

Suicide attempt and its associated factors in young women with adolescent pregnancy in Bangladesh: higher risk if shorter post-pregnancy

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Abstract

Background: Adolescent pregnancy is a major public health problem around the world, with higher prevalence in low income countries and it was a risk factor for suicide. We aimed to assess the prevalence of suicide attempts among young women with adolescent pregnancy in Bangladesh and to explore its association with socio-demographics and pregnancy related factors, health status, and social support.

Methods: In this cross-sectional study, we surveyed young women with adolescent pregnancy in urban and rural areas in Bangladesh to assess suicide attempts, socio-demographic and pregnancy-related characteristics, perceived health status, and perceived social support. Binary logistic regression analysis was conducted to explore the relationship of the potential related factors with suicide attempts.

Results: Among the participating women, 6.5% (61/940) reported suicide attempts in the last 12 months, and majority (88.5%) of the attempts happened within one year after the pregnancy. Participants with more years after first pregnancy (odds ratio (OR) = 0.49, 95%CI = 0.38–0.63) and more perceived social support from friends (OR = 0.71, 95%CI = 0.57–0.88) were less likely to have suicide attempts, and those perceived bad health status compared with good/fair healthy status (OR = 7.73, 95%CI = 2.85–20.99) were more likely to attempt suicide.

Conclusions: Women with adolescent pregnancy were at high risk of suicide attempt especially those during the first year post-pregnancy. The risk of suicide attempts attenuated with the time after pregnancy, and perceived social support from friends was a protective factor and perceived bad health status was a risk factor for suicide attempts among young women who have experienced adolescent pregnancy.

Plain English Summary

Adolescent pregnancy is a major public health problem around the world and it was a risk factor for suicide. It occurs in high, middle, and low-income countries, with higher prevalence in low income countries (e.g. Bangladesh). In this study young women with experiences of adolescent pregnancy were investigated for the prevalence of suicide attempts and its association with socio-demographics and pregnancy related factors, health status, and social support.

Participants were recruited from women who presented to the selected departments of gynecology and maternal health care centers in Bangladesh. They were interviewed to complete questionnaires including their socio-demographic characteristics, first-pregnancy-related factors, self-reported health status, suicide attempts and perceived social support.

Of the 940 participants 61 (6.5%) reported suicide attempts in the last 12 months. The majority (88.5%) of the attempts happened within one year after the pregnancy. Participants with one more year after first pregnancy were 51% less likely to have suicide attempts, those with one more point score of perceived

social support from friends were 29% less likely to have suicide attempts, and those perceived bad health status compared with good/fair healthy status were 7.73 times more likely to attempt suicide.

In conclusion, young women with adolescent pregnancy were at high risk for suicide attempts in Bangladesh, especially those with shorter time after adolescent pregnancy and perceived bad health condition. Improving friends support will help to protect these women from suicide attempts.

Background

Adolescent pregnancy is a major public health problem around the world, which indicates that pregnancy from a girl who is 10–19 years old. It occurs in high, middle, and low income countries, with higher prevalence in low income countries (e.g. Bangladesh)[1]. Globally, an estimated 21 million girls aged 15–19 years become pregnant in 2016 in developing regions [2], and it increases especially in Asia and Africa [3]. Bangladesh is a low-income country, locating in South Asia. It has the highest adolescent fertility rate among countries in South Asia, with the estimated rate of 83.5 per 1000 girls aged 15–19 years every year between 2015 to 2020 [4].

Adolescent pregnancy compromises the educational and occupational opportunities of the girls. It also does harm to their psychological health, even increases the risk of suicide [5, 6]. Meanwhile, females were found to be more likely to attempt suicide than males [7–10]. The experience of suicide attempts increased the risk of repeated attempt and finally completed suicide [11]. Since females are at a higher risk of suicide attempt and pregnancy further increased the risk, it is necessary to explore the suicide attempts among the young women with adolescent pregnancy. However, the prevalence of suicide attempts in this special population remains unclear.

Clarifying the related factors has been demonstrated to be important for preventing suicide in young women who have experienced adolescent pregnancy [12]. Some socio-demographic characteristics, such as age, education, location, and work status, and health status were found to be related with suicide in general population and veterans [9, 13–16]. Pregnancy-related factors (e.g. unplanned pregnancy and outcomes of pregnancy) were found to be associated with elevated maternal depression in studies of general maternal women, which was a dominant risk factor for suicide attempt in women [17–19]. However, the relationships between these factors and suicide attempt among women with adolescent pregnancy have been less studied. In addition to these personal factors, social support was found to buffer individuals from suicidal ideation [15, 20]. How each dimension of social support, including supports from families, friends, and significantly others, associated with suicide needs further investigation in this vulnerable population.

Although women with adolescent pregnancy were evidenced to be at risk of suicide, there is a paucity of epidemiologic studies of the prevalence among this particular population. Since the experience of suicide attempts was a strong predictor of future suicidal behavior, it is important to clarify its associated factors. Thus, this study was conducted to assess the prevalence of suicide attempt among young

women with adolescent pregnancy and to explore its association with socio-demographics and pregnancy related factors, health status, and social support.

Methods

Study design and settings

A cross-sectional survey was conducted from December 2018 to February 2019 in Bangladesh. The departments of gynecology from five hospitals in urban area (Dhaka) and five maternal health care centers in rural areas, including Savar, Narayanganj, Gazipur, Mymensing, and Tangail, were selected as the settings.

Participants

Participants of the study were recruited from all those women who presented to the selected departments of gynecology and maternal health care centers from December 2018 to February 2019. The inclusion criteria were that (1) first pregnancy at the age of 17 years old or younger because we wanted to focus on women who pregnant before marriage age of 18 years old in Bangladesh, (2) without severe medical conditions, and (3) willingness to participate in the survey. Women who were unable to participate the survey because of limited ability of communication or others were excluded.

Study procedure

The survey was administered by field workers. They were trained before the survey and supervised during data collection by researchers with Ph.D. degree in public health. Data were collected through interview after obtaining informed consent of the participants. Respondents were asked about their socio-demographic characteristics (e.g., age, marital status, education, place of birth, and occupation) and first-pregnancy-related factors (e.g., age, outcome, plan and marital status of the first pregnancy). Along with that they were asked about the self-reported health status, suicide attempts and perceived social support. The research was approved by the ethics committee of the Bangladesh Medical Research Council (27023012020) and the School of Public Health, Shandong University (20181109).

Measures

Personal factors (socio-demographic and pregnancy-related characteristics and health status)

Information on women's socio-demographic and first-pregnancy-related characteristics, such as age, marital status, education, and age, plan, and outcome of the first pregnancy were obtained through the questions designed by researchers based on the purpose of the survey. Perceived health status was self-reported subjective measurement of global health. It was suggested to be a sensitive indicator of health evaluation [21]. A single item asked the participants to rated their health condition on a five-point Likert scale (1 = "very good" to 5 = "very bad") and additional option "unknown" to assess the perceived health status in the current study [21].

Suicide attempts

We used a question “Have you ever tried to kill yourself in last 12 months?” from the Ask Suicide-Screening Questions Toolkit [22] to assess the experience of suicide attempts in the last 12 months prior to the assessment with the answer of “yes” or “no”.

Perceived social support

The Perceived Social Support Scale (PSSS) [23] was used to assess the social support of the participants. It contains 12 items scored on a seven-point Likert scale which divide to three subscales: family, friends, and significant others. A higher score indicates higher level of perceived social support. The Cronhach’s alpha values of total scale was 0.88 and of family, friends, and significant others were 0.90, 0.77, and 0.93, respectively in this study.

Statistical analyses

Independent sample *t*-tests (continuous variables) and Chi-square tests (categorical variables) were used to compare differences between participants with and without suicidal behavior. The responses of perceived health status were re-ranged to two groups (good/fair and bad) in the analyses. A binary logistic regression analysis was conducted to explore the relationship of socio-demographic variables, pregnancy-related variables, and perceived health status and social support with suicide attempts. We obtained odds ratio (OR) and its 95% confidence interval (CI) from the logistic regression analysis. The factors that showed significant (at the *p*-value of 0.1) associations with suicide attempts in independent two sample *t*-tests and Chi-square tests were included in the multivariate analyses as independent variables. As years after first pregnancy were computed by age minus age of first pregnancy, they were analyzed separately in logistic regression models to avoid collinearity. Two-sided *p*-values of 0.05 were considered as the significance level. Statistical analyses were performed using SPSS 24.0 (IBM Corp., Armonk, NY, USA).

Results

Sample characteristics

Of the 2500 participants we approached, 983 were eligible and agreed to participate, and 940 completed the questionnaires with valid responses. Table 1 shows the participants’ socio-demographic and pregnancy-related characteristics. The mean age of the patients was 23.17 years (SD = 4.05) and it ranged from 15 to 34 years old. 783 (83.3%) participants were married and 661 (70.3%) participants reported that their health condition was good or average at the time of survey. There were four (0.4%) participants firstly pregnant at the age of 14 years old and 284 (30.2%) at the age of 15 years old, 448 (47.7%) at the age of 16 years old, and 204 (21.7%) at the age of 17 years old. The mean years after the first pregnancy was 7.26 (SD = 4.18), ranging from 0 to 19 years. The percentage of participants who

terminated their first pregnancy was 12.9% and who were pregnant without a plan was 56.7%. Of the the whole 940 participants, 61 (6.5%) participants reported suicide attempts in the last 12 months.

Table 1
Socio-demographic and pregnancy-related characteristics of the participants (N = 940)

	n	%
Age, mean \pm SD, years	23.17 \pm 4.05	
15–19	163	17.3
20–34	777	82.7
Marital status		
Single	157	16.7
Married	783	83.3
Education		
Illiterate/semi-literate/primary school	690	73.4
High school and college	250	26.6
Place of birth		
Rural	857	91.2
Urban	83	8.8
Current working status		
Unemployed	487	51.8
Employed	453	48.2
Dropout experience from the school		
No	135	14.4
Yes	805	85.6
Perceived health status		
Good/fair	661	70.3
Bad	279	29.7
Age of the first pregnancy, years		
14–15 ^a	288	30.6
16	448	47.7
17	204	21.7

^aThere were four participants (0.4%) reported their first pregnancy at the age of 14 years.

	n	%
Years after the first pregnancy		
Within one year	79	8.4
More than one year	861	91.6
Outcomes of the first pregnancy		
Completed or caring	819	87.1
Terminated	121	12.9
Pregnant plan of the first pregnancy		
No	533	56.7
Yes	407	43.3
Suicide attempt		
No	879	93.5
Yes	61	6.5
^a There were four participants (0.4%) reported their first pregnancy at the age of 14 years.		

Differences between participants with and without suicide attempts

Participants with suicide attempts in the last 12 months were significantly younger than those without suicide attempts. More participants were unemployed and reported bad perceived health status in females with suicide attempts than females without suicide attempts. The distributions of age of first pregnancy were significantly different between the two groups with higher percentage of females firstly pregnant at the age of 17 years old in participants with suicide attempts than those without. Years after the first pregnancy were significantly less among participants with suicide attempts than those without. Of the 61 females with suicide attempts, 88.5% (54/61) were within one year after the pregnancy, which was significantly higher than those among females without suicide attempts (2.8%, 25/879; $\chi^2 = 543.98$, $p < 0.001$). The distribution of women attempting suicide in different years after the first pregnancy is shown in Fig. 1. Perceived social support from family, friends, and significant others were significantly less in participants with suicide attempts than those without. The percentage of participants who terminated their first pregnancy and the percentage of participants whose pregnancy were planned were higher among women with suicide attempts than women without. There were no significant differences of the distributions in marital status, education, place of birth, and dropout experience from the school between participants with and without suicide attempts. See Table 2.

Table 2

Comparisons of the potential associated factors between participants with and without suicidal behavior (N = 940)

	with suicidal attempt (n = 61)	without suicidal attempt (n = 879)	<i>t/χ²</i>	<i>p</i>
Age, mean ± SD, years	17.57 ± 2.84	23.56 ± 3.83	15.49	< 0.001
Marital status			1.00	0.318
Single	13 (21.3)	144 (16.4)		
Married	48 (78.7)	735 (83.6)		
Education			0.05	0.816
Illiterate/semi-literate/primary school	44 (72.1)	646 (73.5)		
High school and college	17 (27.9)	233 (26.5)		
Place of birth			2.84	0.092
Rural	52 (85.2)	805 (91.6)		
Urban	9 (14.8)	74 (8.4)		
Current work status			35.22	< 0.001
Unemployed	54 (88.5)	433 (49.3)		
Employed	7 (11.5)	446 (50.7)		
Dropout experience from the school			0.01	0.928
No	9 (14.8)	126 (14.3)		
Yes	52 (85.2)	753 (85.7)		
Perceived health status			70.13	< 0.001
Good/fair	14 (23.0)	647 (73.6)		
Bad	47 (77.0)	232 (26.4)		
Age of first pregnancy, years			63.35	< 0.001
14–15	10 (16.4)	278 (31.6)		

^aFisher's exact test was used.

	with suicidal attempt (n = 61)	without suicidal attempt (n = 879)	<i>t</i> / χ^2	<i>p</i>
16	13 (21.3)	435 (49.5)		
17	38 (62.3)	166 (18.9)		
Years after first pregnancy			543.98	< 0.001
Within one year	54 (88.5)	25 (2.8)		
More than one year	7 (11.5)	854 (97.2)		
Outcomes of the first pregnancy			35.87	< 0.001
Completed or caring	38 (62.3)	781 (88.9)		
Terminated	23 (37.7)	98 (11.1)		
Pregnant plan of the first pregnancy			15.20	< 0.001
No	20 (32.8)	513 (58.4)		
Yes	41 (67.2)	366 (41.6)		
Perceived social support				
Family	8.89 ± 3.87	13.58 ± 3.06	9.27	< 0.001
Friends	11.93 ± 2.64	14.51 ± 2.40	7.39	< 0.001
Significant Others	8.46 ± 6.73	12.16 ± 5.20	4.21	< 0.001
^a Fisher's exact test was used.				

Associated factors of suicide attempts

We firstly performed logistic regression by including age, age of first pregnancy and other variables except years after first pregnancy in univariate associations with the *p*-values of 0.1 or less as independent variables. The results are presented in Table 3. Women who were older (OR = 0.49, 95%CI = 0.37–0.64) and perceived more social support from friends (OR = 0.70, 95%CI = 0.56–0.87) were less likely to have suicide attempts. Women who perceived bad health status compared with who perceived good/fair health (OR = 7.78, 95%CI = 2.79–21.69) and firstly pregnant at 17 years old compared with those at 14–15 years (OR = 3.90, 95%CI = 1.13–13.46) were more likely to have suicide attempts.

Table 3

Multivariate associations between demographic characteristics, pregnancy-related characteristics, health status, and perceived social support and suicidal attempts (N = 940)

	<i>B</i>	<i>S.E.</i>	<i>Wald</i> χ^2	<i>p</i>	OR (95%CI)
Age	-0.72	0.14	25.53	< 0.001	0.49 (0.37–0.64)
Place of birth					
Rural	Reference				1
Urban	0.86	0.89	0.94	0.332	2.36 (0.42–13.40)
Current work status					
Unemployed	Reference				1
Employed	0.85	0.77	1.22	0.270	2.34 (0.52–10.63)
Perceived health status					
Good/fair	Reference				1
Bad	2.05	0.52	15.35	< 0.001	7.78 (2.79–21.69)
Age of first pregnancy, years					
14–15	Reference				1
16	0.97	0.64	2.26	0.133	2.63 (0.75–9.23)
17	1.36	0.63	4.63	0.031	3.90 (1.13–13.46)
Outcomes of the first pregnancy					
Completed or caring	Reference				1
Terminated	0.26	0.50	0.27	0.604	1.30 (0.49–3.44)
Pregnant plan					
No	Reference				1
Yes	-0.82	0.63	1.72	0.189	0.44 (0.13–1.50)
Perceived social support					
Family	-0.08	0.09	0.91	0.340	0.92 (0.78–1.09)
Friends	-0.36	0.11	10.11	0.001	0.70 (0.56–0.87)
Others	0.03	0.07	0.20	0.654	1.03 (0.90–1.18)
Dependent variable: suicide attempts (0 = without, 1 = with).					

We then performed logistic regression by including years after first pregnancy instead of age and age of first pregnancy. The results show that participants with more years after first pregnancy (OR = 0.49, 95%CI = 0.38–0.63) and more perceived social support from friends (OR = 0.71, 95%CI = 0.57–0.88) were less likely to have suicide attempts, and those perceived bad health status (OR = 7.73, 95%CI = 2.85–20.99) were more likely to have suicide attempts in the past 12 months.

Discussion

The current study is the first to examine the prevalence of suicide attempts and its relationship with socio-demographic and pregnancy-related characteristics, perceived health status, and perceived social support in young women who were firstly pregnant in their period of adolescence. The results show that the past-year prevalence of suicide attempts was 6.5% in the whole sample, and majority (88.5%) of the attempts happened within one year after the pregnancy. Those who were younger, firstly pregnant at a relatively older age, perceived bad health status, and reported less perceived social support from friends were more likely to commit suicide in the past 12 months of the survey.

A meta-analysis including 88, 225 college students in China found that the prevalence of 12-month suicide attempts was 2.9% and the prevalence of suicide attempts for female students was 2.7% [10]. Meehan et al. [24] reported the prevalence of 12-month suicide attempt was 2.0% among young adults in a public university of US. The prevalence of suicide attempts in young women with adolescent pregnancy found in our study (6.5%) was higher than that in general population of the similar age. The evidence of prevalence of suicide attempts in general young adults at the similar age with women in our study in Bangladesh is limited. One study found that the prevalence of suicide attempts in adults aged ≤ 39 years from rural location was 0.3% [25]. Another study on suicidal ideation reported that the prevalence of suicidal ideation among women aged 15–49 years ranged from 11.0–14.0% [26], however, less than one third of them will commit suicide attempts [27]. In conclusion, young women with adolescent pregnancy in Bangladesh reported a relatively higher prevalence of suicide attempts than general population at the similar age.

The current study found that among women who have experienced adolescent pregnancy, those with older age were less likely to commit suicide. This may be because the effect of pregnancy happened in their period of adolescence on psychological well-being were attenuated over the time. Our further analysis indicated that women with longer period after the adolescent pregnancy were less likely to attempt suicide, confirming the explanation. Women who were within one year after the pregnancy accounting for 88.5% of all the women attempting suicide in this study. One of the possible reasons for higher suicide risk of shorter time after pregnancy was that adolescents were vulnerable in this rapid phase and critical period for human development [28], and pregnancy in this special time was a stressful life events rather than an event full of happiness [29]. It could induce psychological problems and even suicidal ideations and attempts. Another reason may be that women within one year after pregnancy was more likely to experience depression [30, 31], which was a strong cause of suicide among women [19]. The results indicate that the possibility of suicide attempts were 35% higher in participants who were

firstly pregnant at the age of 17 than those at the age of 14 and 15 years. This may be because that older adolescents had lower self-compassion, which induced worse emotional well-being and further increased the risk of suicide [32].

Perceived health status was measured in this study as it was suggested to be a good indicator of the whole health condition [21]. Our results were in line with the previous ones which found that people with worse health conditions were at elevated risk for mental disorders, including suicide [33, 34]. One study among old adults also found that a negative perception of one's health status was a significant risk factor for suicide attempts [35]. The current study further supports the relationship in women with adolescent pregnancy that bad health condition was associated with higher risk of attempting suicide.

Among social support from family, friends, and significant others, only support from friends was found to be associated with suicide attempt in the current study. It is in accordance with the findings of a few previous studies. Kuper et al. [36] found that friend support was negatively associated with suicide attempts of the past year but the association between family support and suicide attempts was not significant in the transgender and gender nonconforming population. Fredrick et al. [37] found that support from friends was a strong buffer between depression and suicidal ideation among adolescent girls than boys. Lacking of friend support may leave young women, especially adolescent girls feeling alone and isolated. It is consistent with the interpersonal-psychological theory of suicide, which suggests that suicide attempts are associated with short of support and isolation, especially when paired with stressful experiences (e.g., pregnancy during adolescence) [38].

Results of the current study should be interpreted within the context of several limitations. First, our study does not address causality of the relationships between suicide attempts and related factors since data were cross-sectional. However, socio-demographic factors were relatively stable and pregnancy-related factors were retrospectively assessed. The causal relationship between suicide attempts and perceived health condition and social support should be examined in future prospective studies. Second, recalling bias may exist in assessing the information about first pregnancy. It is better to obtain this information from medical records, if possible, in future study. Third, the generalization of the results was limited because the sample was from one country (Bangladesh). The cross-culture research was needed to add epidemiological data of suicide attempts and verify the related factors.

Conclusions

Suicidality represents a major societal and health care problem, it thus should be given a high priority in many realms, particularly some vulnerable populations. This study indicated that the prevalence of suicide attempts was high in young women with adolescent pregnancy. It also underscores the importance of risk roles of shorter time (especially the first year) after the pregnancy and perceived bad health condition and the importance of protective role of friends support for suicide attempts. The results imply that suicides in young women who were firstly pregnant at adolescent age can, at least partially, be prevented by increasing health conditions and providing more support from friends.

Abbreviations

OR: odds ratio; CI: confidence interval.

Declarations

Ethics approval and consent to participate

The research was approved by the ethics committee of the Bangladesh Medical Research Council (27023012020) and the School of Public Health, Shandong University (20181109).

Consent for publication

Not applicable.

Availability of data and materials

The data are available from the corresponding author on reasonable request.

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

Jie Li analyzed and interpreted the data. Syeda Zerim Imam collected the data. Jie Li, Syeda Zerim Imam, Zhengyue Jing, and Yi Wang were performed the first draft of the manuscript. Chengchao Zhou designed the study and revised the manuscript. All authors contributed to the concept and purpose of the study and approved the final manuscript.

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Figures

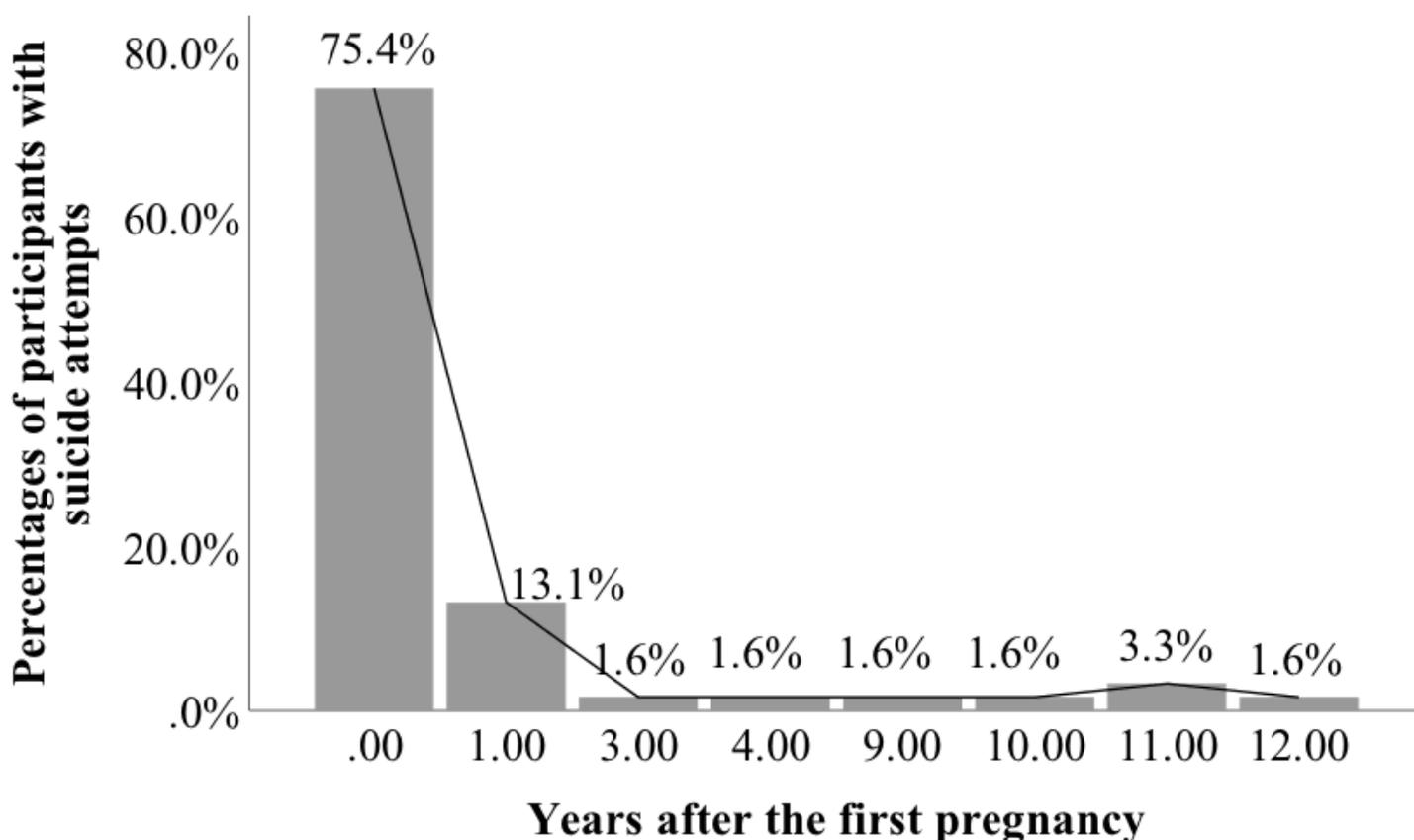


Figure 1

Percentages of participants with suicide attempts in different years after the first pregnancy.

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