 71.2 % were females. Concerning the specialties, pediatrics was found in 28.8 % of the respondents and anesthesiology in 20.5 %. A significant association between specialties with a value of $p = 0.0000$ and academic degrees with $p = 0.003$ ($p \leq 0.05$) was evidenced. Differences regarding suicidal ideation were found by specialty: Kruskal-Wallis *H* test showed a value of $p = 0.000$ and Tukey's Honest Significant Difference test revealed that the specialty of gynecology was the different one.
Conclusions: According to the results of the study sample, approximately one fourth of the resident physicians had suicidal ideation. Its prevalence in this sample showed no significant difference with respect to its incidence in Latin America. An association between suicidal ideation, medical specialties and academic degree was found. As for the comparison between specialties, gynecology was the one with the highest suicidal ideation rate. This work had some limitations; for example, the groups were very heterogeneous, a probabilistic selection technique was not used, and the statistical tests were nonparametric.

Keywords: Suicide; Physicians; Internship and Residency; Education, Graduate (Source: MeSH NLM).

INTRODUCTION

In 1974, Beck, Weissman, Lester and Trexler created the concept of suicide risk, which is understood as any act aimed at deliberately inflicting harm on oneself, regardless of the degree of lethality, and includes self-injurious behaviors, suicidal ideation and previous suicide attempt [(1)]. Currently, there are multiple scales to assess suicidal ideation, such as the Columbia-Suicide Severity Rating Scale [(2)], the Suicide Assessment Five-Step Evaluation and Triage [(3)], the Beck Scale for Suicidal Ideation [(4)], among others; however, the Plutchik and Van Praag Suicide Risk Scale is a simpler instrument [(5)] since it makes a discrimination between cases in which there was or was not a suicide attempt in the past [(6)].

According to the World Health Organization, more than 700,000 people worldwide die by suicide each year. Suicide is the fourth leading cause of death among people aged 15 to 29 years and the third leading cause of death among girls aged 15 to 19 years [(7)]. Physicians are one of the groups at high risk for suicide [(2,3)].

Some authors place suicide as the third leading cause of death among young adults. Although suicide rates vary worldwide,

1 Hospital General de Cd. Obregón, Secretaría de Salubridad y Asistencia (Secretariat of Health). Ciudad Obregon, Sonora, Mexico.
2 Universidad El Bosque. Bogotá, Colombia.
3 Hospital de Especialidades N.º 2 "Lic. Luis Donaldo Colosio Murrieta," Instituto Mexicano del Seguro Social (Mexican Social Security Institute). Ciudad Obregon, Sonora, Mexico.
4 Universidad de Sonora, Cajeme campus. Ciudad Obregon, Sonora, Mexico.
[a] Doctor of Medicine, leader and founder of the Otorhinolaryngology Interest Group – Universidad El Bosque (ORLIG-UEB); [b] Medical graduate.
*Corresponding author.

the highest rates occur in developed and high-income countries compared to developing countries [8].

For example, in Eastern Europe, Southeast Asia and countries such as South Korea and Russia, suicide rates exceed 20 cases per 100,000 people; whereas, in North Africa, Middle East and some Latin American countries, lower rates are reported, with five cases per 100,000 people [9].

An increase in suicide rates has been observed in Mexico. It has been estimated that, from 2000 to 2012, the suicide rate increased by approximately 17.1 % [10]. In 2017, the suicide rate in Mexico was 5.31 per 100,000 people [11]. In addition, the incidence of suicidal behavior in Mexico City has also increased [10].

Medical training—from undergraduate studies—leads to a high prevalence of anxiety, depression and stress, which is widely documented [12-14]. A systematic review and meta-analysis of depression among physicians in undergraduate training performed by Rotenstein et al. [13] found a prevalence of 27.2 %, with a range of 9.3 % to 55.9 %, which means that it is 2 to 5 times higher than in the general population. The reported prevalence of suicidal ideation was 11.1 %, with a range of 7.4 % to 24.2 % [13].

A Canadian study conducted by Laramée et al. in 2019 identified a high rate of suicidal ideation and burnout among Canadian family medicine residents [15].

A study carried out in Egypt [16] reported high numbers of suicidal ideation among medical students. However, in the United States [17], the suicide rate was lower in medical residents compared to the general population, and suicidal ideation might be more closely associated with depression and burnout. This situation makes us question where we stand as hospitals and schools training medical specialists.

On the other hand, one study found that approximately 300 to 400 practicing physicians died by suicide each year [18], and another showed that one out of 16 surgeons reported suicidal ideation [8]. Other studies revealed that resident physicians had a higher risk of depressive disorders, low mood, burnout and suicidal ideation than their peers in the general population [12,19].

A study conducted in the Netherlands showed that 12 % of resident physicians reported suicidal ideation at least once during their training and 1 % of them had these thoughts several times [12].

A study claims that the prevalence of suicidal ideation among medical students in Latin America is 13.85 % [20]. For their part, Lozano-Mundo et al. [21] reported 14 % in a sample of resident physicians in Jalisco, Mexico, and Jiménez et al. found a suicide risk of 7.4 % in resident physicians in Mexico City [22,29]. Another research, such as that of Jordán Alfonso et al. in Paraguay, described higher rates of suicidal ideation (16.2 %) than in the general population [23]. According to 2017 data from the Instituto Nacional de Estadística y Geografía (INEGI – National Institute of Statistics and Geography) in Mexico, Sonora ranked third below Aguascalientes and Chihuahua, where higher suicide rates are concentrated in the general population [24].

However, statistics on resident physicians are very scarce in this region, so the present study will discuss the prevalence of suicidal ideation in the study population.

MATERIALS AND METHODS

Study design and population

An analytical, observational, prospective and cross-sectional study carried out in resident physicians from two health institutions in Ciudad Obregon, Sonora, Mexico, from September to October 2022. Such physicians were chosen using non-probability sampling and consecutive case series, and answered the instrument.

Variables and measurements

The study variables were age, sex, academic degree, marital status, physical activity, federal entity of origin and instrument result. The event score allowed identifying physicians with suicidal ideation when their scores were ≥ 6 points [25]; a questionnaire with the Plutchik Suicide Risk Scale (PSRS) was sent via Google Forms.

The PSRS includes 15 items, and its purpose is to estimate suicidal ideation [26,28]. This scale has been validated in Spanish for Latin Americans [26,27], Mexicans [22] and health professionals [28,29], as well as for resident physicians of different specialties.

Statistical analysis

Descriptive statistics were used with means, standard deviation, as well as relative and absolute frequencies. Tables were employed for their representation; additionally, Pearson's chi-square goodness of fit test was used to compare the proportions of suicidal ideation with other non-physician groups.

Pearson's chi-square goodness of fit test was also employed to analyze the association between demographic variables and suicidal ideation in the study sample, where $p \leq 0.05$ was considered significant. Finally, the Kruskal-Wallis H test was used to examine the differences between specialties and suicidal ideation, and Tukey's Honest Significant Difference test to determine which specialty was different. After coding in Microsoft Excel 2013, IBM Statistical Package of Social Sciences (SPSS) Statistics V24

in Spanish was employed for analysis; tables were used for interpretation.

Ethical considerations

Personal data were protected in accordance with the Federal Law on Protection of Personal Data Held by Private Parties, stipulated in the Diario Oficial de la Federación (DOF – Official Gazette of the Federation, dated July 5, 2010).

RESULTS

A total of 225 surveys were answered, out of which 20 were eliminated due to inadequate completion, leaving 205. The average age was 28.66 years (SD ± 2.360); with respect to sex, 71.2 % were females and 28.8 % males. As for the federal entity of origin, 49.8 % were from the state of Sonora, 17.6 % from Sinaloa, 9.8 % from Baja California and 22.9 % from other states.

The average number of first-year resident physicians was 63.4 %; second-year 22.4 %; third-year 11.2 % and fourth-year 2.9 %. Concerning the specialties, pediatrics registered 28.8 %, general surgery 13.7 %, internal medicine and gynecology 10.2 %, otorhinolaryngology 7.8 %, nephrology and traumatology 2.9 %, and radiology and ophthalmology 2.5 %.

According to the relationship status of the resident physicians (being with or without a partner), the average number of residents without a partner was 60.5 % and with a partner 39.5 %. In relation to the daily working hours, it was found that 73.2 % work more than 12 hours, while 26.8 % work 11 hours or less. Regarding the suicidal ideation established with the PSRS, an average of 76.6 % of residents had a negative test and 23.4 % a positive one.

By using Pearson's chi-square goodness of fit test to analyze the association with some variables and the possibility of having a positive test for suicidal ideation, a significant association between specialties with $p = 0.0000$ and academic degrees with $p = 0.003$ ($p \leq 0.05$) was evidenced. On the other hand, sex ($p = 0.165$), federal entity of origin ($p = 0.320$), being with or without a partner ($p = 0.317$), daily working hours ($p = 0\ .744$) and physical activity ($p = 0.805$) did not show a significant association (Table 1).

Table 1. Summary of the survey of 205 resident physicians of different specialties from two health institutions in Ciudad Obregon, Sonora, Mexico

Personal characteristics	Demographic characteristics	*n*	%	*p* value ($p \leq 0.05$)
Sex	Female	146	71.21	0.165
	Male	59	28.81	
Federal entity of origin	Baja California	20	9.82	0.320
	Sonora	102	49.8	
	Sinaloa	36	17.61	
	Others	47	22.90	
Academic degree	First year	130	63.42	0.003
	Second year	46	22.42	
	Third year	23	11.23	
	Fourth year	6	2.90	
Specialty	Anesthesiology	42	20.51	0.0000
	General surgery	28	13.72	
	Gynecology	21	10.21	
	Internal medicine	21	10.24	
	Nephrology	6	2.92	
	Ophthalmology	3	1.54	
	Otorhinolaryngology	16	7.81	
	Pediatrics	59	28.83	
	Radiology	3	1.53	
	Traumatology	6	2.91	
Relationship status	Without a partner	124	60.53	0.317
	With a partner	81	39.56	

Personal characteristics	Demographic characteristics	*n*	%	*p* value ($p \leq 0.05$)
Daily working hours	≤ 11 hours/day	55	26.82	0.744
	≥ 12 hours/day	150	73.2	
Physical activity	Yes	80	39.00	
	No	125	61.00	
Plutchik Suicide Risk Scale results	Negative	157	76.71	0.805
	Positive	48	23.42	

Source: Surveys from September to October 2022, Hospital de Especialidades N.º 2 and Hospital Materno-Infantil, Ciudad Obregon, Sonora, Mexico.

The PSRS yielded a 23.4 % positivity of suicidal ideation in the sample of 205 resident physicians. Pearson's chi-square goodness of fit test did not find significant differences between the sample reported by Denis-Rodríguez et al. [20] in Latin America with a prevalence of 13.85 % and the sample of this study with $p = 0.139$ ($p \leq 0.05$).

In order to establish if there were differences regarding suicidal ideation between the groups of resident physicians by specialty, the Kruskal-Wallis *H* test, which is used to evaluate more than two groups, showed a value of $p = 0.000$. Additionally, in order to know which group was different, Tukey's Honest Significant Difference test revealed that the specialty of gynecology was the different one.

DISCUSSION

Suicidal ideation includes thoughts of being the agent of one's own death, while a suicide attempt is a self-injurious behavior with non-fatal outcomes accompanied by implicit evidence that the person intended to die by suicide [15]. In a Mexican study on causes of death, a 70 % mortality rate by suicide was found among students and health professionals, which is higher than in other professionals [30]. Studies conducted more than 20 years ago [32-34] as well as more recent ones [34,16,17] have reported higher rates of depression and anxiety, above those observed in the general population. In a 2017 meta-analysis conducted in Latin America, Denis-Rodriguez et al. [20] noted a prevalence of 13.85 %, which is lower than that found in the sample of the present study, which accounted for 23.44 %. However, the results of this study were lower than those described by Deschamps et al. [36] in the United States, with 33.3 %; higher than those found by Laramée et al. [15] in Canada, with 12.8 %; but similar to those reported by Mortier et al. [36], with 23.3 %.

When performing Pearson's chi-square goodness of fit test, no significant differences were found between the sample of this study and that reported by Denis-Rodríguez et al. [20] in Latin America.

Based on the demographic characteristics, the present study showed that there was a higher proportion of female residents, different from that reported by Jiménez-López et al. [22] in a sample of 108 residents in Mexico City, but similar to that described by authors such as Laramée et al. [15] in a sample of 109 family medicine residents. As for the average age, this study found similar results to those described by Jiménez-López et al [22].

With respect to the specialties included in the sample of this study, pediatrics was the most common specialty, followed by anesthesiology; while in the study by Jiménez-López et al. [22], general surgery was the most common specialty, followed by anesthesiology.

Suicidal ideation and male or female sex did not show a significant association, nor did physical activity or daily working hours greater than 12 or less than 11 hours, which differs from the study conducted by Grasdalsmoen et al [37] in Norway. However, a Japanese study found a higher risk of depression and thus a greater possibility of suicidal ideation [38].

In this study, no significant association was found with regard to the relationship status (being with or without a partner); however, Kyung-Sook et al. [39] point out in their study that suicide occurs more frequently in unmarried people compared to their married counterparts. The federal entity of origin did not have a significant association in the present study.

When evaluating the association with a specific specialty, the research by van der Heijden et al. [40] found that psychiatry residents had more frequent suicidal ideation, unlike the sample of this study, where the specialty that showed a difference was gynecology. However, the sample of the present study did not include residents of the specialty of psychiatry, since both hospitals do not cover this branch of medicine.

In conclusion, according to the results of the study sample, one fifth of the resident physicians had suicidal ideation and the prevalence in this sample showed no significant difference with respect to its incidence in Latin American. In addition, an association between suicidal ideation, medical specialties and academic degree was found. Regarding the comparison of specialties, gynecology presented the highest suicidal ideation.

This study had some limitations; for example, the groups were very heterogeneous, a probabilistic selection technique was not used, and the statistical tests were nonparametric. More-homogeneous research groups are proposed to reduce biases, as well as a normal distribution to conduct more-robust statistical tests than nonparametric ones.

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BIBLIOGRAPHIC REFERENCES

1. Beck AT, Weissman A, Lester D, Trexler L. The measurement of pessimism: the hopelessness scale. J Consult Clin Psychol [Internet]. 1974;42(6):861–5.
2. Kilincaslan A, Gunes A, Eskin M, Madan A. Linguistic adaptation and psychometric properties of the Columbia-Suicide Severity Rating Scale among a heterogeneous sample of adolescents in Turkey. Int J Psychiatry Med [Internet]. 2019;54(2):115–32.
3. Fowler JC. Suicide risk assessment in clinical practice: pragmatic guidelines for imperfect assessments. Psychotherapy [Internet]. 2012;49(1):81–90.
4. Kliem S, Lohmann A, Mößle T, Brähler E. German Beck Scale for Suicide Ideation (BSS): psychometric properties from a representative population survey. BMC Psychiatry [Internet]. 2017;17(1):389.
5. Plutchik R, van Praag HM, Conte HR. Correlates of suicide and violence risk: III. A two-stage model of countervailing forces. Psychiatry Res [Internet]. 1989;28(2):215–25.
6. Santana-Campas MA, Santoyo Telles F. Propiedades psicométricas de la escala riesgo suicida de Plutchik en una muestra de jóvenes mexicanos privados de la libertad. avpsicol [Internet]. 2018;26(1):57–64.
7. World Health Organization. Promoting Mental Health [Internet]. WHO; 2004. Available from: https://apps.who.int/iris/bitstream/handle/10665/42940/9241591595.pdf
8. Shanafelt TD, Balch CM, Dyrbye L, Bechamps G, Russell T, Satele D, et al. Special report: suicidal ideation among American surgeons: Suicidal ideation among American surgeons. Arch Surg [Internet]. 2011;146(1):54–62.
9. Nicolini H, Sánchez-de la Cruz JP, Castillo Avila RG, López-Narvaéz ML, González-Castro TB, Chávez-Manjarrez S, et al. Gender differences in suicide and homicide rates in Mexico City during 2019. Int J Environ Res Public Health [Internet]. 2022;19(14):8840.
10. Borges G, Benjet C, Orozco R, Medina-Mora M-E. The growth of suicide ideation, plan and attempt among young adults in the Mexico City metropolitan area. Epidemiol Psychiatr Sci [Internet]. 2017;26(6):635–43.
11. Cervantes CAD, Montaño AMP. Estudio de la carga de la mortalidad por suicidio en México 1990-2017. Rev Bras Epidemiol [Internet]. 2020;23:e200069.
12. Dyrbye LN, West CP, Satele D, Boone S, Tan L, Sloan J, et al. Burnout among U.S. medical students, residents, and early career physicians relative to the general U.S. population. Acad Med [Internet]. 2014;89(3):443–51.
13. Rotenstein LS, Ramos MA, Torre M, Segal JB, Peluso MJ, Guille C, et al. Prevalence of depression, depressive symptoms, and suicidal ideation among medical students: A systematic review and meta-analysis. JAMA [Internet]. 2016;316(21):2214-36.
14. Karp JF, Levine AS. Mental health services for medical students-time to act. N Engl J Med [Internet]. 2018;379(13):1196–8.
15. Laramée J, Kuhl D. Suicidal ideation among family practice residents at the University of British Columbia. Can Fam Physician. 2019;65(10):730–5.
16. Mohamed MY, Elbatrawy AN, Mahmoud DAM, Mohamed MM, Rabie ES. Depression and suicidal ideations in relation to occupational stress in a sample of Egyptian medical residents. Int J Soc Psychiatry [Internet]. 2023;69(1):14–22.
17. Jacob S, Tabraiz R, Raai H. Relationship between residency burnout and suicidal risk in the resident physician population. European Psychiatry [Internet]. 2023;66(1):322–3.
18. Center C, Davis M, Detre T, Ford DE, Hansbrough W, Hendin H, et al. Confronting depression and suicide in physicians: a consensus statement: A consensus statement. JAMA [Internet]. 2003;289(23):3161–6.
19. Moutinho Coentre R, Luisa Figueira M. Depression and suicidal behavior in medical students: A systematic review. Curr Psychiatry Rev [Internet]. 2015;11(2):86–101.
20. Denis-Rodríguez E, Barradas Alarcón ME, Delgadillo-Castillo R, Denis-Rodríguez PB, Melo-Santiesteban G. Prevalencia de la ideación suicida en estudiantes de Medicina en Latinoamérica: un meta análisis / Prevalence of Suicidal Ideation in Medical Students of Latin America: a Meta-analysis. RIDE Rev Iberoam Para Investig Desarro Educ [Internet]. 2017;8(15):387–418.
21. Lozano-Mundo M, Patiño-Trejo J, Ramírez-Palomino JA, Aldana-López J, Carmona-Huerta J. Ideación suicida y su relación con síntomas depresivos, desgaste laboral y consumo de sustancias en residentes médicos. Sal Jal [Internet]. 2022;9(1):28-34.
22. Jiménez-López JL, Arenas-Osuna J, Angeles-Garay U. Síntomas de depresión, ansiedad y riesgo de suicidio en médicos residentes durante un año académico. Rev Med Inst Mex Seguro Soc [Internet]. 2015;53(1):20-8.
23. Jordán Alfonso A, Arrom C, Capurro MH, Fresco M del P, Arrom Suhurt CM, Arrom Suhurt MA. Riesgo suicida y depresión en Residentes de un Hospital Escuela. Rev cient cienc salud [Internet]. 2022;4(2):74–82.
24. Instituto Nacional de Estadística y Geografía. Estadísticas a propósito del día mundial para la prevención del suicidio (10 de septiembre), datos nacionales [Internet]. Aguascalientes: Instituto Nacional de Estadística y Geografía; 2015. Available from: https://iplaneg.guanajuato.gob.mx/seieg/wp-content/

uploads/2022/07/dia_mundial_para_la_prevencion_del_suicidio_2015_1441829727.pdf
25. Rubio G, Montero I, Jaureguil J, Villanueva R, Casado MA, Marín JJ, et al. Validación de la escala de riesgo suicida de Plutchik en poblacion española. Arch Neurobiol [Internet]. 1998;61(2):143-52.
26. Alcázar-Córcoles MÁ, Verdejo AJ, Bouso-Sáiz JC. Psychometric properties of plutchik's impulsivity scale in juvenile spanishspeaking population. Actas Esp Psiquiatr [Internet]. 2015;43(5):161-9.
27. Yuly SC, Palacio Sañudo J, Caballero-Domínguez CC, Pineda-Roa CA. Adaptación, validez de constructo y confiabilidad de la escala de riesgo suicida Plutchik en adolescentes colombianos. Rev Latinoam Psicol [Internet]. 2019;51(3):145-52.
28. Alfonso AJ, Capurro MH, Fresco M del P, Arrom Suhur CM, Arrom Suhurt MA, Arrom Suhurt C. Riesgo de salud mental durante la formación de especialistas. Rev Cient Estud Investig [Internet]. 2019;7:148.
29. Escobar-Padilla B, Márquez-González H, Consejo y Chapela C, López-Sepúlveda AC, Sepúlveda Vildósola AC. Social violence increases the risk of suicidal ideation among undergraduate medical students. Arch Med Res [Internet]. 2019;50(8):577-86.
30. Schernhammer ES, Colditz GA. Suicide rates among physicians: A quantitative and gender assessment (meta-analysis). Am J Psychiatry [Internet]. 2004;161(12):2295-302.
31. Tyssen R, Vaglum P, Grønvold NT, Ekeberg O. Suicidal ideation among medical students and young physicians: a nationwide and prospective study of prevalence and predictors. J Affect Disord [Internet]. 2001;64(1):69-79.
32. Ishikawa M. Relationships between overwork, burnout and suicidal ideation among resident physicians in hospitals in Japan with medical residency programmes: a nationwide questionnaire-based survey. BMJ Open [Internet]. 2022;12(3):e056283.
33. Bai S, Chang Q, Yao D, Zhang Y, Wu B, Shan L. The prevalence and risk factors for major depression and suicidal ideation in medical residents based on a large multi-center cross-sectional study using the propensity score-matched method. Soc Psychiatry Psychiatr Epidemiol [Internet]. 2022;57(11):2279-91.
34. Mavor KI, McNeill KG, Anderson K, Kerr A, O'Reilly E, Platow MJ. Beyond prevalence to process: the role of self and identity in medical student well-being. Med Educ [Internet]. 2014;48(4):351-60.
35. Deschamps F, Castanon J, Laraqui O, Manar N, Laraqui C, Gregoris M, et al. Professional risk factors for burnout among medical residents. J Community Med Health Educ [Internet]. 2018;08(02):1-7.
36. Mortier P, Cuijpers P, Kiekens G, Auerbach RP, Demyttenaere K, Green JG, et al. The prevalence of suicidal thoughts and behaviours among college students: a meta-analysis. Psychol Med [Internet]. 2018;48(4):554-65.
37. Grasdalsmoen M, Eriksen HR, Lønning KJ, Sivertsen B. Physical exercise, mental health problems, and suicide attempts in university students. BMC Psychiatry [Internet]. 2020;20(1):175.
38. Ogawa R, Seo E, Maeno T, Ito M, Sanuki M, Maeno T. The relationship between long working hours and depression among first-year residents in Japan. BMC Med Educ [Internet]. 2018;18(1):50.
39. Kyung-Sook W, SangSoo S, Sangjin S, Young-Jeon S. Marital status integration and suicide: A meta-analysis and meta-regression. Soc Sci Med [Internet]. 2018;197:116-26.
40. van der Heijden F, Dillingh G, Bakker A, Prins J. Suicidal thoughts among medical residents with burnout. Arch Suicide Res [Internet]. 2008;12(4):344-6.

Corresponding author:
Juan Antonio Lugo Machado
Address: Prolongación Hidalgo y Sahuaripa S/N, Ciudad Obregón. Sonora, México.
Telephone: +52 644 235 9053
Email: otorrinox@gmail.com

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ORCID iDs

Juan Antonio Lugo Machado	https://orcid.org/0000-0003-4864-8546
Marcela Morales Escobar	https://orcid.org/0000-0003-2375-8650
Martha Lucía Gutiérrez Pérez	https://orcid.org/0000-0002-5577-7082
Elizabeth Medina Valentón	https://orcid.org/0000-0003-3342-8487
Patricia Emiliana García Ramírez	https://orcid.org/0000-0002-0187-1890
Ana Luisa Escobar Morales	https://orcid.org/0000-0001-9749-4470