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# Evaluation of Lebanon's National Helpline for Emotional Support and Suicide Prevention: Reduction of Emotional Distress among Callers

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## Abstract

*Helplines provide time-limited help and orientation to callers who are suicidal or experiencing self-reported emotional distress, but there is no evidence regarding the efficacy of helplines in low-to-middle income countries like Lebanon. The Embrace Lifeline is Lebanon's national and only helpline for emotional support and suicide prevention, operating since 2018. We accessed anonymous data of 4657 calls received between February 2018 and February 2020. We analysed caller characteristics and predictors of distress and evaluated the immediate outcome of calls by examining the difference in caller distress from beginning to end of call, using a repeated-measures design. The helpline received calls from a majority Lebanese sample that was diverse in terms of age, location, education, employment status and sexual orientation. We found a significant and large ($d = 1.94$ and 1.99, respectively) decrease in subjective levels of distress among those calling for emotional distress only, and those with additional suicide-related behaviour. The most distressed callers were likely to be female, in a relationship (as opposed to not), and experiencing at least one risk factor, and while everyone showed improved distressed, those with at least one risk factor showed the most decrease. The helpline is effectively reducing distress and suicidal ideation, across a wide sample of callers. Future studies need to investigate long-term sustenance and circumvent limitations related to data collection capture.*

### Key implications for practice

- Lebanon's national helpline for emotional support and suicide prevention logged 4657 calls in 2 years, from a majority Lebanese sample diverse in terms of age, location, education, employment status and sexual orientation.
- The helpline interventions are effective in significantly reducing subjective levels of distress and suicide-related behaviour among callers.
- The most distressed callers are likely to be female, in a relationship (as opposed to not), and reporting at least one life stressor (risk factor).
- Those with at least one stressor (risk factor) show the largest reduction in distress.

**Keywords:** Lebanon, phone-based intervention, suicide, suicide hotline

## Background

Mental health issues, with suicide as their morbid yet preventable consequence, are the global health concern. Reducing deaths by suicide is part of the United Nation's Sustainable Development Goal 3, with a target of reduced mortality from noncommunicable diseases, including a reduction in suicide rates. The World Health Organization also aimed at reducing global suicide mortalities by 10% in 2020 through the implementation of national suicide prevention strategies. While addressing the underlying social and individual risk factors of suicide is the ideal mode of

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prevention and treatment, telephone helplines have long been used as a community-based resource for the prevention of suicide and alleviation of emotional distress (Kalafat et al., 2007).

## Effectiveness of Helplines

Helplines vary in their purposes and intervention style, but they are all characterised by a common aim that is to provide time-limited help, support and orientation to callers who are suicidal or experiencing emotional distress – an umbrella term that refers to subjective psychological discomfort. These services are typically available outside usual clinic working hours and have come to constitute a unique outlet for many callers to express their feelings and emotions and receive psychological assistance and support.

The theoretical rationales underlying the use of suicide helplines are manifold. For instance, there is robust evidence that suicidal behaviour is associated with crisis states (Mishara & Daigle, 2001), which represent a unique, time-constrained opportunity for intervention by specially trained individuals (Kalafat et al., 2007). Additionally, those who have survived a suicide attempt often report that their wish to die was coupled with a wish to be saved, suggesting that suicide is characterised by ambivalence (Shaffer et al., 1988). This ambivalence also presents an opportunity for those with special training to intervene and provide immediate support. As for callers who are not suicidal but rather experiencing a time-limited period of increased anxiety, often associated with a failure in coping, hypervigilance and cognitive constriction, helplines provide an accessible, brief intervention that can mitigate such conditions. For all types of callers, in contrast to conventional, face-to-face sources of help, helplines enable the caller to retain a sense of control insofar as callers can choose to terminate or initiate calls, seek help outside traditional working hours and remain anonymous. Along with the ecological usefulness of helplines, there is promising, yet incomplete, evidence that helplines reduce suicide-related behaviours and emotional distress (Gould et al., 2007; Hoffberg et al., 2020; Kalafat et al., 2007; King et al., 2003; Shaw & Chiang, 2019). However, most of the evidence comes from high-income countries and not much is known about the potential impact of helplines in low- and middle-income countries.

Helplines have been found to be effective on a number of outcomes, such as caller satisfaction with the service (Coveney et al., 2012; Gould et al., 2007; Kalafat et al., 2007; Meehan & Broom, 2007), use of resources and referrals post-call (Britton et al., 2016; Gould et al., 2007, 2012; Kalafat et al., 2007) and even rate of suicides/suicide attempts (Pil et al., 2013).

## Local Context and Lifeline

Lebanon is a low- to middle-income country, with a population of about 6,855,713 million (World Bank, 2020). A recent systematic review on the global burden of suicide, ranked Lebanon as having the lowest (age-standardised) mortality rate at 2.4 deaths per 100,000 (Naghavi, 2019). Bizri et al. (2021) also found 124 people died of suicide in Lebanon each year, between 2008 and 2018. This equals to an average rate of 1.87 and 2.4 per 100,000 capita. However, authors warn that these numbers must be interpreted with caution. In addition to the historical difficulties in obtaining accurate suicide data globally, there are additional challenges in countries like Lebanon where death by suicide carries social, cultural, religious and possibly legal consequences.

The majority of suicides result from mental illness, although social determinants are also important especially in countries like Lebanon, prone to military and political conflict and income inequality and social disparity (Compton & Shim, 2015). Prevalence of mental illness in Lebanon is similar to that of developed countries in Western Europe, but the unmet need for treatment is significantly higher in Lebanon than in Western countries (Karam et al., 2007). Additionally, in many Arab countries like Lebanon, people with mental health issues face stigmatising attitudes and social exclusion (Al-Krenawi et al., 2004; Dardas & Simmons, 2015). Studies have shown that psychological disorders are one of the prominent causes of disease burden and disability globally due to the early age of onset, as well as their chronicity (Lawrence et al., 2010). Additionally, one of the most serious and preventable consequences of mental illness is suicide.

In 2018, a nonprofit nongovernmental organisation (Embrace) launched a suicide prevention helpline called Embrace Lifeline, which became the national helpline for emotional support and suicide prevention, in partnership with the Ministry of Public Health. The helpline was aligned with the strategy of the National Mental Health Program that was tasked with reforming mental health system in Lebanon, and which emphasised the importance of working on suicide prevention as part of its strategic initiatives. The Embrace Lifeline was modelled after helplines in Canada and the United States, and now uses an adapted version of the collaborative problem-solving approach developed by Mishara and colleagues (Mishara et al., 2007b; Mishara & Daigle, 1997). Embrace is also affiliated with Befrienders Worldwide and is structured according to their international guidelines (www.befrienders.org). Volunteer phone-operators received custom training in active listening skills, suicide-risk assessment, crisis intervention and techniques for building hope. The helpline is available daily for 18.5 hours, 7 days a week. (For more information about the organisation and operations of the helpline, the reader is referred to Wazir & Zeinoun, in press.)

Despite their common usage in developed countries, the effectiveness of helplines in suicide and emotional distress reduction remains debated (Gould et al., 2012). Additionally, there is no data about the potential effectiveness of a helpline service in Lebanon or any one of the 23 Arab countries, or other similar communities, as most studies on the effectiveness of hotlines are limited to high income countries. In this paper, we evaluate the immediate effectiveness of the National Suicide Prevention and Emotional Support Helpline in Lebanon by examining the reduction in distress and suicidal behaviour among callers from February 2018 to February 2020. We aim to inform the evidence around suicide helplines in general and provide data on suicide and emotional distress reduction in a developing country like Lebanon, in particular.

# Methodology

## Design and Procedures

This study received ethical approval by the Institutional Review Board of the American University of Beirut for secondary use of de-identified data. All identifying variables including names, birth dates and addresses were removed from the data set, and we accessed anonymised data of all calls registered from the launch of the lifeline to the start of the research project (i.e. from February 2018 to February 2020). Data were captured directly by helpline operators using a digital Customer Relationship Management system. Baseline assessments ($T_1$) were conducted by helpline operators at the beginning of calls; preceding any support services provided to the caller. A second assessment ($T_2$) was again conducted by the operators at the end of the call, after having provided the phone-based services. We assessed the immediate outcome of calls by examining the difference in caller distress from beginning to end of call, using a repeated-measures design.

## Participants

Between February 2018 and February 2020, Lebanon's National Emotional Support and Suicide Prevention Helpline logged a total of 4657 calls. People called for many overlapping reasons, with approximately 62.34% ($n = 2624$) mentioning that one of the reasons for calling was "emotional distress", whereas 32.4% ($n = 1374$) were experiencing suicide ideation or having an attempt in progress during the call. For our analysis of effectiveness, we only included participants who reported emotional distress, suicidal ideation, and /or an attempt in progress. We excluded calls whose *only* purpose of calling was seeking a referral or general information (9%), having concerns about a third party in distress (24%), and being frequent callers (i.e. calling more than three times in 1 week; 11%), and prank callers (1%). Frequent callers were excluded from analyses in the light of literature highlighting differences between frequent callers and other callers on a range of features including, for example, the length of call (Greer, 1976; Ingram et al., 2008) and changes in emotional state over time (Mishara & Daigle, 1997). There is also evidence to suggest that frequent callers' perceptions of helpfulness and call quality are more positive than that of other callers (Coveney et al., 2012). This exclusion criterion resulted in 1374 eligible calls related to suicide ideation or an attempt in progress, and 1499 eligible calls that pertained to emotional distress only, in the absence of suicide ideation or attempt. We refer to these as "emotional distress callers" and "suicide callers", respectively.

## Instruments

### Sociodemographic Characteristics

Callers were explicitly asked about their age, gender, area of residence and nationality. Additional information, such as type of call, sexual orientation, relationship status and level of education were captured incidentally, if reported.

### Mental Health Status

We captured information about current and past mental health status including mental illness diagnosis and current and past treatment received. We also asked about reasons for discontinuing treatment, if any.

### Protective/Risk Factors and Stressors

Data were captured regarding risk factors (e.g. family history of suicidal behaviour, access to means), current or chronic stressors (e.g. major loss, chronic illness, financial problems) as well as protective factors or deterrents of suicide (e.g. social support, pets).

### Caller Distress

Callers' reported level of emotional distress was measured on a scale of 1 to 10, via the question "*On a scale of 1 to 10, with 10 being the highest, how distressed are you right now?"* This was asked explicitly at the beginning ($T_1$) and end of each call ($T_2$). However, it should be noted that operators prioritised delivering the intervention on the expense of capturing the data, leading to missing data on this variable. That is, if the caller was reluctant to answer questions, or was not in a mental state of being asked about their level of distress, the operators erred on the side of managing the crisis of the caller.

*Caller Suicidality.* Immediate outcomes of caller suicidality were obtained from standard questions asked at the end of the call, and selected questions from the Columbia Suicide Severity Rating Scale Section (C-SSRS; Posner et al., 2008), which is employed by operators as a standardised measure of suicidality, at the beginning of the call, when applicable. The C-SSRS includes flexible "if-then" questions about suicidal ideation in the past 2 weeks (Section I), intensity of ideation (Section II), imminence of current attempt (Section III) and past suicidal behaviour. Answers are marked as *True, False* or *No Response.* For the purposes of this study, callers' *nonspecific active suicidal thinking* was assessed at the beginning and end of calls. At the beginning of the call, the question was "*Have you had any thoughts of killing yourself*?" whereas at the end of call, the question was a variant of "*Are you still thinking of killing yourself?*"

### Operator Response/Behaviour

Upon completion of each call, operators note the action plan they utilised to help the caller. These include (1) dispatched emergency services, (2) provided suicide education, (3) de-escalated suicidal crisis, (4) provided emotional support, (5) provided general psychoeducation and (6) provided orientation/referral to services.

## Statistical Analysis

All statistical analyses were conducted using the Statistical Package for the Social Sciences 25 (SPSS; IBM Corp., Chicago, Illinois, USA) and STATA/IC 15.0 (StataCorp., 2017). The primary unit of analysis was a call to the helpline. We used descriptive statistics and frequencies to describe characteristics of callers and helper behaviour.

A multiple response analysis was used when callers endorsed more than one choice (e.g. type of employment). A paired-samples *t* test was conducted to examine *changes* in caller distress (continuous variable) from the beginning of the call to the end of the call. This was followed-up by a mixed, two-way analysis of variance (ANOVA) to compare change in distress across calls where suicide ideation was reported and calls where there was an attempt in progress. We also conducted multiple regression analyses to investigate the extent to which individual variables explained levels of distress and changes in distress. Finally, we used Chi-squared tests to analyse changes in suicidality measured through categorical variables (Yes, No and No Response). All diagnostic plots were visually inspected for normality. All statistical tests were performed at a threshold level of $\alpha = 0.05$.

# Results

## Sociodemographic Characteristics

Among the 4657 calls logged, about 56% were females. The sample age ranged from 9 to 96 years ($M = 28.43$, standard deviation [$SD$] = 13), calling from all areas of Lebanon but primarily from the capital Beirut (36.84%) and the most populous governorate of Mount Lebanon (36.33%). The majority of calls were from individuals who reported having completed a high-school education (49.87%), and a considerable proportion of callers identified as current students (36.66%). Callers also identified as employed (34.29%) and unemployed (23.06%). With the exception of relationship status ($\chi^2(1) = 17.96$, $P = 0.00$), there were no differences in the sociodemographic information of callers who reported emotional distress only, versus those who also had suicide-related behaviour. There were significant differences in the initial levels of distress between the two groups, with suicidal callers scoring higher on initial levels of distress ($M = 8.84$, $SD = 1.56$) compared to nonsuicidal callers ($M = 8.24$, $SD = 1.90$, $P = 0.00$). We describe the characteristics of each sample below.

### Callers with Emotional Distress

Among individuals who were in an emotional crisis, and who were *not* presenting suicidal thoughts or attempts ($n = 1499$), the average age of callers was 28.28 ($SD = 12.56$), with the vast majority aged between 18 and 34 years (71.13%) followed by those between 35 and 49 (9.71%) and those below 18 (9.21%). The majority of calls were from females (56.2%), about 13.6% of callers reported to be sexual or gender minority (LGBTQIA+), and 6% of callers were of non-Lebanese nationality such as Syrian and Jordanian. Half of the calls were from individuals whose highest level of completed education was high school (50.6%) followed by those with a Bachelor's degree (3 years of college; 30.9%). Callers identified as currently being students (36.6%), employed (34.8%) and unemployed individuals (23.5%).

### Callers with Suicide-related Behaviour

Among those who presented with suicidal thoughts/attempts ($n = 1374$), age ranged from 11 to 80 years old ($M = 26.8$, $SD = 11.25$). About 56% were females and 14.7% identified as LGBTQ. Callers were mostly Lebanese citizens (91.7%), with about half having completed a high-school education (49.2%). About 39.3% ($n = 456$) of callers were currently students, 26% of callers were unemployed and 30.8% were employed (Table 1).

## Mental Health Status and Services

As summarised in Table 2, about a quarter of calls were from individuals who reported having been diagnosed with a mental illness currently or in the past. The most commonly reported diagnosis was a depressive disorder (37% among callers with emotional distress only and 41.75% among suicidal callers) followed by anxiety disorders (34% among calls with emotional distress only and 23.97% among suicide calls). Those with suicide-related behaviours (28.3%) were significantly more likely than those calling only with emotional distress (21.7%) to have had a diagnosis of mental illness ($\chi^2(1) = 17.96$, $P = 0.000$).

Callers also reported multiple risk and protective factors, known to impact mental health. A large proportion of callers indicated their family and friends were a source of support (40–45%), and that thinking about their children and family deterred them from hurting themselves (34.7%). About a quarter of the sample also indicated that faith and religious beliefs were a protective factor (Table 3). In terms of major stressors and risk factors, the sample frequently endorsed experiencing major loss or stressor in the past year, chronic stress or trauma, social isolation and family discord. The subsamples differed significantly in the extent to which they endorsed at least one protective or risk factor. Those with suicide-related behaviour were more likely to report at least one risk-factor Pearson ($\chi^2(1) = 188.4173$, $P = 0.000$), and also more likely to report at least one protective factor Pearson ($\chi^2(1) = 145.2876$, $P = 0.000$).

In terms of mental health services, an overwhelming majority of calls overall were received from individuals who at one point in time have received mental health services (75–76%). Psychiatric services were more commonly sought compared to psychotherapy or other mental health services. Around 95.75% of emotional distress callers indicated that they at one point received mental health services reported utilising psychiatric services in specific, whereas 82.72% reported seeking psychotherapy. Similarly, in the case of suicidal callers, around 97.42% reported having at some point received psychiatric services, whereas only 84.48% reported seeking psychotherapy. About 92.31% of callers who reported ever having a diagnosis also reported having sought mental health treatment. As there were no significant differences in treatment seeking, those who reported suicide-related behaviours were more likely to have a mental illness diagnosis than those who did not ($\chi^2(1) = 16.88$, $P = 0.000$).

Data regarding reasons for discontinuation of mental health services were available for 59 of the emotional distress calls and 51 of the suicide calls. A multiple response analysis revealed that in the sample of emotional distress callers, individuals most often reported having stopped

**Table 1:** *Sociodemographic Characteristics of Callers*

| Variable | Calls with suicide-related behaviour *n* (%) or mean (*SD*)*N* = 1374 | Calls with emotional distress only *n* (%) or mean (*SD*)*N* = 1499 |
|---|---|---|
| Age | 26.8 (11.3) | 28.3 (12.6) |
| Age group (years) | | |
| <18 | 161 (14.28%) | 110 (9.21%) |
| 18–34 | 770 (68.32%) | 850 (71.13%) |
| 35–49 | 117 (10.38%) | 116 (9.71%) |
| 50–64 | 63 (5.59%) | 80 (6.69%) |
| >65 | 16 (1.42%) | 39 (3.26%) |
| Reported gender | | |
| Male | 602 (43.8%) | 656 (43.8%) |
| Female | 770 (56.1%) | 842 (56.2%) |
| Reports to be sexual/gender minority (LGBTQIA+) | | |
| Yes | 202 (14.7%) | 204 (13.6%) |
| No data | 1172 (85.3%) | 1295 (86.4%) |
| Nationality | | |
| Lebanese | 778 (91.7%) | 991 (94%) |
| Non-Lebanese | 71 (8.3%) | 63 (6%) |
| Governorate | | |
| Beirut | 373 (35.2%) | 406 (37.4%) |
| Bekaa | 45 (4.25%) | 58 (5.34%) |
| Mount Lebanon | 387 (36.5%) | 372 (34.3%) |
| Nabatieh | 14 (1.32%) | 26 (2.39%) |
| North Lebanon | 127 (11.99%) | 105 (9.67%) |
| South | 113 (10.7%) | 119 (10.96%) |
| Living with | | |
| Alone | 172 (14.4%) | 119 (9.7%) |
| Not alone | 1021 (85.4%) | 1102 (90.3%) |
| Homeless | 2 (0.2%) | 0 (0%) |
| Relationship status | | |
| Not in a relationship (single, divorced, widowed) | 910 (80.2%) | 881 (72.8%) |
| In any intimate relationship (dating, married, engaged) | 225 (19.8%) | 329 (27.2%) |
| Highest level of education ever obtained | | |
| Did not complete Primary/elementary school | 34 (3.5%) | 37 (3.8%) |
| Primary/elementary school (1st to 6th grades) | 19 (2%) | 23 (2.3%) |
| Middle school (7th to 9th grades) | 69 (7.2%) | 60 (6.1%) |
| High school (10th to 12th grades) | 473 (49.2%) | 496 (50.6%) |
| Bachelor's degree (BS, BA, DEA) | 308 (32%) | 303 (30.9%) |
| Master's degree completed (MS, MA, DESS) | 31 (3.2%) | 46 (4.7%) |
| Doctoral/medical degree (PhD, MD) | 7 (0.7%) | 4 (0.4%) |
| Vocational/technical degree | 21 (2.2%) | 12 (1.2%) |
| Employment status | | |
| Student | 456 (39.3%) | 452 (36.6%) |
| Employed | 357 (30.8%) | 430 (34.8%) |
| Unemployed | 303 (26.1%) | 290 (23.5%) |
| Others | 43 (3.7%) | 64 (5.2%) |

services due to structural barriers such as inconvenience of cost, time and distance (41.82%). This was followed by reasons related to mistrust towards the provider (30.91%) and personal attitudes/views towards therapy or mental illness (16.36%). In the sample of suicidal callers, the sample most often reported having stopped due to provider-related mistrust (35.29%), followed by inconvenience (27.45%) and personal views/attitudes (25.49%). Further details on the use of current and previous mental health services as well as reasons for ceasing the use of these services are summarised in Table 2.

## Operator Response

The types of interventions implemented by the operator were recorded for a total of 1232 of suicide calls (89.6%) and 1377 of emotional distress calls (89.19%). Considering that operators could endorse more than one response for a given call, a multiple response analysis was conducted for each sample. The most common response reported by operators across both samples was "provided emotional support", followed by "de-escalated suicidal crisis" (41.15%) for suicide calls and "gave referral to community services" (28.42%) for emotional distress calls. Results of

**Table 2:** *Mental Health Status and Services of Callers*

| | Calls with suicide-related behaviour | Calls with emotional distress only |
|---|---|---|
| Any diagnosis of mental illness | *N* (%) | *N* (%) |
| Yes | 389 (28.3%) | 325 (21.7%) |
| No | 985 (71.7%) | 1174 (78.32%) |
| Ever received mental health services | | |
| Yes | 647 (76.4%) | 680 (75.6 %) |
| No | 200 (23.6%) | 219 (24.4%) |
| Reasons for discontinuing mental health services[a] | | |
| Structural barriers (time, cost, distance) | 14 (27.45%) | 23(41.82%) |
| Provider-related mistrust | 18 (35.29%) | 17 (30.91%) |
| Personal views/attitudes | 13 (25.49%) | 9 (16.36 %) |
| Perceived need | 4 (7.84%) | 7 (12.73 %) |
| Stigma | 4 (7.84%) | 2 (3.64 %) |
| Literacy/knowledge | 0 | 1 (1.82%) |
| Presence of at least one risk factor | | |
| Yes | 1236 (89.96%) | 1049 (69.98%) |
| No | 138 (10.04%) | 450 (30.02%) |
| Presence of at least one protective factor | | |
| Yes | 1003 (73.0%) | 766 (51.1%) |
| No | 371 (27.0%) | 733 (48.9%) |

*Note.* [a] *Percentages add up to >100% because multiple options can be endorsed.*

**Table 3:** *Risk and Protective Factors*

| | Calls with suicide-related behaviour | Calls with emotional distress only |
|---|---|---|
| Protective factors[a] | *N* (%)<br>*N* = 932 | *N* (%)<br>*N* = 715 |
| Receiving support from family | 423 (45.39%) | 288 (40.28%) |
| Thinking about children/family | 324 (34.76%) | 125 (17.48%) |
| Receiving support from friends | 261 (28%) | 207 (28.95%) |
| Having a religious/spiritual faith | 233 (25%) | 199 (27.83%) |
| Having a future outlook | 149 (15.99%) | 128 (17.9%) |
| Thinking about friends | 115 (12.34%) | 38 (5.31%) |
| Being afraid of death/incapacitation | 101 (10.84%) | 35 (4.9%) |
| Lacking access to means | 60 (6.44%) | 19 (2.66%) |
| Thinking about pets | 24 (2.58%) | 11 (1.34%) |
| Risk factors and stressors | *N* (%)<br>*N* = 1124 | *N* (%)<br>*N* = 852 |
| Family discord | 439 (39.06%) | 234 (27.46%) |
| Experienced continuous stress, trauma or loss | 404 (35.94%) | 227 (26.64%) |
| Social isolation | 361 (32.12%) | 177 (20.77%) |
| Experienced major loss/stressor within the year | 335 (29.8%) | 196 (23%) |
| Financial problems | 238 (21.17%) | 171 (20.07%) |
| Easy access to lethal means | 187 (16.64%) | 16 (1.88%) |
| Living alone | 129 (11.48%) | 75 (8.8%) |
| Bullying | 118 (10.5%) | 63 (7.39%) |
| Upcoming major stressor/possible loss | 114 (9.16%) | 80 (9.39%) |
| Subjective reporting of substance abuse | 103 (8.81%) | 39 (4.58%) |
| History of impulsive behaviour | 99 (8.81%) | 32 (3.76%) |
| Chronic illness | 90 (8.01%) | 72 (8.45%) |
| Family/peer history of suicidal behaviour/attempt | 79 (7.03%) | 50 (5.87%) |
| Family history of mental illness | 78 (6.94%) | 41 (4.81%) |
| Academic problems | 77 (6.85%) | 66 (3.97%) |
| Experienced any major stress, trauma or loss within lifetime | 64 (5.69%) | 41 (4.81%) |
| Break-up/relationship problems | 54 (4.8%) | 49 (5.75%) |
| Suicide in the media/news | 15 (1.33%) | 4 (0.47%) |
| Peer relationship problems | 14 (1.25%) | 23 (2.7%) |
| Family history of suicidal behaviour/attempt | 8 (0.71%) | 5 (0.59%) |
| Peer history of suicidal attempt | 7 (0.62%) | 3 (0.35%) |

*Note.* [a]*Percentages add up to >100% because multiple options can be endorsed.*

**Table 4:** *Operator Response*

| | Calls with suicide-related behaviour | Calls with emotional distress only |
|---|---|---|
| | *N* (%) | *N* (%) |
| | *N* = 1221 | N = 1313 |
| Provided emotional support | 1131 (92.63%) | 1245 (94.82%) |
| Provided education about suicide and prevention | 264 (21.62%) | 82 (6.25%) |
| De-escalated suicidal crisis | 507 (41.52%) | 20 (1.52%) |
| Provided psychoeducation | 44 (3.6%) | 43 (3.27%) |
| Provided referral to community | 428 (35.05%) | 380 (28.94%) |
| Emergency services dispatched | 22 (1.8%) | 13 (0.97%) |

*Note.* [a]*Percentages add up to >100% because multiple options can be endorsed.*

the multiple response analysis can be found in further detail in Table 4.

## Changes in Caller Distress

On average, caller distress at the beginning of the call was 8.56 ($SD = 1.76$) ranging from 1 to 10. Among 95.39% of analysed calls with available data ($n = 1301$), the level of emotional distress was higher at the beginning of the call, than towards the end of the call ($M = 8.56$, $SD = 1.76$ and $M = 4.02$, $SD = 2.17$, respectively). Among those calling for emotional distress only ($n = 602$), there was a significant decrease between distress levels reported at the beginning of the call ($M = 8.25$, $SD = 1.92$) and end of the call ($M = 3.7$, $SD = 2.08$). The size of the difference was large ($t(601) = 47.55$, $P < 0.005$, $d = -1.94$). Overall, 95.18% reported improvement in level of distress from the beginning to the end of the call. Similarly, based on available data among those calling with suicidal ideas ($n = 699$ calls), there was significant decrease in callers' reported level of distress from the beginning of the call ($M = 8.84$, $SD$=1.56) to the end of the call ($M = 4.30$, $SD = 2.21$). The effect size was also large ($t(698)$= 52.8, $P < 0.0005$, $d = -1.99$).

To examine whether there is a difference in the changes of distress between those that reported only suicide ideation ($n = 667$), versus those that *also* had an attempt in progress ($n = 32$), we conducted a mixed ANOVA comparing change in distress across calls between the two groups. We found no significant interaction. Level of distress decreased from an average of 9.47 ($SD = 1.41$) to 4.69 ($SD = 2.37$) in the case of calls where an attempt was in progress and 8.81 ($SD = 1.56$) to 4.28 ($SD = 2.20$) in the case of suicide ideation calls. It should be noted that the assumption of normality was violated; however, the $F$ test in ANOVA is typically considered to be robust (Games & Lucas, 1966; Glass et al., 1972).

## Individual Characteristics Associated with Emotional Distress

We used univariate ordered logistic regression models to explore the extent to which the following variables might explain variance in initial levels of distress: type of call (emotional distress only or suicidal), age, sex, LGBTQI+ status, living in Beirut, relationship status, living alone status, primary employment status, highest level of education, having received mental health services at one point in time, having a mental health diagnosis and reporting any of the risk/stressors or protective factor. Results of the univariate analysis are found in Appendix A. Calls with suicidal ideation or attempt were associated with significantly higher levels of initial distress compared to emotional distress calls without suicidal ideation or attempt. Being female, being in a relationship and having any risk factor present were associated with significantly higher levels of initial distress. Being 65+ years old was associated with significantly lower levels of initial distress. Holders of vocational/technical degrees had significantly higher odds of having higher initial distress.

We then ran a multivariate ordered logistic regression model with initial levels of distress as the outcome of interest and the following variables as independent variables: female sex, being in a relationship, having any risk factor present and age and adjusted for type of call. We did not adjust for variables which were highly collinear and/or which had not shown significant correlation with the outcomes in the previous step.

Results of the second multivariate model (Appendix B) indicate that the odds of scoring higher on distress at the beginning of the call were significantly *higher* for females compared to males (odds ratio (OR) = 1.35, $P = 0.007$), and those reporting any risk factor compared to those not reporting any risk factor (OR = 2.02, $P = 0.000$). The odds of scoring higher on distress at the beginning of the call were significantly *lower* for emotional distress callers without suicidal ideation or attempt (OR = 0.63, $P = 0.000$), and those older than 65 years old compared to those younger than 18 (OR = 0.53, $P = 0.002$). Relationship status lost significance (OR = 1.17, $P = 0.246$) in this adjusted model.

Finally, we ran a multivariate model using the same independent variables as the previous model but specifying the *difference* in the level of distress between end and beginning of call as the outcome (Appendix C). Here we found that reporting any risk factor (OR = 0.63, $P = 0.004$) was associated with higher odds of having greater improvement over the course of the call. Individuals older than 18 all had lower odds of having larger improvements in distress ($P = 0.000$) compared to those under 18. There was no significant difference in improvement between

males and females (OR = 0.87, $P = 0.195$) or between suicidal and nonsuicidal calls (OR = 0.89, $P = 0.274$).

### Changes in Suicidality

Suicidal ideation was assessed at the beginning of the call ($T_1$) and at the end of the call ($T_2$). About 74.79% ($n = 540$) of callers who expressed suicidal ideation at the beginning of the call ($T_1$) reported a lack of suicidal ideation at the end of call ($T_2$). An independence test revealed that the change across time was significant ($\chi^2(1, N = 990) = 62.24$, $P < 0.05$).

## Discussion

The Embrace National Helpline provided emotional support and de-escalation of suicidal ideation to a diverse sample of callers from Lebanon. As some callers had significantly higher levels of initial distress (e.g. those with suicide-related behaviours, females), there was a significantly large subjective decrease of emotional distress and suicidal ideation, by the end of the intervention, across the sample. Help was most commonly in the form of providing emotional support, as well as de-escalating suicidal crises and providing referrals to community resources.

### Who Calls the Helpline?

The helpline is catering to a diverse sample of individuals. Callers are located in all Lebanese governorates, albeit not in a proportional manner. For example, as more than one-third of callers live in Mount Lebanon, which is the most populous governorate, almost equal number of callers report living in Beirut, where less than 10% of Lebanese are registered as residents (Central Administration of Statistics & International Labour Organization, 2019). This may reflect the fact that Embrace may be appealing more to the urban population of the capital, but it is more likely to reflect the fact that many people work and attend college temporarily in Beirut. This means that the capital hosts more people than it has as officially registered residents. Another reason may be that under-represented areas such as Nabatieh and Bekaa, which have more rural population, face barriers in accessing the helpline, such as access to a private phone or the ability to afford the cost of the call, or lack of knowledge about the helpline itself.

Over half of the calls came from females, and from those aged between 18 and 34. This is rather consistent with the population distribution, whereby the majority of Lebanese are aged between 20 and 29 (Central Administration of Statistics & International Labour Organization, 2019), and in fact, females aged between 20 and 24 make up the highest proportion of Lebanese residents. Receiving more calls from females than males is also in line with previous research suggesting that women are more likely than men to seek help from telephone services or mental health professionals (Rickwood et al., 2007).

People from various socioeconomic backgrounds and potential social vulnerabilities call the helpline. Approximately half of the calls were from individuals with a maximum of a high-school education, and the helpline attracted students, employed and unemployed individuals fairly equally demonstrating equal penetrance to these unique characteristics. Importantly, 14% of calls came from individuals identifying as LGBTQIA+ highlighting the helpline's role in responding to vulnerable populations' mental health needs.

Another interesting finding is that 22% to 28% of calls came from individuals who reported having a previous/current mental health diagnosis, but with an important difference across subsamples. Those with suicide-related behaviours (28.3%) were significantly more likely than those calling only with emotional distress (21.7%) to have had a diagnosis of mental illness. This suggests that those with more severe psychological problems (and high risk of mortality) have at least been assessed and diagnosed at some point, and utilise the helpline as an additional resource to manage their suicide-related behaviours. Moreover, the fact that the majority of people reported *not* having been diagnosed with mental illness, (either because they do not meet criteria, or because they have not been assessed and diagnosed), also suggests that the helpline is offering an accessible intervention to a general population with and without possible mental illness.

Related to the above, about 75% of callers reported having received mental health services at one point in time (most commonly psychiatric services), with no significant differences across the subsamples. Interestingly, those who discontinued mental health services reported that they did so because of structural barriers such as high cost of treatment, traffic and distance to reach the practitioner, and because of provider-related mistrust such as perceiving the practitioner to be incompetent or that he/she would not keep their information confidential. These barriers mirror the reality present in Lebanon, where psychotherapy and psychiatric consultations are personally financed and not covered by public institutions or private insurance companies (Yehia et al., 2014). They are also consistent with findings from a recent study, which found that attitudes towards the mental health professionals and the perceived accessibility of services were major factors that Lebanese consider when seeking mental health services (Jabbour & Zeinoun, 2020). These findings suggest that the helpline is being utilised as an intervention that is easily accessible and trusted in helping with emotional crises in referring callers to trusted community resources.

Finally, our data suggest that callers reach out to the helpline when they are in high levels of distress – scoring an average of 8.25 out of 10 at the beginning of the call. As it is difficult to compare this with other studies due to different metrics, it suggests that the helpline is utilised by those who feel in distress and need immediate help. In fact, findings from previous studies confirm that individuals who call crisis lines are commonly in serious distress. Chan et al. (2018) found significantly higher rates of suicide among crisis line callers than the general population in Hong Kong, and Gould et al. (2007) reported that over half of suicidal callers who called the crisis hotline had a suicide plan in place and 8% had taken some action before calling the centre.

### How Effective is the Helpline?

An overwhelming majority (95%) of emotional distress calls (without missing data) reported improvement in the levels of distress from beginning to end of call. Similarly, suicidal callers – both thinking of suicide and/or attempting it during the call – also experienced an improvement in their emotional distress levels over the course of the call. Also, 75% of suicidal callers reported lack of suicidal ideation by the end of the call. These positive results of the effectiveness of the helpline align well with previous research that has reported benefits of helplines in improving on callers' mental health state. For example, studies that assess the *immediate* efficacy of helplines based on changes in caller distress and suicidal behaviour show evidence that these indicators decrease throughout the call among adults (Gould et al., 2007; Mishara et al., 2007a; Mishara & Daigle, 1997; Rasmussen et al., 2017; Shaw & Chiang, 2019), and among children and adolescents (King et al., 2006). Specifically, Gould et al. (2007) examined outcomes of suicide calls to eight helpline centres in the United States between 2003 and 2004 by measuring the change in the caller's suicide state during the phone calls and 3 weeks later. The study found significant reductions in suicidality (psychological pain, hopelessness and intent to die) by the end of the call. Similarly, in a complementary study on crisis calls, Kalafat et al. (2007) reported significant immediate improvement in callers' crisis state and hopelessness over the course of a call to a suicide helpline.

Despite the strong evidence towards the efficacy of the interventions given to callers with and without suicide-related behaviours, it is worthy to note that 5% of calls do not report improvement, and 25% who continue to report suicidal ideation by the end of the call. Further studies can utilise follow-up calls to investigate the levels of distress and suicidal ideation after some time has passed after the call. This can help understand whether there are "late effects" in improvement, which are not reported by the caller at the end of the call, or whether distress and suicide-related behaviour continue to be reported. Additionally, further analysis with a larger sample can determine the risk profile of possible "nonresponders", and consequently amend interventions to better reach and tailor interventions for this subgroup.

### Who Benefits the Most from the Helpline?

Our data indicate that the most distressed callers are more likely to be female, in a relationship (as opposed to not), and who are experiencing at least one risk factor. However, being female or in a relationship did not affect the extent to which one benefits over the course of the call – i.e. they all showed similar decrease in distress. What seems to explain the *greatest* reduction in distress is the presence of a risk factor. For example, a caller who experienced a major loss in the past year, or social isolation, or any other risk factor is likely to start the call with more distress than a caller who does not report such risk factors, and is more likely to experience a greater *reduction* in distress over the course of the call than counterparts. However, because they start with extremely high distress, they do not reach comparable levels of relief as those without risk factors, despite reduction in distress. Previous studies reported on different risk factors than the ones included in our study – but it is worth noting that those studies did not find a significant interaction between suicide risk factors or mental health status with the caller's reduction in distress over the course of the call (Gould et al., 2007; Kalafat et al., 2007). What previous studies did find is that the responder's level of experience positively predicted the caller's improvement (Hoffberg et al., 2020).

Age provided another interesting explanation of distress, especially with the very young or older callers. Callers above the age of 65 reported lower levels of initial distress than those who were younger than 18. However, the younger callers (under 18) were much more likely to show improvement compared to those above 18.

Interestingly, as the majority of callers have a previous diagnosis or have received mental health services, our results show that having a current/past diagnosis was not predictive of levels of distress, nor of the success of the outcome. This adds evidence that regardless of diagnosis, a person experiencing an emotional crisis can benefit from the nonspecific interventions offered by the helpline, such as active listening and collaborative problem solving.

### Limitations

A key limitation of our study is the absence of follow-up data to help understand whether the alleviation of distress is maintained, and also to investigate those who do not report improvement. Work is currently already underway to collect such data in future callers. Another limitation is the possibility of self-selection bias in the sample. Individuals who call the helpline may have different characteristics that impact their outcomes than those who do not call the helpline. However, this is not a major threat to our findings because the objective of this study was to evaluate the effectiveness of the helpline in helping those who use it, rather than the general population. Another limitation is that our main outcome is self-reported levels of distress. In the absence of more objective measures (e.g. silent objective listener on the call), the report of efficacy rests largely on the person's subjective experience and may be prone to social desirability bias given that the operator providing help is the same one asking for the distress rating. Finally, our study had a large amount of missing data for the outcomes of interest (levels of distress or suicidality). Note that upon closer examination (supplemental material), callers with and without missing data were very similar on most sociodemographic and mental health characteristics. Therefore, we do not consider missing data to be a threat to validity. Future analyses could be improved by ensuring improved data capturing.

## Conclusion

This was the first study to evaluate the effectiveness of an emotional support and suicide-prevention helpline in the Arab region where mental health and suicide remain taboo subjects. Our findings indicate that the Embrace Lifeline provides effective interventions that significantly reduce

subjective distress in a diverse sample of Lebanese. Future work will investigate whether the improvement in callers' mental health status is sustained weeks after the call, and how to further diversify the reach of the helpline.


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### Conflicts of interest

All authors are affiliated with the institution that operates the helpline being investigated.

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