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Suicidality among Lebanese adolescents: Prevalence, predictors and service utilization

Evelyne Baroud[a], Lilian A. Ghandour[b,*], Loay Alrojolah[a], Pia Zeinoun[a], Fadi T. Maalouf[a,**]

[a] Department of Psychiatry, American University of Beirut, Beirut, Lebanon
[b] Department of Epidemiology and Population Health, American University of Beirut, Beirut, Lebanon

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ABSTRACT

Suicide and self-harm in young people is a global public health issue, although epidemiological evidence remains scant in many parts of the world. The aims of the present study are to describe the prevalence, comorbidity patterns, and the clinical and demographic correlates of suicidality among a representative sample of adolescents from Beirut, Lebanon.

We recruited 510 adolescents aged 11–17 and one of their parents/legal guardians using a multistage random cluster design. The validated Arabic version of the Development and Well-Being Assessment (DAWBA) was administered independently to the parent/legal guardian, and adolescents, who also self-completed the Strengths and Difficulties Questionnaire (SDQ), and the Peer-Relations Questionnaire (PRQ). The parent/legal guardian also completed the SDQ and provided demographic and clinical information.

A total of 22 adolescents (4.3%) have experienced suicidal ideation or attempt. Correlates of suicidality were female gender, alcohol use in the past 4 weeks, lifetime exposure to a stressful life event, suffering from a major depressive disorder and having bipolar disorder within the last 4 weeks. Only 1 suicidal participant reported ever seeking professional mental health help.

Our findings highlight an alarming treatment gap in Lebanese adolescents experiencing suicidality. Future studies should aim at investigating barriers to care and at developing community-based interventions to improve access to care.

1. Introduction

Globally each year, 11.4 per 100,000 people die by suicide (World Health Organization, 2014). In 2016, suicide was the second leading cause of death among those aged 10 to 24 (Web-based Injury Statistics Query and Reporting System, 2016).

Adolescence is a key phase of development marked by a significant prevalence of psychiatric disorders and risk for suicide, presenting a window of opportunity for intervention and prevention. Suicidal behaviors lie along a continuum and include suicidal ideations, active planning and fatal attempts as well as non-fatal self-harm gestures (Borschmann et al., 2018).

Suicide in adolescents has been associated with a number of high-risk behaviors and mental health problems (Nock et al., 2013; Waldvogel et al., 2008). Research has identified several risk factors, including individual-level factors (e.g., gender, genetic/biological/personality elements, cognitive styles, history of abuse and of prior suicide attempts); familial factors (e.g., family history of suicidal behavior and parental psychopathology) and social and environmental factors (e.g., lower socio-economic background, lower educational level, other life stressors including loss of a parent or bullying) (Arseneault et al., 2010; Beautrais, 2003; Gould and Kramer, 2001; Waldvogel et al., 2008). The single most important risk factor for completed suicide remains a history of a previous suicide attempt, even after controlling for psychiatric conditions (Bridge et al., 2006). There is a growing body of research on the role of religion, religiosity, and spirituality and suicidal behavior (Lester, 2017), and while religious affiliation is not automatically protective against suicidal ideations, it does safeguard against suicide attempts (Lawrence et al., 2016).

Data on suicidality in the eastern Mediterranean region is scarce. A study from the Gulf shows that suicide ranks among the top 5 causes of death in the young adolescent age group (Al Makadma, 2017). In another study from Lebanon, 16% of 5115 Lebanese students aged 13–15 had considered committing suicide (Mahfoud et al., 2011).

* Corresponding author at: American University of Beirut, Faculty of Health Sciences, Riad El-Solh / Beirut 1107 2020, P.O. Box 11-0236, Lebanon
** Co-Corresponding author at: American University of Beirut, Department of Psychiatry, Riad El-Solh / Beirut 1107 2020, P.O. Box 11-0236, Lebanon
E-mail addresses: lg01@aub.edu.lb (L.A. Ghandour), fm38@aub.edu.lb (F.T. Maalouf).

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The aims of the present paper are to add to the scant literature on suicidality among young people in the Arab world by investigating the prevalence, comorbidity well as the clinical and demographic correlates of suicidality among a representative sample of adolescents recruited from the Greater Beirut area. The findings contribute to the limited available data from a different context and culture of reporting and handling of suicide.

2. Methods

The following study is a secondary analysis of the Beirut Epidemiological Investigation of the Psychiatric Status of Youth (BEI-PSY) (Maalouf et al., 2016).

2.1. Study design and sampling

The survey recruited 510 Arabic speaking adolescents selected using a multistage cluster sampling technique. Details of the survey sampling design and data collection are discussed in separate articles (Ghandour et al., 2018; Maalouf et al., 2016).

2.2. Instruments and measures

Recruited participants and one of their parents/legal guardians were independently interviewed using the validated Arabic version of the Development and Well-Being Assessment (DAWBA) (Goodman et al., 2000; Zalsman et al., 2016). Adolescents also self-completed the Strengths and Difficulties Questionnaire (SDQ), and the Peer-Relations Questionnaire (PRQ). The parent/legal guardian also completed the SDQ and provided demographic and clinical information.

2.2.1. Development and well-being assessment

The DAWBA is a diagnostic tool that relies on interview questions and questionnaires that are completed by children or adolescents and their parents. The DAWBA is used to establish psychiatric diagnoses based on the Diagnostic and Statistical Manual IV (DSM IV) and the International Classification of Disease-10 (ICD-10). Parents and children/adolescents answer questions regarding psychiatric symptomatology and impairment. A computer algorithm is used to predict diagnoses; thereafter a mental health professional validates or refutes the computer generated diagnosis based on revision of both open and closed ended questions (Goodman et al., 2000). For this study, a psychiatrist and a licensed psychologist generated clinical diagnoses based on DSM IV criteria using the DAWBA. The BEI-PSY study used the Arabic version of the DAWBA, which showed evidence of validity in a Lebanese clinical sample of children and adolescents, and excellent inter-rater reliability for disruptive and mood disorders ($\kappa = 0.93$ and 0.82, respectively) and good inter-rater reliability for anxiety disorders (Zeinoun et al., 2013).

2.2.2. Suicidal ideation and/or attempt

The assessment of suicidal ideation and/or attempt was done using the DAWBA. The following questions were asked to a parent and the child: (1) Does the child/ think about death a lot? (2) In the past 4 weeks, did the child talk about harming or killing his or herself? (3) In the past 4 weeks, did the child try to hurt him/herself or kill him/herself? (4) And did the child ever tried to hurt him/herself or kill him/herself? Suicidal ideation is established by answering positively to either question (1) or (2) by the parent or the child. Suicidal attempt is established by answering positively to either question (3) or (4) by the parent or the child. Suicidality (S) for the purpose of this study is having either suicidal ideation or attempt. The study was approved by the Institutional Review Board. Participants signed consent/ assent forms. When the questions of active or past attempt were answered as yes, a psychologist was called on the spot to assess for current ideation and risk.

2.2.3. Strengths and difficulties questionnaire

The SDQ is a general measure of the behavioral and emotional difficulties of children. It produces 5 sub-scores for difficulties as well as a total difficulties score. In the BEI-PSY study, the Arabic version of the SDQ was employed (Almaqrami and Shuwail, 2004).

2.2.4. Peer-relations questionnaire

In the present study, the extent of involvement in bullying, either as victims or perpetrators, was estimated using the Peer-relations questionnaire (PRQ). Three different subscales scores are obtained: victim subscale (PRQ-Victim), which indicates the degree to which the child/adolescent is bullied; bully subscale (PRQ-Bully), which indicates the degree to which the child/adolescent is involved in bullying others; as well as a prosocial behavior subscale (PRQ-Prosocial). A validated Arabic version of the scale showed good internal consistency in the sample ["PRQ-Victim" ($\alpha = 0.74$) and "PRQ-Bullies" ($\alpha = 0.70$)].

2.3. Demographic and clinical information

Demographic data was obtained from the parents and included information about the household size and structure, family monthly income, parents' educational level, and the adolescents' academic/school information. Clinical information about the adolescent's general medical health and family psychiatric history was also collected.

2.4. Statistical analysis

Kruskal–Wallis H test was used to compare non-normally distributed continuous variables. Pearson's Chi square test and Fisher's exact test were used to assess the correlation between categorical variables. Logistic regression models were run to examine demographic correlates of having suicidal ideation or attempt (S). First, bivariate analyses were run followed by multivariable logistic regression analyses whereby associations were adjusted for age and gender and socioeconomic status. At the final level, multivariable analyses were run including all variables correlated with the outcome at the bivariate level at $p < 0.05$ (entered in the second block) in addition to gender, socioeconomic status and age in years (entered in the first block). The Statistical Package for Social Sciences (SPSS version 25.0) was used for all analyses.

3. Results

3.1. Socioeconomic characteristics: (Table 1)

Of the total sample of 510 participants, 22 (4.3%) were found to experience suicidality (S) of which 8 had suicidal ideations only (36.4%), 1 (4.5%) had suicidal attempt with no ideation and 13(59.1%) had both suicidal ideation and attempt. Among participants who fulfilled criteria for suicidality, 14 (63.6%) of them had only youth reported suicidality, 5 (22.7%) had parent reported suicidality and 3 (13.7%) had both parent and youth reported suicidality.

Adolescents in the suicidality group (S) (parent and/or child reported) were one year older on average than those in the group with no suicidality (NS) ($H = 6791$; $p = 0.035$) and had higher proportion of females (68% vs 43%; $p = 0.027$). They were also more likely to have unmarried parents (32% vs 7%; $p < 0.001$), a biological mother not residing at home (14% vs 3%; $p = 0.043$), a biological father not residing at home (23% vs 7%; $p = 0.016$), and not to be enrolled in school (23% vs 5%; $p = 0.004$) compared to those who never experienced suicidality (NS).

3.2. Psychiatric comorbidities and substance use

Among those who experienced suicidality, 72% fulfilled criteria for at least one mental health disorder compared to 24% of those who had

Table 1
Sociodemographic characteristics of suicidal subgroup of adolescents as compared to non-suicidal subgroup.

	No suicidal ideation or attempt Mean(SD)	Suicidal ideation or attempt Mean(SD)		*p*-value
Age new	14.12(2.12)	15.12(1.78)	$H = 6791$	0.035
Total household size	5.05(1.4)	4.77(1.48)	$H = 4699$	0.305
	Count(%)	Count(%)		
Female	211(0.43)	15(0.68)		0.027*
Lebanese	440(0.9)	19(0.86)		0.474
Total monthly income				0.169
233–800	75(0.16)	7(0.32)		
801–1600	346(0.72)	13(0.59)		
>1600	62(0.13)	2(0.09)		
Parents married	452(0.93)	15(0.68)		0.001*
Biological mother residing at home	472(0.97)	19(0.86)		0.043*
Biological father residing at home	456(0.93)	17(0.77)		0.016*
Mother highest education level new				0.225
Less than elementary	22(0.05)	3(0.14)		
Elementary or middle school	189(0.39)	10(0.45)		
Secondary school	142(0.29)	5(0.23)		
University level education	117(0.24)	3(0.14)		
Masters and above	18(0.04)	1(0.05)		
Father highest education level new				0.208
Less than elementary	17(0.03)	3(0.14)		
Elementary or middle school	212(0.43)	10(0.45)		
Secondary school	114(0.23)	3(0.14)		
University level education	112(0.23)	5(0.23)		
Masters and above	33(0.07)	1(0.05)		
Repeated grades	129(0.28)	5(0.29)		1
Attends school	466(0.95)	17(0.77)		0.004*
Public vs Private_new				0.109
Public	141(0.32)	9(0.53)		
Private	306(0.68)	8(0.47)		
Receives special education at school	18(0.04)	1(0.05)		0.574
Receives tutoring at home	71(0.15)	5(0.23)		0.352
Chronic physical illness	76(0.16)	4(0.18)		0.763
Positive psychiatric family history	25(0.05)	3(0.14)		0.103

H: Kruskal–Wallis H Test.
Fisher's exact test was used to compare the categorical variables, with SPPS not providing a value for the test statistic.
* denotes significant difference between the two groups.

never experienced suicidality ($X^2 = 25.954$; $p < 0.001$). Of those in the "S" group, 10 (62.5%) had a major depressive disorder, 7 (43.75%) had an anxiety disorder, 5 (31.25%) had Post Traumatic Stress Disorder (PTSD), 4(25%) had mania/bipolar disorder, 4 (25%) had ADHD and 2 (12.5%) had conduct disorder or oppositional defiant disorder. The "S" group had a higher proportion; though not statistically significant; of participants with positive psychiatric family history (14% vs 5%; $p = 0.103$) as compared to "NS". Among "S", there was a significantly increased proportion of adolescents with alcohol use (27.3% vs 11.0%; $p = 0.033$) and tobacco use in the past 4 weeks (31.8% vs 8.5%; $p = 0.003$) compared to the "NS", but not cannabis use.

3.3. Trauma

"S had a significantly higher self-report of experiencing a lifetime stressful event than "NS" (31.8% vs 5.8%; $p < 0.001$). There was no significant difference between the two groups with regards to parents' reporting that the youth experienced an exceptionally stressful event (13.6% vs 7.4%; $p = 0.232$).

3.4. Victimization and bullying

There was a significant difference between "S" and "NS" groups with regards to PRQ victim score, with the "S" group having a higher score (2.64 vs 1.21; $p = 0.002$). There was no difference between the two groups with regards to PRQ bullying ("S" = 1.95 vs "NS" = 1.37; $p = 0.059$) or PRQ prosocial score ("S" = 9.27 vs "NS" = 9.22; $p = 0.795$).

3.5. Treatment seeking attitude

Only 1 (4.5%) participant in the "S" group ever sought professional mental health help. "S", however, had a higher proportion of adolescents that expressed interest in seeking mental health treatment (31.8% vs 2%; $p < 0.001$) and parents who considered that their child might have needed professional mental health help (63.6% vs 11.1%; $p < 0.001$) as compared to "NS".

3.6. Correlates of suicidality

In the multivariate model, female gender (CI[1.256,16.963]; $p = 0.021$), alcohol use over the past 4 weeks (CI[1.743,90.266]; $p = 0.012$), having a major depressive disorder (CI[10.484,294.465]; $p < 0.001$), having a bipolar disorder (CI [3.768,5301.774]; $p = 0.007$) and having a youth report a lifetime stressful event (CI[2.082,62.4]; $p = 0.005$) were associated with a higher likelihood of being in the "S" group (Table 2).

4. Discussion

In a representative sample of adolescents from the Greater Beirut area, 4.3% reported experiencing suicidal ideation or attempt. Females, those who drank alcohol over the past 4 weeks, those with a history of lifetime exposure to a stressful event, and those who suffered from major depressive disorder and bipolar disorders within the last 4 weeks were more likely to experience suicidality. Quite alarming, only one reported ever seeking mental health care. Obstacles to seeking help for suicidal ideations or self-harm in young people include stigma

Table 2
Correlates of having either suicidal ideation or intent.

Variable		Unadjusted OR	Confidence interval	*P*-value	Adjusted OR	Confidence interval	*p*-value	Adjusted OR	Confidence interval	*p*-value
Gender	Female Male	2.861	[1.146–7.141]	0.024				4.616	[1.256,16.963]	0.021
Income	1			0.144						0.084
	2	0.403	[0.155,1.043]	0.061				0.404	[0.096,1.7]	0.216
	3	0.346	[0.069,1.7724]	0.195				0.007	[0.00,0.673]	0.033
Age		1.259	[1.018,1.556]	0.034				1.057	[0.753,1.485]	0.747
Comorbid MDD	Yes No	5.126	[3.134,8.385]	<0.001	22.661	[8.080,63.55]	<0.001	55.562	[10.484,294.465]]	<0.001
Comorbid PTSD	Yes No	17.647	[5.223,59.628]	<0.001	21.012	[5.683,77.692]	<0.001	4.335	[0.523,35.963]	0.174
mania bipolar	Yes No	7.348	[3.046,17.729]	<0.001	84.246	[11.541,614.971]	<0.001	141.346	[3.768,5301.774]	0.007
Anxiety Disorder	Yes No	4.484	[1.739,11.561]	0.002	5.085	[1.864,13.874]	0.001	0.529	[0.109,3.119]	0.584
Cigarrete use	Yes No	5.042	[1.945,13.070]	0.001	5.269	[1.831,15.162]	<0.001	4.635	[0.735,29.248]	0.103
Alcohol use	Yes No	3.05	[1.144,8.131]	0.026	4.523	[1.502,13.614]	0.007	12.545	[1.743,90.266]	0.012
Parental marital status	Unmarried married	5.859	[2.245,15.291]	<0.001	4.229	[1.523,11.743]	0.006	2.085	[0.418,10.146]	0.375
PRQ victim scale		1.311	[1.113,1.544]	0.001	1.369	[1.148,1.632]	<0.001	2.058	[0.418,10.146]	0.375
Youth reported exceptionally stressful event	Yes	3.981	[1.793,8.839]	0.001	7.448	[2.652,20.916]	<0.001	11.399	[2.082,62.40]	0.005

surrounding mental health as well fears related to treatment of mental illness (Fortune et al., 2008; Freedenthal and Stiffman, 2007). This is especially true in Lebanon, where stigma surrounding mental illness and a lack of awareness remain major barriers to seeking professional help (Karam et al., 2006).

Although data on suicidality in adolescents in Lebanon is scarce, our prevalence rate is lower than the previously reported estimate of 16% (Mahfoud et al., 2011; Shediac-Rizkallah et al., 2000), potentially explained by methodological differences, since their studies collected data via a self-administered questionnaire as part of school or university-based surveys.

Table 3 describes the prevalence of suicidal ideations or attempt across different populations. Our prevalence of suicidality is lower than that reported in a study from the United States, where approximately 12.1% of adolescents (aged 13–18 years) reported suicidal ideation, 4.0% devised a plan for suicide, and around 4% attempted suicide (Nock et al., 2013). Our prevalence is also lower than what has been reported in studies from the European countries where approximately 17% of the 15–16 year olds, and 19.96% of 6–12 year olds experienced suicidal ideations (Kokkevi et al., 2012; Kovess-Masfety et al., 2015). The rate of suicidal attempt in our current study is similar, however, to that found in a recent meta-analysis from China (Hu et al., 2015). These discrepancies in prevalence rates may be partially explained by methodological differences limiting their comparability, but may also stem from region-specific cultural, economic and political factors (Brodsky and Stanley, 2008; Canetto, 2008; Stack, 2000) as well as differences in religiosity across regions (Wu et al., 2015).

In our sample female gender was one of the correlates of suicidality. This is consistent with the data from the Eastern Mediterranean region (Rezaeian, 2007) and with literature reporting that females are twice as likely as males to have both suicidal ideations and attempts but males are three to four times more likely to die due to completed suicides than are females (Beautrais, 2002). This is partly explained by the fact that males tend to have higher rates of externalizing behaviors whereas females are more likely to manifest internalizing problems (Gasquet and Choquet, 1993; Keiley et al., 2000).

The majority (72.74%) of those who experienced suicidality had a mental health disorder, which is consistent with the available scientific literature (Nock et al., 2013). Alcohol use, having a major depressive disorder and having a bipolar disorder were found to be correlates of suicidality. The most common psychiatric disorders associated with suicidal behavior typically include mood disorders, substance use, anxiety disorders as well as antisocial behavior (Beautrais, 2003; Gould et al., 2003, 1998). Substance abuse and alcohol use are associated with around one half of adolescent suicides, most of them in males (Waldvogel et al., 2008). Mood disorders in particular markedly contribute to risk of both attempted and completed adolescent suicides, in both genders (Beautrais et al., 1998; Gould et al., 1998). Our findings also corroborate those of studies from neighboring countries that share common cultural backgrounds, which found suicidality to be correlated with female gender, having a psychiatric disorder, substance use, parental divorce and low socioeconomic status (Canbaz and Terzi, 2018; Zarrouq et al., 2015).

We found that adolescents who experienced suicidality were more likely to have unmarried parents, to have a biological parent not residing at home, and to not be attending school compared to the non-suicidal group. Family related stressors such as separation from a parent due to divorce or death, and living apart from either biological parents are well-replicated risk factors for suicidality (Agerbo et al., 2002; Gould et al., 2003; Rey Gex et al., 1998; Wagner et al., 2003). It may be because youth of non-intact families are less likely to have healthy relationships with their parents and report less regular and satisfying communication with them (Gould et al., 2003). More specifically, low familial cohesion and insecure parent-child attachments have been closely associated with non-fatal suicidal behaviors (Wagner et al., 2003).

Higher socio-economic status was shown to be a protective factor against suicide in our study. This is in line with previous reports that adolescents from low socioeconomic backgrounds are 2.4 times more likely to attempt suicide (Beautrais, 2003). This is likely mediated by an interplay between socio-economic factors, mental health and family functioning (Fergusson et al., 2000). Other studies have shown an inverse association between measures of deprivation and area poverty suicide rates (Rehkopf and Buka, 2005).

We have also found that adolescents in the “S” group were more likely to not be enrolled in school compared to those who never experienced suicidality, a finding that is consistent with the literature whereby school non-attendance and academic difficulties increase

Table 3
Selected publications reporting on the prevalence of suicidal ideation and/or attempt in adolescents in different countries.

Author	Country	Year	Study method and mode of data collection	Age group	Results
Kokkevi et al. (2012)	European Union	2012	45,806 high school students aged 15–16 years from 17 countries that participated in the European School Survey Project on Alcohol and Other Drugs (ESPAD) 2007 school survey completed an anonymous survey	15–16 years	Prevalence of any lifetime self-reported suicide attempt was 10.5% across the participating countries (range 4.1%–23.5%). The median of frequent self-harm thoughts (at least five times) was 7.4% (range 2.1%–15.3%)
Nock et al. (2013)	United - States	2013	Face to face household interviews with 6483 adolescents from the National Comorbidity Survey Replication Adolescent Supplement and their parents	13–18 years	Estimated prevalence of suicide ideation, plans, and attempts were 12.1%, 4.0%, and 4.1%, respectively
Hu et al. (2015)	China	2015	Two reviewers independently screened potentially relevant cross-sectional studies of suicide attempts through PubMed-Medline, Embase, Wanfang Data, Chongqing VIP and Chinese National Knowledge Infrastructure databases using the core terms 'suicid*'/'suicide, attempt*'/'attempted suicide' and 'adolescen*'/'youth'/'child*'/'student*' and 'China'/'Chinese' in the article titles, abstracts and keywords		The pooled prevalence of suicide attempts among Chinese, adolescents was 2.94% (95% CI: 2.53%–3.41%)
Kovess-Masfety et al. (2015)	European Union	2015	Children aged 6–12 ($N = 7062$) from Italy, Turkey, Romania, Bulgaria, Lithuania, Germany, and the Netherlands were randomly selected in primary schools. Suicidal thoughts and death ideation were measured using a computerized pictorial diagnostic tool from the Dominic Interactive (DI) completed by the children	6–12 Years	Suicidal ideation was present in 16.96% of the sample (from 9.9 in Italy to 26.84 in Germany), death thoughts by 21.93% (from 7.71% in Italy to 32.78 in Germany)
Kann et al. (2015)	United - States	2015	Youth Risk Behavior Surveillance System includes. The national school-based Youth Risk Behavior Survey (YRBS) conducted by CDC and state and large urban school district school-based YRBSs conducted by state and local education and health agencies.	Grade 9–12 students	17.7% of students had seriously considered attempting suicide in the 12 months before the survey and 8.6% had attempted suicide.
Zarrouq et al. (2015)	Morocco	2015	North-Centre region of Morocco among students in public secondary schools using anonymous self-administered questionnaires. The Mini International Neuropsychiatric Interview was used in its Moroccan Colloquial Arabic version to assess suicidality according to the DSM-IV criteria	11–23 Years	3020 students (53% boys) aged 11–23 years (average age = 16 ± 2.1 years) were included. The prevalence of suicide ideation, suicide planning and suicide attempts during the last month were 15.7, 6.3, and 6.5% respectively
McKinnon et al. (2016)	32 low- and middle-income countries	2016	data of students from 32 countries that participated in the 2003–2012 Global School-based Health Surveys (GSHS)	13–17 years	Worldwide pooled 12-month prevalence of suicide ideation was 16.2% in females and 12.2% in males whereas the prevalence of suicidal ideation with plan was 8.3% in females and 5.8% in males. In the Eastern Mediterranean region, pooled 12-month prevalence of suicide ideation was 16.0% in females and 12.9% in males whereas the prevalence of suicidal ideation with plan was 9.5% in females and 7.0% in males.
Itani et al. (2017)	Occupied Palestinian Territory (OPT) and United Nations Relief and Works Agency (UNRWA) refugee camps	2017	Global School-based Student Health Survey (GSHS) administered to students in 2010 in the Occupied Palestinian Territory (OPT) and United Nations Relief and Works Agency (UNRWA) refugee camps	13–15 years	The overall prevalence of suicidal ideation and/or planning was 25.6%

adolescents' risk for suicidal behavior (Gould et al., 2003). Students who are neither in school nor working are at a significant risk for completing suicide, and the risk for attempted suicide is increased among school dropouts or after a period of absence from school (Gould et al., 2003; Wunderlich et al., 1998).

Adolescents in the "S" group had a significantly higher rates of experiencing a lifetime stressful event than those in the "NS" group. Stressful life events have been associated with both completed suicide and suicide attempts (Beautrais, 2001; Gould, 1996), even after taking into account psychopathology (Gould, 1996) as well as other factors such as social, familial, and personality elements (Beautrais et al., 1997). Stressors seem to vary depending on comorbid psychiatric illnesses, with interpersonal losses for example being more common among those with substance use disorders (Gould et al., 2003; Gould and Kramer, 2001). Physical abuse is associated with an increased risk of suicide attempts in late adolescence or early adulthood, even after accounting for other factors such as demographics, presence of psychiatric symptoms as well as parental psychopathology (Johnson et al., 2002). Sexual abuse during childhood has also been associated with suicidal behaviors during adolescence. (Fergusson et al., 1996) Close to 1/3 of adolescents in the "S" group had a diagnosis of PTSD. Symptoms of PTSD raise the risk of current suicidal ideations and past attempt, after controlling for gender and depression (Mazza, 2000).

One very important emerging risk factor for adolescent suicide which has been reported in the region is bullying (Canbaz and Terzi, 2018). In our sample, PRQ victim score was significantly higher in "S" as compared to "NS". Being a victim of bullying is an independent predictor of mental health problems (Arseneault et al., 2010). Both adolescent victims and perpetrators of bullying are at long-term risk for suicidal ideation and involvement in bullying in any capacity is associated with both suicidal ideation and behavior. (Holt et al., 2015) Bullying is also associated with suicide attempts among adolescents admitted to mental health inpatient units (Luukkonen et al., 2009).

A recent review estimates that around 20–25% of youth are involved in bullying either as perpetrators, victims, or both (Juvonen and Graham, 2014), and bullying is recognized as a major public health concern by the World Health Organization. Indeed, bullying is a unique childhood risk factor for depression later in life (Santinello et al., 2009); and is associated with poor psychosocial adjustment, whether being a perpetrator or a victim. An earlier analysis of the BEI-PSY study found that approximately 30% of adolescent participants were involved in bullying (Halabi et al., 2018) and they were more likely to suffer from a psychiatric diagnosis as compared to those not involved in bullying. Therefore, addressing mental health consequences of bullying involvement and preventing suicidal ideation/behavior in those who are involved in it is of prime importance.

In our sample, "S" had a higher proportion, though not statistically significant; of participants with positive psychiatric family history as compared to "NS". In the literature, parental psychopathology is a well-known risk factor for adolescent suicidal behavior even after accounting for the adolescent psychopathology (Bridge et al., 2006; Gould et al., 2003; Waldvogel et al., 2008). Furthermore, a family history of suicidal behavior raises the risk of adolescents' completed suicide (Gould and Kramer, 2001).

Worth noting that close to 30% of adolescents in the "S" group did not meet criteria for any psychiatric disorder, and may therefore not present for evaluation or treatment and would warrant special attention. The finding that only one participant in the "S" group had ever sought professional mental health help raises very serious concerns. Stigma in addition to lack of awareness and problems with the availability, accessibility and affordability of services are all possible barriers to seeking help. Efforts should be made to raise awareness and increase access to care for this high risk population through the use of community resources.

It has been reported that younger children and adolescents in particular are more reluctant to seek help for suicidal ideations and self-harm (Bristow and Patten, 2002; Logan and King, 2006; Michelmore and Hindley, 2012). Perhaps this age group is more dependent on others to perceive their trouble and to provide them with access to the appropriate help. In fact, parents of adolescents in the "S" group were more likely to consider that their child might need professional mental health help as compared to "NS". Expectations that emotional problems in that age group will eventually improve or resolve without intervention may also be a possible explanation (Cauce et al., 2002; Logan and King, 2006).

Our study is the first to report on the prevalence, comorbidity patterns, as well as the clinical and demographic correlates of suicidality among a population-based sample of adolescents from Lebanon using a structured psychiatric interview. Future studies should aim at investigating barriers to care and at evaluating community-based interventions to improve access to care in this population. In addition, advocacy efforts should aim at raising awareness and fighting stigma. In line with previous recommendations, we also encourage screening adolescents by primary healthcare providers for psychiatric disorders in order to allow for earlier identification of those at risk and for proper referral and management in order to avoid suicide as an outcome (Bridge et al., 2006; Waldvogel et al., 2008).

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Supplementary materials

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References

Agerbo, E., Nordentoft, M., Mortensen, P.B., 2002. Familial, psychiatric, and socio-economic risk factors for suicide in young people: nested case-control study. BMJ 325, 74.

Al Makadma, A.S., 2017. Adolescent health and health care in the Arab Gulf countries: today's needs and tomorrow's challenges. Int. J. Pediatr. Adolesc. Med. 4, 1–8. https://doi.org/10.1016/j.ijpam.2016.12.006.

Almaqrami, M.H., Shuwail, A.Y., 2004. Validity of the self-report version of the strengths and difficulties questionnaire in Yemen. Saudi Med. J. 25, 592–601.

Arseneault, L., Bowes, L., Shakoor, S., 2010. Bullying victimization in youths and mental health problems: much ado about nothing? Psychol. Med. 40, 717–729. https://doi.org/10.1017/S0033291709991383.

Beautrais, A.L., 2001. Child and young adolescent suicide in New Zealand. Aust. N. Z. J. Psychiatry 35, 647–653. https://doi.org/10.1080/0004867010060514.

Beautrais, A.L., 2002. Gender issues in youth suicidal behaviour. Emerg. Med. (Fremantle) 14, 35–42.

Beautrais, A.L., 2003. Life Course factors associated with suicidal behaviors in young people. Am. Behav. Sci. 46, 1137–1156. https://doi.org/10.1177/0002764202250657.

Beautrais, A.L., Joyce, P.R., Mulder, R.T., 1997. Precipitating factors and life events in serious suicide attempts among youths aged 13 through 24 years. J. Am. Acad. Child Adolesc. Psychiatry 36, 1543–1551. https://doi.org/10.1016/S0890-8567(09)66563-1.

Beautrais, A.L., Joyce, P.R., Mulder, R.T., 1998. Psychiatric illness in a New Zealand sample of young people making serious suicide attempts. N. Z. Med. J. 111, 44–48.

Borschmann, R., Stark, P., Prakash, C., Sawyer, S.M., 2018. Risk profile of young people admitted to hospital for suicidal behaviour in Melbourne, Australia. J. Paediatr. Child Health. https://doi.org/10.1111/jpc.13938.

Bridge, J.A., Goldstein, T.R., Brent, D.A., 2006. Adolescent suicide and suicidal behavior. J. Child Psychol. Psychiatry 47, 372–394. https://doi.org/10.1111/j.1469-7610.2006.01615.x.

Bristow, K., Patten, S., 2002. Treatment-seeking rates and associated mediating factors among individuals with depression. Can. J. Psychiatry 47, 660–665. https://doi.org/10.1177/070674370204700708.

Brodsky, B.S., Stanley, B., 2008. Adverse childhood experiences and suicidal behavior. Psychiatr. Clin. North Am. 31, 223–235. https://doi.org/10.1016/j.psc.2008.02.002.

Canbaz, S., Terzi, Ö, 2018. The prevalence of suicidal ideation in adolescents and associated risk factors: an example from Turkey. Adv. Ther. 35, 839–846. https://doi.org/10.1007/s12325-018-0720-2.

Canetto, S.S., 2008. Women and suicidal behavior: a cultural analysis. Am. J. Orthopsychiatry 78, 259–266. https://doi.org/10.1037/a0013973.

Cauce, A.M., Domenech-Rodríguez, M., Paradise, M., Cochran, B.N., Shea, J.M., Srebnik, D., Baydar, N., 2002. Cultural and contextual influences in mental health help seeking: a focus on ethnic minority youth. J. Consult. Clin. Psychol. 70, 44–55.

Fergusson, D.M., Horwood, L.J., Lynskey, M.T., 1996. Childhood sexual abuse and

psychiatric disorder in young adulthood: II. Psychiatric outcomes of childhood sexual abuse. J. Am. Acad. Child Adolesc. Psychiatry 35, 1365–1374. https://doi.org/10.1097/00004583-199610000-00024.
Fergusson, D.M., Woodward, L.J., Horwood, L.J., 2000. Risk factors and life processes associated with the onset of suicidal behaviour during adolescence and early adulthood. Psychol. Med. 30, 23–39.
Fortune, S., Sinclair, J., Hawton, K., 2008. Help-seeking before and after episodes of self-harm: a descriptive study in school pupils in England. BMC Public Health 8, 369. https://doi.org/10.1186/1471-2458-8-369.
Freedenthal, S., Stiffman, A.R., 2007. "They Might Think I Was Crazy": young American Indians' reasons for not seeking help when suicidal. J. Adolesc. Res. 22, 58–77. https://doi.org/10.1177/0743558406295969.
Gasquet, I., Choquet, M., 1993. Gender role in adolescent suicidal behavior: observations and therapeutic implications. Acta Psychiatr. Scand. 87, 59–65.
Ghandour, L., Shehab, A.A.S., Tavitian, L., Halabi, F., Maalouf, F.T., 2018. Contextual challenges and solutions to undertaking a household adolescent mental health survey in a developing country. East. Mediterr. Health J. 24.
Goodman, R., Ford, T., Richards, H., Gatward, R., Meltzer, H., 2000. The development and well-being assessment: description and initial validation of an integrated assessment of child and adolescent psychopathology. J. Child Psychol. Psychiatry 41, 645–655.
Gould, M.S., 1996. Psychosocial risk factors of child and adolescent completed suicide. Arch. Gen. Psychiatry 53, 1155. https://doi.org/10.1001/archpsyc.1996.01830120095016.
Gould, M.S., Greenberg, T., Velting, D.M., Shaffer, D., 2003. Youth suicide risk and preventive interventions: a review of the past 10 years. J. Am. Acad. Child Adolesc. Psychiatry 42, 386–405. https://doi.org/10.1097/01.CHI.0000046821.95464.CF.
Gould, M.S., King, R., Greenwald, S., Fisher, P., Schwab-Stone, M., Kramer, R., Flisher, A.J., Goodman, S., Canino, G., Shaffer, D., 1998. Psychopathology associated with suicidal ideation and attempts among children and adolescents. J. Am. Acad. Child Adolesc. Psychiatry 37, 915–923. https://doi.org/10.1097/00004583-199809000-00011.
Gould, M.S., Kramer, R.A., 2001. Youth suicide prevention. Suicide Life-Threat. Behav. 31, 6–31. https://doi.org/10.1521/suli.31.1.5.6.24219.
Halabi, F., Ghandour, L., Dib, R., Zeinoun, P., Maalouf, F.T., 2018. Correlates of bullying and its relationship with psychiatric disorders in Lebanese adolescents. Psychiatry Res. 261, 94–101. https://doi.org/10.1016/j.psychres.2017.12.039.
Holt, M.K., Vivolo-Kantor, A.M., Polanin, J.R., Holland, K.M., DeGue, S., Matjasko, J.L., Wolfe, M., Reid, G., 2015. Bullying and suicidal ideation and behaviors: a meta-analysis. Pediatrics 135, e496–e509. https://doi.org/10.1542/peds.2014-1864.
Hu, J., Dong, Y., Chen, X., Liu, Y., Ma, D., Liu, X., Zheng, R., Mao, X., Chen, T., He, W., 2015. Prevalence of suicide attempts among Chinese adolescents: a meta-analysis of cross-sectional studies. Compr. Psychiatry 61, 78–89. https://doi.org/10.1016/j.comppsych.2015.05.001.
Itani, T., Jacobsen, K.H., Kraemer, A., 2017. Suicidal ideation and planning among Palestinian middle school students living in Gaza Strip, West Bank, and United Nations Relief and Works Agency (UNRWA) camps. Int. J. Pediatr. Adolesc. Med. 4 (2), 54–60. https://doi.org/10.1016/j.ijpam.2017.03.003.
Johnson, J.G., Cohen, P., Gould, M.S., Kasen, S., Brown, J., Brook, J.S., 2002. Childhood adversities, interpersonal difficulties, and risk for suicide attempts during late adolescence and early adulthood. Arch. Gen. Psychiatry 59, 741–749.
Juvonen, J., Graham, S., 2014. Bullying in Schools: the power of bullies and the plight of victims. Annu. Rev. Psychol. 65, 159–185. https://doi.org/10.1146/annurev-psych-010213-115030.
Kann, L., McManus, T., Harris, W.A., Shanklin, S.L., Flint, K.H., Hawkins, J., ... Zaza, S., 2016. Youth Risk Behavior Surveillance - United States, 2015. MMWR Surveill Summ 65 (6), 1–174. https://doi.org/10.15585/mmwr.ss6506a1.
Karam, E.G., Mneimneh, Z.N., Karam, A.N., Fayyad, J.A., Nasser, S.C., Chatterji, S., Kessler, R.C., 2006. Prevalence and treatment of mental disorders in Lebanon: a national epidemiological survey. Lancet 367, 1000–1006. https://doi.org/10.1016/S0140-6736(06)68427-4.
Keiley, M.K., Bates, J.E., Dodge, K.A., Pettit, G.S., 2000. No Title. J. Abnorm. Child Psychol. 28, 161–179. https://doi.org/10.1023/A:1005122814723.
Kokkevi, A., Rotsika, V., Arapaki, A., Richardson, C., 2012. Adolescents' self-reported suicide attempts, self-harm thoughts and their correlates across 17 European countries. J. Child Psychol. Psychiatry 53, 381–389. https://doi.org/10.1111/j.1469-7610.2011.02457.x.
Kovess-Masfety, V., Pilowsky, D.J., Goelitz, D., Kuijpers, R., Otten, R., Moro, M.F., Bitfoi, A., Koç, C., Lesinskiene, S., Mihova, Z., Hanson, G., Fermanian, C., Pez, O., Carta, M.G., 2015. Suicidal ideation and mental health disorders in young school children across Europe. J. Affect. Disord. 177, 28–35. https://doi.org/10.1016/j.jad.2015.02.008.
Lawrence, R.E., Oquendo, M.A., Stanley, B., 2016. Religion and suicide risk: a systematic review. Arch. Suicide Res. 20, 1–21. https://doi.org/10.1080/13811118.2015.1004494.
Lester, D., 2017. Does religiosity predict suicidal behavior? Religions 8, 238. https://doi.org/10.3390/rel8110238.
Logan, D.E., King, C.A., 2006. Parental facilitation of adolescent mental health service utilization: a conceptual and empirical review. Clin. Psychol. Sci. Pract. 8, 319–333. https://doi.org/10.1093/clipsy.8.3.319.
Luukkonen, A.-H., Räsänen, P., Hakko, H., Riala, K., 2009. Bullying behavior is related to suicide attempts but not to self-mutilation among psychiatric inpatient adolescents. Psychopathology 42, 131–138. https://doi.org/10.1159/000204764.
Maalouf, F.T., Ghandour, L.A., Halabi, F., Zeinoun, P., Shehab, A.A.S., Tavitian, L., 2016. Psychiatric disorders among adolescents from Lebanon: prevalence, correlates, and treatment gap. Soc. Psychiatry Psychiatr. Epidemiol. 51, 1105–1116. https://doi.org/10.1007/s00127-016-1241-4.
Mahfoud, Z.R., Afifi, R.A., Haddad, P.H., DeJong, J., 2011. Prevalence and determinants of suicide ideation among Lebanese adolescents: results of the GSHS Lebanon 2005. J. Adolesc. 34, 379–384. https://doi.org/10.1016/j.adolescence.2010.03.009.
Mazza, J.J., 2000. The relationship between posttraumatic stress symptomatology and suicidal behavior in school-based adolescents. Suicide Life. Threat. Behav. 30, 91–103.
McKinnon, B., Gariépy, G., Sentenac, M., Elgar, F.J., 2016. Adolescent suicidal behaviours in 32 low- and middle-income countries. Bull. World Health Organ. 94 (5), 340–350F. https://doi.org/10.2471/BLT.15.163295.
Michelmore, L., Hindley, P., 2012. Help-seeking for suicidal thoughts and self-harm in young people: a systematic review. Suicide Life-Threat. Behav. 42, 507–524. https://doi.org/10.1111/j.1943-278X.2012.00108.x.
Nock, M.K., Green, J.G., Hwang, I., McLaughlin, K.A., Sampson, N.A., Zaslavsky, A.M., Kessler, R.C., 2013. Prevalence, correlates, and treatment of lifetime suicidal behavior among adolescents. JAMA Psychiatry 70, 300. https://doi.org/10.1001/2013.jamapsychiatry.55.
Rehkopf, D.H., Buka, S.L., 2005. The association between suicide and the socio-economic characteristics of geographical areas: a systematic review. Psychol. Med. 36, 145. https://doi.org/10.1017/S003329170500588X.
Rey Gex, C., Narring, F., Ferron, C., Michaud, P.A., 1998. Suicide attempts among adolescents in Switzerland: prevalence, associated factors and comorbidity. Acta Psychiatr. Scand. 98, 28–33.
Rezaeian, M., 2007. Age and sex suicide rates in the Eastern Mediterranean Region based on global burden of disease estimates for 2000. East. Mediterr. Health J. 13, 953–960.
Santinello, M., Vieno, A., De Vogli, R., 2009. Primary headache in Italian early adolescents: the role of perceived teacher unfairness. Headache 49, 366–374. https://doi.org/10.1111/j.1526-4610.2008.01208.x.
Shediac-Rizkallah, M.C., Soweid, R.A.A., Farhat, T.M., Yeretzian, J., 2000. Adolescent health-related behaviors in postwar Lebanon: findings among students at the American University of Beirut. Int. Q. Community Health Educ. 20, 115–131. https://doi.org/10.2190/UM5G-3EJN-NAC1-FG8J.
Stack, S., 2000. Suicide: a 15-year review of the sociological literature. Part I: cultural and economic factors. Suicide Life. Threat. Behav. 30, 145–162.
Wagner, B.M., Silverman, M.A.C., Martin, C.E., 2003. Family factors in youth suicidal behaviors. Am. Behav. Sci. 46, 1171–1191. https://doi.org/10.1177/0002764202250661.
Waldvogel, J.L., Rueter, M., Oberg, C.N., 2008. Adolescent Suicide: risk factors and prevention strategies. Curr. Probl. Pediatr. Adolesc. Health Care 38, 110–125. https://doi.org/10.1016/j.cppeds.2008.01.003.
Web-based Injury Statistics Query and Reporting System, 2016. 10 Leading Causes of Death by Age Group, United States – 2016. Centers Dis. Control Prev. [WWW Document].URL. https://www.cdc.gov/violenceprevention/suicide/statistics/index.html.
World Health Organization, 2014. Preventing Suicide: A Global Imperative.
Wu, A., Wang, J.-Y., Jia, C.-X., 2015. Religion and completed suicide: a meta-analysis. PLoS One 10, e0131715. https://doi.org/10.1371/journal.pone.0131715.
Wunderlich, U., Bronisch, T., Wittchen, H.-U., 1998. Comorbidity patterns in adolescents and young adults with suicide attempts. Eur. Arch. Psychiatry Clin. Neurosci. 248, 87–95. https://doi.org/10.1007/s004060050023.
Zalsman, G., Shoval, G., Mansbach-Kleinfeld, I., Farbstein, I., Kanaaneh, R., Lubin, G., Apter, A., 2016. Maternal versus adolescent reports of suicidal behaviors: a nationwide survey in Israel. Eur. Child Adolesc. Psychiatry 25, 1349–1359. https://doi.org/10.1007/s00787-016-0862-1.
Zarrouq, B., Bendaou, B., Elkinany, S., Rammouz, I., Aalouane, R., Lyoussi, B., Khelafa, S., Bout, A., Berhili, N., Hlal, H., Nejjari, C., El Rhazi, K., 2015. Suicidal behaviors among Moroccan school students: prevalence and association with socio-demographic characteristics and psychoactive substances use: a cross-sectional study. BMC Psychiatry 15, 284. https://doi.org/10.1186/s12888-015-0680-x.
Zeinoun, P., Bawab, S., Atwi, M., Hariz, N., Tavitian, L., Khani, M., Nahas, Z., Maalouf, F.T., 2013. Validation of an Arabic multi-informant psychiatric diagnostic interview for children and adolescents: development and Well Being Assessment-Arabic (DAWBA-Arabic). Compr. Psychiatry 54, 1034–1041. https://doi.org/10.1016/j.comppsych.2013.04.012.