The effect of common mental disorders on suicidal attempts by women, during pregnancy and six to nine years after birth

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Abstract *There is scarcity of global data on suicide attempts (SA). The higher frequency of mental disorders places women at a higher risk for SA. Mental disorders (MD) are ranked first in the Global Burden of Diseases (GBD) in terms of years lived with disability (YLD) and common mental disorders (CMD) affect women the most. IN this light, the present study aimed to investigate the impact of CMD during pregnancy, as well as 6 to 9 years after birth, on SA in women who were registered in the Family Health Strategy from the town of Recife, Pernambuco, Brazil. This study consisted of two stages of a prospective cohort. 643 adult women were included. The prevalence of CMD in stage I (pregnancy) and in stage III (six to nine years after birth) were, respectively, 19.3% and 12.6%. The incidence of SA was 10.9%. The multivariate analysis demonstrated a cumulative effect of CMD for SA: only during pregnancy (OR 5.4; 95%CI 2.2-13.3); only in the third stage (OR 5.8; 95%CI 2.3-14.9); and in both stages (OR 6.0; 95%CI 2.5-14.4). The increase of CMD in women increases the chances of SA, hence the importance of implementing public policies for women's health, especially for those with a history of mental disorders and unhealthy habits, and those who suffer violence.*

Key words *Women's health, Mental disorders, Suicide attempt, Cohort studies*

Introduction

The history of suicide attempts (SA) is characterized by a harmful behavior that has the conscious intention of ending one's own life[1]. In 2019, nearly 703,000 people died by suicide around the world, representing a global rate of 9.0 per 100,000 inhabitants, and placing it as the fourth most common cause of death among the youth. Although there has been a reduction of 10% in the rate between 2013 and 2019, such a reduction did not occur in the Americas, the only continent which registered an increase during the period[2].

Little global data is available on SA, and when it is, the quality tends to be poor due to the lack of statistics related to insufficient diagnoses and reports. Moreover, the World Health Organization (WHO) does not receive information on the theme from any country[3].

Worldwide studies show a variation in the prevalence of SA, 0.3% to 4.2%[4,5]. Those studies indicate that, considering sex, women are predominant, even though there is a consensus that men have higher rates of suicide[2]. That can be seen in the Brazilian studies by Botega et al. (2009)[6]; Vidal, Gontijo, and Lima (2013)[7]; Brixner et al. (2016)[8]; Bahia et al. (2017)[9]; Grigoletto et al. (2020)[10]; and Aguiar et al. (2022)[11].

The first Brazilian bulletin regarding suicide shows that, between 2011 and 2016, among the 48,204 cases of reported SA (27.4% of the self-inflicted lesions) most women (69% of the cases) presented an 200% increase during the studied period[12].

Some of the clearest predictors of SA include previous SA, followed by being sexual abuse victims, having an overall low function, having psychiatric disorders, being in psychiatric treatment, having depression, anxiety, and abuse or dependence on alcohol[13].

Mental disorders (MDs) rank first in the Global Burden of Diseases (GBD) in terms of years lived with disability (YLD), and are at the same level as cardiovascular and circulatory diseases in terms of disability-adjusted life years (DALY)[14]. MDs are responsible for the vast majority of SAs and suicides themselves, with a 10-fold higher number than what is found in the general population[3].

Goldberg and Huxley (1992)[15] created the expression "Common Mental Disorder" (CMD) to classify the group of symptoms that present a variety of clinical expressions, such as insomnia, exhaustion, diffuse somatic complaints, irritability, among others, and which may not accurately follow the necessary conditions to identify a known mental disorder, but which can provoke functional and psychosocial losses, as well as a high social and economic cost. Deep sadness, anxiety, and somatization are the classic triad of CMD signs and symptoms.

CMD rates vary in the literature. Steel et al. (2014)[16] found a global rate of 29.2% in adults who were diagnosed at some point in their lives. Gonçalves et al. (2014)[17] found rates of 51.9%, 53.3%, 57.7%, and 64.3% in the Brazilian state capitals of Rio de Janeiro, São Paulo, Porto Alegre, and Fortaleza, respectively, which were statistically associated with women (OR = 2.0; 95%CI 1.6-2.6), with people with a low level of education (OR=1.3; 95%CI 1.0-1.6), and with those who have a low income (OR = 1.6; 95%CI 1.3-2.0).

Some studies relate MDs to SAs or to suicide itself, such as the studies by Santos et al. (2009)[18], Grigoletto et al. (2020)[10], and Bastos et al. (2019)[19]; however, few studies associate CMD to suicide or to SA.

Different strategies have been adopted to reduce suicide, including the first Action Plan for Mental Health 2013-2030[20], created by the WHO. A one-third reduction in suicide rates by 2030 is one of the established global goals. However, in the WHO's 2020 Mental Health Atlas, only 35 countries of the 194 members have reported the implementation of some specific strategy, policy, or plan to prevent suicide[21].

Even more scarce are the cohort studies investigating the association between CMD and SA. Rare as well are those of populational basis, which may be the kind of study that contributes the most to early intervention in women's mental health, allowing for the prevention of SAs and deaths by suicide, as well as other related social losses.

The present study aimed to investigate the isolated and cumulative impact of CMDs during pregnancy, as well as six to nine years after birth, in a cohort of women who were registered in the Family Health Strategy of the city of Recife, Pernambuco, Brazil.

Methodology

This study deals with stages I and III of a prospective cohort, consisting of three stages, conducted in Health District (HD) II in the city of Recife.

Stage I (cohort baseline) took place between 2005 and 2006. In this stage, all of the pregnant

women (n = 1,133), aged 18 and 49 years, with 31 or more weeks of pregnancy, duly registered in the Family Health Strategy of Recife's Health District II, were considered eligible. In this stage, the pregnant women were identified in the community health agents' records and were included in the study. Of the 1,133 eligible women, 1,120 (98.9%) were interviewed during pregnancy. In the cohort's third stage, conducted between July 2013 and December 2014, six to nine years after birth, 643 women were interviewed (57.4% of the original sample), given that there were 477 losses (454 by change of address, 5 by death, and 18 by refusals).

For data collection, higher level professionals with experience in research about women's health were trained, at which time, ethical matters and the need to collect accurate information were emphasized. Prior to data collection, pilot studies were conducted with simulated interviews in the HDs other than those used in the present study. The first contact with the pregnant women was conducted during the prenatal appointment. The interviews were conducted in the Family Health Units (FHU) in the vehicles made available to the interviewers or on scheduled dates and in places which were more convenient for the women, thus providing more comfort and safety. In the case of contacts with pregnant women who did not have their prenatal appointments at the FHU and those who did not have regular prenatal examinations, the interviews were conducted in the women's homes. The interviews with women six to nine years after birth were conducted in the women's home (in a reserved manner), or in some other place at their convenience.

Questionnaires for data collection were produced for both stages, with questions regarding the women's identification and other aspects of their lives. The questionnaire used in stage III included questions based on the questionnaire of the Multi-Country Study on Women's Health and Domestic Violence against Women, by WHO[22].

Information regarding the socio-demographic characteristics of the women, behavior variables, the couples' relationship profile, and about SAs (dependent variable) analyzed in the study were collected in the final stage. SAs were investigated through the question: "Did you ever try to end your own life? (yes/no)."

In the questionnaires for both stages (I and III), the presence of CMD was identified by the "Self-Reporting Questionnaire - 20" (SRQ-20).

The SRQ-20 is an instrument produced by the WHO for the detection of psychiatric prob-

lems in Primary Health Care (PHC) services in developing countries[23], comprised of twenty yes/no questions, four of which were about physical symptoms and sixteen about psycho-emotional disorders in the 30 days prior to the interview. The questionnaire was validated for Brazil, with an 85% sensitivity and an 80% specificity[24], as well as for the state of Pernambuco, with an 62% sensitivity and an 80% specificity[25]. The SRQ-230 cohort study for the present study was defined in 7/8, based on the results of the studies by Mari and William (1968)[24] and Ludermir and Lewis (2005)[25]. The women were divided into two groups: those who were not suspected of having CMD (score equal or below 7) and those who were suspected of having CMD (score equal to or above 8).

The data was entered into the Epi-Info program version 3.5.4, by means of double data entry and by different typists. The Validate app was then used to check typing mistakes, and cleaning and data consistency verification were conducted. The statistical analysis was conducted by the Stata program, version 13.1 for Windows.

In this study, women's characteristics included: age (< 30 years old vs ≥ 30 years old); education (≤ 9 vs > 9 years of study); having a spouse (yes vs no); and history of mental disease (yes vs no). To evaluate race/color, the women were asked to self-report themselves in one of the categories: white, black, or brown. The women's behavioral variables analyzed in this study were: smoking (yes vs no) and drinking alcohol (yes vs no). The profile of the couple's relationship was measured by the covariables: couple fights (< 1 vs ≥ 1 time per month); and by intimate partner violence (yes vs no).

The data was entered in the Epi-Info program, version 3.5.4, by means of double data entry and performed by different typists. The Validate app was then used to check for typing mistakes, and cleaning and data consistency verification were conducted. The statistical analysis was conducted by the Stata, version 13.1, program for Windows.

Initially, the chi-square test was used to estimate the prevalence of CMD during pregnancy and six to nine years after giving birth, as well as the incidence of SAs in women six to nine years after giving birth. Description of the sample by the studied variables was also conducted (women's characteristics, behavioral variables, and profile of relationship).

Logistic regression was used to analyze the independence of the associations between the covariables and the SA and the CMD, as well as

between the SA and the CMD, in crude and adjusted formats.

For the association between SA and CMD, a categorical variable was built from the CMD: 0. no CMD; 1. with CMD during pregnancy and without in the third stage; 2. without CMD during pregnancy and with CMD in the third stage; and 4. CMD in both stages.

The covariables included in the adjusted model were those which the literature describes as potential confounding factors, and which, in the present study, showed an association with both CMD and SA, with a p-value < 0.10.

The Odds Ratio (OR) was calculated with 95% confidence intervals (95%CI) and the associations with p < 0.05 were considered statistically significant.

Confidentiality and privacy were ensured during and after the interviews. All of the participants signed a free and informed consent form, read in the beginning of the interview, when the location was discussed, as well as the volunteer nature, privacy, and the personal and delicate nature of some of the questions. The project for this study was approved by the Research Ethics Committee of the Universidade Federal de Pernambuco – UFPE (Decision no. 194,672, from 02/06/2013). The previous stages of the research were approved by the Research Ethics Committee of the Health Sciences Center of the UFPE (research protocol no. 303/2004-CEP/CCS).

Results

The distribution of the women's characteristics, behavioral variables and of the profile of the relationship (Table 1) showed a predominance of women in the age group of ≥ 30 years (73.6%). Most defined themselves as being/having brown skin color (65.0%) and a little more than half had ≤ 9 years of study (50.5%). The vast majority of the women had a spouse (81.2%) and 14.2% had a history of mental diseases. In relation to the behavioral variables, about one fourth were smokers, (24.4%) and the majority (56.3%) drank alcoholic beverages.

About the profile of the couple's relationship, 32.9% fought once or twice a month, and 33.0% of the women reported having suffered intimate partner violence. The incidence of SAs six to nine years after giving birth was approximately 10.9%.

The results of the association analysis of the covariables with SA demonstrated that it was more frequent in women with a history of mental diseases (OR = 5.40; p < 0.0001) and in those who smoked (OR = 1.86; p = 0.021) and drank alcohol (OR = 1.94; p = 0.016). Moreover, couple fights with frequency equal to or higher than once a month (OR = 3.46; p < 0.0001) and intimate partner violence (OR = 2.91; p < 0.0001) were also statistically associated with SA six to nine years after giving birth. Table 2 shows the association between the women's characteristics, their behavioral variables, and the profile of relationship with the categorical variable of CMD.

Of the 643 women in the study, 47.7% did not have CMD at any time during the study, 19.3% only during pregnancy, 12.6% only during the third stage, and 20.4% in both stages.

The distribution of the women's characteristics, behavioral variables, and the profile of relationship showed that most of the women who had CMD only during pregnancy were also those who most often drank alcohol, six to nine years after giving birth (66.1%). Moreover, women who had CMD during pregnancy and six to nine years after giving birth, were those who most often had ≤ 9 years of study (65.4%), besides having a history of mental diseases (34.3%) and being smokers (31.3%). The same happened in relation to 'couple flights ≥ 1 time/month' (49.6%), and 'intimate partner violence' (55.0%).

The results of the analysis of association of the women's characteristics, behavioral variables, and the profile of the couple's relationship, with CMD showed that those were significantly associated with women who had ≤ 9 years of study (OR = 1,49; 95%CI 1.1-2.0; p = 0.012;) and among those with a history of mental diseases (OR = 3.60; 95%CI 2.2-6.0; p < 0.0001).

In relation to behavioral variables, the CMD showed an association with the women who smoked (OR = 1.56; 95%CI 1.1-2.3; p = 0.018) and drank alcohol (OR = 1.50; 95%CI 1.1-2.1; p = 0.012). Moreover, couple fights with frequency equal or above once a month (OR = 1.73; 95%CI 1.2-2.4; p = 0.001) and intimate partner violence (OR = 2.84; 95%CI 2.0-4.0; p < 0.0001) were significantly associated with CMD as well.

The association between CMD and SA six to nine years after giving birth demonstrated that there was statistical significance in the crude model (TMC during pregnancy = OR 5.5; 95%CI 2.3-13.3; CMD six to nine years after giving birth = OR 8.5; 95%CI 3.5-20.9; CMD during pregnancy and six to nine years after giving birth = OR 11.6; 95%CI 5.2-26.0), and in the adjusted model as well (CMD during pregnancy = OR 5.4; 95%CI 2.2-13.3; CMD six to nine years after giv-

Table 1. Association between women's characteristics, behavioral variables, and relationship profile, and suicide attempts six to nine years after giving birth. Recife, 2013-2014.

Covariables	Suicide attempts six to nine years after giving birth				
	Total = 643	No	Yes	OR (95%CI)	p-value
	n (%)	n (%)	n (%)		
Women's characteristics					
Age (years)					
≥ 30	473 (73.6)	426 (74.3)	47 (67.1)	1.0	
< 30	170 (26.4)	147 (25.7)	23 (32.9)	1.42 (0.8-2.4)	0.199
Race/color [a]					
White	114 (17.8)	106 (18.6)	8 (11.6)	1.0	
Black	110 (17.2)	96 (16.8)	14 (20.3)	1.93 (0.8-4.8)	0.157
Brown	416 (65.0)	369 (64.6)	47 (68.1)	1.69 (0.8-3.7)	0.189
Education (years of study) [b]					
> 9	317 (49.5)	289 (50.7)	28 (40.0)	1.0	
≤ 9	323 (50.5)	281 (49.3)	42 (60.0)	1.54 (0.9-2.6)	0.093
Presence of spouse					
Yes	522 (81.2)	469 (81.9)	53 (75.7)	1.0	
No	121 (18.8)	104 (18.1)	17 (24.3)	1.45 (0.8-2.6)	0.217
History of mental diseases [c]					
No	551 (85.8)	509 (89.0)	42 (60.0)	1.0	
Yes	91 (14.2)	63 (11.0)	28 (40.0)	5.40 (3.1-9.3)	< 0.0001
Women's behavioral variables					
Smoking					
No	486 (75.6)	441 (77.0)	45 (64.3)	1	
Yes	157 (24.4)	132 (23.0)	25 (35.7)	1.86 (1.1-3.1)	0.021
Alcohol consumption					
No	281 (43.7)	260 (45.4)	21 (30.0)	1.0	
Yes	362 (56.3)	313 (54.6)	49 (70.0)	1.94 (1.1-3.3)	0.016
Relationship profile					
Couple fights (times per month) [d]					
< 1	430 (67.1)	402 (70.3)	28 (40.6)	1.0	
≥ 1		170 (29.7)	41 (59.4)	3.46 (2.1-5.8)	< 0.0001
Violence by intimate partner					
No	431 (67.0)	400 (69.8)	31 (44.3)	1.0	
Yes	212 (33.0)	173 (30.2)	39 (55.7)	2.91 (1.8-4.8)	< 0.0001

[a] 3 lost values; [b] 3 lost values; [c] 1 lost value; [d] 2 lost values.
Source: Authors.

ing birth = OR 5.8; 95%CI 2.3-14.9; CMD during pregnancy and in the six to nine years after giving birth = OR 6.0; 95%CI 2.5-14.4), as Table 3 shows, indicating a cumulative effect of the CMD for SA, in other words, women who had CMD during pregnancy and six to nine years after giving birth had more chances of attempting suicide in comparison to those who did not present or presented CMD in only one of the stages..

Discussion

The incidence of SA was higher in the present study, when compared to other studies.

In Bangladesh, Li et al. (2021)[26] found a 6.5% rate of SA among women, most (88.5%) occurring within one year after pregnancy. Similarly, Seponski et al. (2019)[27], in Cambodia, found a 5.5% prevalence of SA among women (n = 100).

The incidence of SA in a population-based cohort study by Maselko and Patel (2008)[28] was even lower, only 0.8%. Much like in the present

Table 2. Association between women's characteristics, behavioral variables, and relationship profile, and Common Mental Disorders. Recife, 2005-2014.

Covariables	Total = 643	Common Mental Disorders				OR (95%CI)	p-value
		0	1	2	3		
	n (%)	n (%)	n (%)	n (%)	n (%)		
Women's characteristics							
Age (years)							
≥ 30	472 (73.4)	224 (73.0)	94 (75.8)	59 (72.8)	95 (72.5)	1.0	
< 30	171 (26.6)	83 (27.0)	30 (24.2)	22 (27.2)	36 (27.5)	0.96 (0.7-1.4)	0.809
Race/color [a]							
White	114 (17.8)	56 (18.3)	22 (17.9)	14 (17.5)	22 (16.8)	1.0	
Black	110 (17.2)	48 (15.7)	25 (20.3)	12 (15.0)	25 (19.1)	1.25 (0.7-2.1)	0.411
Brown	416 (65.0)	202 (66.0)	76 (61.8)	54 (67.5)	84 (64.1)	1.02 (0.7-1.6)	0.915
Education (years of study) [b]							
> 9	316 (49.4)	167 (54.6)	66 (53.3)	38 (47.5)	45 (34.6)	1.0	
≤ 9	324 (50.6)	139 (45.4)	58 (46.7)	42 (52.5)	85 (65.4)	1.49 (1.1-2.0)	0.012
Presence of spouse							
Yes	522 (81.2)	249 (81.1)	102 (82.3)	62 (76.5)	109 (83.2)	1.0	
No	121 (18.8)	58 (18.9)	22 (17.7)	19 (23.5)	22 (16.8)	0.99 (0.7-1.5)	0.963
History of mental diseases [c]							
No	551 (85.8)	286 (93.2)	114 (92.7)	65 (80.3)	86 (65.7)	1.0	
Yes	91 (14.2)	21 (6.8)	9 (7.3)	16 (19.7)	45 (34.3)	3.60 (2.2-6.0)	< 0.0001
Women's behavioral variables							
Smoking							
No	486 (75.6)	245 (79.8)	90 (72.6)	61 (75.3)	90 (68.7)	1.0	
Yes	157 (24.4)	62 (20.2)	34 (27.4)	20 (24.7)	41 (31.3)	1.56 (1.1-2.3)	0.018
Alcohol consumption							
No	281 (43.7)	150 (48.9)	42 (33.9)	36 (44.4)	53 (40.5)	1.0	
Yes	362 (56.3)	157 (51.1)	82 (66.1)	45 (55.6)	78 (59.5)	1.50 (1.1-2.1)	0.012
Relationship profile							
Couple fights (times per month) [d]							
< 1	430 (67.1)	225 (73.3)	95 (76.6)	44 (55.7)	66 (50.4)	1.0	
≥ 1	211 (32.9)	82 (26.7)	29 (23.4)	35 (44.3)	65 (49.6)	1.73 (1.2-2.4)	0.001
Violence by intimate partner							
No	430 (66.9)	241 (78.5)	83 (66.9)	47 (58.0)	59 (45.0)	1.0	
Yes	213 (33.1)	66 (21.5)	41 (33.1)	34 (42.0)	72 (55.0)	2.84 (2.0-4.0)	< 0.0001

[a] Três valores perdidos; [b] três valores perdidos; [c] um valor perdido; [d] dois valores perdidos.

Fonte: Autores.

study, their study had the participation of women from Primary Health Care services in Goa, India. In non-adjusted models, exposure to violence (OR 7.70; 95%CI 2.80-22.21) was one of the strongest predictors of SA, alo appearing as an independent SA predictor in the multivariate model (OR 5.18. 95%CI 1.55-18.75), corroborating the findings of this study.

The significant association between intimate partner violence and suicide attempts in women is already recognized by literature, as was demonstrated in the systematic revision by Devries *et al.*[29].

Intimate partner violence is a very serious public health problem, with consequences for mental health and cognitive functions of women, and may lead to mental and somatoform disorders or to chronic diseases, as well as to other physical conditions, or may even result in SAs or suicide (WHO, 2013)[30].

In the global survey conducted between 2000 and 2003[31], also involving only women, including

Table 3. Association between Common Mental Disorders and suicide attempts six to nine years after giving birth. Recife, 2005-2014.

Common Mental Disorders	Tentativa de suicídio seis a nove anos após o parto						
	Total= 643	No	Yes	OR non-adjusted (95%CI)	p-value	OR* adjusted (95%CI)	p-value
	n (%)	n (%)	n (%)				
NO CMD	307 (47.7)	299 (52.2)	8 (11.4)	1.0		1.0	
Only during pregnancy	124 (19.3)	108 (18.9)	16 (22.9)	5.5 (2.3-13.3)	< 0.0001	5.4 (2.2-13.3)	< 0.0001
Only six to nine years after giving birth	81 (12.6)	66 (11.5)	15 (21.4)	8.5 (3.5-20.9)	< 0.0001	5.8 (2.3-14.9)	< 0.0001
During pregnancy and six to nine years after giving birth	131 (20.4)	97 (17.4)	31 (44.3)	11.6 (5.2-26.0)	< 0.0001	6.0 (2.5-14.4)	< 0.0001

* Adjusted for women's characteristics (education and history of mental diseases); women's behavioral variables (smoking and alcohol consumption); relationship profile (couple fights – times per month and violence by intimate partner).

Source: Authors.

Brazil, Ethiopia, Japan, Namibia, Peru, Samoa, Serbia, Thailand, and Tanzania, a variation in the prevalence of SA was identified throughout life, ranging from 0.8% (Tanzania) to 12.0% (Peru), the latter being higher than the rate presented in the present study. Intimate partner violence was also one of the most consistent risk factors for SAs after adjustment for probable CMDs. Furthermore, 'alcohol related problems' were significantly associated with SAs in all of the countries mentioned above, as well as in the present study.

One of the recognized behaviors subsequent to IPV is the consumption of alcohol by women, as an attempt to manage the negative consequences of the violence suffered. The nature of this association is complex and bi-directional. Alcohol consumption, in situations of dependence, may lead to many health problems, including SAs.

In the study by Vasquez-Escobar and Benitez-Camargo (2021)[32] on factors associated with SA in Sogamoso, Colombia, the variable 'alcohol consumption' was associated with women in the category of 'early adult life" (young) with OR = 2.2 (1/0.45), as well as the variable "violence", which also presented a statistically significant association (p < 0.05) and an OR = 1.8 (1/0.55).

In the association between SA and alcohol consumption, in the cross sectional study by Alvarado-Esquivel (2018)[33], the variable 'alcohol consumption' was also independently associated with SA among women (OR = 2.82; 95%CI: 1.01-7.84; p = 0.04). As in the present study, their study was conducted in the Primary Care Network in Durango, Mexico, and none of the socio-demographic characteristics were associated

with SA, which, in their study, presented a lower rate than that found in our study, 5.1%.

The study by Nam et al. (2021)[34] showed one of the highest levels of SA prevalence (18%) among a sample of North Korean refugees in South Korea. In a manner adverse to the current study, the consumption of alcohol was not statistically significant for SA. The authors believe that the post-migration stress might have been important for the high SA rates found, since the North Korean refugees had higher levels of Post-Traumatic Stress Syndrome (PTSD) than did the general population.

In relation to the history of mental diseases, Seghatoleslam et al. (2011)[35] found a statistically significant association with multiple SAs among Iranian women and their history of mental disease, as well as of depression and substance abuse.

We did not find any studies which associated smoking to SAs. Similar to the relation with SAs, few population-based studies were found regarding CMDs among women. In the current study, the frequencies of investigated CMD are lower than the findings in the majority of the studies. It is important to mention that the same investigated covariables, which were associated statistically with SA, were also associated with CMDs, as was the case of "education ≤ 9 years of study", which was also observed in other studies.

The prevalence rates of CMD among women vary considerably from study to study. Bezerra et al. (2021)[36] showed a global variation between 9.6% and 69.3%, and was the highest variation found in Brazil, in the town of Petrópolis, RJ[37]. Many factors were associated with SA among adult women, such as unemployment; debt; low

income; being a housewife; smoking; low level of education; self-report of poor health; and being single, divorced, or a widow[36].

Audi et al. (2018)[38] estimated a 66.7% frequency of CMD among women incarcerated in a female penitentiary in the city of Campinas, São Paulo, Brazil. The variables 'psychological violence in the year prior to prison' and 'smoking' were associated independently and positively with CMD, corroborating the results found in the current study. We believe that the situation of incarceration may have contributed significantly to the high rate of CMD.

In terms of the prevalence of pregnant women with CMD, one study conducted in Southeast Ethiopia revealed that among the 743 interviewed pregnant women, the prevalence of CMD was above the findings in our study (35.8%; 95% CI: 34-38%). Corroborating with our findings, situations of violence indicated in their study as 'physical or emotional abuse' and 'having sexual relationships against your will', as well as having a 'history of chronic medical condition', were some of the determining factors for CMD[39].

Contrary to the aforementioned studies, the study by Maselko and Patel (2008)[28], which was also conducted with patients from the Primary Care Network found a lower prevalence of CMD than that found in the present study, of only 6.5% (n = 151; 95%CI = 5.5-7.6).

In relation to the association between CMD and SA, the results of our study demonstrated, in the adjusted model, that women who presented CMD only during pregnancy or during six to nine years after giving birth, had a 5-fold greater chance of SA six to nine years after giving birth, considering that the probability was even higher when they presented CMD in the two analyzed stages in comparison to women who did not present CMD, thus demonstrating a cumulative effect. The findings reinforce the importance of early intervention in situations of CMD, as well as in terms of preventing them altogether, so that the chances of SAs can be reduced or disappear.

Studies that have investigated this association are scarce. Devries et al. (2011)[31] identified that 'having a probable CMD' was significantly associated with SAs in all of the places studied. Maselko and Patel (2008)[28] found, in non-adjusted models, that CMDs (OR 8.71; 95%CI = 2.86-24.43) were one of the strongest predictors of SA.

It is well-known that the higher frequency of mental health problems among women puts them at a higher risk of having suicidal behavior, and that women try to commit suicide more often than man, the latter being more successful at ending one's own life[9].

Teti et al. (2014)[40], when analyzing evidence published in Latin America and the Caribbean concerning the risk factors for suicide and SAs among populations with psychiatric disorders, found that major depressive disorder, dysfunctional families, and previous SAs were the main risk factors for SAs.

Final considerations

SAs are the strongest predictor of the occurrence of suicide and should not be underestimated, requiring reporting, surveillance, and follow-up of the women. In the results of this study, it is important to note that the accumulation of CMD episodes contributes to SAs among women.

CMDs must be discussed further, as should violence against women, and requires greater surveillance by health professionals, public authorities, and society as a whole, especially in situations of greater vulnerability, such as pregnancy and puerperium.

Several measures may be taken to avoid suicide, and primary health care is the first and foremost reference point for caring for women's mental health, and together with other services, such as social welfare, education, culture, and leisure, contributes to the promotion of health. The creation of spaces that encourage the adoption of healthy behaviors, services for the care of violence victims and for the prevention of mental suffering/mental disorders and grievances, may all be important contributions in order to avoid sickness and death among young women.

As the benefits of this research, it is important to mention that this was a cohort, population-based study, which is able to comprehend the behavior of the exposure factors and the outcome over the long term, as well as to follow up on women, closer to where they live, making it a more precise source of information. This study provided new data regarding the risk for SAs in this population, and may support actions to prevent CMD and SA, revealing aspects for interventions. Moreover, the data was collected in a strategic segment, which is a priority for public policies, with precarious socioeconomic and health indicators, thus creating the possibility of generalizing the findings for populations in similar conditions.

Among the limitations of the present study, we should mention the possibility of the overgen-

eralization of the results for other women from strata that are different from the location of the present study. We should also mention the considerable losses of subjects during the two stages of the study. Another limitation deals with the possibility of the embarrassment of the women when dealing with issues that are sensitive to them, resulting in difficulties to collect information. For that reason, some precautions were taken, such as the guarantee of confidentiality, the right to choose the place of the interview, and the selection of female interviewers who had experience with research on women's health.

It is important that further studies be conducted on this theme, even contemplating women who are not followed up by health teams and in different conditions of life, such as women who never became pregnant, elderly women, women from the countryside, widows, among others. Based on the identification of predictive factors for SA, it is possible to prevent new attempts, hospitalization, mental suffering, and consequently, suicides.

Collaborations

WBA Duarte worked on the conception and design of the article, writing, analysis and interpretation of data and final review of the article. EP Silva contributed to the analysis and interpretation of data, final review of the article and approval of the version to be published. AB Ludermir worked on the conception and design of the article, writing, analysis and interpretation of data, final review of the article and approval of the version to be published.

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