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Gender differences in socio-demographic, clinical characteristics and psychiatric diagnosis in/of suicide attempters in a Mexican population

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Objective: The aim of the present study was to analyse demographic and clinical characteristics, as well as psychiatric diagnoses to identify gender differences in patients with attempted suicide in a Mexican population.
Methods: Between September 2010 and September 2012, 140 suicide attempts were documented in the Department of Psychiatry at the General Hospital of Comalcalco (Hospital General de Comalcalco in Spanish) in Tabasco, Mexico. Diagnoses were established using the DSM-IV questionnaire in which Axis I and II were considered. The Suicide Intent Scale was also applied.
Results: In our sample, 63.6% were females and 36.4% males. With regard to socio-demographic characteristics, the predominant marital status in males was single, and in females married ($\chi^2 = 5.93$, df = 2, $p = 0.05$). In occupation the male group was mainly unemployed and housewife in females ($\chi^2 = 55.51$, df = 4, $p < 0.001$). Male subjects were more likely to consume alcohol ($\chi^2 = 20.40$, df = 1, $p \leq 0.001$), cannabis ($\chi^2 = 16.62$, df = 1, $p \leq 0.001$) or tobacco. The prevalence of psychiatric diagnosis was significantly different because, the male group was mainly diagnosed with substance-related disorders, whereas female participants showed a prevalence of stress-related disorders ($\chi^2 = 34.17$, gl = 4, $p = 0.0001$).
Conclusion: Our results provide evidence that the characteristics of suicide attempt are different by gender in the Mexican population. Interventions are necessary for the development of prevention strategies that may lead to a reduction in suicidal behaviour. These preventive activities should consider the occupation for the female group and consumption of alcohol, cannabis or tobacco in the male group.

Keywords: gender differences; Mexican population; suicide attempt

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Significant outcomes

- We performed an analysis by gender to determine the differences in psychiatric diagnoses, as well as in clinical characteristics of patients that carried out a suicide attempt in a Mexican population.
- This study showed evidence of differences by gender for suicide attempts in our population.
- We evaluated the presence of psychiatric disease in subjects attempting suicide; 80.7% showed a psychiatric diagnosis.
- This study could improve the understanding of suicidal behaviour in this region of the globe and could help to develop gender-specific prevention strategies.

Limitations

- Small population sample is a possible limitation.
- We analysed cases in a specific region of Mexico. Caution must be taken when these results are generalised to the entire Mexican population.

Introduction

Suicidal behaviour is characterised by three stages: suicide ideation (thinking about ending one's life), suicide attempt (attempting to kill oneself) and completed suicide. Suicidal behaviour is a major health problem worldwide since one death by completed suicide occurs every 40 s (1).

Recent reports have shown that in several Latin-American countries (Argentina, Chile, Ecuador and Mexico) the suicide mortality rate is increasing, mainly among young people (2). Although suicide attempt is more common in some vulnerable groups (3,4), the overall prevalence of suicide attempt is variable among populations. For example, some studies report that among the Caucasian population, the lifetime prevalence of suicide attempt among adolescents is between 1.3% to 3.8% in males and between 1.5% to 10.1% in females (5,6). Furthermore, some authors estimate that every 3 s a suicide attempt is taking place around the world (7). Mexico is not an exception with regard to this health problem. It has been reported that among the general population the prevalence of suicide attempt is 3.8%, and particularly in 2008, a total of 593 600 Mexicans reported attempted suicide (8,9). Since suicide attempt is the main risk factor for suicide completion (10,11), additional research efforts should be performed to identify risk variables for suicide attempt in order to promote early risk detection and preventive measures aimed to decrease suicide attempt in the population.

Currently, some socio-demographic features have been determined as variables associated with suicidal behaviour, especially in completed suicides (10–13). On this line, several studies have reported gender and age differences in suicide attempts. In Mexico, the prevalence of suicide attempt in adolescents between 12 to 17 years of age is 2.14% in males and 6.37% in females. In young adults (18 and 29 years of age) the prevalence is 2.27% in males and 5.09% in females and in a group ranging from 30 to 65 years old, the prevalence is 2.08% and 1.49% in males and in females, respectively (8,9). These results as well as the reports from the literature suggest that therapeutic efforts and prevention should be implemented by taking gender into consideration (14–22). Therefore, we decided to carry out a study in which the objective was to analyse by gender socio-demographic and clinical characteristics, together with psychiatric diagnoses in patients with suicide attempt in a population of Tabasco, Mexico.

Methods

Sample

Our group of study consisted of 140 unrelated suicide attempters. These patients participated in the research protocol: 'Study on genes of the serotonergic system and suicidal behavior' (23). All subjects were consecutively recruited from the out-patient service of the General Hospital of Comalcalco in the state of Tabasco in southeastern Mexico. In 2010, the city of Comalcalco had a population of 51 112 inhabitants. The General Hospital of Comalcalco is a second level hospital. All individuals who made a suicide attempt between September 2010 and September 2012 were invited to participate in the study.

Ethics statement

For the present study, all subjects who were willing to participate were included in compliance with the National Guide of the National Commission of Bioethics. The participation of the subjects in this study did not have any influence or was related to their current status as patients at the General Hospital of Comalcalco. All subjects signed a written informed consent to participate in the study after they were given a verbal and written explanation of the research objectives; they did not receive any economical remuneration. For subjects younger than 18 years of age, parental consent was required. The study was approved by the local ethics committee of the General Hospital of Comalcalco and the Research Committee of the University of Tabasco, Mexico (UJAT-DAMC 20110237 and 201202). The study fulfilled the ethical standards convened in the 1964 Declaration of Helsinki.

Clinical evaluation

Inclusion criteria were as follows: individuals had to be residents of Comalcalco, had to be between 15 and 60 years of age, and with a suicide attempt in the last 30 days before their inclusion to the present study. Concomitant medical or neurological illness and severe intellectual disability were used as exclusion criteria. In addition, subjects were excluded when self-injury behaviours were not serious enough to be considered as suicidal intention or ideation according to the scores of the Suicide Ideation Scale and Suicide Intent Scale (SIS) in its

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Spanish version (24,25). The SIS instrument comprises 20 items and has been used to describe the intensity of the attempter's wish to die at the time of the self-injury behaviour.

Socio-demographic (age, gender, marital status, occupation and school level) and clinical features (suicide attempt characteristics and substance consumption) as well as psychiatric diagnoses were recorded in a previously designed format.

Assessed characteristics of suicide attempt were: (1) age of first suicide attempt, defined as the age at which the patients made a real suicide attempt; (2) method chosen to commit suicide, (3) total number of previous suicide attempts, (4) alcohol consumption during suicide attempt and (5) elaboration of a suicide note. The last two characteristics were taken from the application of the SIS (24). The definition of suicide attempt in accordance with the literature entails a self-harm behaviour with at least some intent to end one's life (1,26).

A person that reported continuous or regular weekend use of alcohol, cannabis or tobacco was considered user, whereas a person that never consumed alcohol, cannabis or tobacco, or made sporadic use of these substances was regarded as not user.

Psychiatric diagnoses were obtained by a visual inspection of the clinical chart of each subject and by a clinical interview performed by two trained psychiatrists, both with a master's degree level (Sherezada Pool and Martha Sánchez). These interviewers also obtained the remaining demographic and clinical information used in the present study by performing an interview with the recruited subject and a relative.

Statistical analysis

Descriptions of demographic and clinical characteristics were done with frequencies and percentages for categorical variables and with means and standard deviations (SD) for continuous variables. For the comparison by gender, χ^2 analyses for contingency tables were used. Significance level for tests was established at $p \leq 0.05$. The statistical software package SPSS version 20.0 for Windows PC was used for the analysis of data.

Results

Socio-demographic characteristics

A total of 140 suicide attempters were recruited. The majority of the subjects were female ($n = 89$, 63.6%), single ($n = 72$, 51.4%) and housewife as main occupation ($n = 55$, 39.3%). Mean age of the sample was of 27.02 years (SD = 9.69, range 15–57 years old) with a mean level of education of 8.57 years (SD = 3.98, range 0–17 years). A total of 10 subjects did not receive formal education or were illiterate.

The comparisons of demographic features between male and female subjects are shown in Table 1. Significant differences emerged between groups in terms of occupation and marital status. The main activity of female subjects was housewife, whereas for males the main activities depended on economically remunerated jobs (half-time or full-time) or were unemployed. In addition, more males than female subjects were single at the time of the study.

Table 1. Socio-demographic data from patients with suicide attempt in Comalcalco, Tabasco, Mexico

	Total ($n = 140$)		Male ($n = 51$)		Female ($n = 89$)		Statistics	
Characteristics	Number	Percentage	Number	Percentage	Number	Percentage	χ^2	p
Marital status								
Married	62	44.3	17	33.3	45	50.6	**11.13**	**0.003**
Single	72	51.4	33	64.7	39	43.8		
Separated/divorced	6	4.3	1	2.0	5	5.6		
Occupation								
Unemployed	24	17.1	16	31.4	8	9.0	**55.51**	**<0.001**
Housewife	55	39.3	2	3.9	53	59.6		
Student	35	25.0	15	29.4	20	22.5		
Full-time job	15	10.7	7	13.7	8	9.0		
Half-time job	11	7.9	11	21.6	0			
Age (in years)								
Up to 20 years of age	45	32.1	15	29.4	30	33.7	0.27	ns
>20 years of age	95	67.5	36	70.6	59	66.3		
Education								
Up to 6 years of schooling	52	37.1	20	39.2	32	36.0	0.14	ns
>6 years of schooling	88	62.9	31	60.8	57	64.0		

ns: non significant.

Bold values are significant.

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Table 2. Clinical characteristics of male and female subjects with suicide attempt in Comalcalco, Tabasco, Mexico

	Total (n = 140)		Male (n = 51)		Female (n = 89)		Statistics	
Characteristics	Number	Percentage	Number	Percentage	Number	Percentage	χ^2	p
Alcohol frequent use								
Yes	56	40	33	64.7	23	25.8	**20.40**	**<0.0001**
No	84	60	18	35.3	66	74.2		
Cannabis use								
Yes	25	17.9	18	35.3	7	7.9	**16.63**	**<0.0001**
No	115	82.1	33	64.7	82	92.1		
Tobacco use								
Yes	9	6.4	5	9.8	4	4.5	1.51	ns
No	131	93.6	46	90.2	85	95.5		
Method of suicide attempt								
Hanging	48	34.3	26	51.0	22	24.7	**15.18**	**<0.001**
Poisoning/drug toxicity	62	44.3	14	27.5	48	53.9		
Sharp object	20	14.3	5	9.8	15	16.9		
Other	10	7.1	6	11.8	4	4.5		
Previous episodes of suicide attempt								
Yes	50	35.7	18	35.3	32	36.0	0.006	ns
No	90	64.3	33	64.7	57	64.0		
Number of suicide attempts								
1	90	64.3	33	64.7	57	64.0	2.33	ns
2	29	20.7	13	25.5	16	18.0		
3+	21	15.0	5	9.8	16	18.0		
Alcohol use at the time of the episode								
No	131	93.6	44	86.3	87	97.3	**7.10**	**0.007**
Yes	9	6.4	7	13.7	2	2.2		
Suicide note								
No	106	75.7	33	64.7	73	82.0	**5.28**	**0.02**
Yes	34	24.3	18	35.3	16	18.0		

ns: non significant.
Bold values are significant.

Table 3. Psychiatric diagnoses of suicide attempters by gender

	Total (n = 113)		Male (n = 41)		Female (n = 72)			
Diagnosis	Number	Percentage	Number	Percentage	Number	Percentage	χ^2	p
Schizophrenia spectrum disorders	13	11.5	6	14.6	7	9.7	34.17	**0.0001**
Mood disorders	31	27.4	8	19.5	23	31.9		
Stress-related disorders	41	36.3	5	12.2	36	50.0		
Substance-related disorders	27	23.9	21	51.2	6	8.3		
Organic disorders	1	0.9	1	2.4	0	0		

This table only included diagnosed patients.
Bold values are significant.

Clinical characteristics

Table 2 displays the results of the comparative analyses of clinical characteristics in suicide attempters divided into males and females. More male subjects used alcohol and cannabis when compared with females. In addition, significant differences were observed in the suicide method selected, where >50% of the males chose hanging while the majority of female subjects (>50%) preferred poisoning/drug toxicity for the commitment of suicide attempt. In addition, more males than females were under alcohol influence during the suicide attempt and also left a suicide note.

Psychiatric diagnoses of suicide attempters by gender

From 140 participants, 113 were diagnosed with psychiatric illness (80.7%). Female subjects were more frequently diagnosed with stress-related disorders and mood disorders, whereas the most common diagnosis in males was substance-related disorders (Table 3).

Discussion

In this study we investigated gender differences in subjects with suicide attempt in a population of Tabasco,

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México. To our knowledge, this is the first study describing such association in this region of the world.

We found a higher prevalence of suicide attempt in female subjects. This was an expected result as similar outcomes have been reported in other cities such as Basel in Switzerland (15), or in some Latin American countries such as Brazil (27) and Chile (28). While this is particularly true for female suicide attempters, another scenario is present for male subjects. A study which analysed the frequency of completed suicide in a population similar to the one used in our study (29) showed that 85% of the suicides reported in three regions of Tabasco, including Comalcalco, were performed by male individuals and only 15% by females. There is a clear gender gap in suicidal behaviour, where females report more suicide attempts and males are preponderant in completed suicides. This situation has been described as the 'gender paradox of suicidal behavior' (30,31), which has also been reported in other studies and populations (18,27,30). This gender concept does not refer exclusively to the biological differences between male and female subjects but also considers social and cultural norms and expectations that may differ between them (32) and which may explain some of the differences found in the present study.

Marital status as well as occupation differed between male and female suicide attempters in our study. Marriage has been generally considered as a protective factor against suicide in males (33–35) and our results support this assumption: two-thirds of our male sample were single or divorced/separated. In Mexico, as in other countries, having a relationship implies an integration of the individual into a family unit where the interests of the couple are now a priority. This may decrease the tendency to individualism in males and hence suicide, since the relationship may give more meaning to the life of male individuals (36). While the same process should be expected for females, in our results a little >50% of the female subjects were married. In the particular case of females we suspect that other stressors within the couple may trigger suicidal behaviour. It is possible to consider domestic violence as a probable stressor. On this line, the National Survey of Health and Nutrition 2012 (Encuesta Nacional de Salud y Nutrición 2012) showed that domestic violence in Mexico may be present in at least 25.8% of households (37) in which the main receptors of violence are females. This assumption should be taken with caution as domestic violence was not assessed in the present study. Nevertheless, it is a possibility that should not be discarded completely when trying to explain the differences observed in terms of marital status between male and female subjects.

Other psychosocial stressors associated with increased suicide risk in males were economic stressors, such as financial problems or unemployment. More than 30% of male subjects in our study were unemployed and >50% of the female subjects carried out household activities, which once again do not represent an economic income. This risk factor has been described in previous reports where the rate of suicide attempt is higher in female that are economically inactive when compared with their male counterpart (162.72 in male vs. 216.47 in female) (15), even if the life situation of an unemployed male differs from the life situation of a housewife; however, it has been suggested that lack of unemployment could be associated with a social disadvantage (38). At present, many countries are experiencing economic crisis and are subject to austerity policies that have a direct effect on the quality of life of the individuals. Several researches have noticed the potential effects of economic crisis on the rapidly increasing suicide attempt rate (39–42) and Mexico is not an exception.

Although demographic features may be related to suicide attempt, there are other individual features that have stronger influence on suicidal behaviour, such as mental disorders and substance consumption. It is not surprising that the majority of our suicide attempters met diagnostic criteria for mental disorder. Other studies have shown that the prevalence of psychiatric disorders among suicide attempters can reach 98.3% (15). In general, significant differences by gender have been reported with respect to the manifestation of mental disorders. For instance, female individuals are more likely to present mood or anxiety disorders (internalised disorders), whereas male subjects are more likely to experience substance-related or impulsive disorders (externalised disorders) (43). Our results are not only consistent with those reported in the literature but also replicate what was found in the National Survey on Psychiatric Epidemiology (ENEP, initials in Spanish) (44) and how these diagnoses are more prevalent among male and female suicide attempters (45). Furthermore, the higher frequency of male subjects with alcohol or cannabis consumption in our sample and the reported alcohol ingestion during the suicide attempt gives further support to some of the gender differences among psychiatric diagnoses and general drug consumption in male subjects (40).

The suicide method also differed between male and female subjects in our sample. Females were more prone to use poison/drug toxicity while the most reported method for males was hanging. Considering the gender paradox of suicidal behaviour where females report more suicide attempts and males more completed suicides, we suggest that this difference may be influenced by the lethality of the suicide method selected by each group (18). Some authors have even suggested that the choice of the suicide method and lethality is directly influenced by the demographic features of the individual, in particular by gender (12,16,17,20,46).

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In our sample, we analysed the number of suicide attempts. A group of subjects showed three or more suicide attempts and were frequently female than male in this group. This suggests the concept that women are the attempters and survivors of suicide attempts (14). However, the analysis as a whole did not show differences significantly. Now, if we consider the higher prevalence of alcohol use during suicide attempt and the higher lethality of the suicide method in male subjects, alcohol may not be a direct trigger to suicide attempt but it can 'lubricate the gears for suicidal behavior' (47) as it is linked to impulsivity, aggression, disregard of social norms, poor judgment and increased pain threshold. Therefore, alcohol may facilitate the whole process of suicidality (e.g. ideation, selected method, etc.) as has been suggested by several authors (47–49).

We also suggest that alcohol may influence the act of leaving a suicide note in males since it may be part of the process of suicidality. Nevertheless, other variables may also have a direct influence on this act such as personality features (41), specific cognitive distortions about the self, the world and the future each subject experienced during the suicidal process (50); these variables were not assessed in the present study and should be included in future studies.

Other limitations of the study should be mentioned. First, the sample size of the study was small and restricted to a particular geographic area of Mexico. This limits the generalisation of our findings to the Mexican population. Second, although the study was performed in a 24-month period, the effect of temporality or seasons was not analysed. Third, the age of the patients presented a large dispersion (15–57 years). Finally, we did not carry a subgroup analysis based on clinical characteristics, including pharmacological treatment for mental disorders and lethality of suicide attempt.

Despite these limitations, our study supports many of the findings in the literature regarding gender differences in suicidal behaviour. Recognising the problem is a necessary first step to solve it and should be followed by the design and implementation of gender-based and effective health policies and methods. It is clear that we need to analyse other factors to solve the increasingly prevalence of suicide attempts around the world. We all have to understand and work to identify and reduce suicide attempts and their consequences. If we can achieve this aim, we will improve the well-being of our society.

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Authors contributions: T.B.G.C. and I.J.R. analysed the data. Y.P.J., S.P.G. and M.P.V.S. performed the clinical evaluation. L.L.N., A.F. and C.A.T.Z. conceived and designed the study. A.F., T.B.G.C. and C.A.T.Z. wrote the paper.

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Conflicts of Interest

None.

Ethical Standards

The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national and institutional committees on human experimentation and with the Helsinki Declaration of 1975 revised in 2008.

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