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Dying online: live broadcasts of Chinese emerging adult suicides and crisis response behaviors

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Abstract

Background: Social media and online environments are becoming increasingly popular and integral to modern lives. The online presentation of suicidal behaviors is an example of the importance of communication technologies, and the need for professionals to respond to a changing world. These types of behaviors, however, have rarely been scientifically analyzed. This study aimed to examine the behaviors of both suicide broadcasters and their audience, with attention on prevention/crisis opportunities.

Methods: Multiple case studies were employed to explore live-broadcast suicide by Chinese emerging adults (aged 18-25 years). Six cases were selected (four males, two females; aged 19-24, $M = 21.60$, $SD = 2.25$), retrieved from 190 public documents (case range = 5 to 32; $M = 11.50$, $SD = 10.37$). A qualitative study based on grounded theory was adopted. Information on case background, stages, participants and their behaviors were collected.

Results: (1) Five stages of blogcast suicide incidents were revealed, including: Signaling, Initial reactions, Live blogcast of suicide attempts, Crisis responses, and Final outcomes. (2) Common behavioral trends (e.g., comforting, verbal abuse) were identified from the blogcast participants (e.g., active audience, peers, parents and police). (3) Suicide blogcasters exhibited tendencies to communicate signs of pain and cries for help.

Conclusions: This multi-case study found live presentations of suicidal behaviors offered unique opportunities to respond to suicidal crises, and also to learn more about the relationships between suicidal people and potential help sources. Findings showed many audience members wanted to be helpful but lacked appropriate skills or knowledge. Others engaged in suicide cyberbullying. The social media is an environment in the making. This study revealed that increasing knowledge and skills for crisis response and suicide prevention is needed. Such efforts could lead to empowered netizens and a more hospitable online world.

Keywords: Live-blogcast suicide, Social media, Suicide prevention, Online behaviors, Suicidal communications, Cyberbully, Crisis response

Background

Social media has become an integral part of many people's daily lives. The number of people using social media, has surpassed 208 million, accounting for 29 % of the global population [1]. The online environment enables self-expression, instant interaction, and communications with people unknown offline [2]. Social media can enrich the content and scope of personal communications and

also facilitate the self-presentation of undesirable behaviors [3, 4]. According to the WHO, suicide is the second leading cause of youth death globally [5]. As more young suicidal people are going online, there may be increased opportunities for help, prevention and crisis response.

Emerging adults, defined here as those aged 18–25 years, are of particular interest because of their unique attributes regarding online behaviors and mental health factors [6–8]. Their online suicidal behaviors are no exception [9–12]. As for the connection between emerging adult suicide cases and social media development, some scholars have highlighted the potential negative impact

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upon people exposed to online information encouraging suicide [13]. Netizens may intentionally or otherwise increase suicidal feelings and behaviors in others, or alternatively, play a positive role by assisting people at risk for suicide through access to rescue or support [14–16]. Studies have suggested that social media-based suicidal communications can be an unorthodox way of help-seeking [11]. Social media can be used for mental health support or online mental service stations. Many organizations and individuals, such as social services and community professionals, volunteers or non-profit organizations, provide suicide prevention mental health services, assessment, psychotherapy and counseling [17, 18].

With respect to specific crisis responses and prevention strategies, researchers have highlighted the important roles played by parents [19, 20], educators [21, 22], peers [23, 24] and community members in providing assistance to suicidal individuals in an offline environment [25, 26]. Matlin et al. revealed that family and peer support helped reduce youth suicide rates, and peer support and community connectedness moderated depressive symptoms and suicidality [27]. However, with the exception of online support groups, prevention strategies in social media environments have not been well explored [9]. Few studies have examined the roles of participants involved in preventive strategies or crisis responses [28], with even less attention paid to those in non-Western societies [14]. For China, despite the tremendous development of social media, little is known about its impact on suicidal people its potential for prevention/crisis response.

Chinese social media, weibo

Weibo, a major social media platform in China, includes weblogs enriched with features for social networking [29]. Weibo enables users to generate their own content, including text, images, audio and live-streaming video. Each Weibo user has a unique username, and others can search, view and connect with them by searching content or username. Weibo data was open-accessed, similar to Twitter, where anyone can check another's profile. It is estimated that, in the first half of 2011 alone, Weibo users surged to 195 million from an initial 63 million, and the majority were youth [30]. As a free-speech platform, Weibo offers Chinese an unprecedented opportunity for sharing information and expressing opinions and emotions [14]. However, undesirable information and behaviors have also occurred on Weibo. At the end of August 2010, the first live-broadcast Weibo suicide case (blogcast suicide) was reported. Since then, quite a number of similar cases have been reported [31], which have not been scientifically studied.

Suicidal communication theories

Although various theories are related to suicide and suicidal factors, this study was interested in how suicidal people communicate their suicidality— which might be evidenced through their online behaviors. The online environment can be exploited as a space to express suicide-related emotions due to anonymity and privacy features [32]. When engaging in suicidal communications, people were more likely disclose their true self [33]. This can be a result of the online one-to-one or group disinhibition effect [34–36].

Farberow and Shneidman [37] theorized that all suicides are cries for help. Communication of suicidality is a behavior that can increase social support and protect a suicidal person from danger at their own hands [12, 38, 39]. Blogcast suicide could be a modern version of a cry for help, but there is little data proving that hypothesis. Shneidman [40] further hypothesized that people become suicidal due to unmet psychological needs, following on Murray's [41] system of needs model. Beck and colleagues [42], however, proposed that suicidality stems from hopelessness, which could be evidenced through blogcast statements of hopelessness as an overriding feeling. Evidence supporting those theories would be found by suicide broadcasters making communications identifying human needs or emotions in their suicidal behaviors. With the exception of Wiggins and colleagues' [16] study, previous research mostly focused on suicidal motivations with less attention paid to online suicide processes and crisis responses.

Study aims

The suicidal communication process may help explain the suicidal individual's emotional needs (*i.e.*, consolation, understanding or care) as presented on social media. Emerging adults are the main adopters and heavy users of social media, comprising over 40 % of Weibo users [43]. Based on media attention, they are the most common blogcast suicide group. This study, therefore, focused on the emerging adults blogcast suicide behaviors (including both suicide attempts and completed suicides), as well as the behaviors of the people who participated in those incidents – in a Chinese context. The research goals were three-fold: (a) to identify the process and stages of blogcast suicide incidents from Chinese emerging adults; (b) to examine the participants, their crisis responses and the impact they had during the suicide process; and (c) to determine possible means for preventing suicides through Weibo and other social media. To accomplish these goals, several cases of online suicides or attempts, by Chinese emerging adults were selected and examined through qualitative methods.

Methods

Case selection

This multiple case study targeted emerging adult, aged 18 to 25, live-broadcasted suicide incidents that occurred on Weibo. In line with case study methodology, various sources of data were collected to obtain a comprehensive picture of the suicide incident process on Weibo and participants' behaviors.

To locate information sources covering target suicide incidents, we used Baidu, the most comprehensive search engine in China, with the following keywords "suicide incident", "Weibo", "emerging adult" and "live broadcast". Numerous search combinations were attempted until all published cases were located. That strategy identified 11 cases. Each case was then researched separately, by username *etc.*, to obtain all possible information on the case and incident. Five cases were then eliminated due to failure to meet the age range and broadcast platform, or insufficient information (*i.e.*, the suicide bloggers posted little suicide-related information; the posts had no appearance of being life-threatening or resulting in death; the suicide event was reported in only a single news story available for public consumption). In total, six cases and 190 news articles from 69 professional news agencies and available blog records of the bloggers were obtained. Each case had 5 to 32 supporting articles ($M = 11.50$, $SD = 10.37$).

Data collection

Data on the suicide incidents, stages/process, participants and their behaviors, was collected. The resulting data consisted of: (a) Background: information on the suicide incidents and bloggers, including incident dates, online platform, age, sex, location, expressed reasons for suicide; (b) Stages: process of the suicide incidents, including duration, key factors of broadcast suicide and outcomes; (c) Participants and their behaviors, relation of the participants to the suicidal incidents and expressed opinions. These methods were pilot tested through two prior cases, which resulted in the final data extraction procedures.

Case analysis and cross-case comparisons

Grounded theory for qualitative content analyses was followed [44, 45]. An open coding system was used with the initial dataset, followed by axial coding and selective coding. Cases were analyzed with NVivo v. 8 (QSR International).

Articles were examined by the study's first two authors to identify and label content into appropriate codes. To generate the coding framework, the first author inductively analyzed the reports of the selected cases and classified them into an initial category. Two trained research assistants then provided their feedback to develop the

final coding framework [46, 47]. The data were reviewed, organized and interpreted by the authors independently during the analysis, and alternative interpretations were continually discussed. Half of the cases were randomly selected and coded by two authors independently to assess inter-coder reliability [48]. The classification showed adequate inter-rater reliability, $Kappa = .81$. Next, discussions led to classification protocol for the remaining cases.

A cross-case analysis method was followed to examine similarities and differences between the cases. That method identified a tentative typology of stages and participants' crisis response/prevention. Further comparisons culminated in a typology of participants behaviors.

Blogcasting suicide cases

In the selected cases, ages ranged from 19 to 24 years ($M = 21.60$, $SD = 2.25$). Two of the six cases were female. All suicide incidents were blogcasted through the Sina Weibo, with one exception (the specific Weibo platform for Case 6 was unknown). The broadcast suicide lasted approximately 3 to 8.5 h ($M = 7.00$, $SD = 6.22$).

With respect to the precipitating incidents, over half (66.6 %) showed evidence of relationship break-ups and the remainder appeared to be related to family problems. Blogcasters in Cases 2 and 5 died by their own hands, while the other four were rescued. Details are presented in Table 1.

Based on the case analysis, the participants could include active audience (strangers on social media who viewed the suicidal incident and/or communications prior to the suicidal incident and also communicated with the suicide blogger), family members, friends, colleagues, fans and police. In addition, there would have been lurkers, who made no known communications with others but only watched the incidents. As there is no recorded data on the details of lurkers, they were not included in the following analyses. Though different in scope, these audience types are consistent with previous research [14, 19, 28]. We divided these participants into four groups by their occupation and relationships with the bloggers: active audience, peers (young acquaintances including friends, young family members, colleagues, schoolmates and fans who contacted the blogger at least once), parents and police.

Results

Processes of live-blogcast suicide

The cross-case analyses revealed five stages were included in live-blogcast suicide incidents. Figure 1 illustrates these five stages, from Signaling pre-suicide information to Final outcomes.

Table 1 Emerging adults live-blogcast suicide incidents in Chinese Weibo

Case	Duration	Location	Sex	Age	PE	Method	Result	Participants
1	5/16/2011 14:28-23:00	Shaanxi	Male	24	Family conflicts	Wrist-cutting	Rescued	Active audience, newspaper reporter, roommate, police
2	9/1/2011 01:07-19:23	Hubei	Male	24	Break-up (likely)	Overdose	Died	Active audience, colleagues and fans, family members
3	10/23/2011 22:13-1:20	Beijing	Female	22	Break-up	Overdose	Rescued	Active audience, police
4	3/7/2012 02:50-6:00	Sichuan	Female	22	Break-up	Wrist-cutting	Rescued	Active audience, friends and ex-colleagues, family members, police
5	11/30/2014 07:48-14:00	Sichuan	Male	19	Break-up	Charcoal-burning & Overdose	Died	Active audience, friends, family members, police
6	12/1/2014 17:00-21:30	Fujian	Male	19	Health and family issues	Overdose	Rescued	Active audience (celebrity), police

Note: The duration began from the time when the blogcaster posted suicide-related information and ended with his/her last relevant post, excluding those messages indicating negative mood in general. PE precipitating event

Stage 1: Signaling – pre-suicide information

Before blogcast suicide incidents, the blogcaster communicated with others online. Those communications were made several hours to a few days before the live suicide attempt. Most commonly, these messages showed evidence of negative self-perceptions or hopelessness about their future, such as “unhappy”, “lonely”, “painful” and “unlikeable”. In the selected cases, all the suicide blogcasters expressed this type of message varied from 1 to 60 posts ($M = 13.00, SD = 21.11$).

In Case 2, the suicide blogcaster, a well-known radio DJ, posted five messages referring to his hopelessness and suicidal intent, including “My whole life is a joke. I have led an empty life for one month, but I could not find an answer ... Let me leave this world quietly...I want a simple and happy life, but I get no chance”.

The blogcaster in Case 5 posted negative messages one day before completing suicide, such as “The body is useless when the heart has died”. After this post, he sent another 44 Weibo messages over one and a half hours. In his later posts, he showed vulnerability due to perceptions of betrayal, and also frequent self-denial (i.e., “Living is so boring to me. Betrayed by my family, my friends and my lover, it meaningless for such an idiot as me to live in this world”), and then mentioned cutting his wrists.

Stage 2: Initial reactions

When the blogcasters’ behaviors showed signs of serious suicide intent (i.e., “I think wrist-cutting suits me the best” in Case 5, and “I feel relieved to leave the world” in Case 2), the participants, including active audience members, some peers and family members, expressed concern and consoled the blogcasters.

In Case 2, after the blogcaster released negative messages on Weibo, his colleagues and fans immediately responded with caring comments. His brother also called their mother to find out what was wrong. In Case 5, the suicide blogcaster displayed some positive reactions to the emotional support shown by his audience. He posted “Thanks for the positive energy from my ex and everyone else. I will have a good sleep and go out shopping tomorrow morning”. The post mentioned social support from friends and some active audience members, which appeared to partly meet his psychological needs. Comments of “good sleep” and “shopping” may have indicated emotional peace.

Stage 3: Live blogcast of suicide attempts

For the six cases, the participants failed to prevent any of the suicide attempts. Then the suicide blogcasters began their suicide process, which included posting

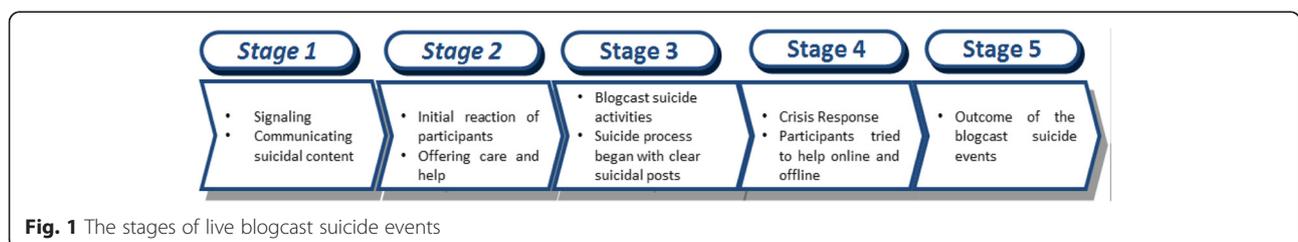


Fig. 1 The stages of live blogcast suicide events

images and videos of potentially lethal acts ($N = 5$), and posting comments indicating suicidal intent ($N = 6$).

In Case 1, the broadcaster displayed his left wrist with a deep cut and the word “*Enough!*” typed in red at 14:28 on Weibo. Two hours later, he posted a second picture, showing the blood from his cut wrist gradually dripping on the floor, and posted “*Drop by drop, what a long time*”. Later, at approximately 20:00, a third picture was posted showing his wrist dripping with blood and his palm turned pale, with the text “*XXX (someone’s name), is that enough?*”

In Case 5, the broadcaster displayed almost every detail of his fatal suicidal behaviors through 38 posts. The posts illustrated his suicidal intent, his purchase of sleeping pills and charcoal, an earlier suicide attempt, a possible cry for help, and his final suicidal behaviors. “*Today is 30th November. It is still early now, and I am not sure if the hospitals and supermarkets are open yet. I thought for a long time calmly and decided to leave. Do not persuade me. Hope the last minute will not be too much pain*”.

Stage 4: Crisis responses

Once the actual incidents began, most peers, parents, police and other active audience members expressed concerns and tried to save the broadcasters. Peers and parents offered immediate information to the police and attempted to rescue the suicide broadcasters. Some active audience members called the police providing the broadcaster’s registration information and the content of their posts. In Cases 3 and 5, active audience informed the police through @police official Weibo.

In Case 1, when the broadcaster presented a second image of his cut wrists, active audience tracked his IP address and located him. A journalist from *Huashang Newspaper* involved in the live incident also helped [49]. The broadcaster’s roommate returned to help the moment he saw the posts. In Case 4, a user in another city found the incident at midnight. She tried to comfort the broadcaster and called the police and local friends for help. Through these online and offline efforts, the suicide was terminated. In Case 6, the broadcaster and Yongyuan Cui, a famous Chinese TV host, were mutual friends on Weibo. When the broadcaster posted messages of suicidal intent, Cui showed his concern and repeatedly sent him encouraging information via Weibo, such as “*Everything will be fine*”, “*I am not sure what bothers you, but that’s not your fault in any sense*”.

Stage 5: Final outcomes

This was the last stage of the live-broadcast suicide. In the six cases, four were rescued in Cases 1, 3, 4 and 6. In Case 1, the broadcaster was saved by his roommate. In Case 3, police rescued the broadcaster. In Case 4, the

family came and saved the broadcaster. In Case 6, the broadcaster abandoned the attempt after receiving support from Cui and other active audience members. The broadcasters of Cases 2 and 5 died by their online suicide behaviors. In Case 2, the broadcaster took a lethal dose of pills early in the morning after updating his last status. In Case 5, although the police and family members were able to get the suicidal broadcaster to the hospital, he died from charcoal-burning and overdose.

Various behaviors from participants

The participants made various attempts to prevent the live-broadcast suicides. Those behaviors may differ by the relationship between the participants and the broadcasters, or by other factors. Some participants even incited the suicidal behaviors. Table 2 summarizes preventive efforts by participants’ type.

In the selected cases, most participants played similar positive roles in crisis responses, although slightly different in scope and pathway. The active audience, unacquainted with the broadcaster in the offline world, represented the largest documented subgroup and had notable influence on broadcast suicide incidents. In contrast with active audience and peers’ quick respond and timely rescue, parents showed insufficient impact during the process. Some active audience members, however, played conflicting roles throughout the process, as illustrated below.

Consoling the suicide broadcasters

Most participants responded positively by showing immediate concern for the broadcasters. In all 6 cases, the suicide-related posts drew wide attention. In Case 5, the active audience persuasion worked for a time. In Case 6, the celebrity Cui played a key role in consoling the suicidal person.

Providing information for timely rescues

Once a potential suicide was identified, active audience and peers searched for information on addresses and phone numbers of the broadcasters. In Cases 1, 4, 5 and 6, the active audience employed *cyber manhunts*, a collaborative search by ordinary netizens to obtain accurate information on a specific person, which was invaluable in rescue. In Case 4, one active audience member made long-distance calls to report the incident and motivated others to locate the broadcaster. Eventually, through several layers of relationships, she contacted the broadcaster’s friends and family.

Reporting to the police & rescue

When active audience and peers had been aware of the seriousness of the broadcast suicide incidents, they sent the information to the police department. Next, police,

Table 2 Classification of participants' behaviors towards the original message

Behaviors	Participant type	Translated examples
Offering care and showing empathy	Active audience Peers	Case 1: "I hope this stranger is just unable to get over only for a while. Please think about your family and your friends. How miserable they will be if you committed suicide". "Suicide is an irresponsible way to yourself and the people who love you".
Searching useful information, calling for information and help	Active audience Peers, police	Case 1: "His IP and telephone show that he is in Yulin. Call the police now." Case 4: "Anyone in Chengdu happens to know the suicide broadcaster? Call the police immediately!"; "The policeman called me again but I really don't know the situation."
Making cynical or indifferent comments, "like" and incitement	Active audience	Case 3: "She must do this (referring to the suicidal behaviors on Weibo) for fame", "God knows?!" Case 5: "Why are you (referring to the suicide broadcaster) still alive?" Case 6: "This person deserves to die."
Expressing shocked feelings	Active audience	Case 1: "Horrible! I could not fall asleep tonight."
On-site rescue actions	Peers, Parents, Police	All the 6 cases: Rush to the suicidal location for rescue

parents and peers became involved in on-site rescues, such as the rescue in Cases 1, 3 and 4. However, due to insufficient information, they were sometimes too late (*i.e.*, Cases 2 and 5).

Cynical and indifferent attitudes

Some active audience members suspected the broadcaster's motivations by openly analyzing and reporting on their identity and previous Weibo content. They claimed the broadcaster was performing a live suicide show for public attention (*i.e.*, one active audience member criticized the suicidal model in Case 3, posting "*I think she did this for fame*"), which was more common for the public figure cases (the DJ in Case 2 and the model in Case 3). Those active audiences focused on their own perceptions of the lethality of the suicidal behaviors, rather than on the broadcasters' feelings and personal situations.

"Likes" and incitement

In Case 5, quite a few members "liked" the suicidal messages and incited the broadcaster to suicide (*i.e.*, "*I do not care whether this person die or not*" in Case 5). In Case 6, after the broadcaster was discovered to have abused an older beggar years ago, many users were enraged and intensively criticized him (*i.e.*, "*You deserve to die*" posted by one active audience member in Case 6).

The cynical and indifferent comments from active audience could be recognized as cyberbullying from a different perspective. In Case 5, the broadcaster responded to the cruel comments as, "*You are happy now. Sorry, everyone. I will leave the rest to God*", possibly denoting his helplessness. In Case 6, the rescued

broadcaster said that he did not know how to respond to those who urged him to kill himself online.

Discussion

Online suicide attempts and completions appear to be a growing phenomenon. This study provided detailed analyses on the behaviors of Chinese emerging adult suicide broadcasters and participants. Findings revealed important information can be obtained from accounts of these incidents, which could contribute to a better understanding of suicidal people, those who encourage suicidal behaviors in others, and perhaps most importantly – how suicide could be prevented in an online/wired environment. From this multiple case study, a significant proportion of the participants' behaviors appeared to be positive, characterizing by showing care and taking actions to help the suicidal broadcasters. The surge in live broadcast suicide incidents presented the individual's self-perceptions– feelings of unhappiness, insecurity, loneliness, and poor self-image. Those online struggles of the suicidal mind, between their wish to live and their wish to die, are not often recorded in such a way to provide valuable support and prevention information.

Broadcasting suicide: continuous cries for help

For the cases of this study, most of the emerging adult suicide broadcasters appeared to gain the attention of a particular person (*i.e.*, the ex-girlfriend or ex-boyfriend), perhaps hoping for a reunion. Their suicidal communications, the cry of pain and for help [37], was often answered through the caring responses of some participants, even if they were not the intended message recipients. Similar to recent work [16], opportunities

for providing social support and crisis intervention were identified.

Beck and colleagues [50, 51], through the Suicide Intent Scale, demonstrated that individuals who make active precautions against discovery of their suicide attempt are at significantly higher risk of dying by suicide than other suicidal individuals. Clearly, blogcasting suicide is antithetical to hiding suicidal intentions. Evidence was found that suicide bloggers received positive feedback and social support which are important suicide protective factors [12, 32, 38, 39]. Cries for help resulted in positive displays of support, evidenced through numerous statements made by close associates and online participants. However, that does not fully preclude the possibility of fatal attempts, or the sincere emotional psychache the actors are experiencing, as demonstrated in the current study. The ambivalent nature of the suicidal mind presented by the bloggers uncovered their struggle between life and death. In conflicting situations, some bloggers showed desires to connect with others and to heal their internal wounds. Those connections can offer realistic, but challenging, opportunities for suicide prevention.

In addition, there were also important cultural factors at play. Within the Chinese context, people, including emerging adults, who experience mental health problems are unlikely to openly communicate mental health issues offline or see mental health professionals [52]. With the advance of Information Communication Technology (ICT), some people prefer to turn to the social media for help or release [11, 53].

Impact of responses: weak ties and peers effects

Participants' responses in the blogcast suicide incidents may contribute to a beneficial environment in helping bloggers to recover from suicidal shadow. Timely responses from peers could be life-saving, and so do other active audience members.

Weak ties effects

The loosely tied interpersonal relationships between bloggers and most active audience are *Weak ties*, which might be more helpful than a closed group in terms of responding to live suicide incidents [14, 54]. On social media, weak ties link a person to a friend who has one or more friends who are not friends with the individual [55]. Our study found that active audiences' activities contributed to social support and rescue information, providing some evidence that such distant connections can yield positive results.

Immediate peer response

From the case analyses, we found that compared to parents, peers were more likely to observe the suicidal messages sent by the bloggers, and offered

consolation and rescue actions. Possible illustration is that peers always have similar social media habits and general shared interests, which implied opportunities in emergency responses.

Risks of comments

Previous research has demonstrated that the experience of cyberbullying may result in depression among youth and increased suicide risk [56, 57]. Our research further found that cynical and indifferent comments from some active audience members may increase likelihood of suicide. This cyberbullying may have negative effects on the emotions of the blogger and on other individuals who are exposed to the information [14].

Improving online suicide prevention

Emerging adults should have more opportunities to notice when their peers are at risk of suicide. However, our study revealed little evidence that emerging adults could adequately discern suicide intentions and take appropriate measures to respond effectively. That may be due to insufficient suicide awareness and knowledge for detection and interventions of suicidality. In China, professional mental health services and training on suicide prevention are not widely accessible [58].

This study revealed sound potential for online suicide prevention. Active audience members displayed compassion and a willingness to take positive actions, although they appeared to lack sufficient knowledge on how best to respond. Considering the effectiveness of suicide prevention training and the low-cost of social media, social media should be utilized more for suicide prevention training. More best-practice materials could be made available in more languages, and better distributed to social media platforms, not only to professional organizations. Within the social media environment, that information can be widely accessed through various platforms, such as Weibo, search engine sites, and other easily accessible sites. Additionally, social media could also be a good platform for the active audience with professional skills to offer online support. Emergency services should institute clear protocols for collecting information and responding to life-threatening crises.

Study limitations and future directions

This study's analyses included six live-blogcast suicide cases focusing on emerging adults, and the data was dependent on online news articles. It is possible that some information was not accurate, and there was no data for other age-groups. The information was incomplete as news services do not include all information due to ethics and space limitations [59, 60]. In addition, the full communications by the suicide bloggers and the participants were not available. For each individual case,

their history of suicidal affect, cognition, behaviors, and psychiatric background were not included in their blogcasts. Such data, indicating the variation in the depth of suicidality (*i.e.*, the degree of suicidal intent), is necessary to better understand the relevant internal factors of the bloggers. Discourse analysis or psychological autopsies could provide further qualitative information on these incidents [16, 61–63]. Online suicide incidents may also differ by online platforms, as the user environment will affect communications and other factors.

Conclusions

This study provided multiple case analyses of Chinese emerging adult live-blogcast suicide. Five stages of online suicide incidents were identified: Signaling, Initial reactions, Live suicide attempts, Crisis responses, and Final outcomes. We also analyzed various players in this online life-death drama: active audience (who were unacquainted with the suicidal individual offline, but participated in the incident), peers, parents, and police. Many participants provided help for the suicidal blogcaster, including consoling, reporting information to emergency services and timely rescues. There were also less desirable factors of these online incidents, such as suicide cyberbullying and a lack of suicide prevention awareness or training of most participants. Our study suggests that online suicide behaviors can be prevented if there is greater awareness of suicidal symptoms and useful protocols to follow when encountering suicidal communications.

Abbreviations

ICT, Information Communication Technology; WHO, World Health Organization

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Availability of data and materials

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Authors' contributions

JM and WZ participated in the design of the study, performed the quantitative analysis and drafted the manuscript. KH developed the literature review and revise critically for intellectual content. QC and XX participated in the study design, the statistical methodology, and helped to draft and review the manuscript. All authors read and approved the manuscript.

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Competing interests

The authors declare that they have no competing interests.

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Ethics approval and consent to participate

Not applicable.

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References

- Kemp S. Digital, Social & Mobile Worldwide in 2015, Available online: <http://www.wearesocial.com/uk/special-reports/digital-social-mobile-worldwide-2015>. (Accessed 1 Apr 2016).
- Blais JJ, Craig WM, Pepler D, Connolly J. Adolescents online: The importance of internet activity choices to salient relationships. *J Youth Adolesc.* 2008; 37(5):522–36.
- Starcevic V, Aboujaoude E. Cyberchondria, cyberbullying, cybersuicide, cybersex: "new" psychopathologies for the 21st century? *World Psychiatry.* 2015;14(1):97–100.
- Joinson AN. Disinhibition and the Internet. In: Gackenbach J, editor. *Psychology and the Internet: Intrapersonal, interpersonal, and transpersonal implications*. 2nd ed. San Diego: Academic; 2007. p. 75–92.
- World Health Organization. Preventing Suicide: A global imperative. 2014. Available Online: http://www.who.int/mental_health/suicide-suicideprevention/world_report_2014/en/. (Accessed 4 May 2016).
- Arnett JJ. Emerging adulthood: a theory of development from the late teens through the twenties. *Am Psychol.* 2000;55(5):469–80.
- Sheets ES, Duncan LE, Bjornsson AS, Craighead LW, Craighead WE. Personality pathology factors predict recurrent major depressive disorder in emerging adults. *J Clin Psychol.* 2014;70(6):536–45.
- Nitzburg GC, Farber BA. Putting up emotional (Facebook) walls? Attachment status and emerging adults' experiences of social networking sites. *J Clin Psychol.* 2013;69(11):1183–90.
- Gilat I, Tobin Y, Shahar G. Responses to suicidal messages in an online support group: comparison between trained volunteers and lay individuals. *Soc Psychiatry Psychiatr Epidemiol.* 2012;47(12):1929–35.
- Westerlund M. Talking suicide: online conversations about a taboo subject. *Nordicom Rev.* 2013;34(2):35–46.
- Seward AL, Harris KM. Offline versus online suicide-related help seeking: changing domains, changing paradigms. *J Clin Psychol.* 2016;72(6):606–20.
- Harris KM, Syu JJ, Lello OD, Chew YL, Willcox CH, Ho RH. The ABC's of suicide risk assessment: applying a tripartite approach to individual evaluations. *PLoS One.* 2014;10(6):1–16.
- Qijin C, Leung KC, Tingshao Z, Li G, Yip PSF. Suicide communication on social media and its psychological mechanisms: an examination of Chinese microblog users. *Int J Environ Res Public Health.* 2015;12(9):11506–27.
- Fu KW, Cheng Q, Wong PW, Yip PS. Responses to a self-presented suicide attempt in social media: a social network analysis. *Crisis.* 2013;34(6):406–12.
- Harris KM. Life vs. death: The suicidal mind online. In: Aboujaoude E, Starcevic V, editors. *Mental health in the digital age: Grave dangers, great promise*. New York: Oxford University Press; 2015. p. 135–51.

16. Wiggins S, McQuade R, Rausmussen S. Stepping back from crisis points: The provision and acknowledgment of support in an online suicide discussion forum. *Qual Health Res*. 2016;26(9):1240–51.
17. Renaud J, Marquette C, Séguin M, Choo B, Lesage AD, Turecki G. Service use and unmet needs in youth suicide: a study of trajectories. *Can J Psychiatr*. 2014;59(10):523–30.
18. Ratnapalan MKM. Approach to adolescent suicide prevention. *Can Fam Physician*. 2010;56:755–60.
19. Hooven C, Walsh E, Pike KC, Herting JR. Promoting CARE: including parents in youth suicide prevention. *Fam Community Health*. 2012;35(3):225–35.
20. Hooven C, Walsh E, Willgerodt M, Salazar A. Increasing participation in research: strategies for youths, parents, and schools. *J Child Adolesc Psychiatr Nurs*. 2011;24(3):137–49.
21. Walsh E, Hooven C, Kronick B. School-wide staff and faculty training in suicide risk awareness: successes and challenges. *J Child Adolesc Psychiatr Nurs*. 2013;26(1):53–61.
22. Shilubane HN, Ruiters RA, van den Borne B, Reddy PS. High school suicide in South Africa: teachers' knowledge, views and training needs. *BMC Public Health*. 2015;15:245.
23. Wyman PA, Brown CH, LoMurray M, Schmeelk-Cone K, Petrova M, Yu Q, Walsh E, Tu X, Wang W. An outcome evaluation of the Sources of Strength suicide prevention program delivered by adolescent peer leaders in high schools. *Am J Public Health*. 2010;100(9):1653–61.
24. Shilubane HN, Ruiters RA, Bos AE, Reddy PS, van den Borne B. High school students' knowledge and experience with a peer who committed or attempted suicide: a focus group study. *BMC Public Health*. 2014;14(1):1081.
25. Mohatt NV, Singer JB, Evans Jr AC, Matlin SL, Golden J, Harris C, Burns J, Siciliano C, Kiernan G, Pelleritti M, et al. A community's response to suicide through public art: stakeholder perspectives from the Finding the Light Within project. *Am J Community Psychol*. 2013;52(1-2):197–209.
26. James A, Gerald M, Carlotta Ching Ting F, David H, Team PA. Suicide prevention as a community development process: understanding circumpolar youth suicide prevention through community level outcomes. *Int J Circumpolar Health*. 2009;68(3):274.
27. Samantha LM, Sherry Davis M, Jacob Kraemer T. Suicidality and depression among african american adolescents: the role of family and peer support and community connectedness. *Am J Orthopsychiatry*. 2011;81(1):108.
28. Robinson J, Rodrigues M, Fisher S, Bailey E, Herrman H. Social media and suicide prevention: findings from a stakeholder survey. *Shanghai Arch Psychiatry*. 2015;27(1):27–35.
29. Böhringer M. Really Social syndication: A conceptual view on microblogging. In: *Sprouts: Working Papers on Information Systems*, vol. 9. 2009. p. 31.
30. China Internet Network Information Center: The 28th Statistical Report on Internet Development in China. 2011. Available online: <http://www1.cnnic.cn/IDR/ReportDownloads/>. (Accessed 22 June 2015).
31. Youth Weibo live-broadcast suicide case, Can you blame the audience? 2014. Available online: <http://www.view.news.qq.com/original/intouchtoday/n2996.html>. (Accessed 16 Jan 2016).
32. Barak A. Emotional support and suicide prevention through the Internet: A field project report. *Comput Hum Behav*. 2007;23(2):971–84.
33. McKenna KYA, Seidman G. You, me, and we: Interpersonal processes in electronic groups. In: Y. Amichai-Hamburger (Ed.), *The social net: Human behavior in cyberspace*. New York: Oxford University Press; 2005:191–217.
34. Suler J. The online disinhibition effect. *Cyberpsychol Behav*. 2004;7(3):321–6.
35. Joinson AN. Self-disclosure in computer-mediated communication: the role of self-awareness and visual anonymity. *Eur J Soc Psychol*. 2001;31(2):177–92.
36. Joinson A. Causes and implications of disinhibited behavior on the Internet. 1998.
37. Farberow NL, Shneidman ES. *The cry for help*. New York: McGraw-Hill; 1961.
38. Kovacs M, Beck AT, Weissman A. The communication of suicidal intent: a reexamination. *Arch Gen Psychiatry*. 1976;33(2):198–201.
39. Misson H, Mathieu F, Jollant F, Yon L, Guillaume S, Parmentier C, Raust A, Jaussent I, Slama F, Leboyer M, et al. Factor analyses of the Suicidal Intent Scale (SIS) and the Risk-Rescue Rating Scale (RRRS): Toward the identification of homogeneous subgroups of suicidal behaviors. *J Affect Disord*. 2010;121(1-2):80–7.
40. Shneidman ES. *The suicidal mind*. New York: Oxford University Press; 1996.
41. Murray HA. *Explorations in personality*. New York: Oxford University Press; 1938.
42. Beck AT, Kovacs M, Weissman A. Hopelessness and suicidal behavior: an overview. *JAMA*. 1975;234(11):1146–9.
43. Sina. Weibo users development report. 2015. Available online: <http://www.199it.com/archives/422583.html>. (Accessed 4 May 2016).
44. McKenna B, Thom K, Edwards G, Nairn R, O'Brien A, Leary I. Reporting of suicide in the media: Content and case study analysis. 2010.
45. Fu K-W, Chan Y-Y, Yip PS. Newspaper reporting of suicides in Hong Kong, Taiwan and Guangzhou: compliance with WHO media guidelines and epidemiological comparisons. *J Epidemiol Community Health*. 2011;65(10):928–33.
46. Hsieh H-F, Shannon SE. Three approaches to qualitative content analysis. *Qual Health Res*. 2005;15(9):1277–88.
47. Downe-Wamboldt B. Content analysis: method, applications, and issues. *Health Care Women Int*. 1992;13(3):313–21.
48. De Swert K. Calculating inter-coder reliability in media content analysis using Krippendorff's Alpha. 2012. Retrieved from: <http://www.polcomm.org/wp-content/uploads/ICR01022012.pdf>.
49. Huashang News. Netizens called to help the a male suicide broadcaster on Weibo from Jingbian, Shaanx. 2011. Available online: <http://news.hsw.cn/system/2011/05/17/050943335.shtml>. (Accessed 4 May 2016).
50. Wenzel A, Berchick ER, Tenhave T, Halberstadt S, Brown GK, Beck AT. Predictors of suicide relative to other deaths in patients with suicide attempts and suicide ideation: A 30-year prospective study. *J Affect Disord*. 2011;132(3):375–82.
51. Beck RW, Morris JB, Beck AT. Cross-validation of the Suicidal Intent Scale. *Psychol Rep*. 1974;34(2):445–6.
52. Deane FP, Wilson CJ, Ciarrochi J. Suicidal ideation and help-negation: Not just hopelessness or prior help. *J Clin Psychol*. 2001;57(7):901–14.
53. Gilat I, Shahar G. Emotional first aid for a suicide crisis: comparison between Telephonic hotline and internet. *Psychiatry*. 2007;70(1):12–8.
54. Granovetter MS. The Strength of weak ties. *Am J Sociol*. 1973;78(6):1360.
55. Baller RD, Richardson KK. The "Dark Side" of the strength of weakties: the diffusion of suicidal thoughts. *J Health Soc Behav*. 2009;50:261–76.
56. Carpenter LM, Hubbard GB. Cyberbullying: implications for the psychiatric nurse practitioner. *J Child Adolesc Psychiatr Nurs*. 2014;27(3):142–8.
57. Magaud E, Nyman K, Addington J. Cyberbullying, childhood trauma and clinical high risk of psychosis. *Schizophr Bull*. 2013;39:S297.
58. Cheng Q, Chang S-S, Yip PS. Opportunities and challenges of online data collection for suicide prevention. *Lancet*. 2012;379(9830):e53–4.
59. Niederkrotenthaler T, Voracek M, Herberth A, Till B, Strauss M, Etzersdorfer E, Eisenwort B, Sonneck G. Role of media reports in completed and prevented suicide: Werther v. Papageno effects. *Br J Psychiatry*. 2010;197(3):234–43.
60. Mishara BL, Weisstub DN. Ethical, legal, and practical issues in the control and regulation of suicide promotion and assistance over the Internet. *Suicide Life Threat Behav*. 2007;37(1):58–65.
61. Shneidman ES. *Autopsy of a suicidal mind*. New York: Oxford University Press; 2004.
62. Yip PSF, Wong PWC, Cheung YT, Chan KS, Beh SL. An empirical study of characteristics and types of homicide-suicides in Hong Kong, 1989–2005. *J Affect Disord*. 2009;112(1-3):184–92.
63. Hawton K, Appleby L, Platt S, Foster T, Cooper J, Malmberg A, Simkin S. The psychological autopsy approach to studying suicide: a review of methodological issues. *J Affect Disord*. 1998;50(2-3):269–76.

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