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Suicide Prevention Media Campaigns: A Systematic Literature Review

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ABSTRACT

Suicide prevention media campaigns are gaining traction as a means of combatting suicide. The current review set out to synthesize information about the effectiveness of these campaigns. We searched four electronic databases for studies that provided evidence on the effectiveness of media campaigns. We focused on studies that described an evaluation of the effectiveness of an entire campaign or a public service announcement explicitly aimed at suicide prevention. We identified 20 studies of varying quality. Studies that looked at whether campaign exposure leads to improved knowledge and awareness of suicide found support for this. Most studies that considered whether campaign materials can achieve improvements in attitudes toward suicide also found this to be the case, although there were some exceptions. Some studies found that media campaigns could boost help-seeking, whereas others suggested that they made no difference or only had an impact when particular sources of help or particular types of help-seeking were considered. Relatively few studies had sufficient statistical power to examine whether media campaigns had an impact on the ultimate behavioral outcome of suicides, but those that did demonstrated significant reductions. Our review indicates that media campaigns should be considered in the suite of interventions that might be used to prevent suicide. Evidence for their effectiveness is still amassing, but there are strong suggestions that they can achieve positive results in terms of certain suicide-related outcomes. Care should be taken to ensure that campaign developers get the messaging of campaigns right, and further work is needed to determine which messages work and which ones do not, and how effective messages should be disseminated. There is an onus on those developing and delivering campaigns to evaluate them carefully and to share the findings with others. There is a need for evaluations that employ rigorous designs assessing the most pertinent outcomes. These evaluations should explore the nature of given campaigns in detail – in particular the messaging contained within them – in order to tease out which messages work well and which do not. They should also take into account the reach of the campaign, in order to determine whether it would be reasonable to expect that they might have their desired effect.

Introduction

Globally, about 800,000 people die by suicide each year (World Health Organization, 2014). International efforts to identify effective suicide prevention interventions are increasing in scope and intensity. Around the world, a variety of universal interventions (aimed at reducing suicide risk across the population), selective interventions (which focus on groups in the population who are at heightened risk but not yet showing explicit signs of suicidality), and indicated interventions (which target individuals who are actively exhibiting suicidal thoughts or behaviors) are being tested (Hawton & Pirkis, 2017).

One universal intervention that is gaining traction is the suicide prevention media campaign (Mann et al., 2005; Zalsman et al., 2016). Suicide prevention media campaigns are designed to achieve the ultimate outcome of a reduction in suicides. Usually, however, they target more distal outcomes related to beliefs, attitudes, and behaviors. Some are designed to educate the general public about suicide warning signs and risk factors, with a view to equipping those who may be

concerned about someone to react appropriately. Others are aimed at raising awareness and reducing stigmatizing attitudes among the general public, thereby increasing the likelihood that someone who is at risk might reach out for help without fear of dismissive, derisive, or discriminatory responses. Still others target vulnerable individuals themselves, encouraging them to seek help for suicidal thoughts and behaviors from informal and formal sources (Pirkis, Rossetto, Nicholas, & Ftanou, 2016).

Contemporary behavior change theories, including those outlining reasoned action approaches, can be used to explain how these various outcomes might be achieved by media campaigns (Azjen, 2002; Fishbein & Cappella, 2006). Reasoned action approaches suggest that the direct precursor to behaviors is behavioral intentions, and that behavioral intentions are formed by attitudes toward the behavior, subjective norms, and perceived behavioral control or self-efficacy. These, in turn, are influenced by beliefs – behavioral beliefs, normative beliefs, and control beliefs. According to these reasoned action approaches, suicide prevention media

campaigns operate at the beginning of the chain by directly changing beliefs. The higher-level outcomes are then achieved indirectly as the beliefs influence attitudes, subjective norms, and perceived behavioral control, and as these in turn influence intentions and, ultimately, behaviors. These relationships may be further complicated when a media campaign targets one group (i.e., equipping the family and friends of suicidal individuals to reach out to them) but ultimately aims to influence behavioral outcomes for another (i.e., increasing help-seeking and reducing suicidal acts in at-risk individuals themselves).

Evidence from other areas, such as tobacco use, suggests that media campaigns are capable of initiating positive attitudinal and behavioral changes and limiting negative ones via these hypothesized pathways (Wakefield, Loken, & Hornik, 2010). Suicide prevention media campaigns based on this model could achieve similar outcomes, including improving community awareness of suicide as a problem, encouraging open and sensitive discussions about suicide, reducing stigma, and increasing help-seeking (Niederkrotenthaler, Reidenberg, Till, & Gould, 2014).

A number of suicide prevention media campaigns have been conducted around the world, targeting different audiences, delivering different messages, and using different combinations of traditional and newer media. Most have had at their core some sort of public service announcement (PSA) that is played on radio or television, in cinemas, or via the Internet (Ftanou et al., 2017). PSAs have been defined as "... announcements (including network announcements) for which no charge is made and which promote programs, activities, or services of ... governments ... or non-profit organizations and any other announcements regarded as serving community interests, excluding time signals, routine weather announcements and promotional announcements" (Dessart, 2013, p. 1849).

Several literature reviews have been conducted that summarize the evidence for suicide prevention media campaigns. Some have been systematic reviews synthesizing the evidence for the full gamut of universal, selective, and indicated interventions that might be used to prevent suicides, and they have concluded that the available information about media campaigns is limited (Du Roscoat & Beck, 2013; Mann et al., 2005; Petersen et al., 2016; Zalsman et al., 2016). Others have focused exclusively on media campaigns and examined them in more detail, but have done so in a narrative, nonsystematic way (Niederkrotenthaler et al., 2014). Only one has involved a systematic review focusing specifically on media campaigns; this covered depression awareness campaigns as well as suicide prevention campaigns and is now somewhat dated (Dumesnil & Verger, 2009). Collectively, these reviews suggest that media campaigns show promise in terms of changing attitudes and intentions, but that further evaluation is required before definitive conclusions can be drawn.

The current review built on these previous reviews by focusing exclusively on studies relating to media campaigns that have been published as recently as May 2017, and systematically searching for and reporting their findings. The review aimed to synthesize information about the effectiveness of media campaigns designed to prevent suicide.

Methods

Search strategy

We searched four electronic databases (PsycINFO, MEDLINE, Scopus, and EBSCOHost) from the date of their inception to May 4, 2017, for studies providing evidence on effectiveness of media campaigns. We used the following search string: (self-harm OR (suicid* NOT (euthanasia OR "assisted suicide"))) AND (campaign* OR service announcement*). We limited our search to peer-reviewed English-language articles reporting on empirical studies, and we excluded other articles (e.g., editorials and commentaries), reports, books, and book chapters. We hand-screened the reference lists of identified studies and other prior relevant reviews to identify further relevant studies. We also drew on our own expert knowledge of current work in the area in an effort to identify additional studies.

Inclusion and exclusion criteria

We included studies if they described an evaluation of the effectiveness of an entire campaign or a PSA, reported on outcomes that related to suicide (e.g., attitudes toward suicide, suicidal thoughts, suicidal behaviors, seeking help [in a suicidal crisis], suicide), and were published as journal articles. We included studies using any methodological approach, providing they permitted an assessment of suicide-related outcomes. We excluded studies that were purely descriptive and provided no data on effectiveness. We focused on campaigns and PSAs explicitly aimed at suicide prevention, and excluded studies of campaigns and PSAs designed to raise awareness of depression or other mental illnesses.

Study selection and evaluation

One member of our team (AR) reviewed the titles and abstracts of retrieved records for potentially relevant articles, and reviewed the full text of these articles to determine whether they met our inclusion criteria. Any uncertainty was resolved by recourse to two other members of the team (JP and NR) who discussed the article and reached a consensus-based decision on its inclusion. JP then extracted relevant data from each of the studies described in the articles and synthesized their findings. The review was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Moher, Liberati, Tetzlaff, & Altman, 2009).

Results

Figure 1 shows the flow of the search strategy. We retrieved 599 records from the four databases, and an additional 6 from other sources, bringing the total to 605. After removing 189 duplicates, we were left with 416 records. Of the 416, 332 were excluded based on title/abstract information or because they were books or book chapters. Full-text versions of the remaining 84 records were sourced and screened for eligibility. We excluded 63 of these as being ineligible because they were reviews/commentaries or protocol papers without data; they were concerned with campaigns that were not directly about

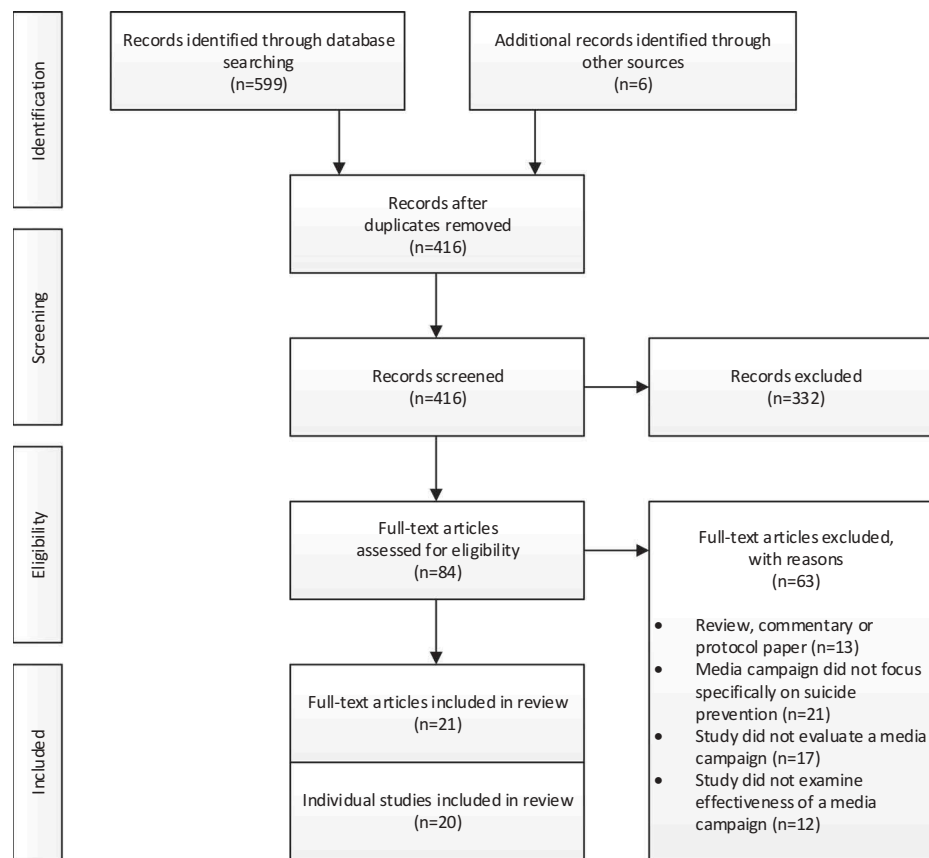


Figure 1. PRISMA flow diagram illustrating the selection of studies.

suicide prevention (e.g., depression awareness campaigns); they were not media campaigns; and/or they were concerned with how to target a suicide prevention campaign or PSA, or the kind of messages that might feature in these, but did not examine the effectiveness of a campaign or a PSA. This left us with 21 journal articles that described 20 separate studies.

The 20 studies are summarized in Table 1. Most studies were conducted fairly recently, with the earliest published in 2005. Twelve were conducted in the United States, two in Canada, and one each in Japan, South Africa, Scotland, Austria, Australia, and South Korea. All involved evaluations of whole media campaigns that were often multifaceted or trials of more specific PSAs. These campaigns and PSAs targeted suicidal individuals and/or those who might be in a position to assist them, and typically delivered messages designed to raise awareness and encourage help-seeking.

The findings from these studies are described in more detail in Table 1. We have organized them by study design, starting with the weakest and finishing with the strongest [studies using post-campaign data only, with no comparison group; studies using post-campaign data, with comparison groups or other design refinements; studies using pre- and post-campaign data, with no comparison group; studies using pre- and post-campaign data, with additional time points, comparison groups or other design refinements; and randomized controlled trials (RCTs)]. It is worth noting here that only the RCTs had true “intervention” and “control” groups; these comprised individuals who had been randomly allocated to specific experimental conditions. In the remaining studies in which comparisons were made, these comparisons

pitted those who were exposed to the given media campaign against those who were not, hence our deliberate use of the term “comparison group.”

Studies using post-campaign data only, with no comparison group

A number of studies involved an assessment of a suicide-related outcome at one point in time only, usually once the given campaign had concluded (Boeke, Griffin, and Reidenberg (2011); Mok et al. (2016); Pillay, Kriel, and Moodley (2007)). Each of these reported a positive effect of the campaign on the chosen outcome measure(s). These outcomes measures related to changes in awareness of how to help those at risk of suicide (Boeke et al. (2011)); knowledge related to suicide, such as risk factors and preventability (Pillay et al. (2007)); carrying out recommended behaviors with people at risk (e.g., asking others if they are ok) and perceptions of the campaign’s impact (Mok et al. (2016)).

Studies using post-campaign data, with comparison groups or other design refinements

The obvious weakness of assessing a suicide-related outcome at the post-campaign point only and doing so with no comparison group is that it is not possible to draw conclusions about whether observed suicide-related knowledge, attitudes, or behaviors have changed since the beginning of the

Table 1. Summary of study findings.

Author and year	Location	Description of campaign or PSA	Study design	Outcome measure(s)	Key finding(s)
Boeke et al. (2011)	Minnesota, United States	Campaign run in spring and summer of 2009 directed at family, friends, colleagues, and peers of suicidal individuals from one of four high-risk populations (adult men, older people, adolescents and native Americans). Campaign designed to increase awareness about the problem of suicide and to advise people on what to do if someone is at risk. Campaign delivered via signs in bus and transit shelters and skyways, newspaper advertisements, church bulletins, billboards, and radio Community Service Announcements (CSAs). "R U OK? Day" campaign held on September 11, 2014, which aimed to prevent suicide by equipping and encouraging people to begin meaningful conversations with those about whom they might be concerned. Campaign message delivered via a range of media.	<ul style="list-style-type: none"> Multifaceted evaluation designed to determine the extent to which the campaign helped those who might assist suicidal adult men. Data collection occurred via record reviews, focus groups, interviews and web-based survey (only the latter two reported). Post-campaign survey administered to 2,000 individuals. 	<ul style="list-style-type: none"> Awareness of how to help suicidal adult men Awareness of campaign Participation in recommended campaign activities Perceived impact of campaign 	<ul style="list-style-type: none"> Of 626 people who were interviewed or took part in the web-based survey, the majority indicated they would: (a) talk to the person, spend time with him, and be supportive; (b) seek help or try to talk the person into seeking help; or (c) do both. The most commonly cited source of help was a doctor. 66% of the sample were aware of the campaign. Of these, around 90% participated in recommended campaign activities (e.g., asking others if they were OK), and the majority had positive perceptions of the campaign's impact (e.g., 58% believed it made people more willing to ask their friends about what might be troubling them).
Mok et al. (2016)	Australia	Campaign called "Love to Live," which was run in 2005 and targeted adolescents. It aimed to prevent suicide (and HIV/AIDS and substance use), and emphasized positive messaging about suicide prevention. It involved a multifaceted approach, with an essay competition being one of the activities.	<ul style="list-style-type: none"> Qualitative examination of knowledge and attitudes demonstrated in essays written by the 63 entrants in the competition. 	<ul style="list-style-type: none"> Knowledge of suicide 	<ul style="list-style-type: none"> Majority of essays (70%) suggested that the writers had a reasonably accurate knowledge of suicide, including with respect to risk factors (e.g., mental illness, life stressors) and preventability. The essays also demonstrated that the writers had a good understanding of sources of help.
Pillay et al. (2007)	Pietermaritzburg, South Africa	Campaign called "Choose Life, North Lanarkshire," which built on the Scottish national "Choose Life" campaign and aimed to raise awareness of suicide and encourage people to seek help early, with a particular focus on men. Targeted at different age groups in different settings via national media and supporting materials (e.g., billboards, panels, posters, cards, DVDs, branded football products, newspaper, television, and radio).	<ul style="list-style-type: none"> Multifaceted evaluation using mixed quantitative and qualitative methods. One of these was a post-campaign survey with 500+ members of the general public, recruited via a quota sampling method. Another was a series of 10 qualitative discussion groups that were organized by age/gender groupings. 	<ul style="list-style-type: none"> Campaign awareness Attitudes toward suicide Behavioral intentions (likelihood of talking to someone who was thinking about suicide; own likelihood of seeking information or help) 	<ul style="list-style-type: none"> Campaign led to changes in attitudes and behavioral intentions for those who were highly aware of the campaign. There were differences in campaign responses on the basis of gender and region.
Robinson et al. (2013); Robinson et al. (2014)	North Lanarkshire, Scotland	Campaign called "Choose Life, North Lanarkshire," which built on the Scottish national "Choose Life" campaign and aimed to raise awareness of suicide and encourage people to seek help early, with a particular focus on men. Targeted at different age groups in different settings via national media and supporting materials (e.g., billboards, panels, posters, cards, DVDs, branded football products, newspaper, television, and radio).	<ul style="list-style-type: none"> Qualitative examination of knowledge and attitudes demonstrated in essays written by the 63 entrants in the competition. 	<ul style="list-style-type: none"> Perceptions re: impact of campaign on awareness, attitudes, and behaviors 	<ul style="list-style-type: none"> Consensus that campaign had raised awareness, mitigated stigma, improved attitudes, and increased the capacity of people to talk to others in their community or seek help themselves.

(Continued)

Table 1. (Continued).

Author and year	Location	Description of campaign or PSA	Study design	Outcome measure(s)	Key finding(s)
Daigle et al. (2006)	Quebec, Canada	Suicide Prevention Weeks held in 1999, 2000 and 2001, which aimed to change the behaviors of suicidal individuals and the public will, and focused specifically on men aged 20–40.	<ul style="list-style-type: none"> Multifaceted evaluation that included (a) a survey of 1,020 randomly selected respondents; those who had been exposed to the campaign were compared with those who had not been exposed (2000 campaign); (b) examination of routinely collected data from various suicide prevention services (different campaign years); and (c) examination of suicide data (1999 and 2000 campaigns). 	<p><i>Survey</i></p> <ul style="list-style-type: none"> Knowledge of suicide Attitudes toward suicide Help-seeking intentions <p><i>Service utilization</i></p> <ul style="list-style-type: none"> Number of visitors to suicide prevention websites Number of visitors to the Centre for Research and Intervention on Suicide and Euthanasia (CRISE) documentation center Number of calls to suicide prevention centers Number of hospital admissions for self-harm <p><i>Suicide data</i></p> <ul style="list-style-type: none"> Suicides 	<p><i>Survey</i></p> <ul style="list-style-type: none"> Those who were exposed to the 2000 campaign had better knowledge of suicide than those who weren't exposed, but there were no differences in terms of attitudes or intentions to seek help. <p><i>Service utilization</i></p> <ul style="list-style-type: none"> Increase in number of visitors to three suicide prevention websites from the beginning of the 2001 campaign. No increase in the number of visitors to CRISE or requests for CRISE documentation associated with the campaign in 1999, 2000, or 2001. No increase in calls to seven suicide prevention centers associated with the 2000 and 2001 campaigns. No decrease in hospital admissions for self-harm associated with the 2000 and 2001 campaigns. <p><i>Suicides</i></p> <ul style="list-style-type: none"> No decrease in suicides associated with the 1999 and 2000 campaigns.
Karras et al. (2014)	12 cities, United States	No specific campaign.	<ul style="list-style-type: none"> Cross-sectional survey administered to 2,526 veteran households which asked about recent exposure to suicide messaging and likelihood of using a suicide prevention helpline. 	<ul style="list-style-type: none"> Likelihood of using a suicide prevention helpline 	<ul style="list-style-type: none"> Respondents who had seen suicide prevention messaging within the past 30 days were more likely to report high intent to use a helpline than those who were not exposed.
Silk et al. (2017)	United States	Two campaigns run from February to April 2012, one in each of two campus neighborhoods. Both took a social norms approach, initially delivering the message "72% of [university] students would seek help if they felt overwhelmed by stress or depression" and later following this with the message "2/3 of [university] students would tell a friend to go to the university counseling center if they thought the friend needed help." One campaign employed peers as the message source and used images of students talking to each other, with the tagline "Come talk to us." The other used celebrities as the message source, involved images of the university's successful basketball team, and used the tagline "It takes teamwork to tackle a challenge." Both campaigns involved posters, "table toppers" and digital signs and emails.	<ul style="list-style-type: none"> Post-campaign survey conducted in the two campaign neighborhoods and a comparison neighborhood. 	<ul style="list-style-type: none"> Campaign awareness Intentions to communicate with others about the university counseling center Intentions to seek help 	<ul style="list-style-type: none"> Those who viewed either campaign were more likely to refer others to the university counseling center and to seek help themselves than those in the comparison neighborhoods. Impacts were greatest for those who reported viewing the campaign, and there was some evidence that peer messaging was more effective than celebrity messaging.

(Continued)

Table 1. (Continued).

Author and year	Location	Description of campaign or PSA	Study design	Outcome measure(s)	Key finding(s)
<i>Studies using pre- and post-campaign data, with no comparison group</i> See Daigle et al. (2006). Omar (2005)	Kentucky, United States	The "Stop Youth Suicide Campaign" was run from 2000 to 2004 and was designed to improve community awareness and knowledge regarding suicide, and to improve the capacity of medical professionals and others who work with adolescents to recognize and manage suicidal thinking. It involved public education and education of professionals and utilized face-to-face encounters and website, video and other forms of media education.	<ul style="list-style-type: none"> Data on young people contacting the campaign. Community surveys conducted before the campaign and three years after its launch. 	<p><i>Contact data</i></p> <ul style="list-style-type: none"> Appropriate referral and treatment of suicidal young people Public awareness about suicide 	<p><i>Contact data</i></p> <ul style="list-style-type: none"> 861 emails and 976 phone calls to campaign from suicidal young people in 4-year period; all appropriately referred and/or treated 13 young people who were at immediate risk were helped and chose alternative courses of action; several of these have joined the campaign to help other young people <p><i>Surveys</i></p> <ul style="list-style-type: none"> Improved public awareness
<i>Studies using pre- and post-campaign data, with additional time points, comparison groups or other design refinements</i> Song et al. (2017)	South Korea	PSA for a crisis helpline shown on television for 16 days from April 20 to May 5, 2013. PSA depicted a mother lying still on a bed, and her concerned daughter knocking on the door and shouting "Mom, mom, what's going on? Open the door, mom!" At the end of the PSA, the message "Suicide Prevention Hotline 129" was displayed.	<p><i>Comparison of average daily suicide-related and mental health-related calls to the helpline in three 16-day periods, before, during, and after the PSA was aired. Supplementary trend analysis of both types of calls in the same periods in the previous year.</i></p>	<ul style="list-style-type: none"> Calls to helpline 	<ul style="list-style-type: none"> There was an increase in suicide-related calls to the helpline during the period in which the PSA was aired, but no increase in mental health-related calls. There was no difference in call numbers for either type of call in the three equivalent periods in the previous year.
Oliver et al. (2008)	Cuyahoga County, Ohio, United States	Campaign with the message "Suicide is preventable. Its causes are treatable. For immediate help call (emergency number)," designed to raise awareness about suicide and encourage the community's use of crisis services. Campaign was delivered via placards on exterior of buses, posters on the interior of buses and in shopping malls, billboards and a public service announcement. Initially run from February 2005 to June 2005 (Phase 1), and then again from November 2005 to March 2006 (Phase 2).	<ul style="list-style-type: none"> Comparison of average monthly suicide-related calls per 100,000 residents for three time periods: (a) baseline versus Phase 1; (b) Phase 1 versus the four month hiatus between Phase 1 and Phase 2; and (c) the four month hiatus and Phase 2. Comparisons also made to equivalent time periods in previous year. 	<ul style="list-style-type: none"> Suicide-related calls to helpline 	<ul style="list-style-type: none"> An average of 23.1 suicide calls per 100,000 were made per month in the baseline period. This increased to 29.9 per 100,000 per month in Phase 1, dropped to 26.8 per 100,000 per month in the hiatus, and increased again to 30.8 per 100,000 per month in Phase 2. There were also significant increases in the Phase 1 and Phase 2 periods compared with the equivalent periods in the previous year.
Bossarte et al. (2014)	6 cities, United States	Transit Authority Suicide Prevention campaign conducted from August to November 2009 designed to increase awareness and promote use of the Veterans Crisis Line among veterans. Placards were used to deliver the message "It takes the courage and strength of a warrior to ask for help ... if you are in emotional crisis call 1-800-273-8255, press 1 for veterans."	<ul style="list-style-type: none"> Examination of average daily number of calls to the Veterans Crisis Line and the National Suicide Prevention Line for three 12-week time periods (before, during, and after the campaign). Comparisons made with four comparison cities. 	<ul style="list-style-type: none"> Calls to helplines 	<ul style="list-style-type: none"> There were statistically significant increases in calls to the Veterans Crisis Line and the National Suicide Prevention Line during the campaign in implementation cities but not in comparison cities.
Jenner et al. (2010)	Louisiana, United States	Campaign delivered in autumn 2007 (Phase 1) and autumn 2008 (Phase 2), centering around the message "Youth suicide: There is hope ... if you or someone you know is suicidal, call 1-800-273-TALK." Both phases targeted the general public via busboards, billboards, and advertisements in newspapers. Phase 1 also targeted young people via radio CSAs, and Phase 2 did the same via CSAs screened in cinemas.	<ul style="list-style-type: none"> Comparison of the monthly volume of calls to a helpline from 2005 to 2008 in parishes exposed and not exposed to the campaign. 	<ul style="list-style-type: none"> Calls to helpline 	<ul style="list-style-type: none"> Campaign exposure was associated with a significant increase in call volumes – controlling for seasonality, there was an increase of 1.59 calls in September compared with July in the campaign periods in each ZIP code in the exposed parishes. Billboards and cinema CSAs had the greatest impact; only radio CSAs had no impact.

(Continued)

Table 1. (Continued).

Author and year	Location	Description of campaign or PSA	Study design	Outcome measure(s)	Key finding(s)
Till et al. (2013)	Styria, Austria	Campaign called "Reasons to Love Life," which aimed to draw public attention to suicide prevention and crisis intervention and to increase help-seeking in suicidal individuals. Campaign targeted men aged 40–60 and was delivered via billboard advertisements, posters, and placards.	<ul style="list-style-type: none"> ● Helpline service utilization (overall and for suicide-related reasons) in 3 months before campaign and 3 months during the campaign in Styria and in a comparison region; comparisons also made with the equivalent time periods in other years. ● Change in number of suicides between pre-campaign period and intervention period in Styria and comparison region. 	<p><i>Helpline service utilization</i></p> <ul style="list-style-type: none"> ● Calls to helpline (overall and for suicide-related reasons) <p><i>Suicide data</i></p> <ul style="list-style-type: none"> ● Suicides 	<p><i>Helpline service utilization</i></p> <ul style="list-style-type: none"> ● Significant increase in the overall number of calls to the helpline in Styria in the intervention period, but this mirrored seasonal trends. <p><i>Suicide data</i></p> <ul style="list-style-type: none"> ● No increase in suicide-related calls.
Mishara and Martin (2012)	Montreal, Quebec, Canada	Campaign called "Together for Life," which was part of a broader program that began in 1997 and was designed to prevent suicides among the Montreal police force (other components included training for police, supervisors and union representatives, and establishment of a dedicated helpline). Campaign informed police officers about suicide prevention via articles in police newsletters, posters, and brochures.	<ul style="list-style-type: none"> ● Examination of suicide data in the 11 years prior to the campaign and the 11 years post the campaign for police in Montreal and other Quebec police. 	<ul style="list-style-type: none"> ● Suicides 	<ul style="list-style-type: none"> ● 78.9% reduction in suicide rate for Montreal police from the pre-campaign period to the post-campaign period (30.5 to 6.42 per 100,000 per year) compared with 11.4% increase in suicide rate for police elsewhere in Quebec.
Matsubayashi et al. (2014)	Nagoya, Japan	Campaign designed to heighten awareness of depression and promote help-seeking among local residents. Promotional material (pamphlet describing symptoms and treatment, encouraging help-seeking, and providing helpline numbers and a website link) handed out at train stations and on streets at particular times of day. Campaign was run from April 2011 to March 2012.	<ul style="list-style-type: none"> ● Monthly panel data for each of 16 wards containing data on the number of sessions at which campaign material was handed out, and data on the number of suicides occurring in each ward in the given month. 	<ul style="list-style-type: none"> ● Suicides 	<ul style="list-style-type: none"> ● Significant reduction in suicides (male, female and overall) in the two months after the campaign.
Karras et al. (2017)	10 cities, United States	"It's your call" multimedia campaign delivered in 2011–2012, designed to encourage veterans to use the Veterans Crisis Line.	<ul style="list-style-type: none"> ● Comparison of daily calls to the Veterans Crisis Line before and during the campaign under different messaging conditions: (a) low dose of the "It's your call" campaign, in which messaging was delivered via banner ads on websites typically used by veterans (four cities); (b) high dose of the "It's your call" campaign, in which the banner advertisements were augmented by messaging on roadside billboards, public transportation advertisements, print advertisements, and a PSA played on radio and in cinemas (four cities); and (c) the high-dose "It's your call" campaign combined with a second multimedia campaign called "Make the connection" which was designed to encourage veterans to seek help (two cities). 	<ul style="list-style-type: none"> ● Calls to helpline 	<ul style="list-style-type: none"> ● There were statistically significant calls to helplines in the cities that received both the high-dose "It's your call" campaign and the "Make the connection" campaign, but not in the other cities.

(Continued)

Table 1. (Continued).

Author and year	Location	Description of campaign or PSA	Study design	Outcome measure(s)	Key finding(s)
Karras et al. (2016)	United States	Transit Authority Suicide Prevention campaign May–November 2009. Aimed to promote use of Veterans Crisis Line. Placard message “It takes the courage and strength of a warrior to ask for help ... if you are in emotional crisis call 1-800-273-TALK, press 1 for veterans.”	Examination of average daily number of calls to the Veterans Crisis Line, Lifeline and 1-800-SUICIDE for from November 2007 to August 2010. Data modeled using an autoregressive conditional varying coefficient model that controlled for exogenous variables.	<ul style="list-style-type: none"> ● Calls to helplines 	<ul style="list-style-type: none"> ● There were statistically significant increases in calls to the three helplines during the campaign period, both calls made directly via the promoted number and calls made indirectly via other routes.
<i>Randomized controlled trials</i> Klimes-Dougan et al. (2009)	Minneapolis, Minnesota, United States	Two media modalities from a campaign with the message “Prevent suicide, treat depression – see your doctor”: (a) a billboard advertisement; and (b) a CSA designed for television.	<ul style="list-style-type: none"> ● Randomized controlled trial in which 426 school-aged adolescents were randomly allocated to viewing the billboard advertisement or the television CSA, or to a “no information” control condition. A demographic/screening measure was administered at the beginning of the session, and a suicide awareness questionnaire at the end. 	<ul style="list-style-type: none"> ● Perceived utility of the campaign material ● Knowledge of depression/suicide ● Attitudes/beliefs about suicide ● Help-seeking and maladaptive behaviors 	<ul style="list-style-type: none"> ● CSA conferred some benefits in terms of knowledge about depression/suicide over the billboard and no-intervention conditions. ● Both the CSA and the billboard may have had some unintended negative effects (e.g., reducing positive attitudes toward help-seeking), particularly for students at heightened risk of suicide.
Klimes-Dougan and Lee (2010)	Minneapolis, Minnesota, United States	Two media modalities from a campaign with the message “Prevent suicide, treat depression – see your doctor”: (a) a billboard advertisement; and (b) a CSA designed for television.	<ul style="list-style-type: none"> ● Randomized controlled trial in which 279 young adult university students were randomly allocated to viewing the billboard advertisement or the television CSA, or to a “no information” control condition. A demographic/screening measure was administered at the beginning of the session, and a suicide awareness questionnaire at the end. 	<ul style="list-style-type: none"> ● Perceived utility of the campaign material ● Knowledge of depression/suicide ● Attitudes/beliefs about suicide ● Help-seeking and maladaptive behaviors 	<ul style="list-style-type: none"> ● Those who viewed the CSA were more inclined to have greater knowledge of depression/suicide than the other two groups, and to indicate that they were more likely to seek help. ● Those who viewed the billboard were less likely to seek help than those in the no-intervention condition ● High-risk students who viewed the billboard showed a greater appreciation of the links between depression and suicide than those in the other two groups.
Klimes-Dougan et al. (2016)	Minneapolis, Minnesota, United States	Three message/modality approaches: (a) billboard the message “Prevent suicide, treat depression – see your doctor”; (b) a billboard with the “Stop depression from taking another life – see your doctor”; and (c) a television CSA with elements of the messages on both billboards.	<ul style="list-style-type: none"> ● Randomized controlled trial in which 785 university students aged 18–34 were randomly allocated to view one or other of the billboards or the television CSA. A demographic/screening measure was administered at the beginning of the session, and a suicide awareness questionnaire at the end. 	<ul style="list-style-type: none"> ● Help-seeking and maladaptive coping 	<ul style="list-style-type: none"> ● The billboard with the message “Stop depression from taking another life – see your doctor” and the television CSA were associated with better attitudes toward help-seeking than the billboard with the message “Prevent suicide, treat depression – see your doctor.” ● There was no difference between the different conditions in terms of maladaptive coping.

campaign, much less whether the campaign was responsible for these changes. Three studies employing post-campaign assessments attempted to overcome this weakness by seeking information about campaign exposure and comparing results on the basis of this exposure (Robinson, Braybrook, and Robertson (2013) and Robinson, Braybrook, and Robertson (2014); Daigle et al. (2006); Karras, Stephens, Kemp, and Bossarte (2014)). These studies showed several positive effects for those groups exposed to a suicide prevention campaign in comparison with no-exposure groups. Positive effects for exposure groups were found on adaptive attitudes and behavioral intentions (Robinson et al. (2013) and Robinson et al. (2014)); knowledge of suicide (Daigle et al. (2006)); and reported likelihood of using a helpline (Karras et al. (2014)). However, Daigle et al. (2006) found no differences between exposure and no-exposure groups in terms of attitudes or intentions to seek help.

Other studies that have used post-campaign data only have experimentally manipulated the campaign exposure. In the study of Silk, Perrault, Nazione, Pace, and Collins-Eaglin (2017), university students who received a social norms-based media campaign (one in which peers acted as the message source and one in which celebrities did) were more likely to refer others to the university counseling center and to seek help themselves than those in a comparison neighborhood. Impacts were greatest for those who reported viewing the campaign, and there was some evidence that the peer messaging was more effective than the celebrity messaging.

Other studies that have also only used post-campaign assessments have delved more deeply into perceived campaign impacts by eliciting information via one-on-one interviews and discussion groups, and explicitly asking respondents about their perceptions regarding the influence of the campaign. In addition to the survey described above, Robinson et al. (2013) and Robinson et al. (2014) conducted qualitative discussions with 10 groups organized by age and gender. These groups agreed the campaign had been responsible for raising awareness, mitigating stigma, improving attitudes, and increasing community members' capacity to reach out to others and/or seek help themselves.

Studies using pre- and post-campaign data, with no comparison group

Stronger evaluation designs have gauged the impact of campaigns by examining change on suicide-related indicators pre- and post the campaign. Daigle et al. (2006), for example, augmented survey data with pre- and post-campaign data from a range of sources. They found no increase in the number of visitors to various suicide prevention centers, no decrease in hospital admissions for self-harm, and no decrease in suicides, but they did find an increase in the number of visitors to a variety of suicide prevention websites. Omar (2005) also used a pre-/post-design to evaluate a 4-year multimedia campaign designed to improve community awareness and knowledge regarding suicide and to encourage professionals to recognize and manage suicidal thinking in adolescents. By the end of the campaign there had been nearly 2,000 contacts with campaign staff (including 13 by young people at

immediate risk for whom intervention was initiated and who remained alive at the time of the evaluation). He also conducted pre- and post-campaign community surveys, which he reported showed evidence of improved public awareness (although no data were provided).

Studies using pre- and post-campaign data, with additional time points, comparison groups or other design refinements

More robust pre-/post-designs have used other design refinements. Some have controlled for seasonality, making additional comparisons with previous years in which no campaign was conducted. Song et al. (2017) tracked suicide-related calls and mental health-related calls over the three 16-day periods before, during, and after the relevant campaign was aired on television. They found a significant increase in suicide-related calls during the campaign period, but no change in the mental health-related calls. They then looked at suicide-related calls and mental health-related calls in the same three periods in the year prior to the airing of the PSA and found that they both remained constant across all periods.

Stronger designs still have used additional time points, made possible when campaigns are run in distinct phases. Oliver et al. (2008) took this approach, with the campaign run in two phases and a 4-month hiatus in between. After controlling for seasonality, the average monthly number of suicide-related calls to a helpline increased from the beginning to the end of Phase 1, dropped from the beginning to the end of the hiatus, and rose again from the beginning to the end of Phase 2.

More compelling evidence has come from pre-/post-studies with quasi-experimental designs that have made comparisons with regions where the campaign did not occur. Bossarte et al. (2014) found there were significant increases in the average numbers of calls over the campaign period in six cities exposed to the campaign but not in the four comparison cities. After adjusting for seasonal fluctuations in calls, Jenner, Jenner, Matthews-Sterling, Burrs, and Williams (2010) found that the average daily number of calls to helplines significantly increased in parishes exposed to the campaign but not in the unexposed ones. Till, Sonneck, Baldauf, Steiner, and Niederkrotenthaler (2013) observed that the overall number of helpline calls was significantly higher in the three months of the campaign than in the three months prior to the campaign in the intervention region but not in a comparison region, but that this mirrored seasonal trends. They also found no differences in terms of suicide-related calls (or suicides), which led them to conclude that the campaign did not reach its target audience, and to suggest that this may have been because it was relatively small in scale. Mishara and Martin (2012) found a significant reduction in suicides among police officers in Montreal exposed to a campaign informing them about suicide prevention from the pre-campaign period to the post-campaign period (both of which covered 11 years); there was no reduction in suicides over the equivalent timeframe for police officers elsewhere in Quebec.

An alternative approach involves looking for evidence of a dose-response effect. Matsubayashi, Ueda, and Sawada (2014)

used the quantity of promotional materials distributed in a given ward in Nagoya in a given month as a proxy for exposure, and correlated this with the number of suicides in the same ward in the same month and in subsequent months (to cater for lags in any potential effect). In aggregate, and after controlling for seasonal effects, their data demonstrated a significant reduction in suicides in the two months after the campaign.

The above two approaches have sometimes been combined. Karras et al. (2017) did this, using a quasi-experimental design in which different cities in the United States were exposed to campaign messaging that varied in intensity. They found that only when the two campaigns included in the study were delivered in unison was there evidence of an increase in calls to a helpline.

Another approach involves using statistical methods that allow alternative explanations for observed changes in behavior to be ruled out. Karras et al. (2016) compared the use of an advertised helpline with the use of other non-advertised helplines and found significant increases in calls to a number of helplines following the campaign.

Randomized controlled trials

The remaining studies have been RCTs. In the current context, randomization of participants to given conditions allows researchers to rule out alternative explanations of any observed impact other than the campaign with greater certainty than in quasi-experimental studies described above. It should be noted, however, that it is extremely difficult to mount RCTs in community settings (e.g., randomly allocating some cities to receive a campaign) for practical reasons, and there is often opposition to this approach from funding bodies and community members. As a result, the RCTs that have been done have tended to focus on whether particular elements of a campaign (e.g., a PSA) have an impact on suicide-related outcomes, rather than on whether whole campaigns are effective.

Klimes-Dougan, Yuan, Lee, and Hourii (2009), Klimes-Dougan and Lee (2010) and Klimes-Dougan, Wright, and Klingbeil (2016) conducted three interrelated RCTs to test format and content options for delivering particular messages. In the first trial, they tested the best format for presenting the message “Prevent suicide, treat depression – see your doctor” with high school students, comparing its delivery via PSA or billboard with a no-intervention control condition (Klimes-Dougan et al., 2009). There were suggestions the PSA conferred benefits in terms of knowledge about depression/suicide over the billboard and no-intervention conditions, but both the PSA and billboard may have had some unintended negative effects (e.g., reducing positive attitudes toward help-seeking), particularly for students at heightened risk of suicide. The second trial, by Klimes-Dougan and Lee (2010), effectively replicated the first, except that participants were tertiary students. It produced slightly different findings. Those who viewed the PSA were more likely to have greater knowledge of depression/suicide than the other two groups, and to indicate that they were more likely to seek help. In fact, those who viewed the billboard were less likely to seek help than

those in the no-intervention condition. On a positive note, however, high-risk students who viewed the billboard showed a greater appreciation of the links between depression and suicide than those in the other two groups. In the final trial, Klimes-Dougan et al. (2016) compared the tertiary students who had been exposed to the original billboard with a group who viewed a billboard with an alternative, more personal message (“Stop depression from taking another life – see your doctor”) and a group who saw a PSA with elements of the messages on both billboards. This time, they found that the alternative billboard and the PSA were associated with better attitudes toward help-seeking than the original billboard.

Discussion

There is a growing body of evidence that suggests media campaigns have a role to play in preventing suicide. Studies that underpin this evidence base vary in quality, and not all of them show positive results, but overall the signs are fairly promising. Studies that have looked at whether campaign exposure leads to improved knowledge and awareness of suicide have found support for this (Boeke et al., 2011; Daigle et al., 2006; Klimes-Dougan & Lee, 2010; Klimes-Dougan et al., 2016; Klimes-Dougan et al., 2009; Omar, 2005; Pillay et al., 2007; Robinson et al., 2013, 2014). Most studies that have considered whether campaign materials can achieve improvements in attitudes toward suicide have also found this to be the case (Daigle et al., 2006; Robinson et al., 2013, 2014), although there are some exceptions (Klimes-Dougan & Lee, 2010; Klimes-Dougan et al., 2016; Klimes-Dougan et al., 2009). The findings are more divergent when behavioral outcomes are considered. Some studies have found that media campaigns can boost help-seeking (Bossarte et al., 2014; Jenner et al., 2010; Oliver et al., 2008), whereas others suggest that they make no difference or only have an impact when particular sources of help or particular types of help-seeking are considered (Daigle et al., 2006; Till et al., 2013). Relatively few studies have had sufficient statistical power to examine whether media campaigns impact on the ultimate behavioral outcome of number of suicides, but the studies that were adequately powered demonstrated significant reductions (Matsubayashi et al., 2014; Mishara & Martin, 2012).

Drilling down into these findings is instructive. Although reasonably positive overall, they suggest that it may be easier for a media campaign to lead to improvements in beliefs about suicide than attitudes toward it, and, in turn, it may be easier to modify attitudes than influence positive behavior, such as help-seeking, or negative behavior, such as self-harm. This is consistent with related empirical work in the area. Gulliver, Griffiths, Christensen, and Brewer (2012), for example, conducted a systematic review of interventions designed to encourage people experiencing depression, anxiety, and/or psychological distress to seek help and found that those that focused on improving knowledge (i.e., boosting mental health literacy) showed more promise than those that aimed to change attitudes (i.e., reducing stigma), and that both had mixed success in changing behavior. It is also consistent

with the pathways described in the theory of planned behavior, suggesting that changes in beliefs may be necessary but not sufficient for changes higher up the causal chain (Ajzen, 2002; Fishbein & Cappella, 2006).

Limitations

As with any systematic review, ours had certain limitations. We may have missed some relevant studies because they were not identified by our search terms or because they were excluded on the basis of some of our criteria (e.g., if the article was not written in English or we were unable to retrieve the full text). We also acknowledge the potential for publication bias; evaluations of campaigns that yielded null findings may have been less likely to be published than those that revealed campaign success.

In addition, we deliberately focused on campaigns and PSAs that addressed suicide prevention directly, but acknowledge that some more general mental health promotion campaigns have been linked to positive suicide-related outcomes. For example, campaigns designed to reduce the stigma surrounding depression and encourage help-seeking among depressed individuals have sometimes been associated with reductions in suicide (Hegerl, Althaus, Schmidtke, & Niklewski, 2006; Hubner-Liebermann, Neuner, Hegerl, Hajak, & Spiesl, 2010).

Finally, we acknowledge that the three studies by Klimes-Dougan and colleagues were qualitatively different from the other studies because they evaluated specific campaign content (e.g., PSAs and other messaging formats) rather than whole campaigns, and did so using convenience samples of students (Klimes-Dougan & Lee, 2010; Klimes-Dougan et al., 2016; Klimes-Dougan et al., 2009). We felt that it was important to include these three studies, however, because they used the strongest of all the identified study designs (the RCT) and could inform questions about the components of effective media campaigns.

Future directions and a call to action

Because the evidence for the effectiveness of suicide prevention media campaigns is not yet incontrovertible, there is an onus on those who are developing and delivering campaigns to evaluate them carefully and to share the findings of these evaluations with others, irrespective of whether these findings are positive or negative. Publishing these findings would allow others to replicate successful campaigns and not repeat the mistakes made in unsuccessful campaigns. As in other areas of public health, there is a need to move beyond descriptive studies and conduct evaluations that employ the most rigorous possible designs and assess the most pertinent outcomes (Sanson-Fisher, Campbell, Htun, Bailey, & Millar, 2008). These evaluations should explore the nature of given campaigns in detail – in particular the messaging contained within them – in order to tease out which messages work well and which do not. They should also take into account the reach of the campaign in order to determine whether it would be reasonable to expect that they might have their desired effect.

Additional work is required to determine the optimal content of suicide prevention media campaigns and whether this varies for particular target groups. It is not possible to tell from the studies described here whether particular kinds of messages are more likely to achieve their objectives than others; campaign messages were not always described (and nor was information provided as to how these messages could be sourced), some campaigns attempted to target multiple audiences using the same message (e.g., Jenner et al., 2010), and different studies assessed different outcomes. It is worth noting, however, that the campaign messages that were tested in some studies had unintended consequences, such as reducing positive attitudes toward help-seeking (Klimes-Dougan & Lee, 2010; Klimes-Dougan et al., 2009). It is understandable that different audiences will interpret and respond to the same message in different ways. For example, a message about being supportive and recognizing warning signs might be helpful for someone reaching out to a suicidal family member, but might leave someone who has been bereaved by suicide feeling that they are to blame for the death. Future efforts should ideally take the strongest of the study designs described in this review and explore the different impacts of particular campaign messages on different audiences, measuring knowledge, attitudes, behavioral intentions, and actual behaviors.

As a universal intervention, evidence-based campaigns will need to be complemented by appropriate selective and indicated interventions (Van Der Feltz-Cornelis et al., 2011). For example, campaigns designed to help community members support individuals who are suicidal and encourage them to utilize professional services will need to be accompanied by strategies to ensure that relevant services are accessible and equipped to cope with any increased demand. Multilevel systems approaches that employ a range of strategies to reduce the rate of suicide attempts and completions are likely to have a greater effect in combination than initiatives that function in isolation (Kryszynska et al., 2016; Van Der Feltz-Cornelis et al., 2011).

Conclusions

Our review indicates that media campaigns should be considered in the suite of interventions that might be used to prevent suicide. Evidence for their effectiveness is still amassing, but there are strong suggestions that they can achieve positive results in terms of certain suicide-related outcomes. Care should be taken to ensure that campaign developers get the messaging of campaigns right, and further work is needed to determine which messages work and which ones do not, and how effective messages should be disseminated.

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