

Single and multiple suicide attempts: Prevalence and correlates in school-going adolescents in Liberia in 2017

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Abstract

Background: This investigation aimed to estimate the prevalence and its correlates of single and multiple suicide attempts among adolescents in Liberia.

Method: Cross-sectional nationally representative data were analysed from 2,744 adolescents (18 years median age) that participated in the “2017 Liberia Global School-Based Student Health Survey (GSHS).”

Results: Results indicate that 33.7% of students had made a suicide attempt in the past 12 months (16.5% single and 17.2% multiple suicide attempts). In adjusted multinomial logistic regression analysis, having no close friends, loneliness, having been frequently physically attacked, ever used amphetamine and fast food intake were associated with multiple suicide attempts in the past 12 months. In addition, having been frequently in a physical fight and current tobacco use were associated with single suicide attempt. In sex stratified analyses, in addition, among boys frequent bullying victimization and among girls, parental tobacco use and parents never or rarely check on home work were associated with multiple suicide attempts. Multiple psychosocial distressors, multiple social-environmental factors and multiple health risk behaviours were associated with single and multiple suicide attempts.

Conclusion: One in three students had made suicide attempt in the past 12 months (one in six students multiple suicide attempts) and several associated variables were detected which can aid in designing intervention strategies.

Background

Suicide is one of the major causes of death in young people [1]. Attempting suicide is an important factor that can lead to suicide death [2]. Programmes geared towards preventing suicide among adolescents need to be aware of the current trends of suicide attempts and its correlates [3]. In a multi-country school survey including adolescents, the pooled prevalence of past 12 month attempted suicide in 8 countries of the sub-Saharan African region was 19.3%, ranging from 10.2% in Tanzania to 27.9% in Benin [4]. In a national household survey among adults in Liberia in 2008, “One in three respondents had participated in fighting forces and one in three of these were women, 44% had PTSD symptoms, 40% met the criteria for major depressive disorder, 11% reported suicidal ideation, 8% social dysfunction, and 6% a prior unsuccessful suicide attempt.” [5] “War exposure and post-conflict sexual violence, poverty, infectious disease and parental death negatively impacted youth mental health in Liberia.” [6] Key informants perceived that among adolescents/young adults in Liberia, suicidal ideation was ranked fourth highest emotional and behavioural problem, after, alcohol, drug use and delinquent behaviour [6]. “Conflict and post-conflict situations can be particularly stressful for children and adolescents facing the traumatising impact of direct exposure to violence as well as stressful living conditions.” [7] There are a lack of systematic data about suicidal behaviour among adolescents in Liberia [7].

As previously reviewed in Pengpid and Peltzer [8], risk factors of suicide attempt may include, “female sex, older age, lower socioeconomic status, having no close friends, loneliness, anxiety, bullied, exposure to interpersonal violence, alcohol use, drug use, cannabis use and injury.” In addition, recent large studies among adolescents showed that

fast food consumption, soft drink intake and sexual behaviour increased the likelihood of suicide attempt [9–11]. Studies on multiple suicide attempts found that lower social support, suicidal ideation, mental disorder, anxiety disorder, hopelessness and family suicide history predicted multiple suicide attempts [12–14]. Moreover, several studies [15–17], showed a strong association between multiple adverse experiences and suicide attempts. The investigation aimed to estimate the prevalence and associated factors of single and multiple suicide attempts among school-going adolescents in Liberia.

Methods

Cross-sectional nationally representative data from the “2017 Liberia GSHS” were analyzed [18]. More details on the survey methodology and the data can be accessed [18]; the overall response rate was 71%.” [18]

Measures

The questionnaire used is shown in supplementary file 1 [18]. Emotional neglect was defined as rarely or never “parental or guardian understanding of your problems and worries? OR rarely or never parents or guardians really know what you were doing with your free time when you were not at school or work?” [19]

Data analysis

Statistical analyses were done with “STATA software version 15.0 (Stata Corporation, College Station, Texas, USA).” Adjusted multinomial logistic regression was used to assess predictors of single and multiple suicide attempts (past 12 months), with no past 12-month suicide attempt as reference category. Missing values were not included in the analysis. $P < 0.05$ was accepted as significant.

Results

The sample comprised of 2,744 school adolescents (18 years median age, 2 years interquartile range), 48.2% were female, 16.6% were mostly or always hungry, 16.9% used currently tobacco, 15.6% got into trouble because of alcohol use, 8.4% used currently cannabis, 7.9% had ever use amphetamines, 19.2% had two or more soft drinks a day, 23.6% had fast food on two or more days in the past week, 27.8% had multiple sexual partners, and 39.7% had multiple injuries (2 or more/past year). One in five students (20.0%) had anxiety, 12.6% had no close friends, 13.9% had loneliness, 22.5% had frequently been bullied, 38.1% had been frequently attacked and 23.8% had been frequently in a physical fight. One in five students (24.6%) reported low peer support, 38.3% parental emotional neglect, 29.8% had parents who never or rarely checked home work, 19.8% mostly or always go through things (not respect privacy), 13.9% had one or both parents using tobacco and 15.0% had engaged in school truancy. One in three of the participants (33.7%) had made a suicide attempt in the past year (16.5% single and 17.2% multiple suicide attempts) (see Table 1).

Table 1
Sample and suicide attempts characteristics among adolescents in Liberia

Variable	Sample	Suicide attempt (past 12 months)	
		1 time	≥ 2 times
	N (%)	%	%
Socio-demographics			
All	2744	16.5	17.2
Age (years)	392 (16.1)	12.8	12.1
≤14	932 (36.3)	16.3	14.7
15–17	1337 (47.6)	18.2	20.4
≥18			
Gender	1253 (48.2)	16.9	16.0
Female	1382 (51.8)	15.9	17.8
Male			
Psychosocial distress			
No close friends	330 (12.6)	16.8	17.9
Loneliness	367 (13.9)	19.3	26.7
Anxiety	540 (20.0)	17.3	26.2
Frequently bullied (≥ 3 days/month)	528 (22.5)	19.7	34.1
Frequently physically attacked	1010 (38.1)	17.5	25.6
Frequently in physical fight	629 (23.8)	19.7	32.6
Social-environmental factors			
Mostly/always feeling hungry	439 (16.6)	17.7	25.2
Low peer support	571 (24.6)	21.4	18.3
Parental emotional neglect	865 (38.3)	16.7	18.2
Parents never/rarely check home work	734 (29.8)	17.0	18.9
Parents mostly/always go through things	482 (19.8)	19.9	19.0
Parental tobacco use	358 (13.9)	22.0	35.3
School truancy (≥ 3 days/month)	348 (15.0)	16.9	24.5
Health risk behaviours			
Current tobacco use	414 (16.9)	27.2	44.5
Trouble from alcohol use	358 (15.6)	23.1	34.9
Current cannabis use	193 (8.4)	25.2	42.6
Ever amphetamines	180 (7.9)	22.9	52.4
Soft drink intake (≥ 2 times/day)	512 (19.2)	22.2	31.0
Fast food intake (≥ 2 days/week)	607 (23.6)	20.0	26.1
Multiple sexual partners	684 (27.8)	19.6	21.7
Multiple injuries	901 (39.7)	14.9	24.6

Table 1

Associations with single and multiple suicide attempts by single adverse events

In adjusted multinomial logistic regression analysis, having no close friends, loneliness, having been frequently physically attacked, ever used amphetamine and fast food intake were associated with multiple suicide attempts in the past 12 months. In addition, having been frequently in a physical fight and current tobacco use were associated with single suicide attempt (see Table 2). In sex stratified analyses, in addition, among boys frequent bullying victimization (OR: 2.19, CI: 1.19–4.02) and among girls, parental tobacco use (OR: 5.44, CI: 1.94, 15.26) and parents never or rarely check on home work (OR: 2.78, CI: 1.19, 6.51) were associated with multiple suicide attempts in the past 12 months.

Table 2

Associations with single and multiple suicide attempts in the past 12 months by single adverse events

Variable	Single suicide attempt	Multiple suicide attempts
	ARRR (95% CI)	ARRR (95% CI)
Socio-demographics		
Age (years)	1 (Reference)	1 (Reference)
≤14	1.76 (0.86, 3.59)	2.21 (0.99, 3.98)
15–17	1.52 (0.66, 3.49)	2.16 (0.91, 5.09)
≥18		
Gender	1 (Reference)	1 (Reference)
Female	0.97 (0.62, 1.50)	1.36 (0.85, 2.17)
Male		
Psychosocial distress		
No close friends	1.21 (0.57, 2.60)	2.63 (1.48, 4.68)***
Loneliness	1.82 (0.97, 3.42)	1.96 (1.15, 3.37)*
Anxiety	1.13 (0.69, 1.85)	1.47 (0.83, 2.59)
Frequently bullied (≥ 3 days/month)	1.14 (0.63, 2.08)	1.45 (0.85, 2.47)
Frequently physically attacked (≥ 2 times/year)	1.01 (0.69, 1.47)	2.42 (1.38, 4.25)**
Frequently in physical fight (≥ 2 times/year)	2.20 (1.37, 3.53)***	1.76 (0.93, 3.32)
Social-environmental factors		
Mostly/always feeling hungry	1.25 (0.67, 2.35)	1.06 (0.54, 2.09)
Low peer support	1.63 (0.97, 2.74)	1.36 (0.74, 2.50)
Parental emotional neglect	0.99 (0.58, 1.70)	1.02 (0.54, 1.92)
Parents never/rarely check home work	0.97 (0.59, 1.58)	0.89 (0.49, 1.64)
Parents mostly/always go through things	1.06 (0.66, 1.71)	0.98 (0.57, 1.66)
Parental tobacco use	1.25 (0.51, 3.07)	2.11 (0.99, 4.52)
School truancy (≥ 3 days/month)	0.76 (0.39, 1.48)	0.69 (0.28, 1.70)
Health risk behaviours		
Current tobacco use	2.04 (1.02, 4.04)*	1.18 (0.51, 2.77)
Trouble from alcohol use	1.27 (0.69, 2.35)	1.30 (0.66, 2.58)
Current cannabis use	1.83 (0.51, 6.55)	2.59 (0.94, 7.17)
Ever amphetamines	1.17 (0.27, 5.05)	2.87 (1.19, 6.89)*
Soft drink intake (≥ 2/day)	1.07 (0.62, 1.85)	1.14 (0.61, 2.11)
Fast food intake (≥ 2/week)	1.72 (1.03, 2.87)*	1.93 (1.11, 3.34)*
Multiple sexual partners (lifetime)	1.35 (0.85, 2.14)	1.40 (0.84, 2.33)
Multiple injuries (past year)	0.70 (0.38, 1.29)	1.09 (0.65, 1.83)
***P < .001; **P < .01; *P < .05; ARRR = Adjusted Relative Risk Ratio; CI = Confidence Interval		

Table 2

Associations with single and multiple suicide attempts by multiple adverse events

In adjusted multinomial logistic regression analysis, compared to students who did not experience any psychosocial distress, students with 1, 2 and 3 or more psychosocial distresses had an increasing likelihood of single and multiple suicide attempts. Multiple social-environmental factors and multiple health risk behaviour were associated with single and multiple suicide attempts. Associations with multiple suicide attempts were stronger than with a single suicide attempt (see Table 3).

Table 3
Associations with single and multiple suicide attempts in the past 12 months by multiple adverse events

Variable	Prevalence	Single suicide attempt	Multiple suicide attempts
	%	ARRR (95% CI) ¹	ARRR (95% CI) ¹
<i>No of psychosocial distresses</i>			
0	32.0	1 (Reference)	1 (Reference)
1	31.8	1.68 (1.18, 2.39)**	3.79 (2.26, 6.35)***
2	20.8	2.54 (1.94, 3.33)***	5.12 (2.76, 9.48)***
3 or more	15.5	2.55 (1.58, 4.12)***	14.02 (8.70, 22.58)***
<i>No of social-environmental factors</i>			
0	26.0	1 (Reference)	1 (Reference)
1	29.0	1.32 (0.86, 2.02)	1.14 (0.80, 1.64)
2	23.6	1.57 (0.94, 2.60)	2.05 (1.35, 3.13)***
3 or more	20.4	2.11 (1.38, 3.24)***	2.68 (1.80, 4.01)***
<i>No of health risk behaviours</i>			
0	31.3	1 (Reference)	1 (Reference)
1	35.3	1.03 (0.66, 1.60)	1.61 (0.99, 2.62)
2	18.1	1.91 (1.35, 2.70)***	2.43 (1.36, 4.35)**
3 or more	15.3	3.47 (2.34, 5.15)***	8.27 (4.87, 14.04)***
Variables	Question	Response options (coding scheme)	
	<i>Psychosocial distress</i>		
	<i>Social-environmental factors</i>		
	<i>Health risk behaviours</i>		
Current tobacco use	"1 = 0 days to 7 = All 30 days (coded 1 = 0 and 2-7 = 1)		
***P < .001; **P < .01; *P < .05; ARRR = Adjusted Relative Risk Ratio; CI = Confidence Interval; ¹ Adjusted for age, sex and school grade			
Supplementary file 1: Variable description			

Table 3

Discussion

The investigation aimed to estimate the prevalence and correlates of single and multiple suicide attempts in school adolescents in Liberia. The prevalence of past 12-month suicide attempt (33.7%) in this study was much higher than in 8 countries of the sub-Saharan Africa region (19.3%) [4]. It is possible that the post-conflict situation in Liberia contributes to the high rate suicide attempts among adolescents [5–7]. Borba et al. [6] note that “the most significant mental health needs for children, adolescents and young adults included both externalizing and internalizing (i.e., lack of motivation, sadness/depression, suicidal thoughts, hopelessness) symptoms and behaviours.” “While these symptoms have been consistently documented in youth exposed to childhood adversity and exposure to traumatic experiences, these findings should be viewed in the context of the total breakdown of many protective communal, family and societal structures.” [6]

Previous studies found a higher prevalence of suicide attempt (single and multiple) in girls than in boys [20, 21], while no significant sex differences were found in this study. This result seems to show that boys “internalize emotional-behavioural problems (leading more likely to suicidal ideation and suicide attempts)” [22] similarly than girls do. In a multi-country school survey among adolescents study [20], suicide attempts increased with age, while age differences in the prevalence of single and multiple suicide attempts were not observed in this study. Unlike a previous study [20], this investigation did not find an association between low economic status (mostly feeling hungry) and suicide attempt.

In agreement with previous studies [20, 21, 23, 24], this study found an association between loneliness, no close friends, bullying victimization, interpersonal violence and single and/or multiple suicide attempt. Several researchers [13, 14] emphasised the importance of mental disorder and/or hopelessness in predicting multiple suicide attempts. These findings suggest the importance of treating psychosocial distress and prevention of bullying victimization and interpersonal violence in order to prevent suicide.

In agreement with previous investigations [8, 10, 20, 25], the findings of this research show an association between current tobacco use, drug use, parental tobacco use and fast food intake with single and/or multiple suicide attempts. Several mechanisms have been proposed [10] for the link between fast food consumption and suicide attempt, for example, “fast food consumption may increase risk for suicide attempts by increasing vulnerability to traumatic stress via alterations in brain structure and function, with stress being a well-known predictor of suicide attempts in adolescents.” [10, 26]. Some research [9, 11, 27] showed an association between sexual behaviour, injury, soft drink intake and suicide attempt, while this study did not discover such links.

Only among girls, this study found an association between social-environmental factors (parental tobacco use and parents never/rarely check home work) and multiple suicide attempts, which concurs with some previous research [20, 25]. In agreement with former research [15–17], this study showed a strong association between multiple adverse experiences and single and multiple suicide attempts, and appeared to be stronger in multiple suicide attempts. This seems to confirm a dose-response relationship between the more adverse experiences, the more likely multiple suicide attempts are made. Study limitations include that this investigation was limited because of its cross-sectional design, the inclusion of only school adolescents as well as the self-report of the data. An additional limitation was that the GSHS in Liberia did not assess help seeking behaviours for suicidal behaviours.

Conclusion

The study found among school-going nationally representative adolescents in Liberia that one in three students had made a suicide attempt in the past 12 months (one in six students multiple suicide attempts). Several risk factors, including having no close friends, loneliness, having been frequently physically attacked, ever used amphetamine, fast food intake, having been frequently in a physical fight, current tobacco use, frequent bullying victimization, parental tobacco use and parents never or rarely check on home work were identified for both or one of the sexes for multiple and/or single suicide attempt, which can assist in guiding interventions to prevent suicidal behaviour in this adolescent school population.

Abbreviations

GSHS

Global School-Based Student Health Survey; STATA: Statistics and data

Declarations

Ethics approval and consent to participate

The present study was based on an analysis of the Liberia 2017 GSHS survey dataset freely available online with all identifier information detached. The Liberia 2017 GSHS was approved by the Liberia Ministry of Education and the World Health Organization. Therefore, the permission and ethical approval for the present analysis was automatically deemed unnecessary. Moreover, during the GSHS survey, written assent attached to a questionnaire was obtained from all eligible participants before filling the questionnaire.

Consent for publication

Not applicable.

Availability of data and materials

The data for the current study are publicly available at the World Health Organization NCD Microdata Repository (URL: <https://extranet.who.int/ncdsmicrodata/index.php/catalog>).

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

All authors fulfill the criteria for authorship. SP and KP conceived and designed the research, performed statistical analysis, drafted the manuscript and made critical revision of the manuscript for key intellectual content. All authors read and approved the final version of the manuscript and have agreed to authorship and order of authorship for this manuscript.

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The data source, the World Health Organization NCD Microdata Repository (URL: <https://extranet.who.int/ncdsmicrodata/index.php/catalog>), is hereby acknowledged.

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