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Mass media representation of suicide deaths in India: an epidemiological comparison with suicide deaths in the population

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Manuscripts

Mass media representation of suicide deaths in India: an epidemiological comparison with suicide deaths in the population

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Abstract

Objectives:

Suicide rates in India are among the highest in the world, equating to over 200,000 suicides annually. Reports of suicides are a routine feature in major newspapers in India, and reporters may selectively present “newsworthy” suicide stories. The aim of this paper was to systematically investigate whether mass media reports of suicides reflect the epidemiological data on suicide in India.

Design:

We extracted socio-demographic data on suicides reported among nine of the most highly read daily newspapers in the southern state of Tamil Nadu between June-December 2016. Five of the nine newspapers under review were in the top 20 most circulated daily newspapers in the country. A total of 1,258 newspaper articles were retrieved containing reports on 1,631 suicides. Two-tailed binomial tests on aggregate frequencies assessed whether the socio-demographic characteristics of suicides in the newspaper articles were different to the population suicide statistics for Tamil Nadu.

Results:

We identified some statistically significant discrepancies between suicide characteristics in the population and the media. Suicides involving females, those aged under 29 years, separated or widowed males, unmarried females, those using more lethal methods, and those

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3 who were students or working in the agricultural sector were significantly over-reported
4 relative to their occurrence in the broader population.
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7 **Conclusions:**

8 The suicide characteristics in the print media were not entirely representative of suicides in
9 the broader population, which may lead the general public to develop misunderstandings
10 about suicide. The discrepancies we identified will inform tailored suicide prevention
11 education for media professionals.
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16 **Strengths and limitations of this study**

- 17 • Suicides are a routine feature in major newspapers in India, and this is the first study
18 to examine whether these media reports of suicides reflect the epidemiological data
19 on suicide in India.
- 20 • We followed nine major newspapers over seven months and collected a large sample
21 of 1,631 media reports of suicides.
- 22 • We only looked at printed newspapers and further funding it would be desirable to
23 examine media reports by other forms of mass and social media.
- 24 • A large proportion of suicides are not captured in the official suicide statistics in
25 India, due to a sole reliance on police data and the lack of a comprehensive and
26 reliable vital registration system. Given both the official statistics and the media
27 reports used in this study are based on police reports of suicide, we expect that this
28 will have a negligible effect on the comparisons made in our study.
- 29 • While our findings provide some epidemiological clues as to the decisions made by
30 media professionals in choosing whether to report on a suicide, further qualitative
31 research with media professionals is required to better understand the decision-
32 making process and any biases that may be involved.
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Background

Southeast Asia accounts for roughly 40% of the estimated 800,000 suicides that occur each year globally¹. Suicide rates in India are among the highest in the world with the most recent suicide death rate estimates ranging between 18-21 deaths per 100,000 population (*c.f.* the global average of 11/100,000). This equates to an estimated 230,000-250,000 suicide deaths annually with far-reaching social, emotional and economic consequences^{1,2}. A public health approach to suicide is gaining momentum in India with calls for the development of national and state-level suicide prevention strategies, including the development of media guidelines to improve mass and social media coverage of suicides³.

One of the few recommended suicide prevention strategies at the population level is responsible media reporting of suicides⁴⁻⁶, based on evidence around copycat suicides, dissemination of suicide methods and behaviours, and the imperative to deliver tailored suicide prevention messaging in media content⁷⁻¹². Consequently, the World Health Organization (WHO) recommends that public health specialists should engage with media professionals to limit irresponsible media coverage (for example, reports that sensationalise suicide) and to promote coverage that educates the public about suicide¹³.

The manner by which the mass media communicates with the Indian public on the topic of suicide in India has thus far gone without sufficient inquiry¹⁴. Our own recent research into print media portrayals of suicide in India observed that explicit suicide reports are a routine feature, and that potentially harmful reporting practices are common¹⁵. For example, a detailed suicide method was reported in 43.3% of articles. Given that there are few alternative sources of publicly-disseminated information on suicide in India, as the suicide prevention sector is relatively under-resourced, these mass media portrayals of suicide are quite possibly playing a critical role in shaping and reflecting public attitudes and behaviours in relation to suicide.

Researchers have long recognised the disparity between the epidemiological data on suicide in the population and the stories selectively presented for mass media reports¹⁶. In suicide prevention, there is a major focus on disseminating knowledge on the risk factors and the complex multilayered context for suicide⁶. This can be at odds with media preferences for newsworthy stories that are atypical or that play to broader social narratives of interest to readers. Hence, one important area of enquiry for suicide prevention is to better understand what kinds of suicides media broadcast to the public, to shed light on possible misunderstandings of the epidemiological realities that can inform media training and engagement strategies. Very few studies have examined which suicides tend to feature in the media. Those that have, found that the mass media selectively present newsworthy suicide stories that do not reflect the broader array of suicides in the population¹⁷⁻²⁰, which can carry profound implications for the social and political responses to suicide.

This phenomenon is yet to be studied in India. This paper seeks to address this gap in the literature by comparing the characteristics of suicides in print media reports in India against the characteristics of suicides in the population. We elected to undertake a comprehensive study of newspaper reporting in one state, the southern state of Tamil Nadu (population = 72 million), which consistently has one of the highest suicide rates in India (22.8/100,000) equating to 15,777 recorded suicides in 2015, over 40 suicides per day²¹. The approach of

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3 focusing on one state allows us to comprehensively track changes in media reporting in this
4 state following upcoming efforts to engage with the media on this topic.
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6 7 **Methods**

8 As part of the Suicide in the Indian Media (SIM) project ¹⁵, we undertook a content analysis
9 study of articles reporting suicide-related news in nine of the ten most highly read vernacular
10 and English-language daily newspapers in Tamil Nadu over the 7-month period between 1st
11 June and 31st December 2016. The nine newspapers collectively have an estimated average
12 daily readership of over 16,000,000 people in Tamil Nadu alone ²². Five of the nine
13 newspapers under review are in the top 20 most circulated daily newspapers in the country ²³,
14 giving the findings relevance beyond Tamil Nadu. We previously published research from
15 this content analysis study where we assessed the quality of newspaper reporting of suicide-
16 related news against World Health Organization suicide reporting guidelines ^{13 15}.
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19 To source the articles, the hardcopies of all 1,926 (9 newspapers x 214 days) editions of the
20 nine newspapers during the study period were hand searched by three trained research
21 assistants (psychologists), allowing us to include several newspapers that did not have a
22 strong online presence. Our search yielded 1,258 articles containing reports on 1,631
23 suicides. We excluded articles where suicide was only mentioned briefly (i.e. <50% of the
24 article) and articles with a focus on terrorist-related suicide bombings or euthanasia.
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27 A bi-lingual psychologist and researcher (MPsych, MPhil) extracted data on gender, age,
28 marital status, suicide method and occupational status for each suicide. We compared the data
29 extracted from the newspaper articles with the characteristics of suicides in the Tamil Nadu
30 population suicide statistics found in the Accidental Death & Suicides in India report for
31 2015 published by the National Crime Records Bureau (NCRB) ²¹.
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34 Comparing occupational status between the two data sets was complicated by the use of
35 broad category descriptors in the NCRB data (for example, ‘professionals/salaried persons’)
36 that were not possible to reproduce. However, there were two occupational categories that
37 were distinct enough to legitimately reproduce and examine; ‘students’ and ‘persons engaged
38 in the farming sector’. Both are occupational groups that have been of significant interest to
39 suicide prevention in India and would resonate strongly with the public when discussing the
40 topic of suicide ^{24 25}.
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43 We disaggregated the data by gender, and in doing so we excluded suicides of *Hijra* and
44 transgender people due to the very small numbers of such cases; there were 13 reports of
45 suicide deceased who were Hijra/transgender in the newspaper articles and 2 such suicide
46 deceased in the official suicide records for Tamil Nadu.
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49 Two-tailed binomial tests on aggregate frequencies were used in Stata (command “prtesti”) to
50 assess whether the distribution of the characteristics of suicides in the newspaper articles was
51 different to their distribution in the population suicide statistics for Tamil Nadu. This analysis
52 approach has been used previously by a similar media study in Austria ¹⁷. Not all media
53 reports contained data on all the variables we analysed, so percentages were calculated based
54 on data for those individuals for whom these characteristics were reported in the article.
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57 **Results**

58 Binomial tests showed that female suicides were over-reported relative to their occurrence in
59 the broader population of suicides, comprising 45.3% (729/1610) of suicides in newspaper
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3 reports compared to 32.0% (n=5041/15775) of suicides in the official suicide statistics
4 (p<0.001) (see Figure 1). While newspapers covered a significantly higher percentage of
5 female suicides, this was not the case across all age groups. There was no statistically
6 significant difference in the <18 years age group, and we observed the reverse pattern in the
7 60+ years age group, such that female suicides were significantly under-reported.
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10 Binomial tests showed that the suicides of those aged less than 29 years were over-reported
11 relative to their occurrence in the broader population (see Table 1). Conversely, the suicides
12 of those aged 30 years or older were under-reported. The suicides of those who were
13 unmarried, separated and widowed were over-reported, while the suicides of those who were
14 married were under-reported. The gender stratification of these marital status results
15 highlighted a significant gender-based difference. Suicides among separated males were
16 over-reported while the suicides of separated females were under-reported. For females, it
17 was the suicides of those who were unmarried that were over-reported, while such deaths
18 were not significantly over-reported among males.
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21 The suicides of students and those engaged in the farming sector were over-reported relative
22 to their occurrence in the broader population (see Figure 2). Students comprised 15.6%
23 (255/1631) of all suicides in newspaper reports compared to 6.1% (955/15775) of suicides in
24 the official suicide statistics (p<0.001). People engaged in the farming sector comprised 6.3%
25 (102/1631) of all suicides in newspaper reports compared to 3.8% (606/15775) of suicides in
26 the official suicide statistics (p<0.001). Conversely, the suicides of females in the agricultural
27 sector were under-represented in media reports.
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30 Deaths involving hanging, coming under vehicle/train, jumping off building/structure and
31 self-inflicted injury such as a knife wound were over-reported, while suicides by poisoning
32 were under-reported (see Table 1).
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35 Discussion

36 The present study identified substantial disparities between suicide characteristics in the
37 population and the media. Suicides involving females, those aged under 29 years, separated
38 or widowed males, unmarried females, and those using lethal methods (other than pesticides)
39 were significantly over-reported relative to their occurrence in the broader population. The
40 suicides of people from the occupational groups of students or persons engaged in the
41 agricultural sector were also over-reported.
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44 An important finding was that female suicides were significantly over-represented, relative to
45 their occurrence in the population. This finding appears to be unique to India and is in stark
46 contrast to what has been observed elsewhere. No under or over-reporting was observed in
47 Australia¹⁹ or Austria¹⁷ based on gender. However, in the Chinese settings of Guangzhou
48 and Taiwan, female suicides have been observed to be under-reported²⁰, the opposite pattern
49 to our findings. The authors posited that, in traditional Chinese societies, women can be
50 stereotyped as being more emotional or hysterical, and more prone to suicide. Such that, they
51 felt media professionals may perceive the suicide deaths of men to be more unusual and thus
52 newsworthy.
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56 In India, the female suicide rate is among the highest in the world, and is nearly three times
57 higher than the rate expected globally for countries at similar levels of Socio-Demographic
58 Index². This well-documented fact about suicide in India could possibly permeate the minds
59 of media professionals, who may then give greater emphasis to the plight of females who
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3 take their lives. Notwithstanding this, it is also likely that there are some other reasons media
4 professionals decide that the suicides of females are more newsworthy. Based on our
5 anecdotal conversations with media professionals, we speculate that female suicides may also
6 be perceived by media professionals to generate a greater empathic response among readers
7 of newspapers in India. Stories of the suicides of females may align with paternalistic
8 narratives about the risks to women in Indian society and the family and collective
9 responsibility to protect them ²⁶.
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12 We also observed an under-reporting of suicides of married males and females. Moreover, we
13 observed that, among female suicides, there was an over-reporting of suicides among those
14 who were unmarried. This was quite distinct from what was observed among male suicides,
15 where suicides by separated or widowed males were over-reported in the newspapers. It is
16 unclear why there is an apparent media preference for stories of unmarried females and
17 separated or widowed males, nor what cultural scripts or narratives this may align with.
18 Marriage and family are at the core of the social fabric in India ²⁷, and family is the main
19 source of welfare protections. We speculate that risks associated with being outside of the
20 institution of marriage may be being emphasised by media professionals through their
21 selection of suicide stories pertaining to people whose marriage has been lost or who are yet
22 to enter marriage. Through this under-reporting of suicides of married people, these media
23 reports may actually be giving an incorrect signal to the population with regard to any suicide
24 prevention protections that may be assumed to be gained from being married. It is important
25 to that that while marriage is typically understood to protect against suicide, particularly for
26 men, based on findings from studies in Western settings ²⁸, this is not the case in India.
27 Research undertaken in India yields mixed findings regarding the relationship between
28 marital status and suicide for both men and women, suggesting that either marriage is not a
29 protective factor for suicide, or indeed that the risk of suicide is higher among those who are
30 married ^{29 30}. This epidemiological reality regarding marriage and suicide may conflict with
31 narratives in India that locate 'the family' as the main source of social protections. Clearly
32 this is speculation, and so qualitative research with media professionals is required to better
33 understand the phenomenon of the influential role of gender and marital status in the
34 perceived newsworthiness of suicide deaths. We note though, that even such qualitative
35 interviews may find it hard to unravel what may be unconscious and deeply culturally
36 embedded biases among media professionals.
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43 Our findings suggest that the suicides of younger persons aged <29 years were considered to
44 be more newsworthy than the suicide deaths of persons aged 30 years and older. This finding
45 is largely consistent with research from Australia ¹⁹, Austria ¹⁷ and China ²⁰. It has been
46 posited that youth suicides may be considered more newsworthy; that is, the death of a youth
47 with their life ahead of them carries a sensational undertone that may grab the reader's
48 attention ²⁰. Suicide is also the leading cause of death among youth in India aged 15-29 years,
49 and greater than 70% of female suicide deaths and 50% of male suicide deaths are in this age
50 group ². Thus, it is possible that media professionals may be attempting to give such suicide
51 deaths greater emphasis without being aware that they may in turn be overlooking the issue
52 of suicide among older aged people, also a high-risk period for both males and females in
53 India ².
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56 Our findings also revealed that the suicides of students and people engaged in the agricultural
57 sector were significantly over-represented, relative to their occurrence in the population. This
58 finding was not surprising, given that both occupational groups are of significant interest to
59 the public discourse and narratives around suicide in India ^{24 25}. Media houses would be
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3 aware that reports on such deaths would resonate strongly with readers. Student suicides are a
4 major and topical policy issue in India, frequently located within discussions around the
5 fierce competition for student places and an accompanying intensity of exam pressure³¹.
6 Reporting on this issue will likely be of great interest to parents, who may carry a level of
7 fear around this happening to their own children. Farmer suicides are highly politicised in
8 India, and have been the subject of numerous government commissions and policy dialogues.
9 This has largely been with a focus on issues around the high levels of indebtedness among
10 farmers, a decline in secure institutional credit, water scarcity, trade liberalisation, and a
11 considerable vulnerability to “crop failure”³². Farmer suicide deaths have been described as
12 “public deaths”, due to the perception that they receive sensational coverage by the mass
13 media³³.
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17 Finally, suicides by particular methods also appeared to attract more media attention. Deaths
18 involving hanging, jumping, and coming under vehicle/train were over-represented in media
19 reports, while suicides by poisoning were under-represented. One interpretation of this
20 finding is that media may be attracted to reporting on suicides using methods with a higher
21 degree of lethality, given that these have been observed to have a high case fatality rate³⁴.
22 Deaths involving self-inflicted injuries (e.g. knife wound) were also over-reported, even
23 though this method does not have a high case fatality rate, indicating that newspaper reporters
24 may also have an interest in particular suicide methods where it is easy for them to construct
25 a graphic visual that may attract the attention of the reader. The under-reporting of poisoning
26 suicide deaths is also an interesting finding. While the ingestion of medical drugs typically
27 has a low case fatality rate³⁴, the ingestion of pesticides, a common suicide method in India
28 and elsewhere in South Asia³⁵, has a high case fatality rate and is a major contributor to high
29 suicide rates in this region^{36 37}.
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33 These findings have important implications for suicide prevention. While the mass media are
34 a powerful resource for educating the public about suicide, the general public may develop
35 misunderstandings about suicide that are caused by media misrepresentations. For example,
36 Till et al observed that the consumption of tabloid newspapers in Austria for daily
37 information appeared to be an independent factor in the endorsement of misconceptions and
38 myths about suicide³⁸. While we didn't assess the articles for suicide myths, we did observe
39 substantial disparities between suicide characteristics in the population and the media. Strong
40 biases towards reporting particular types of suicide deaths may result in social and political
41 responses to suicide that are not based on the epidemiological data. For instance, if media
42 reports are overly biased towards the coverage of female suicides, youth suicides, suicides
43 among particular occupational groups, or particularly graphic or more lethal suicide methods,
44 this may inadvertently affect suicide prevention funding allocations, public perceptions about
45 who is most at risk of suicide and the method they may use, among other possible
46 consequences.
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50 The study has several limitations that are worth noting. Firstly, we compared data from media
51 reports collected in 2016 against the official suicide statistics for 2015. While these are two
52 different time periods, it is the most recently available suicide statistics for India and it is
53 unlikely there is substantial variation between 2015 and 2016. Secondly, there is a high level
54 of under-reporting of suicide in India. Given both the official statistics and the media reports
55 are based on police reports of suicide, we expect that this will have a negligible effect on the
56 comparisons made in our study. Thirdly, while our findings provide some clues as to the
57 decisions made by media professionals in choosing whether to report on a suicide, we cannot
58 speak definitively about the decision-making process and any biases that may be involved.
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3 We are currently undertaking qualitative research with media professionals to better
4 understand this phenomenon³⁹. Fourthly, we were only able to examine the over or under-
5 representation of two occupational categories that we could meaningfully reproduce. Finally,
6 we only looked at printed newspapers and it would have been desirable to examine reports by
7 other forms of mass and social media.
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10 11 **Conclusion**

12 The suicide characteristics in the print media were not representative of suicides in the
13 broader population, indicating that a skewed picture of reality is being presented to the
14 community. The discrepancies we identified will inform tailored suicide prevention education
15 for media professionals.
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18 19 **Contributors**

20 GA designed the study, supervised the data collection, undertook the data analyses and wrote
21 the first draft of the manuscript. LV and TN supported the design of the study. MJ
22 implemented data collection. All authors read and improved the final manuscript and assisted
23 in interpreting the findings.
24
25

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30 searching the nine newspapers for the relevant articles for this study.
31

32 33 **Competing interests**

34 None declared.
35

36 37 **Patient and public involvement**

38 This study did not involve patients.
39

40 41 **Ethics approval**

42 The data used in this study are from publicly available documents. Nonetheless, we obtained
43 ethics approvals from the Human Ethics Advisory Group at The University of Melbourne in
44 Australia (ID: 1646245.1).
45

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50 Society for Mental Health Research and The University of Melbourne.
51

52 53 **Data sharing**

54 The data used in this study are publicly available media reports and publicly available official
55 reports on suicides in India. Anyone interested in accessing our database on media reports of
56 suicides may contact the corresponding author.
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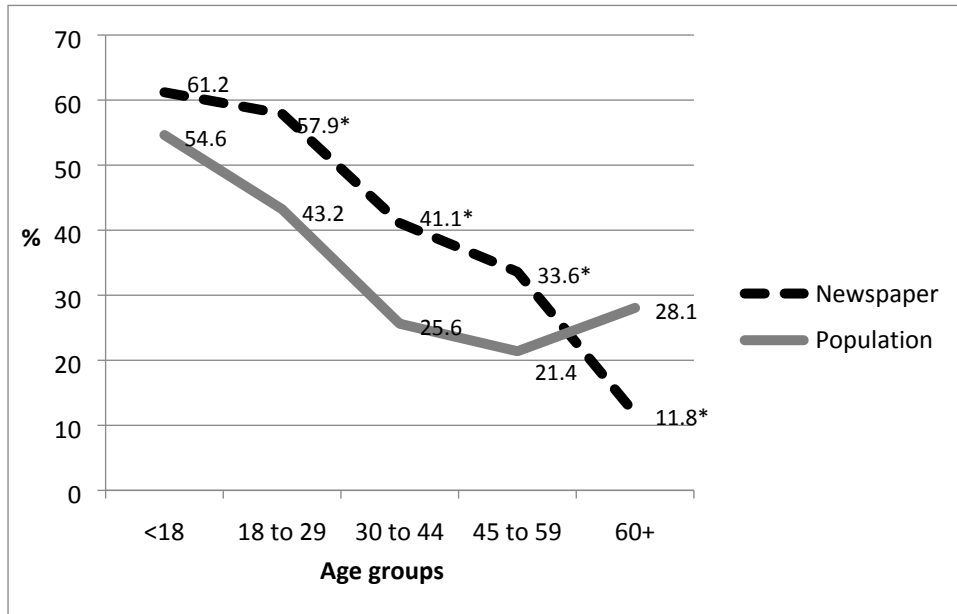
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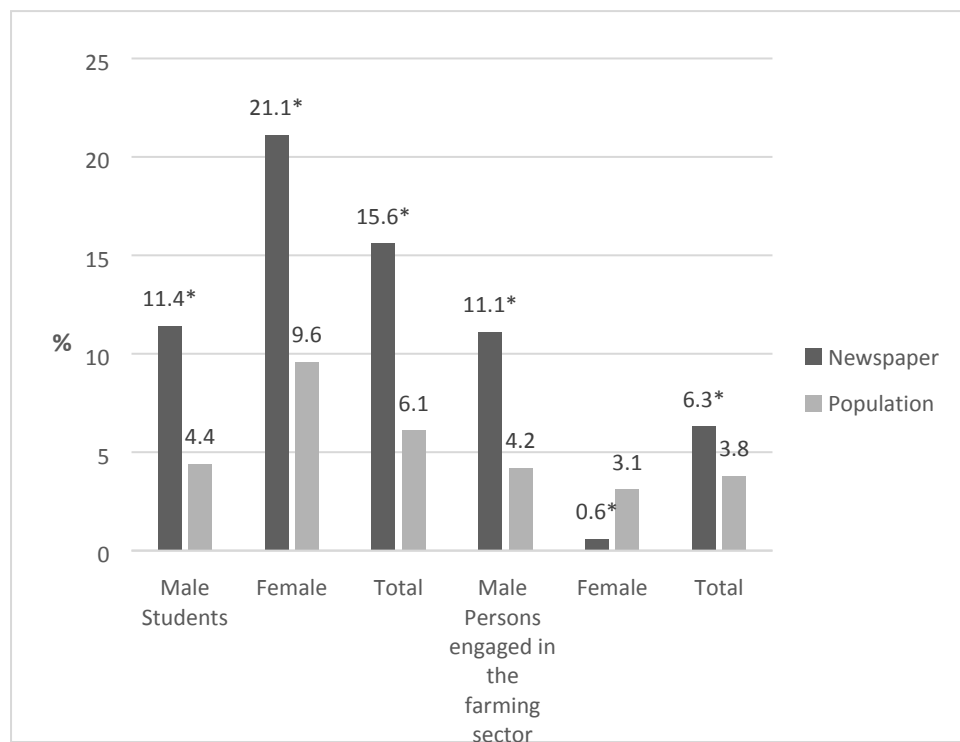
Figures

Figure 1: Comparing the proportion of female decedents in newspaper suicide reports vs. the population suicide statistics for Tamil Nadu



* <math>p < 0.05</math>, based on two-sided binomial tests within each age group to calculate if the proportion of suicide deceased in the newspaper articles that were female was different to that in the official suicide statistics

Figure 2: Comparing the proportions of selected occupational groups of suicide decedents in newspaper reports vs. the population suicide statistics for Tamil Nadu



Note: The occupational categories of 'student' and 'persons engaged in the farming sector' were the only categories in the official statistics that were distinct enough to compare to the data we extracted from newspaper reports. Other occupational categories in the official suicide statistics (e.g. 'professionals/salaried persons') were too broad to be reproduced.

* <0.05 , based on two-sided binomial tests within each age group to calculate if the proportion of suicide deceased in the newspaper articles that were female was different to that in the official suicide statistics

Tables

Table 1: Binomial tests comparing the demographic characteristics of suicide decedents in newspaper reports vs. the population suicide statistics for Tamil Nadu

Characteristics	Male			Female			Total		
	Newspaper % (n)	Population % (n)	p-value ^a	Newspaper % (n)	Population % (n)	p-value ^a	Newspaper % (n)	Population % (n)	p-value ^a
Age									
<18 years	7.1% (54)	4.2% (446)	<0.001	13.0% (85)	10.7% (537)	0.071	9.8% (139)	6.2% (983)	<0.001
18-29 years	31.5% (239)	24.7% (2656)	<0.001	50.2% (328)	40.1% (2022)	<0.001	40.1% (567)	29.7% (4678)	<0.001
30-44 years	26.2% (199)	34.9% (3749)	<0.001	21.3% (139)	25.6% (1291)	0.016	23.9% (338)	31.9% (5040)	<0.001
45-59 years	23.4% (178)	25.5% (2742)	0.194	13.8% (90)	14.8% (746)	0.481	19.0% (268)	22.1% (3488)	0.006
60+ years	11.8% (90)	10.6% (1141)	0.296	1.8% (12)	8.8% (445)	<0.001	7.2% (102)	10.1% (1586)	0.001
Total	100.0% (760)	100.0% (10734)		100.0% (654)	100.0% (5041)		100.0% (1,414)	100.0% (15775)	
Marital status^b									
Unmarried	26.8% (125)	23.5% (2459)	0.096	34.5% (180)	22.3% (1100)	<0.001	30.9% (305)	23.1% (3559)	<0.001
Married	63.6% (297)	73.4% (7682)	<0.001	60.8% (317)	72.1% (3556)	<0.001	62.1% (614)	73.0% (11238)	<0.001
Separated	5.6% (26)	1.2% (128)	<0.001	1.2% (6)	3.1% (155)	<0.001	3.2% (32)	1.8% (283)	<0.001
Divorced	0.0% (0)	0.3% (21)	0.236	0.4% (2)	0.8% (38)	0.286	0.2% (2)	0.4% (69)	0.325
Widowed	4.1% (19)	1.6% (164)	<0.001	3.1% (16)	1.6% (80)	0.008	3.5% (35)	1.6% (244)	<0.001
Total	100.0% (467)	100.0% (10464)		100.0% (521)	100.0% (4929)		100.0% (988)	100.0% (15393)	
Suicide method									
Hanging	52.7% (436)	42.5% (4555)	<0.001	51.2% (349)	38.0% (1916)	<0.001	52.1% (785)	41.0% (6471)	<0.001
Poisoning	20.3% (168)	39.7% (4260)	<0.001	19.8% (135)	35.2% (1775)	<0.001	20.1% (303)	38.3% (6035)	<0.001
Fire/self-immolation	9.3% (77)	6.0% (643)	0.001	12.0% (82)	19.2% (967)	<0.001	10.5% (159)	10.2% (1610)	0.659
Under vehicle/train	4.5% (37)	2.9% (309)	0.007	3.8% (26)	0.9% (45)	<0.001	4.2% (63)	2.2% (354)	<0.001
Drowning	3.0% (25)	3.3% (357)	0.656	4.7% (32)	3.4% (171)	0.061	3.8% (57)	3.3% (528)	0.297
Jumping (off structure)	2.5% (21)	0.6% (60)	<0.001	4.1% (28)	0.1% (7)	<0.001	3.2% (49)	0.4% (67)	<0.001
Self-inflicted injury	0.7% (6)	0.6% (68)	0.642	2.3% (16)	0.4% (18)	<0.001	1.5% (22)	0.5% (86)	<0.001
Other	6.9% (57)	4.5% (482)	0.001	1.9% (13)	2.8% (142)	0.159	4.6% (70)	4.0% (624)	0.203
Total	100.0% (827)	100.0% (10734)		100.0% (681)	100.0% (5041)		100.0% (1508)	100.0% (15775)	

^a Two-tailed binomial test on difference between two proportions using the “prtesti” command in Stata

^b Excludes those listed as ‘unknown’ and ‘other’ in the NCRB data

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Mass media representation of suicide in a high suicide state in India: an epidemiological comparison with suicide deaths in the population

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Manuscripts

Mass media representation of suicide in a high suicide state in India: an epidemiological comparison with suicide deaths in the population

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Abstract

Objectives:

Suicide rates in India are among the highest in the world, equating to over 200,000 suicides annually. Reports of suicides are a routine feature in major newspapers in India, and reporters may selectively present “newsworthy” suicide stories. The aim of this paper was to systematically investigate whether mass media reports of suicides reflect the epidemiological data on suicide in a high suicide state in India.

Design:

We undertook a content analysis study to extract socio-demographic data on suicides reported among nine of the most highly read daily newspapers in the high suicide southern state of Tamil Nadu between June–December 2016. A total of 1,258 newspaper articles were retrieved containing reports on 1,631 suicides. Two-tailed binomial tests on aggregate frequencies assessed whether the socio-demographic characteristics of suicides in the newspaper articles were different to the population suicide statistics for Tamil Nadu.

Results:

We identified some statistically significant discrepancies between suicide characteristics in the population and the media. Suicides involving females, those aged under 29 years, separated or widowed males, unmarried females, those using methods with a higher case-

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3 fatality rate, and those who were students or working in the agricultural sector were
4 significantly over-reported relative to their occurrence in the broader population.
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7 **Conclusions:**

8 The suicide characteristics in the print media were not entirely representative of suicides in
9 the broader Tamil Nadu population, which may lead the general public to develop
10 misunderstandings about suicide in their state. The discrepancies we identified will inform
11 tailored suicide prevention education for media professionals.
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16 **Strengths and limitations of this study**

- 17 • Suicides are a routine feature in major newspapers in India, and this is the first study
18 to examine whether these media reports of suicides reflect the epidemiological data
19 on suicide in India.
- 20 • We followed nine major newspapers over seven months and collected a large sample
21 of 1,631 media reports of suicides.
- 22 • We only looked at printed newspapers and further funding it would be desirable to
23 examine media reports by other forms of mass and social media.
- 24 • A large proportion of suicides are not captured in the official suicide statistics in
25 India, due to a sole reliance on police data and the lack of a comprehensive and
26 reliable vital registration system. Given both the official statistics and the media
27 reports used in this study are based on police reports of suicide, we expect that this
28 will have a negligible effect on the comparisons made in our study.
- 29 • While our findings provide some epidemiological clues as to the decisions made by
30 media professionals in choosing whether to report on a suicide, further qualitative
31 research with media professionals is required to better understand the decision-
32 making process and any biases that may be involved.
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Background

Southeast Asia accounts for roughly 40% of the estimated 800,000 suicides that occur each year globally¹. Suicide rates in India are among the highest in the world with the most recent suicide death rate estimates ranging between 18-21 deaths per 100,000 population (*c.f.* the global average of 11/100,000). This equates to an estimated 230,000-250,000 suicide deaths annually with far-reaching social, emotional and economic consequences^{1,2}. A public health approach to suicide is gaining momentum in India with calls for the development of national and state-level suicide prevention strategies, including the development of media guidelines to improve mass and social media coverage of suicides³.

One of the few recommended suicide prevention strategies at the population level is responsible media reporting of suicides⁴⁻⁶, based on evidence around copycat suicides, dissemination of suicide methods and behaviours, and the imperative to deliver tailored suicide prevention messaging in media content⁷⁻¹². Consequently, the World Health Organization (WHO) recommends that public health specialists should engage with media professionals to limit irresponsible media coverage (for example, reports that sensationalise suicide) and to promote coverage that educates the public about suicide¹³.

The manner by which the mass media communicates with the Indian public on the topic of suicide in India has thus far gone without sufficient inquiry¹⁴. Our own recent research into print media portrayals of suicide in India observed that explicit suicide reports are a routine feature, and that potentially harmful reporting practices are common¹⁵. For example, a detailed suicide method was reported in 43.3% of articles. Given that there are few alternative sources of publicly-disseminated information on suicide in India, as the suicide prevention sector is relatively under-resourced, these mass media portrayals of suicide are quite possibly playing a critical role in shaping and reflecting public attitudes and behaviours in relation to suicide.

Researchers have long recognised the disparity between the epidemiological data on suicide in the population and the stories selectively presented for mass media reports¹⁶. In suicide prevention, there is a major focus on disseminating knowledge on the risk factors and the complex multilayered context for suicide⁶. This can be at odds with media preferences for newsworthy stories that are atypical or that play to broader social narratives of interest to readers. Hence, one important area of enquiry for suicide prevention is to better understand what kinds of suicides media broadcast to the public, to shed light on possible misunderstandings of the epidemiological realities that can inform media training and engagement strategies. Very few studies have examined which suicides tend to feature in the media. Those that have, found that the mass media selectively present newsworthy suicide stories that do not reflect the broader array of suicides in the population¹⁷⁻²⁰, which can carry profound implications for the social and political responses to suicide.

This phenomenon is yet to be studied in India. This paper seeks to address this gap in the literature by comparing the characteristics of suicides in print media reports in India against the characteristics of suicides in the population. Due to the large number of languages across India and the prohibitive level of resources required to fund a study with a broad national spread of newspapers published in a range of languages, we elected to undertake a comprehensive study of newspaper reporting in one state. We chose the southern state of Tamil Nadu (population = 72 million), which consistently has one of the highest suicide rates

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3 in India (22.8/100,000) equating to 15,777 recorded suicides in 2015, over 40 suicides per
4 day²¹. The approach of focusing on one state allows us to comprehensively track changes in
5 media reporting in this state following upcoming efforts to engage with the media on this
6 topic.
7

8 9 **Methods**

10 As part of the Suicide in the Indian Media (SIM) project ¹⁵, we undertook a content analysis
11 study of articles reporting suicide-related news in nine of the ten most highly read vernacular
12 and English-language daily newspapers in Tamil Nadu over the 7-month period between 1st
13 June and 31st December 2016. The nine newspapers collectively have an estimated average
14 daily readership of over 16,000,000 people in Tamil Nadu alone ²². Five of the nine
15 newspapers under review are in the top 20 most circulated daily newspapers in the country ²³,
16 giving the findings relevance beyond Tamil Nadu. We previously published research from
17 this content analysis study where we assessed the quality of newspaper reporting of suicide-
18 related news against World Health Organization suicide reporting guidelines ^{13 15}.
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21 To source the articles, the hardcopies of all 1,926 (9 newspapers x 214 days) editions of the
22 nine newspapers during the study period were hand searched by three trained research
23 assistants (psychologists), allowing us to include several newspapers that did not have a
24 strong online presence. Our search yielded 1,258 articles containing reports on 1,631
25 suicides; the vast majority of these suicides were of people from Tamil Nadu (84.0%,
26 n=1371), while the remainder were largely of people from elsewhere in India (14.5%, n=236)
27 or from other countries (1.1%, n=18), with location unable to be determined in 0.4% (n=6) of
28 the media reports. We elected to retain all suicides in our primary analyses, regardless of the
29 location of the deceased, as these reports will still influence the public's impressions of who
30 is affected by suicide; secondary analyses will exclusively examine suicides of people from
31 Tamil Nadu. We excluded articles where suicide was only mentioned briefly (i.e. <50% of the
32 article) and articles with a focus on terrorist-related suicide bombings or euthanasia.
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36 A bi-lingual psychologist and researcher (MPsych, MPhil) extracted data on gender, age,
37 marital status, suicide method and occupational status for each suicide. We compared the data
38 extracted from the newspaper articles with the characteristics of suicides in the Tamil Nadu
39 population suicide statistics found in the Accidental Death & Suicides in India report for
40 2015 published by the National Crime Records Bureau (NCRB) ²¹.
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43 Comparing occupational status between the two data sets was complicated by the use of
44 broad category descriptors in the NCRB data (for example, 'professionals/salaried persons')
45 that were not possible to reproduce. However, there were two occupational categories that
46 were distinct enough to legitimately reproduce and examine; 'students' and 'persons engaged
47 in the farming sector'. Both are occupational groups that have been of significant interest to
48 suicide prevention in India and would resonate strongly with the public when discussing the
49 topic of suicide ^{24 25}.
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53 We disaggregated the data by gender, and in doing so we excluded suicides of *Hijra* and
54 transgender people due to the very small numbers of such cases; there were 13 reports of
55 suicide deceased who were Hijra/transgender in the newspaper articles and 2 such suicide
56 deceased in the official suicide records for Tamil Nadu.
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58 Two-tailed binomial tests on aggregate frequencies were used in Stata (command "prtesti") to
59 assess whether the distribution of the characteristics of suicides in the newspaper articles was
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3 different to their distribution in the population suicide statistics for Tamil Nadu. This analysis
4 approach has been used previously by a similar media study in Austria¹⁷. Not all media
5 reports contained data on all the variables we analysed, so percentages were calculated based
6 on data for those individuals for whom these characteristics were reported in the article.
7

8 9 **Results**

10 Binomial tests showed that female suicides were over-reported relative to their occurrence in
11 the broader population of suicides, comprising 45.3% (729/1610) of suicides in newspaper
12 reports compared to 32.0% (n=5041/15775) of suicides in the official suicide statistics
13 (p<0.001) (see Figure 1). While newspapers covered a significantly higher percentage of
14 female suicides, this was not the case across all age groups. There was no statistically
15 significant difference in the <18 years age group, and we observed the reverse pattern in the
16 60+ years age group, such that female suicides were significantly under-reported.
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19 Binomial tests showed that the suicides of those aged less than 29 years were over-reported
20 relative to their occurrence in the broader population (see Table 1). Conversely, the suicides
21 of those aged 30 years or older were under-reported. The suicides of those who were
22 unmarried, separated and widowed were over-reported, while the suicides of those who were
23 married were under-reported. The gender stratification of these marital status results
24 highlighted a gender-based difference. Suicides among separated and widowed males were
25 over-reported while it was the suicides of unmarried females that were over-reported; the
26 suicides of those who were married were under-reported in both males and females.
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29 The suicides of students and those engaged in the farming sector were over-reported relative
30 to their occurrence in the broader population (see Figure 2). Students comprised 15.6%
31 (255/1631) of all suicides in newspaper reports compared to 6.1% (955/15775) of suicides in
32 the official suicide statistics (p<0.001). People engaged in the farming sector comprised 6.3%
33 (102/1631) of all suicides in newspaper reports compared to 3.8% (606/15775) of suicides in
34 the official suicide statistics (p<0.001). Conversely, the suicides of females in the agricultural
35 sector were under-represented in media reports.
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38 Deaths involving hanging, coming under vehicle/train, jumping off building/structure and
39 self-inflicted injury such as a knife wound were over-reported, while suicides by poisoning
40 were under-reported (see Table 1).
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43 Secondary analyses were undertaken, only including media reports of suicides of people from
44 Tamil Nadu, to examine if our findings were confounded by media reports of suicides of
45 people from outside Tamil Nadu. The results are consistent with the primary analyses (See
46 Supplementary File 1).
47

48 49 **Discussion**

50 The present study identified substantial disparities between suicide characteristics in the
51 population and the media. Suicides involving females, those aged under 29 years, separated
52 or widowed males, unmarried females, and those using lethal methods (other than pesticides)
53 were significantly over-reported relative to their occurrence in the broader population. The
54 suicides of people from the occupational groups of students or persons engaged in the
55 agricultural sector were also over-reported.
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58 An important finding was that female suicides were significantly over-represented, relative to
59 their occurrence in the population. This finding appears to be unique to India and is in stark
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3 contrast to what has been observed elsewhere. No under or over-reporting was observed in
4 Australia¹⁹ or Austria¹⁷ based on gender. However, in the Chinese settings of Guangzhou
5 and Taiwan, female suicides have been observed to be under-reported²⁰, the opposite pattern
6 to our findings. The authors posited that, in traditional Chinese societies, women can be
7 stereotyped as being more emotional or hysterical, and more prone to suicide. Such that, they
8 felt media professionals may perceive the suicide deaths of men to be more unusual and thus
9 newsworthy.
10
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12 In India, the female suicide rate is among the highest in the world, and is nearly three times
13 higher than the rate expected globally for countries at similar levels of Socio-Demographic
14 Index². This well-documented fact about suicide in India could possibly permeate the minds
15 of media professionals, who may then give greater emphasis to the plight of females who
16 take their lives. Notwithstanding this, it is also likely that there are some other reasons media
17 professionals decide that the suicides of females are more newsworthy. Based on our
18 anecdotal conversations with media professionals, we speculate that female suicides may also
19 be perceived by media professionals to generate a greater empathic response among readers
20 of newspapers in India. Stories of the suicides of females may align with paternalistic
21 narratives about the risks to women in Indian society and the family and collective
22 responsibility to protect them²⁶.
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26 We also observed an under-reporting of suicides of married males and females. Moreover, we
27 observed that, among female suicides, there was an over-reporting of suicides among those
28 who were unmarried. This was quite distinct from what was observed among male suicides,
29 where suicides by separated or widowed males were over-reported in the newspapers. It is
30 unclear why there is an apparent media preference for stories of unmarried females and
31 separated or widowed males, nor what cultural scripts or narratives this may align with.
32 Marriage and family are at the core of the social fabric in India²⁷, and family is the main
33 source of welfare protections. We speculate that risks associated with being outside of the
34 institution of marriage may be being emphasised by media professionals through their
35 selection of suicide stories pertaining to people whose marriage has been lost or who are yet
36 to enter marriage. Through this under-reporting of suicides of married people, these media
37 reports may actually be giving an incorrect signal to the population with regard to any suicide
38 prevention protections that may be assumed to be gained from being married. It is important
39 to note that while marriage is typically understood to protect against suicide, particularly for
40 men, based on findings from studies in Western settings²⁸, this is not the case in India.
41 Research undertaken in India yields mixed findings regarding the relationship between
42 marital status and suicide for both men and women, suggesting that either marriage is not a
43 protective factor for suicide, or indeed that the risk of suicide is higher among those who are
44 married^{29 30}. This epidemiological reality regarding marriage and suicide may conflict with
45 narratives in India that locate 'the family' as the main source of social protections. Clearly
46 this is speculation, and so qualitative research with media professionals is required to better
47 understand the phenomenon of the influential role of gender and marital status in the
48 perceived newsworthiness of suicide deaths. We note though, that even such qualitative
49 interviews may find it hard to unravel what may be unconscious and deeply culturally
50 embedded biases among media professionals.
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56 Our findings suggest that the suicides of younger persons aged <29 years were considered to
57 be more newsworthy than the suicide deaths of persons aged 30 years and older. This finding
58 is largely consistent with research from Australia¹⁹, Austria¹⁷ and China²⁰. It has been
59 posited that youth suicides may be considered more newsworthy; that is, the death of a youth
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3 with their life ahead of them carries a sensational undertone that may grab the reader's
4 attention²⁰. Suicide is also the leading cause of death among youth in India aged 15-29 years,
5 and greater than 70% of female suicide deaths and 50% of male suicide deaths are in this age
6 group². Thus, it is possible that media professionals may be attempting to give such suicide
7 deaths greater emphasis without being aware that they may in turn be overlooking the issue
8 of suicide among older aged people, also a high-risk period for both males and females in
9 India².
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12 Our findings also revealed that the suicides of students and people engaged in the agricultural
13 sector were significantly over-represented, relative to their occurrence in the population. This
14 finding was not surprising, given that both occupational groups are of significant interest to
15 the public discourse and narratives around suicide in India^{24 25}. Media houses would be
16 aware that reports on such deaths would resonate strongly with readers. Student suicides are a
17 major and topical policy issue in India, frequently located within discussions around the
18 fierce competition for student places and an accompanying intensity of exam pressure³¹.
19 Reporting on this issue will likely be of great interest to parents, who may carry a level of
20 fear around this happening to their own children. Farmer suicides are highly politicised in
21 India, and have been the subject of numerous government commissions and policy dialogues.
22 This has largely been with a focus on issues around the high levels of indebtedness among
23 farmers, a decline in secure institutional credit, water scarcity, trade liberalisation, and a
24 considerable vulnerability to "crop failure"³². Farmer suicide deaths have been described as
25 "public deaths", due to the perception that they receive sensational coverage by the mass
26 media³³.
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30 Finally, suicides by particular methods also appeared to attract more media attention. Deaths
31 involving hanging, jumping, and coming under vehicle/train were over-represented in media
32 reports, while suicides by poisoning were under-represented. One interpretation of this
33 finding is that media may be attracted to reporting on suicides using methods with a higher
34 degree of lethality, given that these have been observed to have a high case fatality rate³⁴.
35 Deaths involving self-inflicted injuries (e.g. knife wound) were also over-reported, even
36 though this method does not have a high case fatality rate, indicating that newspaper reporters
37 may also have an interest in particular suicide methods where it is easy for them to construct
38 a graphic visual that may attract the attention of the reader. The under-reporting of poisoning
39 suicide deaths is also an interesting finding. While the ingestion of medical drugs typically
40 has a low case fatality rate³⁴, the ingestion of pesticides, a common suicide method in India
41 and elsewhere in South Asia³⁵, has a high case fatality rate and is a major contributor to high
42 suicide rates in this region^{36 37}.
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46 These findings have important implications for suicide prevention. While the mass media are
47 a powerful resource for educating the public about suicide, the general public may develop
48 misunderstandings about suicide that are caused by media misrepresentations. For example,
49 Till et al observed that the consumption of tabloid newspapers in Austria for daily
50 information appeared to be an independent factor in the endorsement of misconceptions and
51 myths about suicide³⁸. While we didn't assess the articles for suicide myths, we did observe
52 substantial disparities between suicide characteristics in the population and the media. Strong
53 biases towards reporting particular types of suicide deaths may result in social and political
54 responses to suicide that are not based on the epidemiological data. For instance, if media
55 reports are overly biased towards the coverage of female suicides, youth suicides, suicides
56 among particular occupational groups, or particularly graphic or more lethal suicide methods,
57 this may inadvertently affect suicide prevention funding allocations, public perceptions about
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3 who is most at risk of suicide and the method they may use, among other possible
4 consequences.
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7 The study has several limitations that are worth noting. Firstly, we compared data from media
8 reports collected in 2016 against the official suicide statistics for 2015. While these are two
9 different time periods, it is the most recently available suicide statistics for India and we
10 expect a high degree of stability between the 2015 and 2016 data. We compared the official
11 suicide statistics for 2015 against that for 2014 and 2013 and we observed a high degree of
12 stability in the data; for example, the suicide rate for Tamil Nadu was 22.8 in 2015 and 23.4
13 in 2014, and 29.7% and 30.7% of suicide deaths were people aged 18-29 in 2015 and 2013
14 respectively. Secondly, there is a high level of under-reporting of suicide in India. Given both
15 the official statistics and the media reports are based on police reports of suicide, we expect
16 that this will have a negligible effect on the comparisons made in our study. Thirdly, while
17 our findings provide some clues as to the decisions made by media professionals in choosing
18 whether to report on a suicide, we cannot speak definitively about the decision-making
19 process and any biases that may be involved. We are currently undertaking qualitative
20 research with media professionals to better understand this phenomenon³⁹. Fourthly, we
21 were only able to examine the over or under-representation of two occupational categories
22 that we could meaningfully reproduce. There are several additional occupational categories
23 that would have been interesting to examine; for example, “housewives” comprised 53% of
24 female suicide deaths in the 2015 official suicide statistics, yet this occupational information
25 or the specific term was rarely communicated in media reports. Finally, we only examined
26 newspaper reports in one southern state of India, and it would have been desirable to examine
27 reports in other states and reports in other forms of mass and social media.
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31 **Conclusion**

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33 The suicide characteristics in the print media in Tamil Nadu were not representative of
34 suicides in the broader population, indicating that a skewed picture of reality is being
35 presented to the community. In particular, suicides involving females, those aged under 29
36 years, separated or widowed males, unmarried females, those using methods with a higher
37 case-fatality rate, and those who were students or working in the agricultural sector were
38 significantly over-reported relative to their occurrence in the broader population. The
39 discrepancies we identified will inform tailored suicide prevention education for media
40 professionals.
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43 **Contributors**

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45 GA designed the study, supervised the data collection, and led the data analyses and drafting
46 of the manuscript. LV and TN supported the design of the study. MJ implemented data
47 collection. LV, JP, MJ, AC, JBS, VA and TN all contributed to the data analysis plan,
48 interpretation of the results and the development of the final manuscript.
49

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53 Nivetha Vincent from Voluntary Health Services in Chennai for their thorough work in hand
54 searching the nine newspapers for the relevant articles for this study.
55

56 **Competing interests**

57
58 None declared.
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Patient and public involvement

This study did not involve patients.

Ethics approval

The data used in this study are from publicly available documents. Nonetheless, we obtained ethics approvals from the Human Ethics Advisory Group at The University of Melbourne in Australia (ID: 1646245.1).

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Data sharing

The data used in this study are publicly available media reports and publicly available official reports on suicides in India. Anyone interested in accessing our database on media reports of suicides may contact the corresponding author.

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Tables

Table 1: Binomial tests comparing the demographic characteristics of suicide decedents in newspaper reports vs. the population suicide statistics for Tamil Nadu

Characteristics	Male			Female			Total		
	Newspaper % (n)	Population % (n)	p-value ^a	Newspaper % (n)	Population % (n)	p-value ^a	Newspaper % (n)	Population % (n)	p-value ^a
Age									
<18 years	7.1% (54)	4.2% (446)	<0.001	13.0% (85)	10.7% (537)	0.071	9.8% (139)	6.2% (983)	<0.001
18-29 years	31.5% (239)	24.7% (2656)	<0.001	50.2% (328)	40.1% (2022)	<0.001	40.1% (567)	29.7% (4678)	<0.001
30-44 years	26.2% (199)	34.9% (3749)	<0.001	21.3% (139)	25.6% (1291)	0.016	23.9% (338)	31.9% (5040)	<0.001
45-59 years	23.4% (178)	25.5% (2742)	0.194	13.8% (90)	14.8% (746)	0.481	19.0% (268)	22.1% (3488)	0.006
60+ years	11.8% (90)	10.6% (1141)	0.296	1.8% (12)	8.8% (445)	<0.001	7.2% (102)	10.1% (1586)	0.001
Total	100.0% (760)	100.0% (10734)		100.0% (654)	100.0% (5041)		100.0% (1,414)	100.0% (15775)	
Marital status^b									
Unmarried	26.8% (125)	23.5% (2459)	0.096	34.5% (180)	22.3% (1100)	<0.001	30.9% (305)	23.1% (3559)	<0.001
Married	63.6% (297)	73.4% (7682)	<0.001	60.8% (317)	72.1% (3556)	<0.001	62.1% (614)	73.0% (11238)	<0.001
Separated	4.1% (19)	1.2% (128)	<0.001	3.1% (16)	3.1% (155)	1.000	3.5% (35)	1.8% (283)	<0.001
Divorced	0.0% (0)	0.3% (21)	0.236	0.4% (2)	0.8% (38)	0.286	0.2% (2)	0.4% (69)	0.325
Widowed	5.6% (26)	1.6% (164)	<0.001	1.2% (6)	1.6% (80)	0.484	3.2% (32)	1.6% (244)	<0.001
Total	100.0% (467)	100.0% (10464)		100.0% (521)	100.0% (4929)		100.0% (988)	100.0% (15393)	
Suicide method									
Hanging	52.7% (436)	42.5% (4555)	<0.001	51.2% (349)	38.0% (1916)	<0.001	52.1% (785)	41.0% (6471)	<0.001
Poisoning	20.3% (168)	39.7% (4260)	<0.001	19.8% (135)	35.2% (1775)	<0.001	20.1% (303)	38.3% (6035)	<0.001
Fire/self-immolation	9.3% (77)	6.0% (643)	0.001	12.0% (82)	19.2% (967)	<0.001	10.5% (159)	10.2% (1610)	0.659
Under vehicle/train	4.5% (37)	2.9% (309)	0.007	3.8% (26)	0.9% (45)	<0.001	4.2% (63)	2.2% (354)	<0.001
Drowning	3.0% (25)	3.3% (357)	0.656	4.7% (32)	3.4% (171)	0.061	3.8% (57)	3.3% (528)	0.297
Jumping (off structure)	2.5% (21)	0.6% (60)	<0.001	4.1% (28)	0.1% (7)	<0.001	3.2% (49)	0.4% (67)	<0.001
Self-inflicted injury	0.7% (6)	0.6% (68)	0.642	2.3% (16)	0.4% (18)	<0.001	1.5% (22)	0.5% (86)	<0.001
Other	6.9% (57)	4.5% (482)	0.001	1.9% (13)	2.8% (142)	0.159	4.6% (70)	4.0% (624)	0.203
Total	100.0% (827)	100.0% (10734)		100.0% (681)	100.0% (5041)		100.0% (1508)	100.0% (15775)	

^a Two-tailed binomial test on difference between two proportions using the “prtesti” command in Stata

^b Excludes those listed as ‘unknown’ and ‘other’ in the NCRB data

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4 **Figure 1: Comparing the proportion of female decedents in newspaper suicide reports**
5 **vs. the population suicide statistics for Tamil Nadu**
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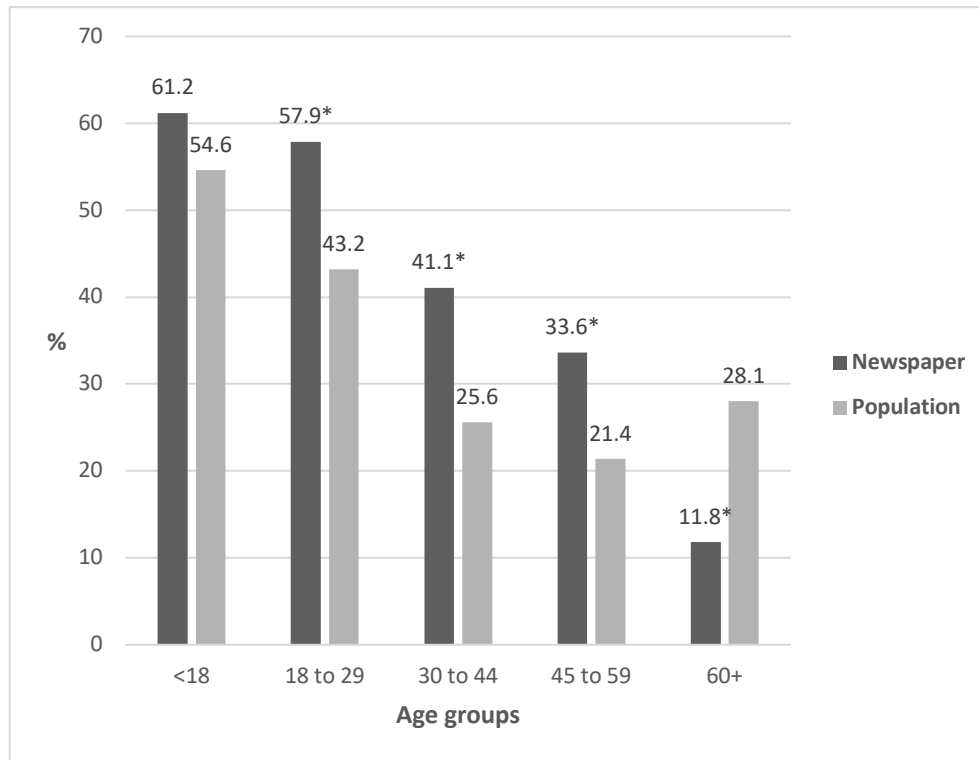
For peer review only

Figure 2: Comparing the proportions of selected occupational groups of suicide decedents in newspaper reports vs. the population suicide statistics for Tamil Nadu

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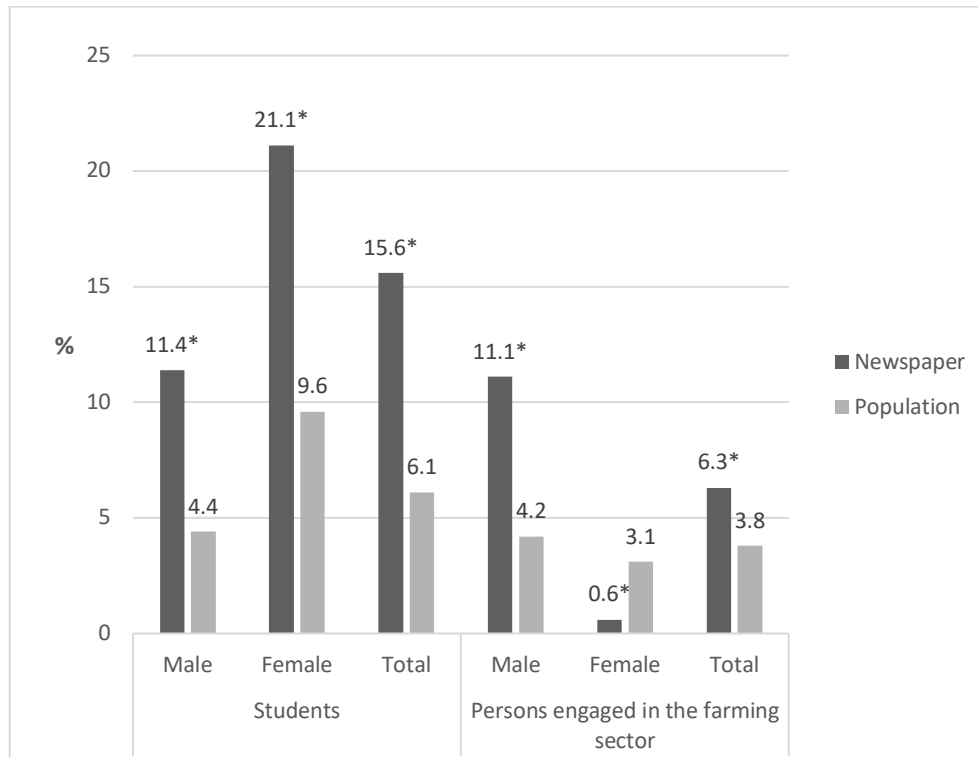
Figure 1: Comparing the proportion of female decedents in newspaper suicide reports vs. the population suicide statistics for Tamil Nadu



* <math>p < 0.05</math>, based on two-sided binomial tests within each age group to calculate if the proportion of suicide deceased in the newspaper articles that were female was different to that in the official suicide statistics

View only

Figure 2: Comparing the proportions of selected occupational groups of suicide decedents in newspaper reports vs. the population suicide statistics for Tamil Nadu

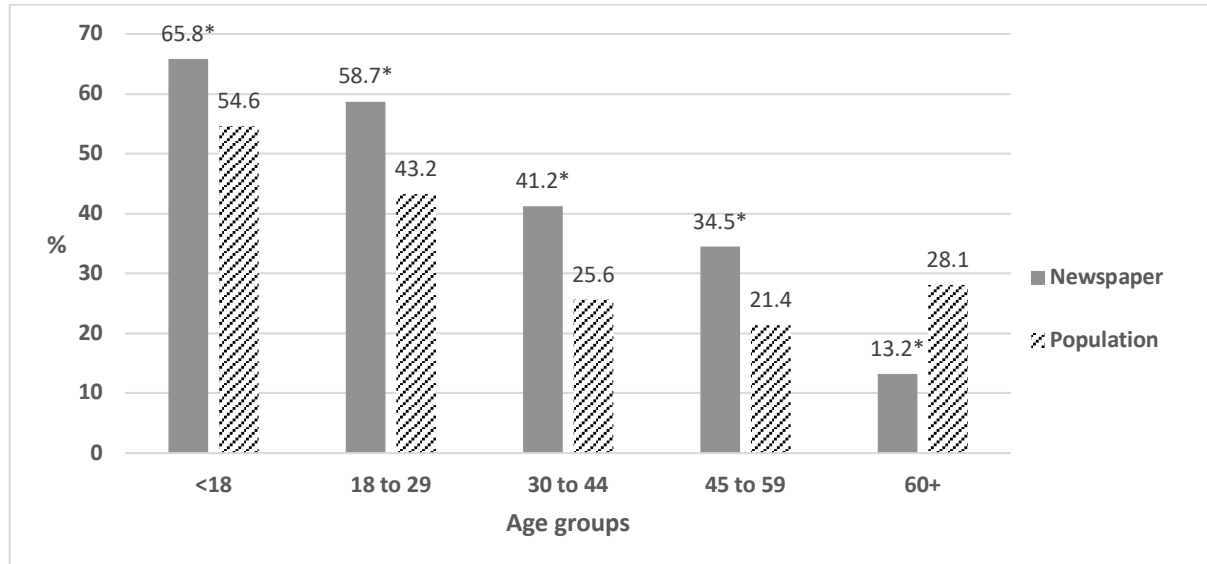


Note: The occupational categories of 'student' and 'persons engaged in the farming sector' were the only categories in the official statistics that were distinct enough to compare to the data we extracted from newspaper reports. Other occupational categories in the official suicide statistics (e.g. 'professionals/salaried persons') were too broad to be reproduced.

* <0.05 , based on two-sided binomial tests within each age group to calculate if the proportion of suicide deceased in the newspaper articles that were female was different to that in the official suicide statistics

Supplementary File 1: Secondary analyses only including media reports of suicides of people from Tamil Nadu

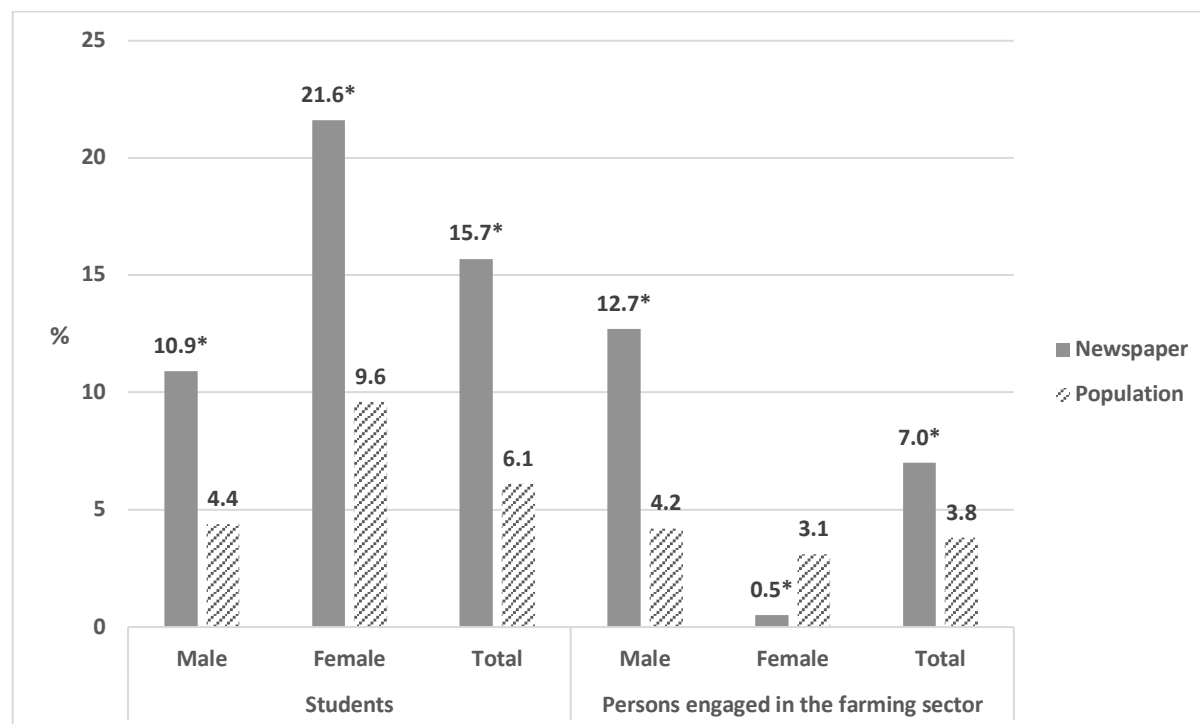
Figure 1: Comparing the proportion of female decedents in newspaper suicide reports vs. the population suicide statistics for Tamil Nadu



Note: Only includes newspaper reports of suicides of people residing in Tamil Nadu

* <0.05 , based on two-sided binomial tests within each age group to calculate if the proportion of suicide deceased in the newspaper articles that were female was different to that in the official suicide statistics

Figure 2: Comparing the proportions of selected occupational groups of suicide decedents in newspaper reports vs. the population suicide statistics for Tamil Nadu



Note 1: Only includes newspaper reports of suicides of people residing in Tamil Nadu

Note 2: The occupational categories of 'student' and 'persons engaged in the farming sector' were the only categories in the official statistics that were distinct enough to compare to the data we extracted from newspaper reports. Other occupational categories in the official suicide statistics (e.g. 'professionals/salaried persons') were too broad to be reproduced.

* <0.05 , based on two-sided binomial tests within each age group to calculate if the proportion of suicide deceased in the newspaper articles that were female was different to that in the official suicide statistics

Table 1: Binomial tests comparing the demographic characteristics of suicide decedents in newspaper reports vs. the population suicide statistics for Tamil Nadu

Characteristics	Male			Female			Total		
	Newspaper % (n)	Population % (n)	p-value ^a	Newspaper % (n)	Population % (n)	p-value ^a	Newspaper % (n)	Population % (n)	p-value ^a
Age									
<18 years	6.3% (41)	4.2% (446)	0.012	13.5% (79)	10.7% (537)	0.040	9.7% (120)	6.2% (983)	<0.001
18-29 years	32.2% (209)	24.7% (2656)	<0.001	50.6% (297)	40.1% (2022)	<0.001	40.9% (506)	29.7% (4678)	<0.001
30-44 years	26.6% (173)	34.9% (3749)	<0.001	20.6% (121)	25.6% (1291)	0.008	23.8% (294)	31.9% (5040)	<0.001
45-59 years	22.8% (148)	25.5% (2742)	0.124	13.3% (78)	14.8% (746)	0.331	18.3% (226)	22.1% (3488)	0.002
60+ years	12.2% (79)	10.6% (1141)	0.200	2.0% (12)	8.8% (445)	<0.001	7.4% (91)	10.1% (1586)	0.002
Total	100.0% (650)	100.0% (10734)		100.0% (587)	100.0% (5041)		100.0% (1237)	100.0% (15775)	
Marital status^b									
Unmarried	26.3% (105)	23.5% (2459)	0.196	34.8% (162)	22.3% (1100)	<0.001	30.9% (267)	23.1% (3559)	<0.001
Married	64.3% (257)	73.4% (7682)	<0.001	60.4% (281)	72.1% (3556)	<0.001	62.2% (534)	73.0% (11238)	<0.001
Separated	4.5% (18)	1.2% (128)	<0.001	3.2% (15)	3.1% (155)	0.906	3.8% (33)	1.8% (283)	<0.001
Divorced	0.0% (0)	0.3% (21)	0.273	0.2% (1)	0.8% (38)	0.151	0.1% (1)	0.4% (69)	0.167
Widowed	5.0% (20)	1.6% (164)	<0.001	1.3% (6)	1.6% (80)	0.619	3.0% (26)	1.6% (244)	<0.001
Total	100.0% (400)	100.0% (10464)		100.0% (465)	100.0% (4929)		100.0% (988)	100.0% (15393)	
Suicide method									
Hanging	52.9% (358)	42.5% (4555)	<0.001	52.4% (313)	38.0% (1916)	<0.001	52.7% (671)	41.0% (6471)	<0.001
Poisoning	21.4% (145)	39.7% (4260)	<0.001	20.1% (120)	35.2% (1775)	<0.001	20.8% (265)	38.3% (6035)	<0.001
Fire/self-immolation	11.2% (76)	6.0% (643)	<0.001	12.1% (72)	19.2% (967)	<0.001	11.6% (148)	10.2% (1610)	0.114
Under vehicle/train	4.7% (32)	2.9% (309)	0.008	4.4% (26)	0.9% (45)	<0.001	4.6% (58)	2.2% (354)	<0.001
Drowning	3.3% (22)	3.3% (357)	1.000	4.0% (24)	3.4% (171)	0.448	3.6% (46)	3.3% (528)	0.566
Jumping (off structure)	1.9% (13)	0.6% (60)	<0.001	3.5% (21)	0.1% (7)	<0.001	2.7% (34)	0.4% (67)	<0.001
Self-inflicted injury	0.9% (6)	0.6% (68)	0.334	2.2% (13)	0.4% (18)	<0.001	1.5% (19)	0.5% (86)	<0.001
Other	3.7% (25)	4.5% (482)	0.328	1.3% (8)	2.8% (142)	0.031	2.6% (33)	4.0% (624)	0.013
Total	100.0% (677)	100.0% (10734)		100.0% (597)	100.0% (5041)		100.0% (1274)	100.0% (15775)	

Note: Only includes newspaper reports of suicides of people residing in Tamil Nadu

^a Two-tailed binomial test on difference between two proportions using the "prtesti" command in Stata

^b Excludes those listed as 'unknown' and 'other' in the NCRB data

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Mass media representation of suicide in a high suicide state in India: an epidemiological comparison with suicide deaths in the population

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Manuscripts

Mass media representation of suicide in a high suicide state in India: an epidemiological comparison with suicide deaths in the population

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Abstract

Objectives:

Suicide rates in India are among the highest in the world, equating to over 200,000 suicides annually. Reports of suicides are a routine feature in major newspapers in India, and reporters may selectively present “newsworthy” suicide stories. The aim of this paper was to systematically investigate whether mass media reports of suicides reflect the epidemiological data on suicide in a high suicide state in India.

Design:

We undertook a content analysis study to extract socio-demographic data on suicides reported among nine of the most highly read daily newspapers in the high suicide southern state of Tamil Nadu between June–December 2016. A total of 1,258 newspaper articles were retrieved containing reports on 1,631 suicides. Two-tailed binomial tests on aggregate frequencies assessed whether the socio-demographic characteristics of suicides in the newspaper articles were different to the population suicide statistics for Tamil Nadu.

Results:

We identified some statistically significant discrepancies between suicide characteristics in the population and the media. Suicides involving females ($p < 0.001$), those aged under 30 years ($p < 0.001$), separated or widowed males ($p < 0.001$), unmarried females ($p < 0.001$), those using methods with a higher case-fatality rate (i.e. hanging ($p < 0.001$), jumping off high

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3 structures ($p<0.001$) and coming under vehicles ($p<0.001$), and those who were students
4 ($p<0.001$) or working in the agricultural sector ($p<0.001$) were significantly over-reported
5 relative to their occurrence in the broader population. Suicides involving males ($p<0.001$),
6 those aged over 30 years and above ($p<0.001$), those who were married, and suicides by
7 poisoning ($p<0.001$) were significantly under-reported relative to their occurrence in the
8 broader population.
9

10 11 **Conclusions:**

12 The suicide characteristics in the print media were not entirely representative of suicides in
13 the broader Tamil Nadu population, which may lead the general public to develop
14 misunderstandings about suicide in their state. The discrepancies we identified will inform
15 tailored suicide prevention education for media professionals.
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20 21 **Strengths and limitations of this study**

- 22 • Suicides are a routine feature in major newspapers in India, and this is the first study
23 to examine whether these media reports of suicides reflect the epidemiological data
24 on suicide in India.
- 25 • We followed nine major newspapers over seven months and collected a large sample
26 of 1,631 media reports of suicides.
- 27 • We only looked at printed newspapers in one state with a high suicide rate; with
28 further funding it would be desirable to examine media reports by other forms of mass
29 and social media across a broader range of states.
- 30 • A large proportion of suicides are not captured in the official suicide statistics in
31 India, due to a sole reliance on police data and the lack of a comprehensive and
32 reliable vital registration system. Given both the official statistics and the media
33 reports used in this study are based on police reports of suicide, we expect that this
34 will have a negligible effect on the comparisons made in our study.
- 35 • While our findings provide some epidemiological clues as to the decisions made by
36 media professionals in choosing whether to report on a suicide, further qualitative
37 research with media professionals is required to better understand the decision-
38 making process and any biases that may be involved.
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Background

Southeast Asia accounts for roughly 40% of the estimated 800,000 suicides that occur each year globally¹. Suicide rates in India are among the highest in the world with the most recent suicide death rate estimates ranging between 18-21 deaths per 100,000 population (*c.f.* the global average of 11/100,000). This equates to an estimated 230,000-250,000 suicide deaths annually with far-reaching social, emotional and economic consequences^{1,2}. A public health approach to suicide is gaining momentum in India with calls for the development of national and state-level suicide prevention strategies, including the development of media guidelines to improve mass and social media coverage of suicides³.

One of the few recommended suicide prevention strategies at the population level is responsible media reporting of suicides⁴⁻⁶, based on evidence around copycat suicides, dissemination of suicide methods and behaviours, and the imperative to deliver tailored suicide prevention messaging in media content⁷⁻¹². Consequently, the World Health Organization (WHO) recommends that public health specialists should engage with media professionals to limit irresponsible media coverage (for example, reports that sensationalise suicide) and to promote coverage that educates the public about suicide¹³.

The manner by which the mass media communicates with the Indian public on the topic of suicide in India has thus far gone without sufficient inquiry¹⁴. Our own recent research into print media portrayals of suicide in India observed that explicit suicide reports are a routine feature, and that potentially harmful reporting practices are common¹⁵. For example, a detailed suicide method was reported in 43.3% of articles. Given that there are few alternative sources of publicly-disseminated information on suicide in India, as the suicide prevention sector is relatively under-resourced, these mass media portrayals of suicide are quite possibly playing a critical role in shaping and reflecting public attitudes and behaviours in relation to suicide.

Researchers have long recognised the disparity between the epidemiological data on suicide in the population and the stories selectively presented for mass media reports¹⁶. In suicide prevention, there is a major focus on disseminating knowledge on the risk factors and the complex multilayered context for suicide⁶. This can be at odds with media preferences for newsworthy stories that are atypical or that play to broader social narratives of interest to readers. Hence, one important area of enquiry for suicide prevention is to better understand what kinds of suicides media broadcast to the public, to shed light on possible misunderstandings of the epidemiological realities that can inform media training and engagement strategies. Very few studies have examined which suicides tend to feature in the media. Those that have, found that the mass media selectively present newsworthy suicide stories that do not reflect the broader array of suicides in the population¹⁷⁻²⁰, which can carry profound implications for the social and political responses to suicide.

This phenomenon is yet to be studied in India. This paper seeks to address this gap in the literature by comparing the characteristics of suicides in print media reports in India against the characteristics of suicides in the population. Due to the large number of languages across India and the prohibitive level of resources required to fund a study with a broad national spread of newspapers published in a range of languages, we elected to undertake a comprehensive study of newspaper reporting in one state. We chose the southern state of Tamil Nadu (population = 72 million), which consistently has one of the highest suicide rates

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3 in India (22.8/100,000) equating to 15,777 recorded suicides in 2015, over 40 suicides per
4 day²¹. The approach of focusing on one state allows us to comprehensively track changes in
5 media reporting in this state following upcoming efforts to engage with the media on this
6 topic.
7

8 **Methods**

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10 As part of the Suicide in the Indian Media (SIM) project ¹⁵, we undertook a content analysis
11 study of articles reporting suicide-related news in nine of the ten most highly read vernacular
12 and English-language daily newspapers in Tamil Nadu over the 7-month period between 1st
13 June and 31st December 2016. The nine newspapers collectively have an estimated average
14 daily readership of over 16,000,000 people in Tamil Nadu alone ²². Five of the nine
15 newspapers under review are in the top 20 most circulated daily newspapers in the country ²³,
16 giving the findings relevance beyond Tamil Nadu. We previously published research from
17 this content analysis study where we assessed the quality of newspaper reporting of suicide-
18 related news against World Health Organization suicide reporting guidelines ^{13 15}.
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21 To source the articles, the hardcopies of all 1,926 (9 newspapers x 214 days) editions of the
22 nine newspapers during the study period were hand searched by three trained research
23 assistants (psychologists), allowing us to include several newspapers that did not have a
24 strong online presence. Our search yielded 1,258 articles containing reports on 1,631
25 suicides; the vast majority of these suicides were of people from Tamil Nadu (84.0%,
26 n=1371), while the remainder were largely of people from elsewhere in India (14.5%, n=236)
27 or from other countries (1.1%, n=18), with location unable to be determined in 0.4% (n=6) of
28 the media reports. We elected to retain all suicides in our primary analyses, regardless of the
29 location of the deceased, as these reports will still influence the public's impressions of who
30 is affected by suicide; secondary analyses will exclusively examine suicides of people from
31 Tamil Nadu. We excluded articles where suicide was only mentioned briefly (i.e. <50% of the
32 article) and articles with a focus on terrorist-related suicide bombings or euthanasia.
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36 A bi-lingual psychologist and researcher (MPsych, MPhil) extracted data on gender, age,
37 marital status, suicide method and occupational status for each suicide. We compared the data
38 extracted from the newspaper articles with the characteristics of suicides in the Tamil Nadu
39 population suicide statistics found in the Accidental Death & Suicides in India report for
40 2015 published by the National Crime Records Bureau (NCRB) ²¹.
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44 Comparing occupational status between the two data sets was complicated by the use of
45 broad category descriptors in the NCRB data (for example, 'professionals/salaried persons')
46 that were not possible to reproduce. However, there were two occupational categories that
47 were distinct enough to legitimately reproduce and examine; 'students' and 'persons engaged
48 in the farming sector'. Both are occupational groups that have been of significant interest to
49 suicide prevention in India and would resonate strongly with the public when discussing the
50 topic of suicide ^{24 25}.
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53 We disaggregated the data by gender, and in doing so we excluded suicides of *Hijra* and
54 transgender people due to the very small numbers of such cases; there were 13 reports of
55 suicide deceased who were Hijra/transgender in the newspaper articles and 2 such suicide
56 deceased in the official suicide records for Tamil Nadu.
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59 Two-tailed binomial tests on aggregate frequencies were used in Stata (command "prtesti") to
60 assess whether the distribution of the characteristics of suicides in the newspaper articles was

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3 different to their distribution in the population suicide statistics for Tamil Nadu. This analysis
4 approach has been used previously by a similar media study in Austria¹⁷. Not all media
5 reports contained data on all the variables we analysed, so percentages were calculated based
6 on data for those individuals for whom these characteristics were reported in the article.
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8 **Patient and public involvement**

9 Patients and the public were not involved in the design or planning of this study.
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12 **Results**

13 Binomial tests showed that female suicides were over-reported relative to their occurrence in
14 the broader population of suicides, comprising 45.3% (729/1610) of suicides in newspaper
15 reports compared to 32.0% (n=5041/15775) of suicides in the official suicide statistics
16 (p<0.001) (see Figure 1). While newspapers covered a significantly higher percentage of
17 female suicides, this was not the case across all age groups. There was no statistically
18 significant difference in the <18 years age group, and we observed the reverse pattern in the
19 60+ years age group, such that female suicides were significantly under-reported.
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22 Binomial tests showed that the suicides of those aged less than 30 years were over-reported
23 relative to their occurrence in the broader population (see Table 1). Conversely, the suicides
24 of those aged 30 years or older were under-reported. The suicides of those who were
25 unmarried, separated and widowed were over-reported, while the suicides of those who were
26 married were under-reported. The gender stratification of these marital status results
27 highlighted a gender-based difference. Suicides among separated and widowed males were
28 over-reported while it was the suicides of unmarried females that were over-reported; the
29 suicides of those who were married were under-reported in both males and females.
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32 The suicides of students and those engaged in the farming sector were over-reported relative
33 to their occurrence in the broader population (see Figure 2). Students comprised 15.6%
34 (255/1631) of all suicides in newspaper reports compared to 6.1% (955/15775) of suicides in
35 the official suicide statistics (p<0.001). People engaged in the farming sector comprised 6.3%
36 (102/1631) of all suicides in newspaper reports compared to 3.8% (606/15775) of suicides in
37 the official suicide statistics (p<0.001). Conversely, the suicides of females in the agricultural
38 sector were under-represented in media reports.
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41 Deaths involving hanging, coming under vehicle/train, jumping off building/structure and
42 self-inflicted injury such as a knife wound were over-reported, while suicides by poisoning
43 were under-reported (see Table 1).
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46 Secondary analyses were undertaken, only including media reports of suicides of people from
47 Tamil Nadu, to examine if our findings were confounded by media reports of suicides of
48 people from outside Tamil Nadu. The results are consistent with the primary analyses (See
49 Supplementary File 1).
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52 **Discussion**

53 The present study identified substantial disparities between suicide characteristics in the
54 population and the media. Suicides involving females, those aged under 30 years, separated
55 or widowed males, unmarried females, and those using lethal methods (other than pesticides)
56 were significantly over-reported relative to their occurrence in the broader population. The
57 suicides of people from the occupational groups of students or persons engaged in the
58 agricultural sector were also over-reported.
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4 An important finding was that female suicides were significantly over-represented, relative to
5 their occurrence in the population. This finding appears to be unique to India and is in stark
6 contrast to what has been observed elsewhere. No under or over-reporting was observed in
7 Australia¹⁹ or Austria¹⁷ based on gender. However, in the Chinese settings of Guangzhou
8 and Taiwan, female suicides have been observed to be under-reported²⁰, the opposite pattern
9 to our findings. The authors posited that, in traditional Chinese societies, women can be
10 stereotyped as being more emotional or hysterical, and more prone to suicide. Such that, they
11 felt media professionals may perceive the suicide deaths of men to be more unusual and thus
12 newsworthy.
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16 In India, the female suicide rate is among the highest in the world, and is nearly three times
17 higher than the rate expected globally for countries at similar levels of Socio-Demographic
18 Index². This well-documented fact about suicide in India could possibly permeate the minds
19 of media professionals, who may then give greater emphasis to the plight of females who
20 take their lives. Notwithstanding this, it is also likely that there are some other reasons media
21 professionals decide that the suicides of females are more newsworthy. Based on our
22 anecdotal conversations with media professionals, we speculate that female suicides may also
23 be perceived by media professionals to generate a greater empathic response among readers
24 of newspapers in India. Stories of the suicides of females may align with paternalistic
25 narratives about the risks to women in Indian society and the family and collective
26 responsibility to protect them²⁶.
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30 We also observed an under-reporting of suicides of married males and females. Moreover, we
31 observed that, among female suicides, there was an over-reporting of suicides among those
32 who were unmarried. This was quite distinct from what was observed among male suicides,
33 where suicides by separated or widowed males were over-reported in the newspapers. It is
34 unclear why there is an apparent media preference for stories of unmarried females and
35 separated or widowed males, nor what cultural scripts or narratives this may align with.
36 Marriage and family are at the core of the social fabric in India²⁷, and family is the main
37 source of welfare protections. We speculate that risks associated with being outside of the
38 institution of marriage may be being emphasised by media professionals through their
39 selection of suicide stories pertaining to people whose marriage has been lost or who are yet
40 to enter marriage. Through this under-reporting of suicides of married people, these media
41 reports may actually be giving an incorrect signal to the population with regard to any suicide
42 prevention protections that may be assumed to be gained from being married. It is important
43 to note that while marriage is typically understood to protect against suicide, particularly for
44 men, based on findings from studies in Western settings²⁸, this is not the case in India.
45 Research undertaken in India yields mixed findings regarding the relationship between
46 marital status and suicide for both men and women, suggesting that either marriage is not a
47 protective factor for suicide, or indeed that the risk of suicide is higher among those who are
48 married^{29 30}. This epidemiological reality regarding marriage and suicide may conflict with
49 narratives in India that locate 'the family' as the main source of social protections. Clearly
50 this is speculation, and so qualitative research with media professionals is required to better
51 understand the phenomenon of the influential role of gender and marital status in the
52 perceived newsworthiness of suicide deaths. We note though, that even such qualitative
53 interviews may find it hard to unravel what may be unconscious and deeply culturally
54 embedded biases among media professionals.
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3 Our findings suggest that the suicides of younger persons aged <30 years were considered to
4 be more newsworthy than the suicide deaths of persons aged 30 years and older. This finding
5 is largely consistent with research from Australia¹⁹, Austria¹⁷ and China²⁰. It has been
6 posited that youth suicides may be considered more newsworthy; that is, the death of a youth
7 with their life ahead of them carries a sensational undertone that may grab the reader's
8 attention²⁰. Suicide is also the leading cause of death among youth in India aged 15-29 years,
9 and greater than 70% of female suicide deaths and 50% of male suicide deaths are in this age
10 group². Thus, it is possible that media professionals may be attempting to give such suicide
11 deaths greater emphasis without being aware that they may in turn be overlooking the issue
12 of suicide among older aged people, also a high-risk period for both males and females in
13 India².
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17 Our findings also revealed that the suicides of students and people engaged in the agricultural
18 sector were significantly over-represented, relative to their occurrence in the population. This
19 finding was not surprising, given that both occupational groups are of significant interest to
20 the public discourse and narratives around suicide in India^{24 25}. Media houses would be
21 aware that reports on such deaths would resonate strongly with readers. Student suicides are a
22 major and topical policy issue in India, frequently located within discussions around the
23 fierce competition for student places and an accompanying intensity of exam pressure³¹.
24 Reporting on this issue will likely be of great interest to parents, who may carry a level of
25 fear around this happening to their own children. Farmer suicides are highly politicised in
26 India, and have been the subject of numerous government commissions and policy dialogues.
27 This has largely been with a focus on issues around the high levels of indebtedness among
28 farmers, a decline in secure institutional credit, water scarcity, trade liberalisation, and a
29 considerable vulnerability to "crop failure"³². Farmer suicide deaths have been described as
30 "public deaths", due to the perception that they receive sensational coverage by the mass
31 media³³.
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36 Finally, suicides by particular methods also appeared to attract more media attention. Deaths
37 involving hanging, jumping, and coming under vehicle/train were over-represented in media
38 reports, while suicides by poisoning were under-represented. One interpretation of this
39 finding is that media may be attracted to reporting on suicides using methods with a higher
40 degree of lethality, given that these have been observed to have a high case fatality rate³⁴.
41 Deaths involving self-inflicted injuries (e.g. knife wound) were also over-reported, even
42 though this method does not have a high case fatality rate, indicating that newspaper reporters
43 may also have an interest in particular suicide methods where it is easy for them to construct
44 a graphic visual that may attract the attention of the reader. The under-reporting of poisoning
45 suicide deaths is also an interesting finding. While the ingestion of medical drugs typically
46 has a low case fatality rate³⁴, the ingestion of pesticides, a common suicide method in India
47 and elsewhere in South Asia³⁵, has a high case fatality rate and is a major contributor to high
48 suicide rates in this region^{36 37}.
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52 These findings have important implications for suicide prevention. While the mass media are
53 a powerful resource for educating the public about suicide, the general public may develop
54 misunderstandings about suicide that are caused by media misrepresentations. For example,
55 Till et al observed that the consumption of tabloid newspapers in Austria for daily
56 information appeared to be an independent factor in the endorsement of misconceptions and
57 myths about suicide³⁸. While we didn't assess the articles for suicide myths, we did observe
58 substantial disparities between suicide characteristics in the population and the media. Strong
59 biases towards reporting particular types of suicide deaths may result in social and political
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3 responses to suicide that are not based on the epidemiological data. For instance, if media
4 reports are overly biased towards the coverage of female suicides, youth suicides, suicides
5 among particular occupational groups, or particularly graphic or more lethal suicide methods,
6 this may inadvertently affect suicide prevention funding allocations, public perceptions about
7 who is most at risk of suicide and the method they may use, among other possible
8 consequences.
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11 The study has several limitations that are worth noting. Firstly, we compared data from media
12 reports collected in 2016 against the official suicide statistics for 2015. While these are two
13 different time periods, it is the most recently available suicide statistics for India and we
14 expect a high degree of stability between the 2015 and 2016 data. We compared the official
15 suicide statistics for 2015 against that for 2014 and 2013 and we observed a high degree of
16 stability in the data; for example, the suicide rate for Tamil Nadu was 22.8 in 2015 and 23.4
17 in 2014, and 29.7% and 30.7% of suicide deaths were people aged 18-29 in 2015 and 2013
18 respectively. Secondly, there is a high level of under-reporting of suicide in India. Given both
19 the official statistics and the media reports are based on police reports of suicide, we expect
20 that this will have a negligible effect on the comparisons made in our study. Thirdly, while
21 our findings provide some clues as to the decisions made by media professionals in choosing
22 whether to report on a suicide, we cannot speak definitively about the decision-making
23 process and any biases that may be involved. We are currently undertaking qualitative
24 research with media professionals to better understand this phenomenon³⁹. Fourthly, we
25 were only able to examine the over or under-representation of two occupational categories
26 that we could meaningfully reproduce. There are several additional occupational categories
27 that would have been interesting to examine; for example, “housewives” comprised 53% of
28 female suicide deaths in the 2015 official suicide statistics, yet this occupational information
29 or the specific term was rarely communicated in media reports. Finally, we only examined
30 newspaper reports in one southern state of India where the suicide rate is substantially higher
31 than the national average. It is possible that our findings do not reflect newspaper coverage of
32 suicide in other states of India, particularly those with a lower suicide rate where mass media
33 reports of suicides may be less common. Future research should examine reports in other
34 states as well as reports in other forms of mass and social media.
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40 **Conclusion**

41 The suicide characteristics in the print media in Tamil Nadu were not entirely representative
42 of suicides in the broader population. A moderately skewed picture of reality is being
43 presented to the community, which may lead the general public to develop misunderstandings
44 about suicide in their state. In particular, suicides involving females, those aged under 29
45 years, separated or widowed males, unmarried females, those using methods with a higher
46 case-fatality rate, and those who were students or working in the agricultural sector were
47 significantly over-reported relative to their occurrence in the broader population. Conversely,
48 suicides involving males, those aged over 30 years and above, those who were married, and
49 suicides by poisoning were significantly under-reported relative to their occurrence in the
50 broader population. The discrepancies we identified will inform tailored suicide prevention
51 education for media professionals.
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55 **Contributors**

56 GA designed the study, supervised the data collection, and led the data analyses and drafting
57 of the manuscript. LV and TN supported the design of the study. MJ implemented data
58 collection. LV, JP, MJ, AC, JBS, VA and TN all contributed to the data analysis plan,
59 interpretation of the results and the development of the final manuscript.
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Competing interests

None declared.

Ethics approval

The data used in this study are from publicly available documents. Nonetheless, we obtained ethics approvals from the Human Ethics Advisory Group at The University of Melbourne in Australia (ID: 1646245.1).

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Data sharing

The data used in this study are publicly available media reports and publicly available official reports on suicides in India. Anyone interested in accessing our database on media reports of suicides may contact the corresponding author.

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Tables

Table 1: Binomial tests comparing the demographic characteristics of suicide decedents in newspaper reports vs. the population suicide statistics for Tamil Nadu

Characteristics	Male			Female			Total		
	Newspaper % (n)	Population % (n)	p-value ^a	Newspaper % (n)	Population % (n)	p-value ^a	Newspaper % (n)	Population % (n)	p-value ^a
Age									
<18 years	7.1% (54)	4.2% (446)	<0.001	13.0% (85)	10.7% (537)	0.071	9.8% (139)	6.2% (983)	<0.001
18-29 years	31.5% (239)	24.7% (2656)	<0.001	50.2% (328)	40.1% (2022)	<0.001	40.1% (567)	29.7% (4678)	<0.001
30-44 years	26.2% (199)	34.9% (3749)	<0.001	21.3% (139)	25.6% (1291)	0.016	23.9% (338)	31.9% (5040)	<0.001
45-59 years	23.4% (178)	25.5% (2742)	0.194	13.8% (90)	14.8% (746)	0.481	19.0% (268)	22.1% (3488)	0.006
60+ years	11.8% (90)	10.6% (1141)	0.296	1.8% (12)	8.8% (445)	<0.001	7.2% (102)	10.1% (1586)	0.001
Total	100.0% (760)	100.0% (10734)		100.0% (654)	100.0% (5041)		100.0% (1,414)	100.0% (15775)	
Marital status^b									
Unmarried	26.8% (125)	23.5% (2459)	0.096	34.5% (180)	22.3% (1100)	<0.001	30.9% (305)	23.1% (3559)	<0.001
Married	63.6% (297)	73.4% (7682)	<0.001	60.8% (317)	72.1% (3556)	<0.001	62.1% (614)	73.0% (11238)	<0.001
Separated	4.1% (19)	1.2% (128)	<0.001	3.1% (16)	3.1% (155)	1.000	3.5% (35)	1.8% (283)	<0.001
Divorced	0.0% (0)	0.3% (21)	0.236	0.4% (2)	0.8% (38)	0.286	0.2% (2)	0.4% (69)	0.325
Widowed	5.6% (26)	1.6% (164)	<0.001	1.2% (6)	1.6% (80)	0.484	3.2% (32)	1.6% (244)	<0.001
Total	100.0% (467)	100.0% (10464)		100.0% (521)	100.0% (4929)		100.0% (988)	100.0% (15393)	
Suicide method									
Hanging	52.7% (436)	42.5% (4555)	<0.001	51.2% (349)	38.0% (1916)	<0.001	52.1% (785)	41.0% (6471)	<0.001
Poisoning	20.3% (168)	39.7% (4260)	<0.001	19.8% (135)	35.2% (1775)	<0.001	20.1% (303)	38.3% (6035)	<0.001
Fire/self-immolation	9.3% (77)	6.0% (643)	0.001	12.0% (82)	19.2% (967)	<0.001	10.5% (159)	10.2% (1610)	0.659
Under vehicle/train	4.5% (37)	2.9% (309)	0.007	3.8% (26)	0.9% (45)	<0.001	4.2% (63)	2.2% (354)	<0.001
Drowning	3.0% (25)	3.3% (357)	0.656	4.7% (32)	3.4% (171)	0.061	3.8% (57)	3.3% (528)	0.297
Jumping (off structure)	2.5% (21)	0.6% (60)	<0.001	4.1% (28)	0.1% (7)	<0.001	3.2% (49)	0.4% (67)	<0.001
Self-inflicted injury	0.7% (6)	0.6% (68)	0.642	2.3% (16)	0.4% (18)	<0.001	1.5% (22)	0.5% (86)	<0.001
Other	6.9% (57)	4.5% (482)	0.001	1.9% (13)	2.8% (142)	0.159	4.6% (70)	4.0% (624)	0.203
Total	100.0% (827)	100.0% (10734)		100.0% (681)	100.0% (5041)		100.0% (1508)	100.0% (15775)	

^a Two-tailed binomial test on difference between two proportions using the “prtesti” command in Stata

^b Excludes those listed as ‘unknown’ and ‘other’ in the NCRB data

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4 **Figure 1: Comparing the proportion of female decedents in newspaper suicide reports**
5 **vs. the population suicide statistics for Tamil Nadu**
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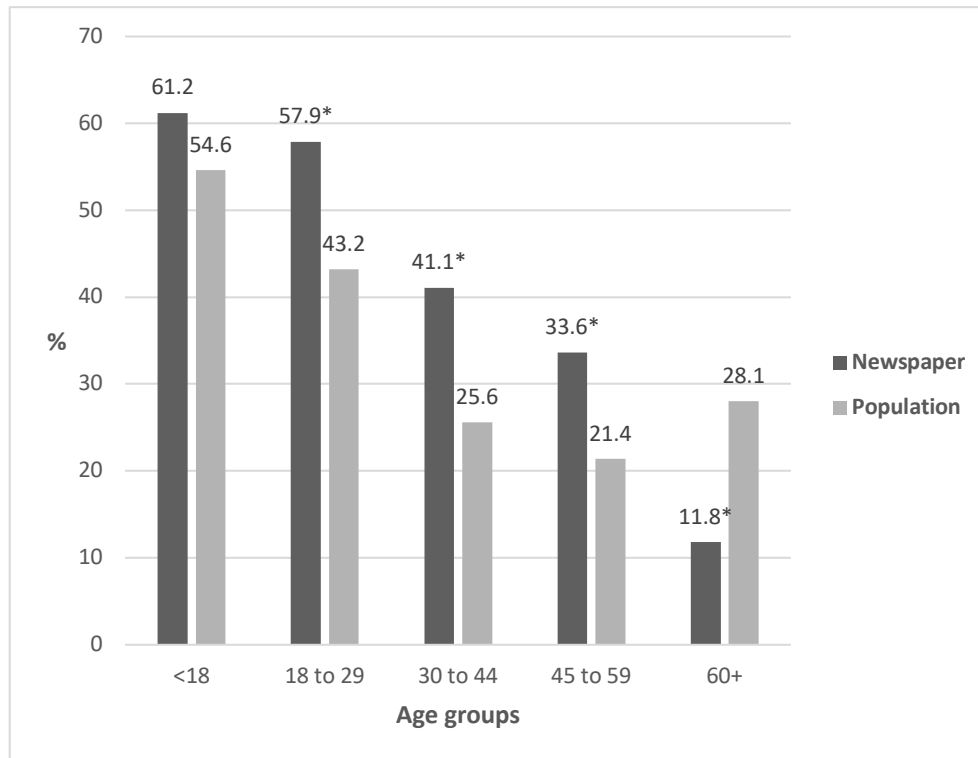
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Figure 2: Comparing the proportions of selected occupational groups of suicide decedents in newspaper reports vs. the population suicide statistics for Tamil Nadu

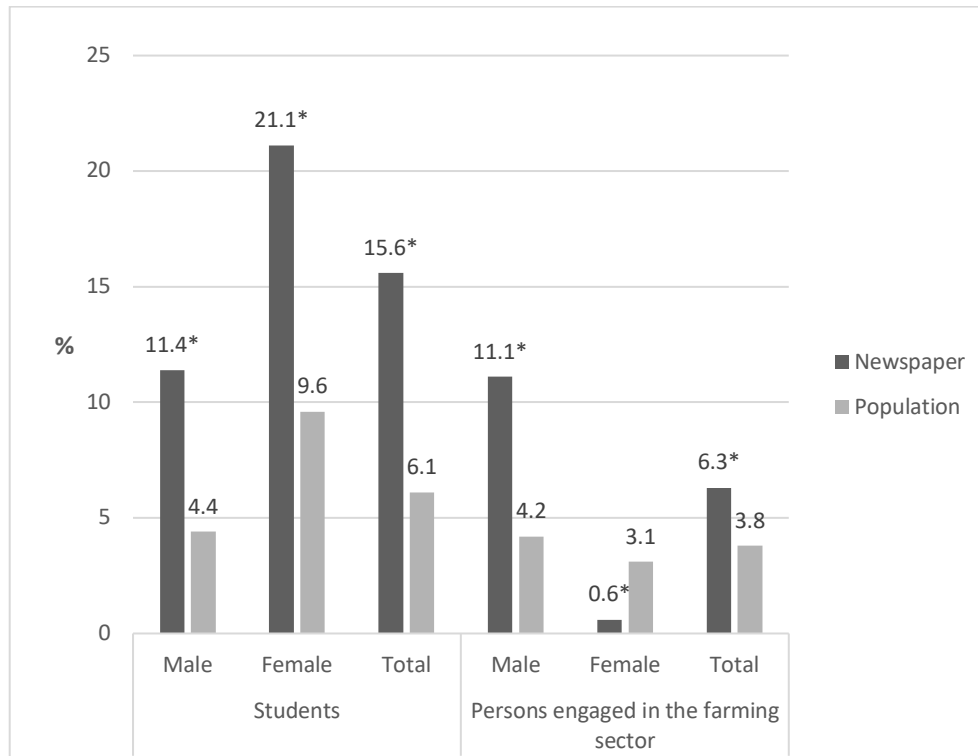
For peer review only

Figure 1: Comparing the proportion of female decedents in newspaper suicide reports vs. the population suicide statistics for Tamil Nadu



* <0.05 , based on two-sided binomial tests within each age group to calculate if the proportion of suicide deceased in the newspaper articles that were female was different to that in the official suicide statistics

Figure 2: Comparing the proportions of selected occupational groups of suicide decedents in newspaper reports vs. the population suicide statistics for Tamil Nadu

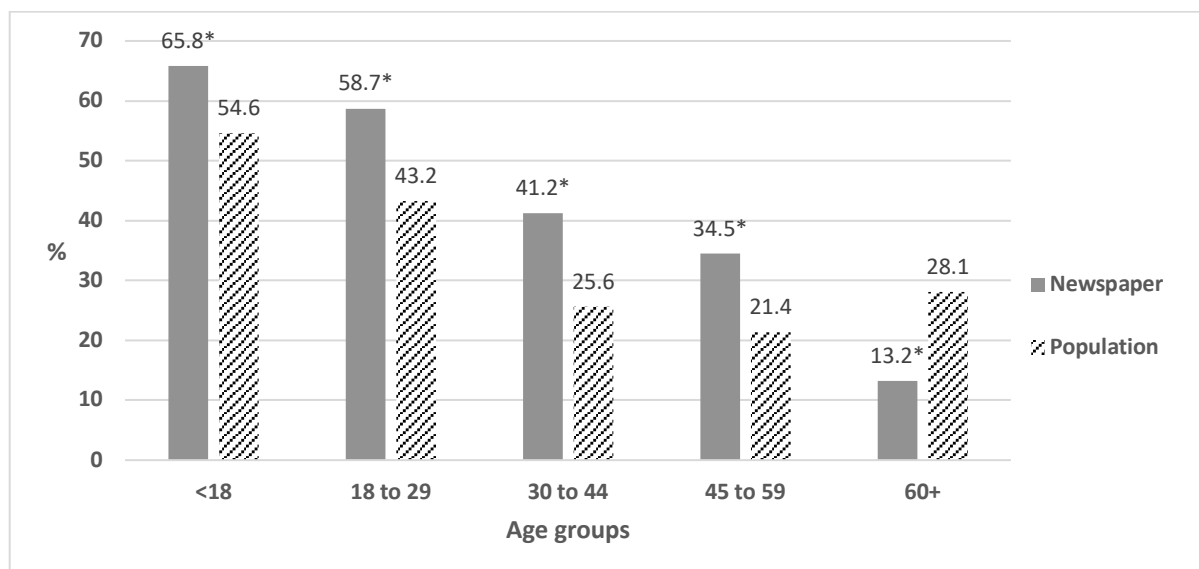


Note: The occupational categories of 'student' and 'persons engaged in the farming sector' were the only categories in the official statistics that were distinct enough to compare to the data we extracted from newspaper reports. Other occupational categories in the official suicide statistics (e.g. 'professionals/salaried persons') were too broad to be reproduced.

* <0.05 , based on two-sided binomial tests within each age group to calculate if the proportion of suicide deceased in the newspaper articles that were female was different to that in the official suicide statistics

Supplementary File 1: Secondary analyses only including media reports of suicides of people from Tamil Nadu

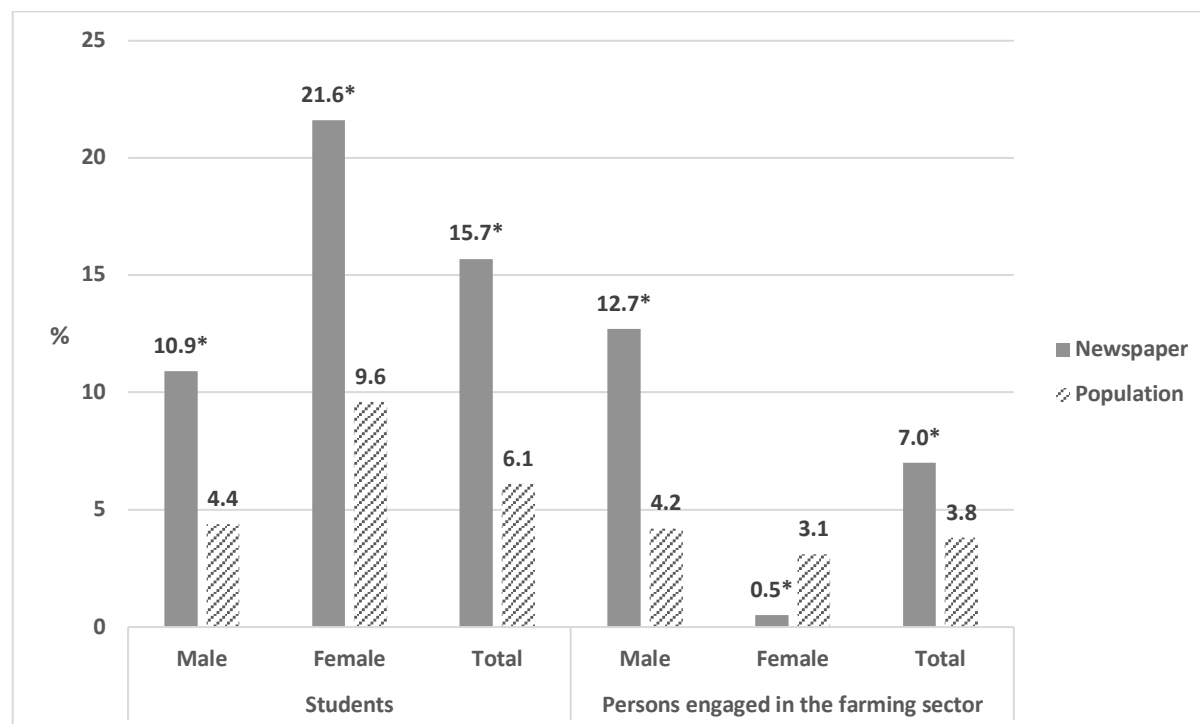
Figure 1: Comparing the proportion of female decedents in newspaper suicide reports vs. the population suicide statistics for Tamil Nadu



Note: Only includes newspaper reports of suicides of people residing in Tamil Nadu

* <0.05, based on two-sided binomial tests within each age group to calculate if the proportion of suicide deceased in the newspaper articles that were female was different to that in the official suicide statistics

Figure 2: Comparing the proportions of selected occupational groups of suicide decedents in newspaper reports vs. the population suicide statistics for Tamil Nadu



Note 1: Only includes newspaper reports of suicides of people residing in Tamil Nadu

Note 2: The occupational categories of 'student' and 'persons engaged in the farming sector' were the only categories in the official statistics that were distinct enough to compare to the data we extracted from newspaper reports. Other occupational categories in the official suicide statistics (e.g. 'professionals/salaried persons') were too broad to be reproduced.

* <math>p < 0.05</math>, based on two-sided binomial tests within each age group to calculate if the proportion of suicide deceased in the newspaper articles that were female was different to that in the official suicide statistics

Table 1: Binomial tests comparing the demographic characteristics of suicide decedents in newspaper reports vs. the population suicide statistics for Tamil Nadu

Characteristics	Male			Female			Total		
	Newspaper % (n)	Population % (n)	p-value ^a	Newspaper % (n)	Population % (n)	p-value ^a	Newspaper % (n)	Population % (n)	p-value ^a
Age									
<18 years	6.3% (41)	4.2% (446)	0.012	13.5% (79)	10.7% (537)	0.040	9.7% (120)	6.2% (983)	<0.001
18-29 years	32.2% (209)	24.7% (2656)	<0.001	50.6% (297)	40.1% (2022)	<0.001	40.9% (506)	29.7% (4678)	<0.001
30-44 years	26.6% (173)	34.9% (3749)	<0.001	20.6% (121)	25.6% (1291)	0.008	23.8% (294)	31.9% (5040)	<0.001
45-59 years	22.8% (148)	25.5% (2742)	0.124	13.3% (78)	14.8% (746)	0.331	18.3% (226)	22.1% (3488)	0.002
60+ years	12.2% (79)	10.6% (1141)	0.200	2.0% (12)	8.8% (445)	<0.001	7.4% (91)	10.1% (1586)	0.002
Total	100.0% (650)	100.0% (10734)		100.0% (587)	100.0% (5041)		100.0% (1237)	100.0% (15775)	
Marital status^b									
Unmarried	26.3% (105)	23.5% (2459)	0.196	34.8% (162)	22.3% (1100)	<0.001	30.9% (267)	23.1% (3559)	<0.001
Married	64.3% (257)	73.4% (7682)	<0.001	60.4% (281)	72.1% (3556)	<0.001	62.2% (534)	73.0% (11238)	<0.001
Separated	4.5% (18)	1.2% (128)	<0.001	3.2% (15)	3.1% (155)	0.906	3.8% (33)	1.8% (283)	<0.001
Divorced	0.0% (0)	0.3% (21)	0.273	0.2% (1)	0.8% (38)	0.151	0.1% (1)	0.4% (69)	0.167
Widowed	5.0% (20)	1.6% (164)	<0.001	1.3% (6)	1.6% (80)	0.619	3.0% (26)	1.6% (244)	<0.001
Total	100.0% (400)	100.0% (10464)		100.0% (465)	100.0% (4929)		100.0% (988)	100.0% (15393)	
Suicide method									
Hanging	52.9% (358)	42.5% (4555)	<0.001	52.4% (313)	38.0% (1916)	<0.001	52.7% (671)	41.0% (6471)	<0.001
Poisoning	21.4% (145)	39.7% (4260)	<0.001	20.1% (120)	35.2% (1775)	<0.001	20.8% (265)	38.3% (6035)	<0.001
Fire/self-immolation	11.2% (76)	6.0% (643)	<0.001	12.1% (72)	19.2% (967)	<0.001	11.6% (148)	10.2% (1610)	0.114
Under vehicle/train	4.7% (32)	2.9% (309)	0.008	4.4% (26)	0.9% (45)	<0.001	4.6% (58)	2.2% (354)	<0.001
Drowning	3.3% (22)	3.3% (357)	1.000	4.0% (24)	3.4% (171)	0.448	3.6% (46)	3.3% (528)	0.566
Jumping (off structure)	1.9% (13)	0.6% (60)	<0.001	3.5% (21)	0.1% (7)	<0.001	2.7% (34)	0.4% (67)	<0.001
Self-inflicted injury	0.9% (6)	0.6% (68)	0.334	2.2% (13)	0.4% (18)	<0.001	1.5% (19)	0.5% (86)	<0.001
Other	3.7% (25)	4.5% (482)	0.328	1.3% (8)	2.8% (142)	0.031	2.6% (33)	4.0% (624)	0.013
Total	100.0% (677)	100.0% (10734)		100.0% (597)	100.0% (5041)		100.0% (1274)	100.0% (15775)	

Note: Only includes newspaper reports of suicides of people residing in Tamil Nadu

^a Two-tailed binomial test on difference between two proportions using the "prtesti" command in Stata

^b Excludes those listed as 'unknown' and 'other' in the NCRB data

STROBE Statement—Checklist of items that should be included in reports of *cross-sectional studies*

	Item No	Recommendation	Page No
Title and abstract	1	(a) Indicate the study's design with a commonly used term in the title or the abstract	1
		(b) Provide in the abstract an informative and balanced summary of what was done and what was found	1-2
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	3
Objectives	3	State specific objectives, including any prespecified hypotheses	3
Methods			
Study design	4	Present key elements of study design early in the paper	4
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	4
Participants	6	(a) Give the eligibility criteria, and the sources and methods of selection of participants	N/A
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	4
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	4
Bias	9	Describe any efforts to address potential sources of bias	4-5
Study size	10	Explain how the study size was arrived at	4
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	4-5
Statistical methods	12	(a) Describe all statistical methods, including those used to control for confounding	4-5
		(b) Describe any methods used to examine subgroups and interactions	4-5
		(c) Explain how missing data were addressed	4-5
		(d) If applicable, describe analytical methods taking account of sampling strategy	N/A
		(e) Describe any sensitivity analyses	N/A
Results			
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	N/A
		(b) Give reasons for non-participation at each stage	N/A
		(c) Consider use of a flow diagram	N/A
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	N/A
		(b) Indicate number of participants with missing data for each variable of interest	N/A
Outcome data	15*	Report numbers of outcome events or summary measures	N/A

1			
2	Main results	16	(a) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included
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7			(b) Report category boundaries when continuous variables were categorized
8			N/A
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10			(c) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period
11			N/A
12	Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses
13			N/A
14			
15	Discussion		
16	Key results	18	Summarise key results with reference to study objectives
17			6
18	Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias
19			8
20			
21	Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence
22			6-7
23			
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25	Generalisability	21	Discuss the generalisability (external validity) of the study results
26			8
27	Other information		
28	Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based
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*Give information separately for exposed and unexposed groups.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at <http://www.plosmedicine.org/>, Annals of Internal Medicine at <http://www.annals.org/>, and Epidemiology at <http://www.epidem.com/>). Information on the STROBE Initiative is available at www.strobe-statement.org.