



Adherence to suicide reporting guidelines by news shared on a social networking platform

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Rates of suicide in the United States are at a more than 20-y high. Suicide contagion, or spread of suicide-related thoughts and behaviors through exposure to sensationalized and harmful content is a well-recognized phenomenon. Health authorities have published guidelines for news media reporting on suicide to help prevent contagion; however, uptake of recommendations remains limited. A key barrier to widespread voluntary uptake of suicide-reporting guidelines is that more sensational content is perceived to be more engaging to readers and thus enhances publisher visibility and engagement; however, no empirical information exists on the actual influence of adherence to safe-reporting practices on reader engagement. Hence, we conducted a study to analyze adherence to suicide-reporting guidelines on news shared on social media and to assess how adherence affects reader engagement. Our analysis of Facebook data revealed that harmful elements were prevalent in news articles about suicide shared on social media while the presence of protective elements was generally rare. Contrary to popular perception, closer adherence to safe-reporting practices was associated with a greater likelihood of an article being reshared (adjusted odds ratio [AOR] = 1.19, 95% confidence interval [CI] = 1.10 to 1.27) and receiving positive engagement (“love” reactions) (AOR = 1.20, 95% CI = 1.13 to 1.26). Mean safe-reporting scores were lower in the US than other English-speaking nations and variation existed by publisher characteristics. Our results provide empirical evidence that improved adherence to suicide-reporting guidelines may benefit not only the health of individuals, but also support publisher goals of reach and engagement.

Suicide-related contagion can occur from in-person contact between individuals, but can also occur through indirect means, such as media exposure to suicide-related content (10, 11). Spread of suicide-related behaviors may occur due to multiple mechanisms—such as altering social norms about suicide, encouraging identification with an individual with similar characteristics or life circumstances, or implicitly suggesting a viable means of suicide to vulnerable individuals—and is supported by social learning theory, which posits that behavior is learned through observation of others (12). Although increasingly well-researched (13, 14), the population-level effects of exposure to suicide-related media are underappreciated. For example, a longitudinal study of US deaths demonstrated that in the 6 mo following actor Robin Williams’ highly publicized suicide, rates of suicide nationally increased nearly 10% above seasonally adjusted baselines (15). Studies of exposure to suicide-related content in media have also revealed that such content is associated with the formation of youth suicide clusters (16).

Media Guidelines for Suicide Reporting. The effects of exposure to suicide-related media have led to the creation of guidelines for media reporting about suicide by multiple national and international health authorities, including the World Health Organization (WHO) and the US Centers for Disease Control and Prevention (CDC) (17–20). In general, suicide-reporting guidelines attempt to reduce sensationalism around suicide and prevent exposure to content that may be triggering to vulnerable

suicide | Facebook | social networks | news reporting | contagion

Globally, nearly 800,000 people die from suicide each year (1). In the United States, suicide rates have increased more than 33% from 1999 to 2017, resulting in more than 47,000 deaths in 2017 (2). Indeed, the rapid rise in deaths due to suicide has been a leading contributor to the first and largest decrease in overall life expectancy in the United States observed in decades (3, 4). In addition to rising deaths from suicide, rates of nonfatal suicide-related thoughts and behaviors are also increasing (5, 6). Annually, there are nearly 500,000 Emergency Department visits for self-harm, and rates of such injuries have risen by more than 39% from 2001 to 2017 (5). Furthermore, national survey data indicate that the total number of Americans at risk for suicide is even greater; more than 10.5 million Americans experience serious thoughts of suicide each year (7).

Role of Contagion in Suicide. The causes of suicide are complex and multifactorial; however, one modifiable risk factor for suicide is exposure to content which promotes contagion or spread of suicide-related thoughts and behaviors. Contagion is a well-recognized phenomenon in which exposure to the suicidal behaviors of one individual may increase the risk of suicidal behaviors in another individual (8). In the field of mental health, the spread of suicidal behaviors between individuals is known as the Werther effect, named after an 18th century Goethe novel, in which a young man kills himself after a romantic rejection; the publication of the novel purportedly led to an increase in suicides and resulted in bans of the novel (9).

Significance

Rates of suicide in the United States have increased over recent decades. One modifiable risk factor for suicide is exposure to sensationalized media content about suicide. Health authorities have published guidelines for news media reporting on suicide; however, uptake of recommendations remains limited. We conducted a study to analyze adherence to the guidelines on news shared on Facebook and assessed how adherence affects reader engagement. Certain harmful elements were widely prevalent in news media while protective elements were limited; however, contrary to popular perception, articles which more closely adhered to safe-reporting practices were shared more often. Variability in scores exists across nations and publisher types with implications for journalists, public health organizations, social media companies, researchers, and lay readers.

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individuals or prompt suicides, such as providing a detailed description of the suicide method or location. Inclusion of protective information, such as suicide helpline and resource information, is also recommended by the guidelines.

Despite these efforts, uptake and adherence to safe-reporting guidelines have differed by country and generally been limited (21–25). In most nations, including the United States, adherence to the guidelines is voluntary for reporters. One barrier to widespread voluntary uptake of the guidelines is that more sensational content is perceived by media organizations to be more engaging to readers and thus enhances publisher visibility and engagement. However, no empirical information exists about the actual influence of adherence to suicide-reporting guidelines on reader engagement. Furthermore, most prior studies of suicide-related media have focused on traditional news media, such as print newspapers; to our knowledge no studies have examined news on social media platforms, which now surpass print newspapers as a form of news consumption in the United States (26).

To examine these unanswered questions to better improve public health practice, we analyzed a large sample of English-language news articles about suicide posted on Facebook, one of the largest social networking platforms (27). Specifically, the objectives of our work were to answer three key questions: 1) How closely do news articles shared on Facebook adhere to suicide-reporting guidelines? 2) What is the effect of adherence to suicide-reporting guidelines on reader engagement? and 3) What are the characteristics of publications that predict strongest adherence to the guidelines?

Materials and Methods

News Articles. News articles about suicide were identified by selecting English-language links shared from news domains worldwide on Facebook over a 1-mo period (October 20 to November 19, 2018) that contained the text string “suicid” in the article headline, summary text, web address (URL), or text written by a person posting the article. The 1000 most frequently posted articles meeting these criteria were selected for further review as prior, detailed studies of print news suggest that a quantity of ~500 articles or more is sufficient to yield statistically significant results (14). All articles studied were public news articles (i.e., accessible to anyone who visited the publishers’ websites) posted by Facebook users in either public or private posts. No personally identifiable text from individuals’ posts was viewed by the researchers. Study investigators then classified each news article into one of three categories: 1) articles discussing the suicide or suicidal behaviors of an individual, 2) articles discussing a homicide-suicide (event where an individual kills another and then kills themselves), or 3) articles that discuss suicide generally (e.g., reporting on statistics, prevention efforts, risk factors, treatment, etc.), but do not include mention of an individual suicide story. These categories have been commonly employed in prior published literature examining print news articles (13, 14, 16). Articles on physician-assisted suicide, terrorism (suicide bombing), or off-topic articles with only peripheral mention of suicide were excluded (*SI Appendix*). After filtering for inclusion, 664 articles remained for adherence labeling. Lastly, we identified the country of origin of each publication.

Adherence to Suicide-Reporting Guidelines. To assess adherence to suicide-reporting guidelines, trained staff reviewed the full text of each article and labeled articles for the presence of potentially harmful elements (contagion-promoting items which the guidelines advise reporters not to include) and protective elements (items which guidelines advise including). Suicide-reporting guidelines published across nations and public health authorities are largely similar in content (20); as a general framework, we used the most recently published consensus guidelines available at ReportingOnSuicide.org (18), which were developed by a collaboration of the leading international and US governmental, nongovernmental, university, and private sector partners. Our criteria were also informed by leading studies in this area (13, 14, 16). We favored inclusion of items which have been empirically studied and associated with suicide contagion (16). Ultimately, a list of 18 harmful elements and 9 protective elements were included for review (*SI Appendix*). Articles were then scored for the presence or absence of each element by trained labelers; if two reviewers could not reach consensus on a single article, a third reviewer broke the tie. Raw interrater agreement

percentage is presented in the *SI Appendix* as well as the Gwet’s AC1 statistic, an interrater statistic with more reliable performance than Cohen’s Kappa in assessing items with low prevalence (28, 29).

Article Engagement and Characteristics. To assess the relationship between an article’s adherence to the suicide-reporting guidelines and reader engagement, we collected measures of the number of reshares, comments, and likes as well as emotive “reactions” that a viewer can click for each article (e.g., love, wow, haha, sorry, and angry) for the 60 d after the article was posted (30). A 60-d observation period was selected to comprehensively capture interactions with a post; prior research on Facebook indicates that the majority of interactions with a post happen within 24 h and studies comparing 24-h and 72-h feedback windows yield similar conclusions (31).

To examine characteristics of publications more closely adhering to the suicide-reporting guidelines, for US articles we categorized each article along three publisher characteristics (*SI Appendix*): Whether the publication was 1) local or national, 2) print or television/radio-based, and 3) a digital-native or legacy publication (one that originated in a traditional format but now has online content). These publisher categorization schemes were drawn from journalism literature (32, 33).

Statistical Analysis. We first calculated prevalence of protective and harmful elements across all news articles and calculated a composite score for each article: +1 for each protective element and –1 for each harmful element. Logistic regression was used to assess the association between article safe-reporting score and the odds of reader engagement, controlling for the article focus (individual suicide, homicide-suicide, or general information), how often the article appeared on Facebook, the distribution volume of a given publisher, and country of publication. Significant differences between publisher characteristics (e.g., local vs. national publications) and article score were assessed using *t* tests, followed by a linear regression (*SI Appendix*).

All data were de-identified and analyzed in aggregate; no individuals’ posts were viewed by researchers. The unit of analysis for this study was individual news articles. The project was reviewed and approved by Facebook’s internal research review panel and by the Centers for Disease Control and Prevention as a public health program evaluation activity.

Data Availability. A dataset that corresponds to appropriate privacy protections is available at: <https://github.com/ssummer-ncipc/news>.

Results

There was a total of 664 suicide-related articles that met study inclusion criteria and for which the prevalence of protective and harmful elements was calculated (Fig. 1). Harmful elements were more common than protective ones. Indeed, four elements that are advised against (explicitly reporting the name of the decedent [60%], featuring the word “suicide” prominently in the headline [59%], publicizing details about the place of the suicide [55%], and describing the method of the suicide [50%]) all were present in at least half of articles. The most frequent protective element was the citation of statistics on suicide from official health sources, present in 39% of articles that included statistics.

Examination of the number of protective elements within articles reveals that more than 60% of articles (412 of 664) did not include any protective elements and only one article included all 8 protective elements studied (Fig. 2A). Conversely, the occurrence of harmful elements was more uniformly distributed; the average article included nearly 4 (mean [M] = 3.8) harmful elements. Summing the number of elements for each article (+1 for each protective element and –1 for each harmful element) to produce an article-specific summary statistic yielded a bimodal distribution of scores ranging from –11 to 7.

Safe-reporting article scores differed by article type (Fig. 2B). Articles reporting on the suicide of an individual were the predominant article type, accounting for 66% (437 of 664) of all articles. These articles had the greatest range in scores and a mean article score of –3.24. Articles reporting on suicide in general, but without mention of an individual death or attempt were the second most prevalent type (132 of 664 articles; 20%) and had the highest mean safe-reporting score (M = 0.30). Articles reporting on homicide-suicide events were the least

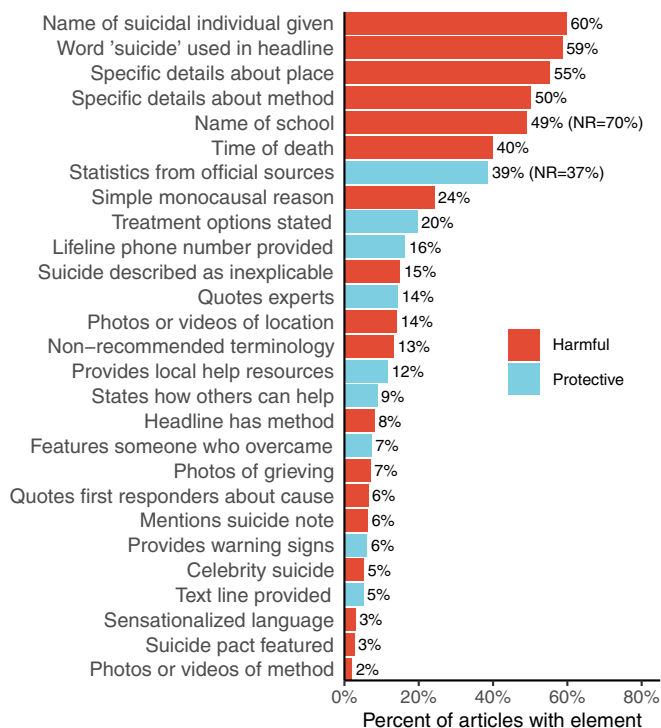


Fig. 1. Prevalence of harmful and protective elements in news articles about suicide posted on Facebook ($n = 664$). Publicizing the decedent's name, describing the method and location of the death in detail, and featuring the word suicide in the headline were present in a large proportion of articles. Protective elements were rare. NR = Not relevant (such as the name of a school when the decedent was not a student).

common article type (95 of 664 articles) and had the lowest mean article score ($M = -5.43$).

Safe-reporting article scores also differed significantly by country of publication (Fig. 2C). Among the five nations most frequently represented in the sample, the highest mean score was noted for Australia ($M = 0.28$). Articles about suicide from US publishers, which accounted for nearly two-thirds (429 of 664) of all articles in the sample, scored lower ($M = -3.21$) than articles from Australia, Canada, and the United Kingdom, and were statistically comparable to articles from India.

Regression models assessing the impact of article safe-reporting score on reader engagement revealed increased likelihood of positive article engagement as article score increased. Specifically, each additional point was associated with a 19% increase in the odds of the article being reshared by the viewer (adjusted odds ratio [AOR] = 1.19; 95% confidence interval [CI] = 1.10 to 1.27) (Fig. 3). Higher scores were also associated with a 20% increased odds of receiving a love reaction (AOR = 1.20; 95% CI = 1.13 to 1.26).

Lastly, we categorized articles originating from the US along three publisher characteristics and assessed differences in article score (Fig. 4). Approximately, half (48%) of the 429 publications in our sample were from national publishers. In bivariable comparisons, national publications had higher mean article scores than local publications (mean difference = 1.58, $P < 0.001$). Print-focused publishers accounted for over half (255 of 429) of articles and had higher scores than publishers that were primarily television or radio based (mean difference = 0.94, $P < 0.01$). Finally, digital-native publishers, while only accounting for 26% (110 of 429) of articles, had higher scores than legacy publishers (mean difference = 0.85, $P = 0.01$). In a multivariable linear regression controlling for all three publisher characteristics reported above as well as publisher size, national publishers retained a statistically significant higher score ($\beta = 1.93$, $P < 0.001$) as well as print publishers ($\beta = 0.63$, $P = 0.08$).

Discussion

Our study yielded three main findings: 1) certain harmful elements were widely present in news articles about suicide shared on social media while the presence of positive elements was generally rare; 2) closer adherence to safe-reporting practices was associated with higher reader reshares and positive engagement; and 3) adherence to safe-reporting practices was lower in the United States than in other English-speaking, high-income nations and variability in scores differed across other publisher characteristics.

Article Characteristics. A large number of research studies have previously assessed adherence to suicide-reporting guidelines in media from print, television, and radio outlets (14, 16, 21, 24, 25). Furthermore, previous research has demonstrated that media content which poorly adheres to the suicide-reporting guidelines causes objective health harms, such as increases in deaths from suicide clusters and increased suicide rates (14, 16). In light of these compelling health consequences, the evolving nature in which individuals consume media, and persistent limited uptake of

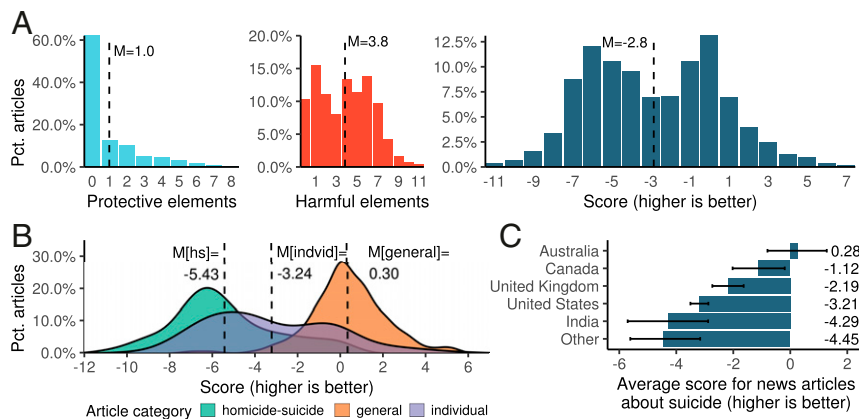


Fig. 2. Distribution of harmful and protective reporting elements by article characteristic in news articles about suicide posted on Facebook ($n = 664$). (A) Distribution of harmful and protective elements separately and when combined as a score, (B) Distribution of scores by type of suicide content in article, and (C) Distribution of article score by country of publication. M indicates "mean" score in each plot, and error bars display the 95% confidence interval for each mean in 2C.

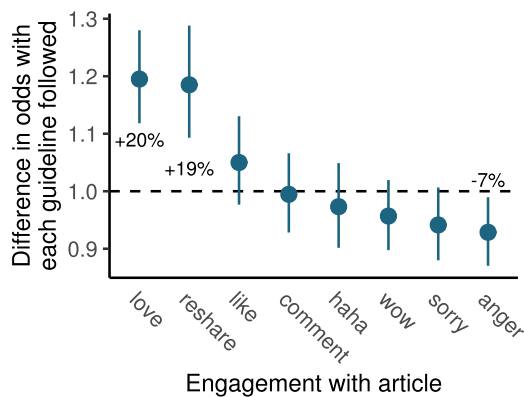


Fig. 3. Relationship between safe-reporting score and reader engagement for news articles about suicide posted on Facebook ($n = 664$). Plotted are adjusted odds ratios indicating the increased or decreased odds of each form of reader engagement (e.g., love, reshare, like, comment, haha, wow, sorry, anger) associated with each additional safe-reporting point score. Error bars show the 95% confidence interval. Higher safe-reporting scores were more likely to receive a love reaction and to be reshared, and were less likely to receive an anger reaction.

safe-reporting practices, our study sought to assess adherence among articles shared on social media, a leading way in which individuals now view and interact with news information. Consistent with prior studies, we found that publicizing the decedent's name, describing the method and location of the death in detail, and featuring the word suicide prominently in the headline were present in a large proportion of articles (16, 21). Similarly, inclusion of protective information was low. For example, only 16% of articles included information about a suicide prevention telephone hotline despite the general availability of such resources in the nations we studied and the relative ease with which such information can be included. The reasons for noninclusion of protective elements in media reporting about suicide have not been fully elucidated in prior research; however, there are limited incentives for publishers to include additional content, no matter how brief it may be. Indeed, as over 60% of the articles we studied included none of the protective elements we measured, increasing inclusion of protective content is an area of safe reporting where considerable gains can be made.

Notable differences in article scores by article type were found for each category. Articles about homicide-suicides had the lowest mean score while general articles about suicide had the highest score. Particularly low scores among articles about homicide-suicides may be a reflection of the fact that such multiple-fatality events are common targets of sensational reporting. Furthermore, even where publishers are aware of best practices for safe reporting about suicide, publishers may not view homicide-suicide events as fitting within the paradigm of suicide reporting and hence fail to include standard protective elements. Although studies on the effect of suicide contagion from media reporting on homicide-suicides has been mixed (13, 14, 16), there may be increased risks for suicide among females (13), suggesting caution is still warranted for this class of articles.

General articles about suicide (which do not focus on a specific suicide) include a broad range of articles, such as positive stories of individuals living with mental health challenges or news on suicide prevention programs, had the highest scores. Prior studies have found that media covering individuals with suicidal ideation and advancing the notion that positive coping skills are possible have been empirically associated with lower population-level suicide rates (14).

Importantly, there were notable differences across countries. Articles from Australia had the highest scores of all nations

studied, which is consistent with concerted efforts by suicide prevention organizations in Australia to increase uptake of suicide-reporting guidelines (34). Articles from the United States had the lowest mean score of all high-income, English-speaking nations studied and were statistically indistinguishable from articles from India. Notably, there has been a growing amount of research from economically developing nations, particularly India, which have documented low adherence to suicide-reporting guidelines; our results are consistent with these studies (22, 35).

Reader Engagement. In contrast to commonly held beliefs, our empirical findings from one of the largest social networking platforms indicate that, at least for mental health content, articles with lower amounts of sensationalism and higher quality health reporting are more often reshared and have the potential to reach a greater number of viewers. Even a single 1-point increase in positive reporting on a 27-point scale confers a 19% increase in the odds of an article being reshared. Given that the overall degree of adherence to safe-reporting practices is still relatively low across the entire corpus of suicide-related news, it is likely that robust efforts to improve safe-reporting practices would likely shift safe-reporting scores by more than a single point increase, resulting in even greater odds of article resharing. Indeed, the top fifth of articles by score received ~470% as many reshares as articles with scores in the bottom fifth. Creating even a small shift in population-level exposure to harmful content, such as is possible given the extremely large user base of leading social media platforms, would be anticipated to lead to a population-level impact on suicide reduction. Indeed, leading public health strategies that create seemingly small shifts in the distribution of exposure to risk factors, result in sizable population-level reductions in death (36).

Lastly, with regards to the engagement analysis, it should be noted that higher scoring articles also had increased odds of receiving a love reaction and lower numbers of "anger" reactions. Although previous research indicates that the love reaction is used in a largely monosemantic positive way (37), the nature of anger reactions toward articles is less clear as readers may simply be expressing anger at the death of an individual rather than at the content of an article. Importantly, however, previous research has identified anger as a strong motivating factor for sharing of information by individuals (38), yet our findings diverge from this as articles with the highest safe-reporting scores and resharing had the lowest odds of anger reactions. This suggests that the expression of anger in relation to suicide-related

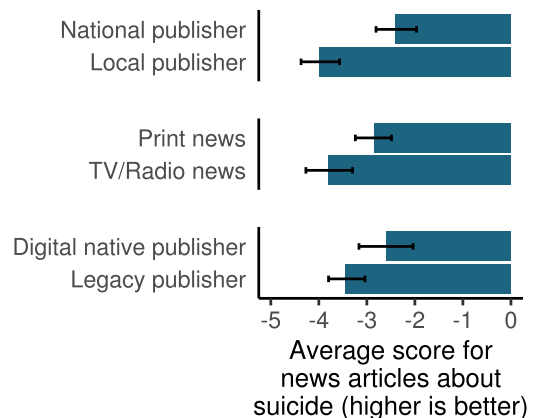


Fig. 4. Mean score by publisher characteristics (US news articles about suicide posted on Facebook [$n = 429$]). Error bars display the 95% confidence interval for each mean. National publishers produced higher average safe-reporting scores than local publishers, print-based publishers higher than TV/Radio, and digital-native publishers higher than legacy publishers.

news and resultant social actions are a nuanced area that merits further research.

Publisher Characteristics. Investigation into the characteristics of publishers more likely to have higher safe-reporting scores revealed that national publishers had higher mean scores than local ones. The nature of outreach and training of news organizations on best practices for suicide reporting in the United States has not been quantified. With recent renewed national awareness of the importance of local media and calls to strengthen local news organizations (39), our findings suggest an increased role for capacity building for suicide reporting among local news organizations. Our analysis also detected a trend toward higher scores from publishers that are primarily print media organizations compared to outlets that are primarily television or radio; this is consistent with some studies (13), yet other studies have found lower adherence among print media (40). It is important to acknowledge that the definitional boundaries of print, television, and radio now poorly define media organizations in online environments. For example, it is not uncommon for a television news station to have a robust online news site with large volumes of digital print content. In regression analyses, there were no statistically significant differences among legacy and digital-native media outlets. This finding may be a result of the fact that these distinctions are also increasingly artificial as nearly all legacy publishers are also building robust digital publishing platforms given changes in media consumption preferences.

Limitations. There are important limitations of our study to note. First, our study assessed media content about suicide over a focused time period. Ongoing evaluation of safe-reporting practices should be performed. It should also be noted that the articles studied in this analysis were those that appeared most frequently on Facebook. We focused on such articles as content that is more prevalent is most likely to impact population health and our sample of articles remained remarkably diverse (representing 307 unique publishers across a wide variety of nations and characteristics); however, assessing the nature of news media that is relatively rarer is an important direction for future work. Second, as with any study involving manual annotation, there is the possibility of misclassification of suicide-reporting elements. However, any misclassification is unlikely to be differential across articles and with the large number of elements evaluated per article the effect of occasional misclassification on overall score distribution is small. Also, given that we sampled articles based on the presence of the word suicide in the article text or user annotation, it is possible that we excluded some articles about suicide that did not explicitly use the term; the number of such articles is likely to be low and this is a limitation of other published research as well. Third, while our study is the only assessment of reporting about suicide on Facebook and has significant global coverage, more can be learned by expanding the international reach of our evaluation (41, 42). Lastly, our evaluation treated all elements of safe reporting as equally important in the creation of our scores, which is consistent with prior published studies; however, prior research also suggests that some elements may be more contagion promoting than others. Future work may consider incorporating weighting schemes to allow more refined study of the most harmful elements.

Implications. The public health implications of our findings are considerable and can help advance better reporting on suicide and therefore a potential reduction in suicide deaths from contagion. Our results have relevance for journalists/publishers, public health organizations, social media companies, academic researchers, and lay readers of health content. First, for publishers, while poor adherence to suicide-reporting guidelines is recognized by health professionals as harmful to the health of individuals, our results provide empirical evidence that such

reporting may also be harmful to publishers as well. The observation that news articles with lower adherence to suicide-reporting guidelines are less likely to be shared by audiences provides strong rationale for publishers to adopt greater adherence to the voluntary guidelines.

Second, our findings help to accelerate the efforts of public health organizations. Given the rapid and sustained increases in suicide rates nationally, robust multisector partnerships to address suicide are needed. Suicide-reporting guidelines, which were primarily developed in the era of print media, would benefit from continued adaptations relevant to the increasingly digital nature of communications. Public health professionals and relevant nongovernmental partners can also serve as key entities to help advance the creation of positive content about individuals overcoming mental health challenges that can lower suicide rates (14). Moreover, our study found that news articles infrequently had information on national and local resources, warning signs of suicide, and statistical information and quotes from official sources, all of which are items which health organizations can help strengthen.

Third, social media platforms can play an important role in disseminating information about the importance and nature of safe reporting to the many publishers active on their platforms in a way that may have even greater reach than previous efforts by health organizations, particularly as the number of publishers increase and diversify with the advance of digital publishing. Furthermore, beyond the stated goals of social media organizations to protect against health misinformation, social media platforms can also play an important role in advancing content which protects against suicidal behaviors, such as the positive stories noted above; greater visibility of such content could have a significant benefit to public health.

Fourth, this research points to key areas of collaboration for academic researchers, particularly in measuring the impact and effectiveness of multisector approaches to increase uptake of the guidelines. Further research is also needed to expand the literature on engagement with articles beyond our initial presentation herein and to more fully understand who is most vulnerable to harmful content. While most of the research literature has focused on suicide fatalities as a consequence of harmful reporting, less is known about nonfatal self-harm including nonsuicidal self-harm. Additionally, with regards to public health strategies focused on increasing positive content, while previous research on the Facebook platform has indicated that increased viewing of positive content is associated with increased positive sentiment in subsequent posts made by viewers (43), no study has assessed whether a similar relationship holds true for positive suicide-related content and additional research on the nature and characteristics of positive content online that is most protective and beneficial to mental health is needed.

Lastly, our findings suggest a final important area for expanded engagement—with lay readers of health content. Awareness of the impact of sensationalized content about suicide on health may be even lower among the general population than among publishers. Friends and family in the social networks of individuals at risk for suicide can play an important role in protecting the health of loved ones through a greater awareness of the impact of sharing content about suicide. Furthermore, with the advance of social technologies, all individuals are increasingly empowered to be content creators and thus expanded efforts to educate all individuals on suicide prevention strategies are increasingly important. Broad collaborations to improve safe reporting about suicide stand to benefit both population health as well as news media goals of reach and engagement.

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