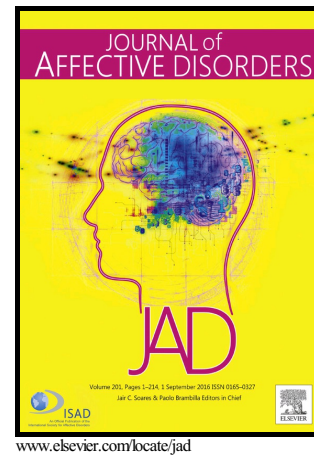


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The role of media in preventing student suicides: a Hong Kong experience
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Abstract

Introduction

In view of the surge of student suicides in March 2016, a large-scale media involvement was engaged to minimize copycat effects and to extensively spread more preventive information.

Methods

Trend differences between student suicides in overall as well as youth suicides between 2003 and 2016 were examined. Impacts of media involvement were examined as to the changes of their intensities in reporting student suicides in different manners. Local polynomial smoothing method was used to estimate the intensities throughout the study period.

Results

The intensity of students' suicides has been slowly increasing since 2006, which was in contrast to the decreasing trend of overall suicide intensity. After our engagement with the media, acute descriptive-reporting in student suicide news has sharply dropped and remained low since then, whereas preventive-reporting has increased sharply in March and April 2016, but dropped back to normal afterwards. The higher intensity of preventive-reporting seemed to have a protective effect on student suicide.

Limitations

Data of student suicides in 2016 were substantially extracted from the local news, which may not contain complete information. The analyses suggested, but could not confirm, a causal relationship between the changes of student suicide news-reporting and the incidents of suicides themselves.

Conclusions

The recent surge of student suicides in Hong Kong was statistically abnormal. Media engagement has changed local suicide news-reporting to become more preventive, which could have contributed to the drop of student suicides. It is essential to sustain the media's coverage of preventive reporting to maintain its enduring effect.

Keywords:

Student suicide; Asia; Media engagement; Suicide news; Media effect; Papageno effect.

Introduction

Suicide is the leading cause of death for young people in Hong Kong, and the second, globally. (WHO, 2014) More alarmingly, a surge of student suicides has appeared in HK. Based on the media reports, 36 student suicides occurred in 2016, with 20 of those incidents took place in the first four months of that year. This exceeds the usual number of student suicides in Hong Kong, which was around 20 annually between the years of 2003 and 2015. All these suicides were full-time students, ranging from primary schools to universities. Traditionally, students have a lower suicide rate than those who are in the same age cohort but are working or are unemployed (Gould et al. 2003). This highly unusual phenomenon has attracted significant concern from the public, and the Government has warranted in-depth inquiry into their antecedents.

Particularly, the Werther effect is often considered as a risk factor for youth suicides. Werther effect refers to inappropriate media coverage of suicide news, such as prominently publishing salacious stories on the front page or sensationally describing suicide details. The inappropriate coverage may lead to copycat effects, to which young people are more vulnerable than other age groups (Stack, 2000; Gould et al., 2003; Ji et al., 2014). On respecting editorial freedom, suicide prevention professionals have advocated more responsible reporting of suicide news rather than restricting suicide news-reporting (Cheng et al., 2014; Mishara and Weisstub, 2005). Empirical studies in Europe have also found that preventive knowledge, such as how people adopted coping strategies to overcome adverse circumstances or educative website, can be associated with a decrease in suicide rates or individuals' suicidal ideation (Niederkrotenthaler et al., 2010; Till et al., 2017). Such media-reporting of preventive information producing positive effects is referred to as the Papageno effect, as a counterforce to the Werther Effect (Niederkrotenthaler, 2017). Many recommendations on suicide news-reporting across different countries are also consistent with the WHO media guidelines (Wang, 2012; Pirkis et al., 2006), and suggest that media outlets publish more preventive information.

Given the recent increase in student suicides in Hong Kong and the possible prominent effects of the media, the present authors, who are members of the Centre for Suicide Research and Prevention at the University of Hong Kong, contacted the local media to express their concerns. Of the greatest concern was the manner in which the local media began counting the number of student suicides in their headlines, and even published the student suicide news on the front page. Recognizing that student suicides have become a public concern, the authors did not appeal to the local media not to report the incidents, but to tone down sensational reporting and publish more recommendations on intervention and prevention strategies. The earnest requests were made through three means, including direct contact with chief editors of various media outlets, publishing articles in local newspapers, and providing expert commentaries on the local TV and radio news programs on March 12, 2016 and the ensuing weeks. After the appeals to the local media, the authors continued to constantly monitor the local news coverage of student suicides, and approached different media outlets individually in the event of any inappropriate reporting. The involvement also included responsive contact with a local newsroom on any misreporting, and proactive actions before the reporting of a certain case most likely to be reported the following day. Nonetheless, we did not make a public appeal again after March 2016.

The present study was conducted to gain a better understanding of the students' suicides problem and the impacts of our media. Its specific objectives include: 1) quantifying the pattern of student suicides in Hong Kong since 2003 and confirming whether the recent surge was abnormal; and 2) examining whether the dynamic change of trend of student suicides was related to the mass media's reporting practices.

To the best of our knowledge, no study has been published specifically to examine the antecedents of student suicides in Hong Kong. Previous studies on antecedents or risk factors of suicides in Hong Kong mostly focused on suicidal ideation, self-harm, or suicide attempts, rather than the occurrence of suicide deaths as the outcome variables (Law and Shek, 2016; Shek and Lin, 2015). Among the limited number of studies on youth suicide deaths, the majority, if not all, were conducted in the western countries (Rodway et al., 2016). In addition, the positive effects of responsible media-reporting practices, or the so-called Papageno effect, has rarely been empirically examined in the Asian context. Therefore, the present study not only will present an in-depth view of the problem in Hong Kong, but also provide new evidence to be compared with other countries' findings. Thus, this experience and findings would be relevant to suicide prevention in the region, as well as globally.

Methods

Data collection and coding

Suicides data were primarily collected from the Coroner's Court (the "CC"), which is the judiciary institute in Hong Kong that investigates into the causes and circumstances surrounding all unnatural of deaths, including suicides. Cases with ICD code as X60~84 were defined as suicide deaths. Furthermore, we extracted student suicides and youth suicides from the overall database. When a decedent's occupation was confirmed by the CC as a full-time student, the case was included as a student suicide case. When a decedent's age was 25 or younger, the case was included as a youth suicide case. Since suicides data were transferred from the CC to the researchers in batches every six months, the comprehensive CC data were only updated to the end of 2015 when we started the study. Sometimes, it can take more than one year for the CC to reach the verdicts of some unnatural causes of death, and suicide is one of unnatural causes of death. Therefore, based on the same CC database, we could only examine the trends of overall suicides, student suicides, and youth suicides between 2003 and 2015, inclusively.

Given that the objectives of our study were related to the recent student suicides in 2016, we had to identify other sources to enrich the student suicide database. The police department was contacted to provide investigation files relating to cases of deaths deemed suicides between September 1, 2013 and December 31, 2016, and had been further identified as students' suicides but yet to be included in the CC database due to the previously mentioned delay in reporting (Cui et al., 2004).

In addition, local media publications of students' suicide news between September 1, 2013 and December 31, 2016 were systematically reviewed. The review aimed to build a student suicide news dataset and triangulate with authoritative information provided by the CC or the police to identify any missing cases not reported in the local media. To extract the relevant news, we used keywords such as "suicide" and "student" in the Chinese character to search through an online database, WiseNews, which contains all newspapers circulated in Hong Kong. Then we manually double-checked whether each news article met the following

criteria, namely: 1) it being a news report instead of an opinion or column article; and 2) the topic is about one or more local students' suicide deaths.

When an article was included, a trained coder would read through the article and extract the basic information of the case, such as name, age, gender, education level, suicide method, the occurrence address, and the occurrence date. Based on such information, we could link the news articles to the suicide cases as recorded in the CC or the police files. The coder would also identify which paragraphs described the suicides (i.e. descriptive information) and which provided the prevention recommendations (i.e. preventive information). Following the latest media guidelines in Hong Kong (HKJC Centre for Suicide Research and Prevention, 2015), we defined "preventive information" as sentences interviewing experts to give suggestions on suicide preventions, quoting suicide prevention research findings, reporting stories of how people in similar situations overcame their difficulties, or introducing local community resources for suicide preventions. Then word count was performed to quantify how many words were descriptive and how many were preventive in each article. The coding scheme was developed by close communications between QC and EL and the coding was implemented by EL. When EL had any uncertainty with a code, she would discuss with QC immediately until a consensus was reached.

By comparing news reports with the CC and police records, we noted that 20 cases were reported by the media as student suicides but had not been found in the authoritative sources yet, two of which occurred in 2013, two in 2015, and the rest in June 2016 or later. Those cases might still be under investigation by the CC, therefore, we retained those cases and their news reports in the dataset. Conversely, 7 cases were recorded in the authoritative sources but not by the media. By comparing the demographic information and death dates reported in both the news reports and the authoritative sources, we found that the information was generally consistent, except for three cases which showed a two- or three-day difference in terms of the dates of deaths. The three cases were deaths by drowning or jumping from a great height, which might cause an uncertainty in estimating the dates of the deaths. With regard to the three cases, we adopted the authoritative sources' dates of the deaths. In general, for the vast majority of students' suicide-reporting, we discovered that the media reports and the basic information of the cases were consistent with the authoritative records. Therefore, we have decided to include in the suicide dataset those cases which have been reported by the media but not yet found in the CC or police files.

Data analyses

To gain a more complete contextual picture, we first analyzed the time trends of student suicides and youth suicides between 2003 and 2015. We treated the suicide incident dates as a Poisson process with an intensity function that can potentially vary over time. The intensity function was estimated using the local polynomial smoothing method (Chen et al., 2008; Chen et al., 2011; Chen, 2011). A two-year bandwidth was chosen to demonstrate the long-term trend in a clearer manner.

Furthermore, we focused on the period from September 1, 2013 to December 31, 2016 to examine the trends of student suicides and student suicides' news-reporting. To assess news-reporting intensity, we have assumed the number of newspaper articles covering each case to be Poisson distributed with the mean parameter allowed to vary over time. In this regard, the mean parameter stood for the average number of articles on a student suicide case. We have also assumed that the reporting intensity varied slowly and smoothly over

time, and estimated it using the local likelihood method (Fan and Gijbels, 1996). Specifically, we have assumed y_i to be newspaper articles regarding case i that happened at time t_i as Poisson distributed with mean $\mu(t_i)$. We have further assumed that $\mu(\cdot)$ was a smooth function of time, so that $\log \mu(t_i) \cong \log \mu(t) + \frac{\mu'(t)}{\mu(t)}(t_i - t) = a + b(t_i - t)$ for t_i close to t . To estimate $\mu(t)$ for a fixed t in the estimation domain, we first estimated the local parameter $\theta = (a, b)$, which depended on t , by maximizing the following local log likelihood function,

$$l(\theta) = \sum_{i=1}^n (y_i \{a + b(t_i - t)\} - \exp\{a + b(t_i - t)\}) K_t(t_i),$$

with $K_t(t_i) = \frac{1}{b} K(\frac{t_i - t}{b})$ a scaled kernel function regulating the weights received by a case at time t_i in determining the estimate of the local parameter at t .

In addition, based on the counts of descriptive or preventive news words, we estimated descriptive- or preventive-reporting intensities. We assumed that y_i , the average words of descriptive/preventive contents in the news articles of a case that happened at t_i , followed a distribution with mean $\mu(t_i)$ and variance σ^2/n_i , where n_i is the number of news articles reporting on the case at t_i . Assuming further that the descriptive/preventive-reporting intensity $\mu(\cdot)$ is a smooth function, we have estimated either the descriptive-or preventive-reporting intensity using a non-parametric smoother.

Results

Figure 1 demonstrates that the overall suicides' intensity and the youth suicides' intensity were at the highest at the beginning of 2003 but decreasing over the years. By contrast, the students' suicide intensity has been slowly climbing up since 2006. There was a mild increase in the youth suicides' intensity towards the end of 2015, which corresponds to the increase of students' suicide intensity.

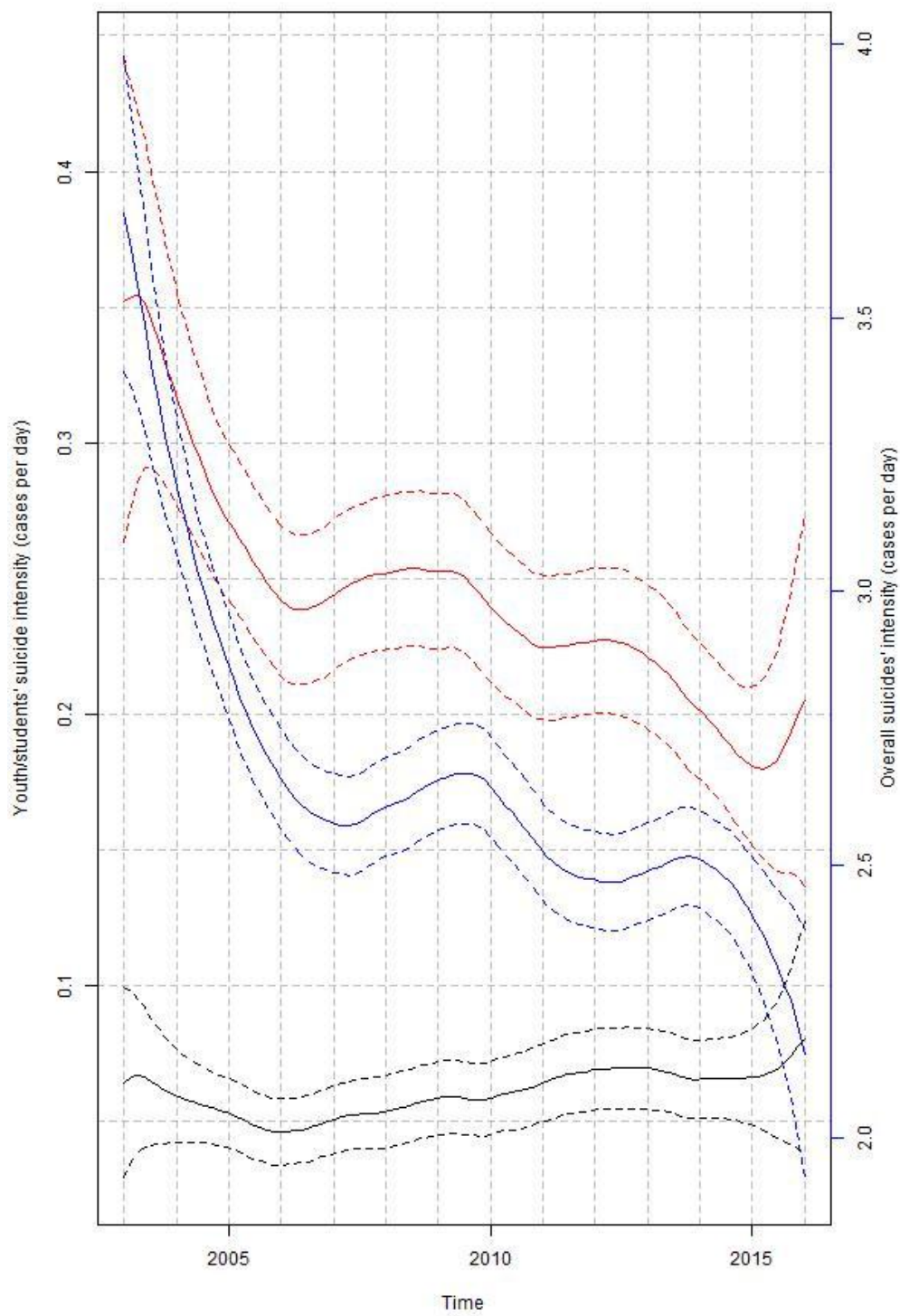


Figure 1. Trends of students' suicides and the youth suicides between 2003 and 2015 in Hong Kong. Legend: Black: Students' suicide intensity. Red: Youth suicides' intensity. Blue: Overall suicides' intensity (scale shown on the right-hand side axis). Solid lines: The estimates. Broken lines: The point-wise 95% confidence intervals.

When shifting the focus to the period between September 1, 2013 and December 31, 2016, we identified that 101 student suicide cases were covered by 1,010 news articles, averaging 10 articles per case. As illustrated in Figure. 2, student suicides' intensity had been generally going down until August 2014. Then, the intensity started to climb up gradually

until it reached a sharp peak around January 13, 2016, about four weeks before the Chinese New Year. Then, the students' suicide intensity remained in a downward trend until September 14, 2016. Unfortunately, another sharp increase of student suicides intensity appeared by the end of 2016. At the peak on January 13, 2016 and the end of 2016, students' suicide intensity recorded roughly 0.11~0.12 cases per day, which was higher than the students' suicide intensity between 2003 and 2015 as shown in Figure 1.

In the same Figure 2, student suicide news intensity did not always align with their reporting intensity. Five peaks of news intensity could be spotted in the figure. The first was at the very beginning of the study period, corresponded to a high suicide intensity. The second however, appeared around the end of 2014, indicating that on average, there were about 11 news reports per case, corresponding to the up rise of student suicides' intensity. Between June 2015 and March 2016, the intensity of students' suicide news-reporting had remained above 10 articles per case in all printed media outlets and reached a peak at 15 articles per case in March 2016. It was noted that the students' suicide intensity had been dropping since January 13th, 2016. In other words, the peak of suicide news reporting intensity in March 2016 appeared after the peak of student suicide intensity in January 2016. The last news intensity peak appeared around the last increase of students' suicide intensity, although the magnitude of the last peak was much smaller than the previous peaks (on average 8 articles per case).

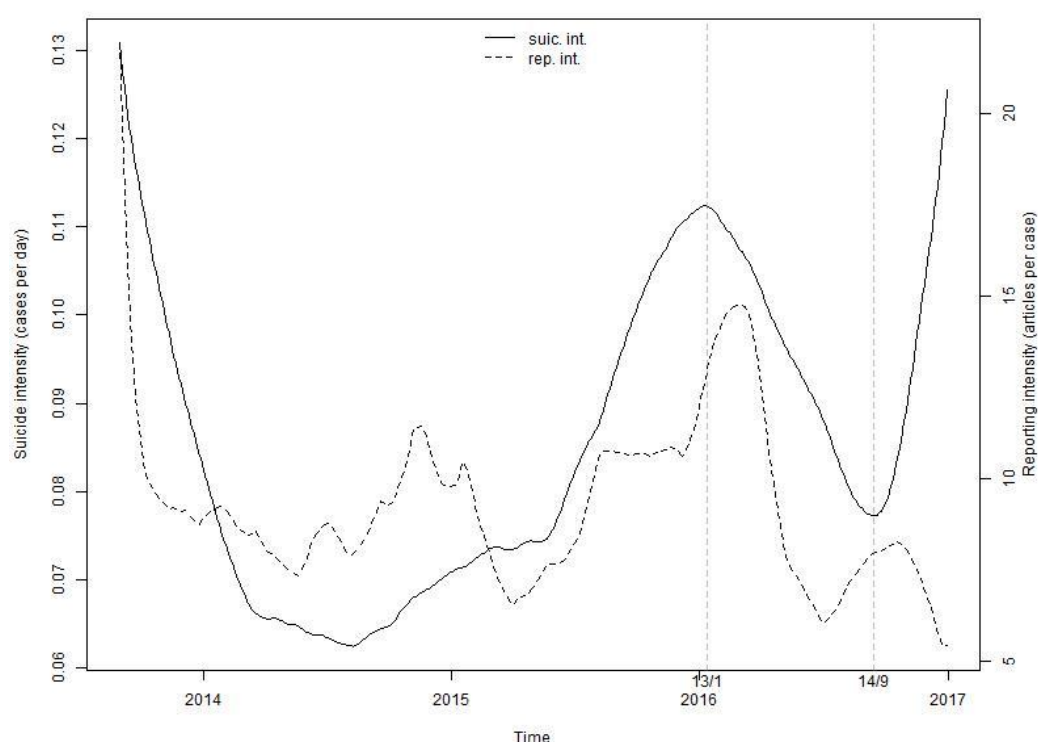


Figure 2. Student suicides cases and news-reporting intensities between September 1, 2013 and December 31, 2016.

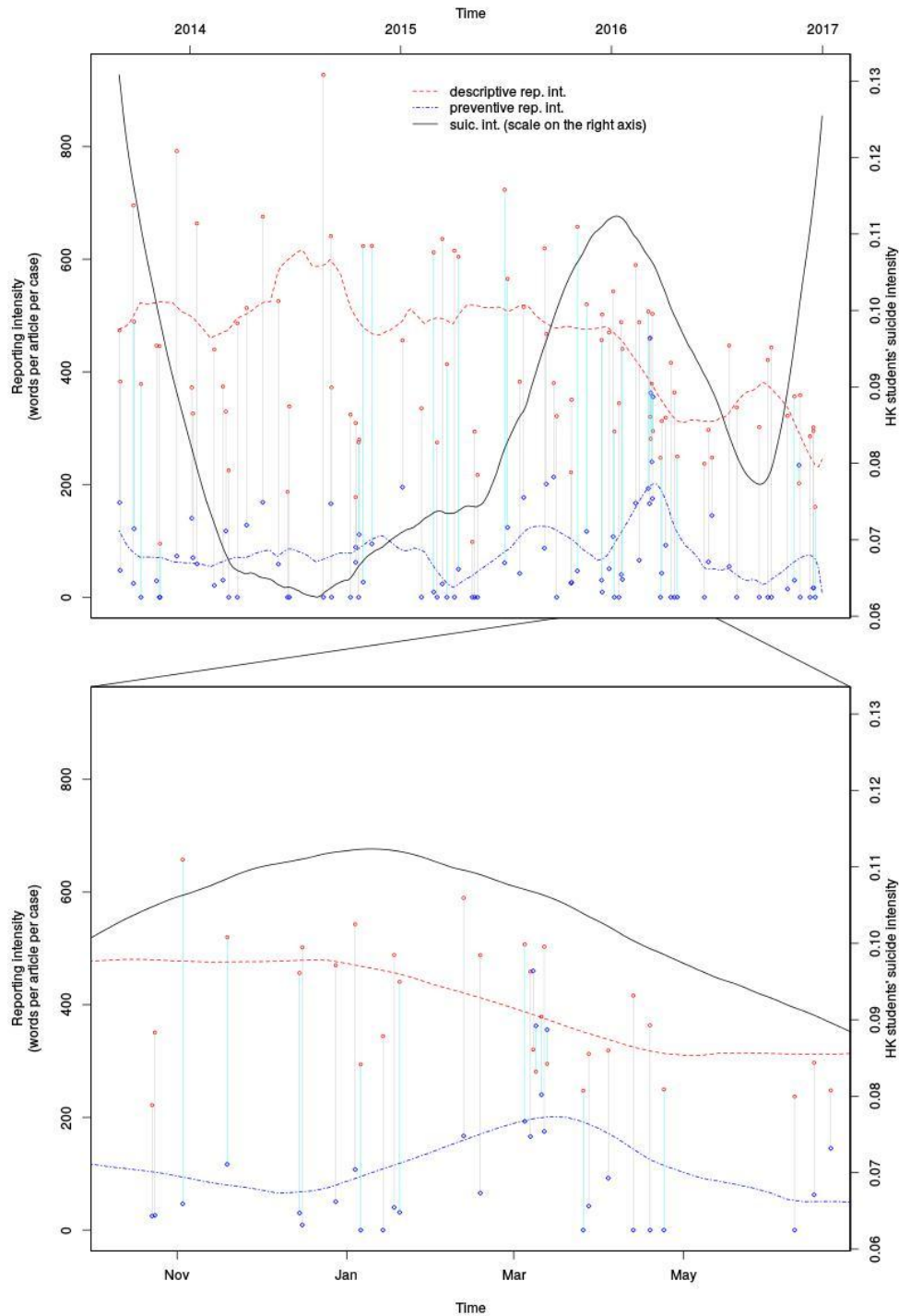


Figure 3. Upper panel. Student suicides and news intensities between September 1, 2013 and December 31, 2016 in Hong Kong. Lower panel. Zoom into student suicides and news intensities between October 1, 2015 and June 30, 2016 in Hong Kong. *Note: Circle: publication dates and average words of the descriptive contents of a case. Square: publication dates and average words of the preventive contents of a case. A 5t vertical line connecting two points corresponding to the same suicide case. Cyan vertical line: university or above students' suicide cases. Grey vertical line: other students' (e. g. primary school, secondary school, higher diploma, associate degree, etc.) suicide cases.*

As shown in Figure 3, when we further broke down the news articles into descriptive and preventive contents, preventive-reporting intensity had remained low before January 2016 with no more than 160 Chinese words per article per case. By contrast, descriptive-reporting intensity had never been lower than 400 words per case per article in the same

period. When covering some younger students' suicides in the mid of 2014, the descriptive-reporting intensity even reached over 600 words per article per case. However, the descriptive-reporting intensity sharply dropped to under 400 words per article per case in Mar 2016 and has remained under this threshold since then. By contrast, preventive-reporting intensity broke through 200 words per article per case in March and April 2016 but dropped back to normal afterwards. It is noteworthy that some cases in March 2016 even received more preventive than descriptive coverage, as shown in the lower panel of Figure 3, where 3 squares appear to be above the corresponding circles of the cases.

Discussion

The present study provides an overview of student suicides in Hong Kong as well as a focused view on the sudden increase of student suicides in the first four months of 2016. When looking through this long lens, it is noteworthy that student suicides have been slowly increasing since 2006, while the general youth suicides and overall suicides have been decreasing. A greater increase of students' suicide intensity in late 2015 and early 2016 may have driven up the overall youth suicides' intensity. It appeared that the students' suicide intensity quickly dropped after March 2016. Unfortunately, this intensity bounced back again towards the end of 2016, although the magnitude might be exaggerated by the boundary effect. This is because the kernel function used in the data analyses suffers from the lack of data outside the two ends of the timeline (i.e. the boundary). The results confirmed the abnormal, varying, and alarming trend of student suicides in Hong Kong, compared to the general youth and the overall population.

When examining the media practices, we note the Hong Kong press showed extremely high reporting interest in student suicides, with almost 90% of the incidents recorded in the CC or police files being reported by the media. The reporting intensity was excessive and intensive, and the phenomenon is consistent with previous studies, which also observed that Hong Kong media tend to over-report youth suicides but under-report elderly suicides (Au et al., 2004). In addition, the news-reporting used in student suicides was mainly descriptive, including many details of the incidents, which is also consistent with previous findings on general suicide news-reporting in Hong Kong (Cheng and Yip, 2012).

It was encouraging that after the authors made appeals to the local media, around March 12, 2016, the intensity of newspapers' descriptive-reporting has significantly decreased, whereas preventive-reporting has intensely increased. The results suggest that our involvement with the local media has had a positive impact on the local media's reporting practices. However, when more student suicides occurred at the end of 2016, preventive-reporting intensity did not hold up to a higher value, although the overall students' suicide news-reporting intensity and descriptive-reporting intensity both remained in a low value. Similarly, studies in other countries also found that the intervention effects of media engagement tended to be short-lived (Niederkrötenhaler & Sonneck, 2007; Sisask & Värnik, 2012).

By relating media practices to reporting student suicides, our results suggest that the gap between descriptive-reporting and preventive-reporting when compared to the total news-reporting intensity, may play a stronger role in influencing suicides. As shown in Figure. 2, the total student suicides' news-reporting intensity reached similar heights in late 2014 and early 2016. However, the two heights were followed by different changes in

students' suicide intensity, the former increasing and the latter decreasing. The difference between the two peaks of news-reporting intensity was that the former was mainly pulled up by higher descriptive-reporting intensity, whereas the latter was by preventive-reporting intensity. In other words, when the gap between descriptive-reporting and preventive-reporting is enlarged, it may be followed by an increase of students' suicide intensity; whereas when the gap is minimized, it may be followed by a decrease of students' suicide intensity. The pattern appeared again by the end of 2016, when the gap was once more enlarged, the students' suicide intensity bounced back to even higher than in March 2016, despite the total suicides' news-reporting intensity being much lower then. The results suggest that future students' suicide-prevention should aim at not only reducing over news-reporting on suicides, but also sustain high media coverage on preventive information.

It should be further noted that the authors have been constantly individually engaging with the local media outlets since March 2016. The difference between our interventions in March 2016 and afterwards was that public appeals via different media platforms were only implemented in March 2016 but not afterwards. The results suggest that our constant and individual engagement with the media has successfully restrained the local media's overall and descriptive-reporting of student suicides, but has yet to sustain a prominent coverage of preventive information. This might be related to the fact that descriptive-reporting appeared to be a "normal" practice for the local Hong Kong media, whereas preventive-reporting was more responsive to direct outreach and advocacy by suicide prevention professionals. The findings also warrant professionals in suicide-prevention to look for effective strategies to engage the media's high interests in preventive information. It will indeed be helpful if additional community members, or other professionals from related fields be active in promoting and extending suicide preventive measures.

The impact on the media can only be sustained if continuous efforts are in place, otherwise, the impact will gradually wane off over time.

Limitations

This study provides insight into the possible influence of media news-reporting practices on the fluctuations of student suicides in Hong Kong. This information is useful to future suicide-prevention strategies specifically surrounding media engagement tactics. For this study, a few limitations ought to be noted. First, students' suicide data in 2016 were substantially extracted from news reported information, which is subject to potential modifications after the official data from the CC or police records have been obtained. Nonetheless, as we reported in the Data Collection sub-section, our previous experience shows that the local media reported over 90% of student suicides. Previous studies also noted that Hong Kong newspapers often accurately reported the profiles of the suicide deceased (Cheng & Yip, 2012). In addition, according to the latest updates that the research team received from the CC during the present study being reviewed, we have not found any need for modifications on the current dataset yet. Second, although the news-coding was conducted by one trained coder which ensured their consistencies, nonetheless, with more sufficient resources, future studies could involve more than one coder to code the same data to examine the intercoder reliability and increase the transferable validity of the coding process. Thirdly, we did not examine the mutual causation between students' suicide news and incidents, because the data points are not sufficient for a meaningful statistical analysis. Therefore, we can hardly confirm a causal relationship between student suicides' news-reporting and incidents. Last but not least, this study focused on the effects of the media, but

cannot rule out the effects from other social, economic, and psychological factors. In terms of the rising number of student suicides, it may have been influenced by the pessimistic atmosphere among the youth population in Hong Kong, where the education system is widely criticized for being tough, and social mobility among the young generation is found to be low. On the other hand, since March 2016, the local government and various stakeholders have been actively responding to students' suicide prevention. On March 30th, 2016, a committee with thirty-seven members including school teachers, parents, students, healthcare professionals, social service providers, and the government, was established to investigate into why those student suicides occurred and provide advice for future prevention, and one of the authors (PY) is the chairman of that committee. The sharp drop of student suicides from April to November 2016 may be due to the joint efforts of different community members, including, but not limited to, the changes in media-reporting practices.

Conclusions

Student suicides have been gradually increasing in Hong Kong since 2006 with a sharper surge in early 2016. This alarming public health issue in Hong Kong warrants more investigations and proactive prevention efforts. Among many antecedents and risk factors, the local media's routine practice of prominently and sensationally reporting student suicides may have cumulative effects on the youth suicidal behaviors. On the other hand, our constant reminders to the mass media to report students' suicide news responsibly appeared to be taking effect in directly changing the media practices and indirectly constraining suicide cases. This is the first time that the Papageno effects were examined in the Asian context, which added new evidence to support possible positive effects of media-reporting on suicide prevention. More importantly, the study demonstrated that our constant engagement with the media could curtail reporting suicide news in a descriptive manner, but not sustain a high level of media coverage on preventive information in the long run, which with hindsight, might have led to reducing students' suicides. Hence, future engagements with the media should focus not only on convincing them to restrain inappropriate reporting, but also a need to keep churning out more preventive agenda to attract the media's attention. Thus, more proactive and persistent engagements with the media are needed to cultivate best practices among media professionals and further change the society to positively respond to more suicide-prevention methods. The local community (including the media) should be sensitive to student suicides' prevention and not sensationalize the issue to avoid the copycat effect, and in addition, be consistently prepared to respond appropriately to the challenge of student suicides.

Author Statement

Contributors: Dr. Qijin Cheng wrote up the manuscript, Dr. Feng Chen did the data analysis, Ms. Esther ST Lee worked on the data collection, Prof. Paul SF Yip initiated and involved in the whole development of the project. All authors declare that they have no conflicts of interest.

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Declaration of interest

Conflicts of interest: none

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Highlights

- Student suicide has been gradually increasing in Hong Kong since 2006 with a sharper surge in early 2016.

- Local media's routine practice of reporting student suicides prominently and sensationally may have cumulative effects on the youth suicidal behaviors.
- Student suicide news reporting was more intensive and most content was descriptive after media engagement.
- More proactive and persistent engagement with the media is needed to cultivate best practices among media professionals.