Supplementary Appendix

to

Association between suicide reporting in the media and suicide: Systematic review and meta-analysis

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Table of Contents

Studies included in the qualitative and quantitative analyses

This section lists all 31 studies used in our qualitative assessment and quantitative analysis. The complete list of included studies is as follows:

Bakst 2018

Bakst SS, Berchenko Y, Braun T, Shohat T. The effects of publicized suicide deaths on subsequent suicide counts in Israel. Arch Suicide Res. 2019;23(3):440-54.

Chang 2015

Chang SS, Kwok SSM, Cheng Q, Yip PSF, Chen YY. The association of trends in charcoal-burning suicide with Google search and newspaper reporting in Taiwan: a time-series analysis. Social Psychiatry and Psychiatric Epidemiology. 2015;50:1451-61.

Chen 2011

Chen YY, Chen F, Yip PSF. The impact of media reporting of suicide on actual suicides in Taiwan, 2002-05. Journal of Epidemiology and Community Health. 2011;65:934-40.

Chen 2012

Chen YY, Liao SF, Teng PR, et al. The impact of media reporting of the suicide of a singer on suicide rates in Taiwan. Social Psychiatry and Psychiatric Epidemiology. 2012;47:215-21.

Chen 2013

Chen YY, Chen F, Gunnell D, Yip PSF. The impact of media reporting on the emergence of charcoal burning suicide in Taiwan. PLOS ONE. 2013;8:e55000.

Cheng 2007

Cheng ATA, Hawton K, Lee CTC, Chen THH. The influence of media reporting of the suicide of a celebrity on suicide rates: a population-based study. International Journal of Epidemiology. 2007;36:1229-34.

Cheng 2017

Cheng Q, Chen F, Yip PSF. Media effects on suicide methods: A case study on Hong Kong 1998-2005. PLOS ONE. 2017;12:e0175580.

Choi 2016

Choi YJ, Oh H. Does media coverage of a celebrity suicide trigger copycat suicides? Evidence from Korean cases. Journal of Media Economics. 2016;29:92-105.

Etzersdorfer 2004

Etzersdorfer E, Voracek M, Sonneck G. A dose-response relationship of imitational suicides and newspaper distribution. Archives of Suicide Research. 2001;8:137-45.

Fink 2018

Fink DS, Santaella-Tenorio J, Keyes K. Increase in suicides in the months after the death of Robin Williams in the US. PLOS ONE. 2018;13:e0191405.

Fu 2009

Fu KW, Yip PSF. Estimating the risk of suicide following the suicide deaths of 3 Asian entertainment celebrities: A meta-analytic approach. Journal of Clinical Psychiatry. 2009;70:869-78.

Hagihara 2007

Hagihara A, Tarumi K, Abe T. Media suicide-reports, internet use and the occurrence of suicides between 1987 and 2005 in Japan. BMC Public Health. 2007;7:321.

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Jobes DA, Berman AL, O'Carroll PW, Eastgard S, Knickmeyer S. The Kurt Cobain suicide crisis: Perspectives from research, public health and the news media. Suicide and Life-Threatening Behavior, 1996;26(3):260—69.

Jonas 1992

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Kessler 1989

Kessler RC, Downey G, Stipp H, Milavsky JR. Network television news stories about suicide and short term changes in total US suicides. The Journal of Nervous and Mental Disease. 1989;177:551-5.

Koburger 2015

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Koepping 1989

Koepping AP, Hanzeboom HBG, Swanborn PG. Verhoging van suicide in navolging van kranteberichten. Nederlands Tudschrift Voor De Psychologie. 1989;44:62-72.

Ladwig 2012

Ladwig KH, Kunrath S, Lukaschek K, Baumert J. The railway suicide death of a famous German football player: Impact of the subsequent frequency of railway suicide acts in Germany. Journal of Affective Disorders. 2012;136:194-8.

Lee 2019

Lee SY. Do effects of copycat suicides vary with reasons for celebrity suicides reported in the media? The Social Science Journal. 2019 April; doi.org/10.1016/j.soscij.2019.03.003. [Epub ahead of print]

Mockus 2018

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Niederkrotenthaler 2009

Niederkrotenthaler T, Till B, Kapusta ND, Voracek M, Dervic K, Sonneck G. Copycat effects after media reports on suicide: a population-based ecologic study. Social Science & Medicine. 2009;69:1085-90.

Phillips 1974

Phillips DP. The influence of suggestion on suicide: substantive and theoretical implications of the Werther effect. American Sociological Review. 1974;39:340-54.

Pirkis 2020

Pirkis J, Currier D, Too LS, et al. Suicides in Australia following media reports of the death of Robin Williams. Australian and New Zealand Journal of Psychiatry. 2020;54:99-104.

Queinec 2011

Queinec R, Beitz C, Contrand B, et al. Copycat effect after celebrity suicides: results from the French national death register. Psychological Medicine. 2011;41:668-71.

Romer 2006

Romer D, Jamieson P, Jamieson KH. Are news reports of suicide contagious? A stringent test in six U.S. cities. Journal of Communication. 2006;56:253-70.

Ruddigkeit 2010

Ruddigkeit A. Der umgekehrte Werther-Effekt. Eine quasi-experimentelle Untersuchung von Suizidberichterstattung und deutscher Suizidrate. Publizistik. 2010;55:253-73.

Schafer 2015

Schafer M, Quiring O. The press coverage of celebrity suicide and the development of suicide frequencies in Germany. Health Communication. 2015;30:1149-58.

Stack 1996

Stack S. The effect of the media on suicide: evidence from Japan, 1955-1985. Suicide and Life-Threatening Behavior. 1996;26:132-42.

Ueda 2014

Ueda M, Mori K, Matsubayashi T. The effects of media reports of suicide by well-known figures between 1989 and 2010 in Japan. International Journal of Epidemiology. 2014;43: 623-9.

Ueda 2017

Ueda M, Mori K, Matsubayashi T, Sawada T. Tweeting celebrity suicides: Users' reaction to prominent suicide deaths and subsequent increases in actual suicides. Social Science & Medicine. 2017;189:158-66.

Whitley 2019

Whitley R, Fink DS, Santaella-Tenorio J, Keyes KM. Suicide mortality in Canada after the death of Robin Williams, in the context of high-fidelity to suicide reporting guidelines in the Canadian media. The Canadian Journal of Psychiatry. 2019 Jun 10. doi: 10.1177/0706743719854073.

Risk of bias assessment (based on Robins I-tool)

A: Pre-intervention and at-intervention aspects		
1 Bias due to confounding	**TOTAL domain 1:** **Low**: no confounding expected **Moderate**: some confounding expected; typically all subdomains appropriately controlled for (clarifications provided below) and reliability of measurement of these domains appears sufficient **Serious**: at least one domain not measured or controlled, or reliability low **Critical**: unmeasured confounding strongly suggested	**SUBDOMAINS§ (Code YES or NO):** **A NO if**: Sufficient pre-intervention time-points measured **B YES if**: No appropriate analysis method that accounts for time trends **C YES if:** Seasonality not accounted for (*if applicable*) **D YES if:** No confounders measured and controlled for
General comments domain 1: Because *no confounding expected* generally does not apply to the study designs included in our study, the best possible rating in domain 1 is moderate risk of bias. Other aspects should be considered when judging the potential of bias due to confounding: **Subdomain A**: Studies with only one pre-intervention time point are coded Yes in this subdomain (meaning, pre-intervention number of time points is not sufficient to account for time trends). However, this might still be consistent with moderate risk in domain one, particularly if follow-up is short and measures are taken to control for time trend/baseline suicide risk (see below, subdomain b). **Subdomain B**: Time trends can be accounted for using modelling techniques (e.g. autoregressive/moving average components,[1] first differencing,[1] lagged dependent variables,[2] variables for trend such as a linear variable for time and/or indicator variables for trend, e.g. year-months),[3] or through study design (e.g. calculations of expected frequencies based on measuring the outcome at time points both before *and* after the end of the follow-up period).[4] If, in a pre-post comparison without any corrections using indicator variables for trend, and only data points from *before* the intervention are used for the comparison and there is no consideration of data points from *after* the follow-up (intervention) period,[5] then this is not sufficient to adequately address possible bias from time patterns. Subdomain B should then be coded Yes. If an ITS design is used, controlling for time with an *annual* indicator variable alone is not sufficient to control for time trends.[6] This should also be coded Yes. A Yes in subdomain B means that domain 1 is at serious risk of bias (or higher). **Subdomain C**: Confounding might arise from comparing different seasons before and after the intervention (e.g. spring vs. winter). In case of daily outcome data, patterns across a week count as seasonality. In these cases, adjustments in the study design need to be made accordingly (e.g.		

<table>
<tr><td colspan="3">using monthly indicator variables for seasonality patterns,[2] or day-of-the-week indicator variables for a weekly pattern[3]) in order to code as No in this subdomain. If seasonality is not addressed in these analyses, code Yes for this subdomain. A Yes in subdomain C means that domain 1 is at serious risk (or higher).

Subdomain D: The absence of adjustment for confounders means that subdomain D is coded as Yes. There is, however, no general consensus on which specific confounders (e.g. unemployment, divorce rates, temperature)[2,7] need to be incorporated in the analysis of suicide counts. Also, some analysis techniques are less prone to bias due to confounding because of the way the underlying structure of the data is modelled (e.g. ARIMA modelling).[1] Others control for possible confounders by year-month variables that allow the baseline suicides to differ between each month[3] (thereby accounting for other factors that change at the monthly level). Some pre-post designs use components of the time series with many interventions but short follow-up periods (to compare suicides in a few weeks before and after the intervention),[8] and adjustments for longer term trends (e.g. unemployment rates) are probably not necessary with these study designs. A study coded as Yes in this subdomain can therefore be still be consistent with moderate risk in domain 1 if it uses an analysis that, to some extent, accounts for the structure of the time series (e.g. uses ARIMA modelling[1]), or if the specific design, e.g. with short follow-up, means adjustments for covariates are unnecessary. If these specifications do not apply this means that domain 1 is at serious risk (or higher).[9]

Absence of adjustment for confounding altogether might result in critical risk for example if an intervention period is assumed to be one year long (which is atypical for media effects) although related media interventions are largely restricted to a few weeks after the death.[10]

[§] Code specific subdomain as Yes if the specific type of bias is present or probably present; code No if not present or probably not present.</td></tr>
<tr><td>2 Bias in classification of interventions*</td><td>Total domain 2:
Low: Specification of pre-and post-intervention time points is consistent with timing of intervention
Moderate: Specification of pre-and post-time points is mainly consistent with intervention
Serious: Specification is not consistent with intervention
Critical: Specification unclear or inconsistent</td><td></td></tr>
<tr><td colspan="3">General comments domain 2:

* Code as low risk of bias if the timing of intervention is consistent with the measurement of events in time pre- and post-intervention (e.g. the exact date of death is used to define the pre- and post-intervention periods).[11] If this applies only partially (e.g. outcome data is measured weekly but the intervention occurred on a specific day within that week), code moderate as long as the assignment is mainly consistent.[2]

If monthly data are used yet the interventions occur anytime within a month (i.e., not at the beginning of the month), code as serious risk of bias even if adjustments are made to the assignment of the intervention month (e.g. death of a celebrity by suicide after the 23rd of the month are assigned to the following month).[4,12] Exception to this might be if the intervention occurred early in the month, resulting in lower risk of bias as compared to interventions later in the month. Such studies can be coded as moderate risk in this domain.[1]</td></tr>
</table>

Critical bias occurs for example if, in an ITS study with several interventions, the modelled duration of effects differs widely between interventions. Studies using annual outcome data were excluded from the meta-analysis.		
B Post-intervention aspects		
3 Bias due to preparatory phases	**Total domain 3:** **Low**: There is no reason to assume that there was a preparatory phase before the intervention that might have impacted on the outcome. **Moderate**: Any preparatory phases are well-described and adequately accounted for **Serious**: Preparatory phases of the intervention that might impact on the outcome appear likely and are not accounted for.	
General comments domain 3: * This domain is to cover specifically whether the effects of any preparatory (pre-intervention) phases of the intervention that might impact on the outcome were appropriately accounted for. A preparatory phase might be a pre-release promotion for a documentary on suicide which might impact on suicide rates even before its release. This domain should be coded as low risk of bias if the intervention is about a sudden event (e.g. a death of a celebrity by suicide, which typically happens without preparatory phases). Also, code as low risk of bias if any preparatory phases were likely limited in terms of reach in the population (e.g. before the publication of a specialized book on suicide).[13] Code as moderate if preparatory phases are likely but accounted for (e.g. by excluding the preparatory phase from the pre-intervention phase of the time series). Code as serious if such preparatory phases are not adequately accounted for.		
4 Bias due to missing data*	**Total domain 4:** **Low**: data appear reasonably complete based on published information, *OR* the analysis addressed missing data and is likely to have removed any risk of bias **Moderate**: missing data points appear to be more frequent before or after the intervention; OR the analysis is unlikely to have removed the risk of bias arising from missing data. **Serious**: (i) Missing data differ substantially across time points; and (ii) the analysis is unlikely to have removed the risk of bias arising from the missing data.	
General comments domain 4: *Missing data in the context of our study means that suicide data are not available for all time points. This is rarely a problem when it comes to the total numbers of deaths drawn from national mortality databases but might be a problem with international datasets where countries report data infrequently, or in regional datasets. Some studies indicate some missing data and should be coded accordingly.[14] With regard to national datasets, if not reported differently in the study, reasonable completeness of data can be assumed in industrialized countries and these studies can be coded as low risk of bias in this domain. If preliminary data from regional databases are used and no information on missing values is provided, code unknown.[15]		

<table>
<tr><td>5 Bias in measurement of the outcome*</td><td>Total domain 5:
Low: Any error in measuring the outcome is unrelated to intervention status
Moderate: Any error in measuring outcome is only minimally related to intervention status
Serious: Error in measuring the outcome is entirely possible and related to intervention status.</td><td></td></tr>
<tr><td colspan="3">General comment domain 5:

*Bias in outcome measurement can arise if methods of outcome assessment were not fully comparable before and after the intervention and if there were systematic changes in the measurement of the outcome coincident with the implementation of the intervention.
There are two ways this could occur in studies on mortality. First, this type of bias might occur if there were changes in the coding system, e.g. from ICD-9 to ICD-10, although studies have shown that this has minimal impact on the ascertainment of suicide as ICD-9 and ICD-10 are highly consistent for coding suicide (see [16] for related considerations). Therefore, such changes are still consistent with a code of low risk of bias.

A second way this could occur is if there are abrupt changes in the likelihood of registering the death as suicide due to a coroner's effect. Specifically, high media attention on the topic of suicide might result in an increased likelihood of coroners coding suicides as the cause of death. Based on available studies, such effects, should typically be small (consistent with low risk; see [17] for related considerations), but they would be problematic if the collecting entities were directly involved in the study (e.g. if coroners are made aware of a suicide method and suicide data is subsequently collected directly from them).[15] We expect that this type of bias is relatively rare as most studies draw on national death registries to identify suicides.</td></tr>
<tr><td>6 Bias in selection of reported results</td><td>Total domain 6:
Low: Clear evidence, usually from pre-registered protocol, that all results are reported without selective reporting with regard to conducted methods; time-points included; or subgroups of suicides analysed.
Moderate: The outcome measurements and analyses are consistent with an a priori-plan; OR are clearly defined and appear both internally and externally consistent AND there is no indication of selection of the reported analysis from among multiple analyses; AND there is no indication of selection of a subgroup of suicides for reporting on the basis of the results
Serious: Outcomes are defined in different ways in the methods and results sections, OR there is a high risk of selective reporting from among multiple analyses; OR the subgroup is selected from a larger study for analysis and appears to be reported on the basis of the results.
Critical: There is evidence or strong suspicion of selective reporting of results AND the unreported results are likely to be substantially different from the reported results.</td><td>SUBDOMAINS[§]:

A YES if: selection of time point within series

B YES if: selection of method from several conducted methods

C YES if: Selection of results because of interest, but more results available</td></tr>
</table>

General comments on domain 6:

This bias includes three types of selective reporting: (I) an effect estimate for the outcome is selected from among multiple measurements with the same analysis method, for example a measurement made at one of a number of time points is selected, or (II) reported results are selected from intervention effects estimated with different analysis methods; or (III) if results are selected for a subgroup of data on the basis of more interesting findings.

In the absence of a published study protocol, the best possible rating in this domain is moderate risk of bias.

For the considered studies, some possible reporting bias in general and across all studies results from different selections of follow-up periods, but it is not possible to say which specific duration is appropriate as there is no general agreement on the duration of media effects and there is a reasonable possibility of strong variations in effect duration. For this reason, only follow-up periods up to two months were included in this meta-analysis.

Risk in the specific subdomains (A-C) should be coded positive / probably positive (Yes) if they might reasonably bias the findings in the meta-analysis in addition to the general points above. For example, studies sometimes conduct analyses for several demographic subgroups and then focus primarily on one of them -- but this would not introduce bias in this meta-analysis which always uses total suicides for the total population in the primary analysis, and total suicides by specific methods consistent with method used by the celebrity in secondary analysis 1. Further, if studies present several study methods that deliver consistent results, this does not indicate additional risk of bias (here, in subdomain B). If, on the other hand, several time periods are tried out and only one or a few are reported, this does affect the risk of bias in this meta-analysis, resulting in a code of Yes (in subdomain A).[18] Similarly, subdomain C would be coded Yes if important design decisions, e.g related to collecting intervention data is based on the results.[18] Any Yes in subdomains A-C means that risk of bias in domain 6 is serious (or higher). Any strong suspicion of selective reporting, e.g. if there are relevant design decisions that are not explained and unusual and reported associations are very close to boundary of non-significance) mean there is critical risk.[19]

[§] Code specific subdomains as Yes if the specific type of bias is present or probably present; code No if not present or probably not present.

References for risk of bias reporting tool with examples

1. Fink DS, Santaella-Tenorio J, Keyes KM. Increase in suicides in the months after the death of Robin Williams in the US. PLOS One. 2018;13:e0191405.
2. Chang SS, Kwok SS, Cheng Q, Yip PS, Chen YY. The association of trends in charcoal-burning suicide with Google search and newspaper reporting in Taiwan: a time-series analysis. Soc Psychiatry Psychiatr Epidemiol. 2015;50:1451-61.
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7. Cheng ATA, Hawton K, Lee CTC, Chen THH. The influence of media reporting of the suicide of a celebrity on suicide rates: a population-based study. Int J Epidemiol. 2007;36:1229-34.
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10. Tousignant M, Mishara BL, Caillaud A, Fortin V, St-Laurent D. The impact of media coverage of the suicide of a well-known Quebec reported: the case of Gaetan Girouard. Soc Sci Med. 2005;60:1919-26.
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13. Marzuk PM, Tardiff K, Hirsch CS, et al. Increase in suicide by asphyxiation in New York City after the publication of Final Exit. N Engl J Med. 1993;329:1508-10.
14. Jonas K. Modelling and suicide: a test of the Werther effect. Br J Soc Psychology. 1992;31:295-306
15. Jobes DA, Berman AL, O'Carroll PW, Eastgard S, Knickmeyer S. The Kurt Cobain suicide crisis: perspectives from research, public health and the news media. Suicide Life Threat Behav. 1996;26:260-9.
16. Anderson RN, Miniño AM, Hoyert DL, Rosenberg HM. Comparability of cause of death between ICD-9 and ICD-10: preliminary estimates. Natl Vital Stat Rep. 2001;49,1-32.
17. Phillips DP, Carstensen LL. Clustering of teenage suicide after television news stories about suicide. N Engl J Med. 1986;315:685-9.
18. Romer D, Jamieson PE, Jamieson KH. Are news reports of suicide contagious? A stringent test in six U.S. cities. J Commun. 2006;56:253-270.
19. Hassan R. Effects of newspaper stories on the incidence of suicide in Australia: a research note. Aust N Z J Psychiatry. 1995;29:480-3.

Table S1: Detailed Characteristics of the Included Studies with Regards to Study Methods

Author and year	Study design	Data analysis	Method to control for time trends and seasonality	Confounders measured	Outcome data source	Number of time points before intervention	Number of time points after intervention	Estimate	Type of estimate	How estimate was derived*
Bakst 2018	Multiple arm pre-post comparison	Simple counts in the exposure period and comparisons with averages in control periods	None	None	Central Bureau of Statistics	1	1	Unadjusted	Expected and observed suicides	Extracted directly using data related to 5 prominent suicides (Table 1)
Chang 2015	Interrupted time series	Poisson regression	Lagged dependent variable (1 week) to detrend data; monthly indicator variables for seasonality; indicator variables for linear time trend	Monthly unemployment and divorce rates and the date of a death of a celebrity by suicide in Taiwan	Taiwan's mortality statistics	N/a: association between linear variable representing number of suicide stories and the suicide rate the following week	N/a: association between linear variable representing number of suicide stories and the suicide rate the following week	Adjusted	Rate ratio	Estimates combined using meta-analysis (using RRs for the 4 newspapers for the previous week and for charcoal and non-charcoal burning suicide, Table 2)
Chen 2011	Interrupted time series	Poisson regression	Indicator variables for day of week and month	Unemployment and divorce rates	Taiwan's mortality statistics	N/a: association between linear variable representing number of suicide stories and the suicide rate the next day	N/a: association between linear variable representing number of suicide stories and the suicide rate the next day	Adjusted	Rate ratio	Estimates combined using meta-analysis (using RRs for the 3 newspapers for May 2003-Dec 2005, Table 2)
Chen 2012	Interrupted time series	Poisson regression	Indicator variables for season and calendar year as well as autoregressive terms	Temperature, humidity and unemployment rates	Taiwan's mortality statistics	150	7	Adjusted	Rate ratio	Extracted directly (Total suicides in Table 2 and charcoal burning suicides in Table 4)

Chen 2013	Interrupted time series	Poisson regression	Lagged dependent variable (1 day) to detrend data; day of week	None	Taiwan's mortality statistics	N/a: association between linear variable representing number of suicide stories (lagged up to 7 days) and the suicide rate	N/a: association between linear variable representing number of suicide stories (lagged up to 7 days) and the suicide rate	Adjusted	Rate ratio	Extracted directly (Table 1 adjusted estimate for non-charcoal burning as a proxy for total suicides)
Cheng 2007	Interrupted time series	Poisson regression	Indicator variables for season and calendar year as well as autoregressive terms	Temperature, humidity and unemployment rates	Taiwan's mortality statistics	121	31	Adjusted	Rate ratio	Extracted directly (Total suicides in Table 1 and hanging suicides in Table 2)
Cheng 2017	Interrupted time series	Negative binomial regression	Lagged dependent variable (1 day) to detrend data, dummies for day of week	Property price index, unemployment rate, divorce rate	Hong Kong Coroner's court and Census and Statistics Department	N/a: association between linear variable representing number of suicide stories and the suicide rate the next day	N/a: association between linear variable representing number of suicide stories and the suicide rate the next day	Adjusted	Rate ratio	Reanalysis of the data by study authors
Choi 2016	Interrupted time series	Instrumental variable regression	Linear term for time and indicator variables for month	GDP per capita, GDP growth rates, Gini coefficients, unemployment, birth and divorce rates	Statistics Korea	N/a: association between linear variable representing number of suicide stories and the suicide rate in the same month	N/a: association between linear variable representing number of suicide stories and the suicide rate in the same month	Adjusted	Rate ratio	Extracted directly (Table 3, IV estimate for news of deaths of Korean celebrities by suicide)
Etzersdorfer 2004	Multiple arm pre-post comparison	Poisson regression	Control periods from the 9 preceding and 9 subsequent years (all measured in the same weeks of the year)	None	Statistics Austria	9	10	Unadjusted	Rate ratio	Reanalysis of the data by study authors
Fink 2018	Interrupted time series	SARIMA	First differencing (monthly and yearly), monthly and yearly moving average terms	None	U.S. CDC, Wonder database	187	2	Adjusted	Expected and observed suicides	Extracted directly (Table 1, total population, August and September; Table 2, suffocation,

										August and September)
Fu 2009	Interrupted time series	Poisson regression	Indicator variables for season and calendar year as well as autoregressive terms	Monthly unemployment rates	Hong Kong Census and Statistics Department and the Coroner's court	117	39	Adjusted	Rate ratio	Extracted directly (Figure 2A, Overall Hong Kong and Figure 2C, Method Hong Kong)
Hagihara 2007	Interrupted time series	Linear regression	Log transformation of the outcome variable to make the series stationary, indicator variable for month	Percent households with Internet use and national unemployment rates	Vital and Health Statistics, Japanese Ministry of Health, Labor, and Welfare	N/a: association between news stories and the suicide rate in the following month	N/a: association between news stories and the suicide rate in the following month	Adjusted	Rate ratio	Extracted directly (Table 2 males and Table 2 females)
Jobes 1996	Multiple arm pre-post comparison	Simple counts	Comparison periods were the same weeks in year before and after the death of a celebrity by suicide	None	Unknown	5	7	Unadjusted	Rate ratio	Extracted directly (Figure 2)
Jonas 1992	Multiple arm pre-post comparison	Linear regression	Control periods from two adjacent years from the same days as during exposure year, indicator variables for month, linear term for year, and adjustment to the standard errors to account for autocorrelation	None	Statistical Office of Baden Würtemberg	N/a: indicator variable coded 1 for the 7 days after date each celebrity died by suicide regressed on the daily suicide rate	N/a: indicator variable coded 1 for the 7 days after date each celebrity died by suicide regressed on the daily suicide rate	Adjusted	Expected and observed suicides	Extracted directly (Table 1, 14 prominent persons where data was available)
Kessler 1989	Interrupted time series	Linear regression	Lagged dependent variable (1 day) to detrend data; indicator variables for day of week; month; year	Indicator variables for nine major holidays	National Center of Health Statistics Detailed Mortality File	N/a: model tested association between an indicator variable coded 1 for the 8 days after each of the 87 news stories (0 otherwise)	N/a: model tested association between an indicator variable coded 1 for the 8 days after each of the 87 news stories (0 otherwise)	Adjusted	Rate ratio	Extracted directly (Table 2, 1973-1984 total estimate)

						and daily suicide counts	and daily suicide counts			
Koburger 2015	Multiple arm pre-post comparison	Negative binomial regression	Control periods from 8 weeks prior to the index suicide	None	OSPI study (national statistical offices)	8	2	Unadjusted	Rate ratio	Extracted directly (Table 2, all four countries except Germany)
Koepping 1989	Interrupted time series	Poisson regression	Linear term for trend, indicator variables for week and month	None	Central Bureau for Statistics CBS	N/a: model tested association between an indicator variable coded 1 for the 7 days after each of the 126 news stories (0 otherwise) and daily suicide counts	N/a: model tested association between an indicator variable coded 1 for the 7 days after each of the 126 news stories (0 otherwise) and daily suicide counts	Adjusted	Expected and observed suicides	Extracted directly (Table 3)
Ladwig 2012	Single-arm pre-post comparison	Poisson regression	None: but additional analysis conducted in the period after the intervention period compared to same period in previous years indicated no differences across these years	Daily temperature	German Railway Event Database	1	1	Adjusted	Rate ratio	Extracted directly (Table 2)
Lee 2019	Interrupted time series	Linear regression	Indicator variables for month and year	Unemployment rates	Statistics Korea	N/a: association between indicator variable representing the two weeks after each celebrity died by suicide and suicide counts	N/a: association between indicator variable representing the two weeks after each celebrity died by suicide and suicide counts	Adjusted	Coefficient	Coefficient (from Table 2) converted to a rate using the midpoint population estimate (in Table 1)
Mockus 2018	Interrupted time series	Poisson regression	Indicator variables for year-month, day of week, day of month and holidays	None	U.S. National Center for Health Statistics	N/a: association between indicator variable representing	N/a: association between indicator variable representing	Adjusted	Rate ratio	Extracted directly (Table 8, k = 2)

						that the date is within *k* days since the celebrity died by suicide (*k* = 1, 2, …, 30 days) and the suicide rate	that the date is within *k* days since the celebrity died by suicide (*k* = 1, 2, …, 30 days) and the suicide rate			
Niederkrotenthaler 2009	Multiple arm pre-post comparison	Poisson regression	Indicator variables for month and year	Density of any suicide-related reporting	Statistics Austria	1	1	Adjusted	Rate ratio	Reanalysis of the data by study authors
Phillips 1974	Multiple arm pre-post comparison	Simple counts in the exposure period and comparisons with averages in control periods	Control period for each publicised suicide is the average number of suicides in same month in the preceding and subsequent year	None	U.S. National Center for Health Statistics	1	1	Unadjusted	Expected and observed suicides	Extracted directly (Table 1)
Pirkis 2020	Interrupted time series	Poisson regression	Fractional polynomials to model underlying trend, sine and cosine terms for seasonality	None	Australia's National Coronial Information System	4972	873	Adjusted	Rate ratio	Reanalysis of the data by study authors
Queinec 2011	Interrupted time series	SARIMA	Not specified, but SAIRMA models allow a variety of adjustments including first differencing and moving average and autocorrelation terms	None	French Exhaustive Death Registry	N/a: association between indicator variable representing the month after each celebrity died by suicide and suicide counts	N/a: association between indicator variable representing the month after each celebrity died by suicide and suicide counts	Adjusted	Expected and observed suicides	Extracted directly (total and method-specific in Table 1)
Romer 2006	Multiple arm pre-post comparison	Negative binomial regression	Lagged dependent variables (9 days) and indicator variables for day of week and month	Soap opera depictions, movies shown on local screens, movie	US State Health Departments	N/a: association between linear variable representing number of	N/a: association between linear variable representing number of	Adjusted	Expected and observed suicides	Extracted directly (expected Table 5, observed, text page 264)

				rentals, two major holidays		suicide stories (lagged up to 9 days) and the suicide rate	suicide stories (lagged up to 9 days) and the suicide rate			
Ruddigkeit 2010	Multiple arm pre-post comparison	t-test	None	None	Deutsche Mortalitäts-statistik / Stat. Landesämter	1	1	Unadjusted	Expected and observed suicides	Extracted directly (Table 1)
Schafer 2015	Multiple arm pre-post comparison	Simple counts in the exposure period and comparisons with averages in control periods	Compared weeks post to expected number based on mean from suicide count in previous and subsequent year using the same week and same succession of weekdays	None	German mortality statistics from German federal statistical office	1	4	Unadjusted	Expected and observed suicides	Extracted directly (Total suicides in Figure 3 and method-specific suicides in Figure 4)
Stack 1996	Interrupted time series	Linear regression	Lagged dependent variable (1 month) to detrend data and adjustment to the standard errors for autocorrelation; monthly indicator variables for seasonality	Publicised stories about non-Japanese suicides	Chew 1992: Suicide data for Japan 1955-85 personal communication	N/a: association between news stories and the suicide rate in the same month	N/a: association between news stories and the suicide rate in the same month	Adjusted	Rate ratio	Extracted directly (Table 1 coefficient for Japanese celebrities and coefficient for intercept)
Ueda 2014	Interrupted time series	Poisson regression	Indicator variables for year-month, day of the week and a term for day	None	Vital statistics of Japan, Ministry of Health, Labour and Welfare	N/a: indicator variable coded 1 for the 10 days after date each celebrity died by suicide regressed on the daily suicide rate	N/a: indicator variable coded 1 for the 10 days after date each celebrity died by suicide regressed on the daily suicide rate	Adjusted	Rate ratio	Extracted directly (text, page 626)
Ueda 2017	Interrupted time series	Poisson regression	Indicator variables for year-month, day of the week and a term for day number within month	None	Vital statistics of Japan, Ministry of Health, Labour and Welfare	N/a: indicator variable coded 1 for the 10 days after date each celebrity died by suicide regressed on	N/a: indicator variable coded 1 for the 10 days after date each celebrity died by suicide regressed on	Adjusted	Rate ratio	Reanalysis of the data by study authors

						the daily suicide rate	the daily suicide rate			
Whitley 2019	Interrupted time series	SARIMA	First differencing (monthly and yearly), monthly and yearly moving average terms	None	Statistics Canada	187	2	Adjusted	Expected and observed suicides	Extracted directly (Table 1, overall for August and September and suffocation for August and September)

* Table numbers refer to specific table as published in respective study.

Table S2: Risk of bias ratings of included studies

Author and year	Q1-a	Q1-b	Q1-c	Q1-d	Q1-total	Q2	Q3	Q4	Q5	Q6-a	Q6-b	Q6-c	Q6-total	Total risk of bias
Bakst 2018	Yes	Yes	No	Yes	Serious	Low	Low	Low	Low	No	No	No	Moderate	Serious
Chang 2015	No	No	No	No	Moderate	Moderate	Low	Low	Low	No	No	No	Moderate	Moderate
Chen 2011	No	No	No	No	Moderate	Low	Low	Low	Low	No	No	No	Moderate	Moderate
Chen 2012	No	No	No	No	Moderate	Low	Low	Low	Low	No	No	No	Moderate	Moderate
Chen 2013	No	No	No	Yes	Moderate	Low	Low	Low	Low	No	No	No	Moderate	Moderate
Cheng 2007	No	No	No	No	Moderate	Low	Low	Low	Low	No	No	No	Moderate	Moderate
Cheng 2017	No	No	No	No	Moderate	Moderate	Low	Low	Low	No	No	No	Moderate	Moderate
Choi 2016	No	No	No	No	Moderate	Moderate	Low	Low	Low	No	No	No	Moderate	Moderate
Etzersdorfer 2004	No	No	No	Yes	Moderate	Low	Low	Low	Low	No	No	No	Moderate	Moderate
Fink 2018	No	No	No	Yes	Moderate	Moderate	Low	Low	Low	No	No	No	Moderate	Moderate
Fu 2009	No	No	No	No	Moderate	Low	Low	Low	Low	No	No	No	Moderate	Moderate
Hagihara 2007	No	No	No	No	Moderate	Serious	Low	Low	Low	No	No	No	Moderate	Serious
Jobes 1996	No	No	No	Yes	Serious	Moderate	Low	Unknown	Serious	No	No	No	Moderate	Serious
Jonas 1992	No	No	No	Yes	Moderate	Low	Low	Moderate	Low	No	No	No	Moderate	Moderate
Kessler 1989	No	No	No	No	Moderate	Low	Low	Low	Low	No	No	No	Moderate	Moderate
Koburger 2015	No	Yes	No	Yes	Serious	Low	Low	Low	Low	No	No	No	Moderate	Serious
Koepping 1989	No	No	No	Yes	Serious	Low	Low	Low	Low	No	No	No	Moderate	Serious
Ladwig 2012	Yes	Yes	No	No	Moderate	Low	Low	Low	Low	No	No	No	Moderate	Moderate
Lee 2019	No	Yes	No	No	Serious	Low	Low	Low	Low	No	No	No	Moderate	Serious
Mockus 2018	No	No	No	No	Moderate	Low	Low	Low	Low	Yes	No	No	Serious	Serious
Niederkrotenthaler 2009	Yes	No	No	No	Moderate	Low	Low	Low	Low	No	No	No	Moderate	Moderate
Phillips 1974	Yes	No	No	Yes	Serious	Serious	Low	Low	Low	No	No	No	Moderate	Serious
Pirkis 2020	No	No	No	Yes	Moderate	Low	Low	Low	Low	No	No	No	Moderate	Moderate
Queinec 2011	No	No	No	Yes	Moderate	Low	Low	Low	Low	No	No	No	Moderate	Moderate
Romer 2006	No	No	No	No	Moderate	Low	Low	Low	Low	Yes	No	Yes	Serious	Serious
Ruddigkeit 2010	Yes	Yes	No	Yes	Serious	Low	Low	Low	Low	No	No	No	Moderate	Serious

Schafer 2015	No	No	No	Yes	Moderate	Low	Low	Moderate	Low	No	No	No	Moderate	Moderate
Stack 1996	No	No	No	No	Moderate	Serious	Low	Low	Low	No	No	No	Moderate	Serious
Ueda 2014	No	No	No	Yes	Moderate	Low	Low	Low	Low	No	No	No	Moderate	Moderate
Ueda 2017	No	No	No	Yes	Moderate	Low	Low	Low	Low	No	No	No	Moderate	Moderate
Whitley 2019	No	No	No	Yes	Moderate	Moderate	Low	Low	Low	No	No	No	Moderate	Moderate

Abbreviations: Q1-a = Risk of bias due to confounding A: Sufficient pre-intervention time-points measured; Q1-b = Risk of bias due to confounding B: appropriate analysis method that accounts for time trends; Q1-c = Risk of bias due to confounding C: Seasonality; Q1-d = Risk of bias due to confounding D: Confounders measured and controlled for; Q1-total = Risk of bias due to confounding; Q2 = Risk of bias in classification of studies; Q3 = Risk of bias due to deviations from intended interventions / preparatory phases; Q4 = Risk of bias due to missing data; Q5 = Risk of bias in measurement of the outcome; Q6-a = Risk of bias in selection of results: selection of time point within series; Q6-b = Risk of bias in selection of results: selection of method from several conducted methods; Q6-c = Risk of bias in selection of results: Selection of results because of interest, but more results available; Q6-total = Risk of bias in selection of results.

Table S3: Multivariate meta-regressions of the effect of reporting of deaths of celebrities by suicide on total suicides by study factors (all studies at moderate risk of bias)

	Number of studies	RR (95% CI)[a]	P-value
Period published			0.62
≤2005	2	1.17 (1.00 to 1.37)	
2006 to 2010	3	1.17 (1.05 to 1.31)	
2011 to 2015	4	1.12 (1.01 to 1.25)	
≥2016	5	1.17 (1.11 to 1.23)	
Number of celebrities			0.27
1	7	1.17 (1.00 to 1.37)	
≥2	7	1.11 (0.98 to 1.26)	

[a] The rate ratio in each category calculated using the exponential of the linear combination of coefficients from the meta-regression model.

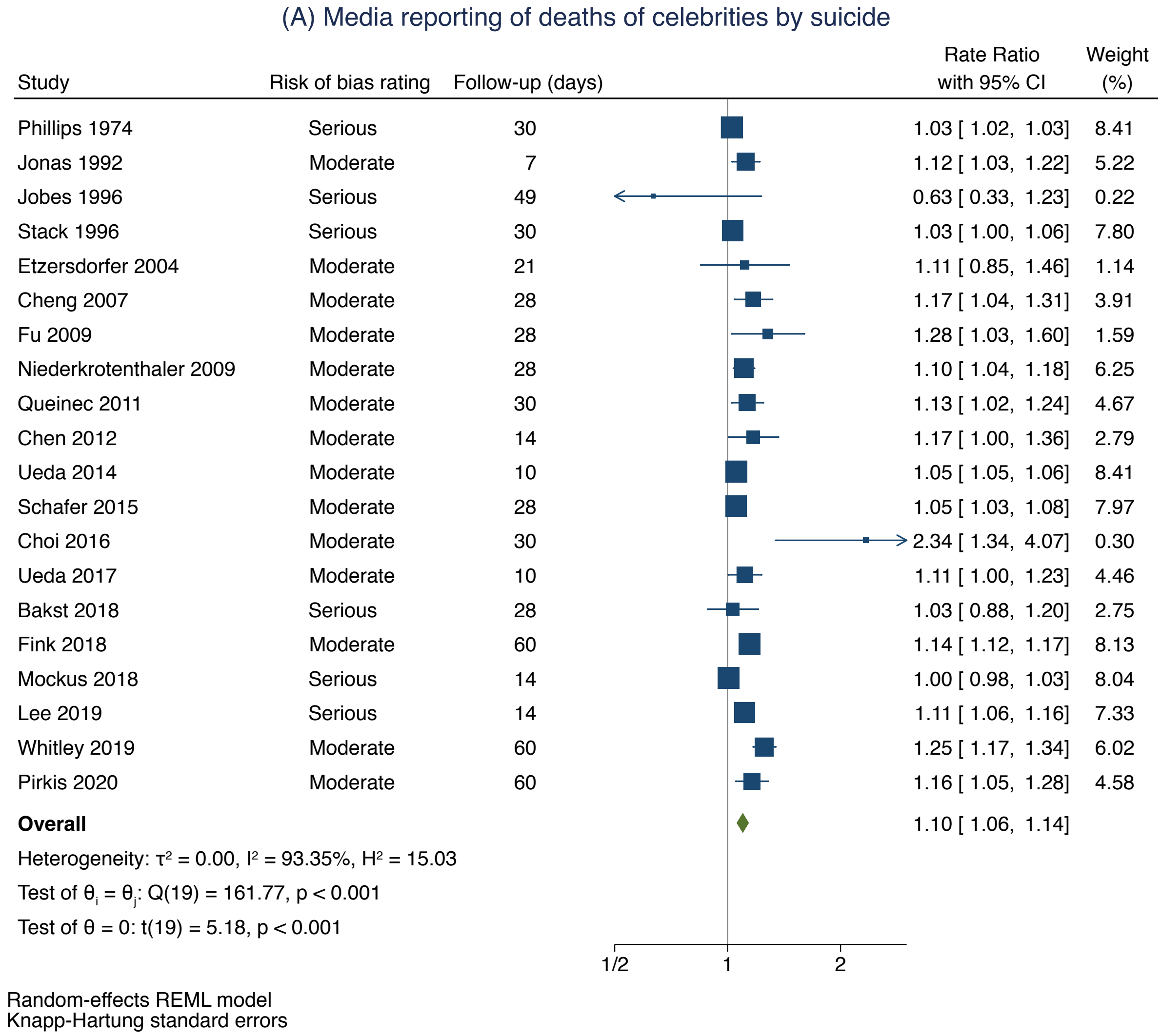
Table S4: Univariate meta-regressions of the effect of method-specific reporting of deaths of celebrities by suicides on total suicides by study factors (all studies at moderate risk of bias)

	Number of studies	RR (95% CI)[a]	P-value	I^{2*}
Method			0.58	66.4%
Hanging	4	1.34 (1.15 to 1.55)		
Other methods	7	1.27 (1.09 to 1.47)		
Period published			0.94	76.3%
≤2010	4	1.35 (1.06 to 1.70)		
2011 to 2015	4	1.28 (1.04 to 1.58)		
≥2016	3	1.30 (1.07 to 1.58)		
Location			0.92	76.3%
Asia	3	1.36 (1.03 to 1.80)		
Europe	5	1.29 (1.07 to 1.55)		
North America/Australia	3	1.30 (1.07 to 1.58)		
Celebrity recognition			0.52	72.3%
Local	4	1.39 (1.09 to 1.77)		
International	7	1.28 (1.14 to 1.44)		
Celebrity type			0.72	68.9%
Entertainer	6	1.32 (1.15 to 1.52)		
Other	5	1.28 (1.08 to 1.51)		
Study length (per 1000 days)	11	0.99 (0.96 to 1.03)	0.74	76.8%
Unit of analysis				
Day	6	1.25 (1.07 to 1.47)	0.73	69.6%
Week	3	1.37 (1.04 to 1.79)		
Month	2	1.35 (1.09 to 1.67)		
Adjustment for confounders			0.44	75.8%
No	6	1.27 (1.11 to 1.45)		
Yes	5	1.38 (1.14 to 1.65)		

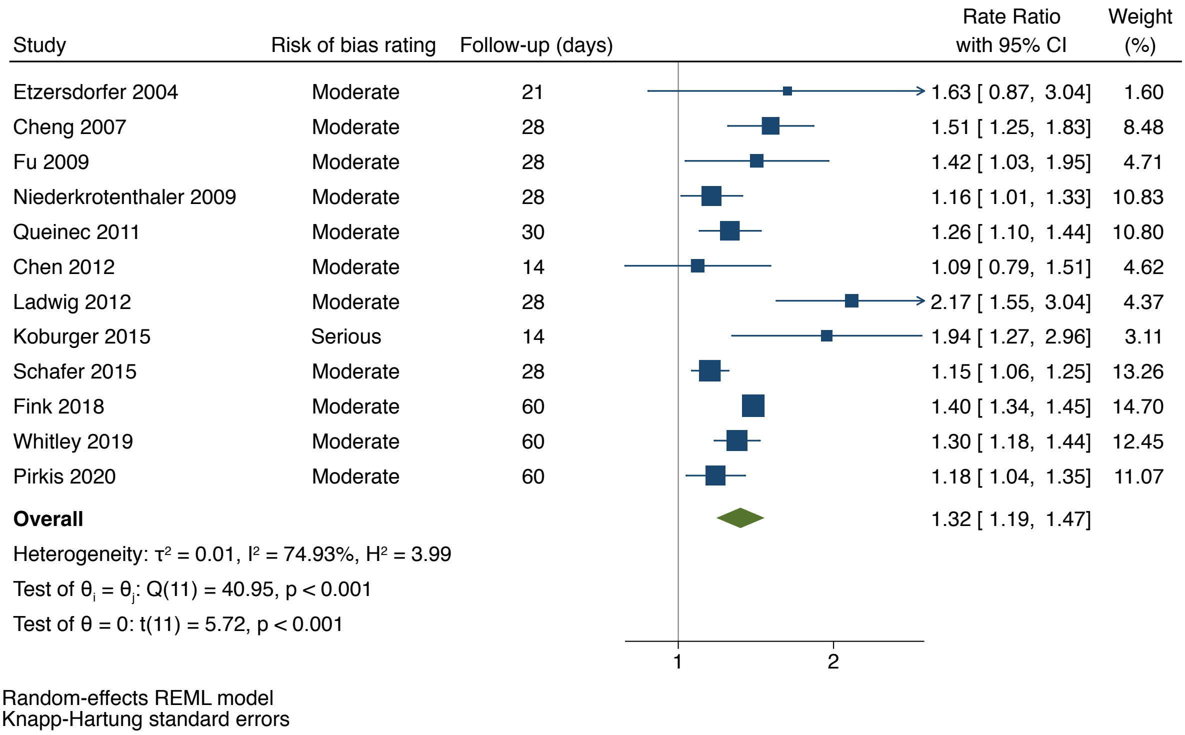
[a] The rate ratio in each category calculated using the exponential of the linear combination of coefficients from the meta-regression model.

* Heterogeneity remaining after meta-regression.

Figure S1: Forest plot for sensitivity analyses (all studies at moderate and serious risk of bias).



(B) Reporting of method of suicide used by a celebrity



(C) General reporting of suicide

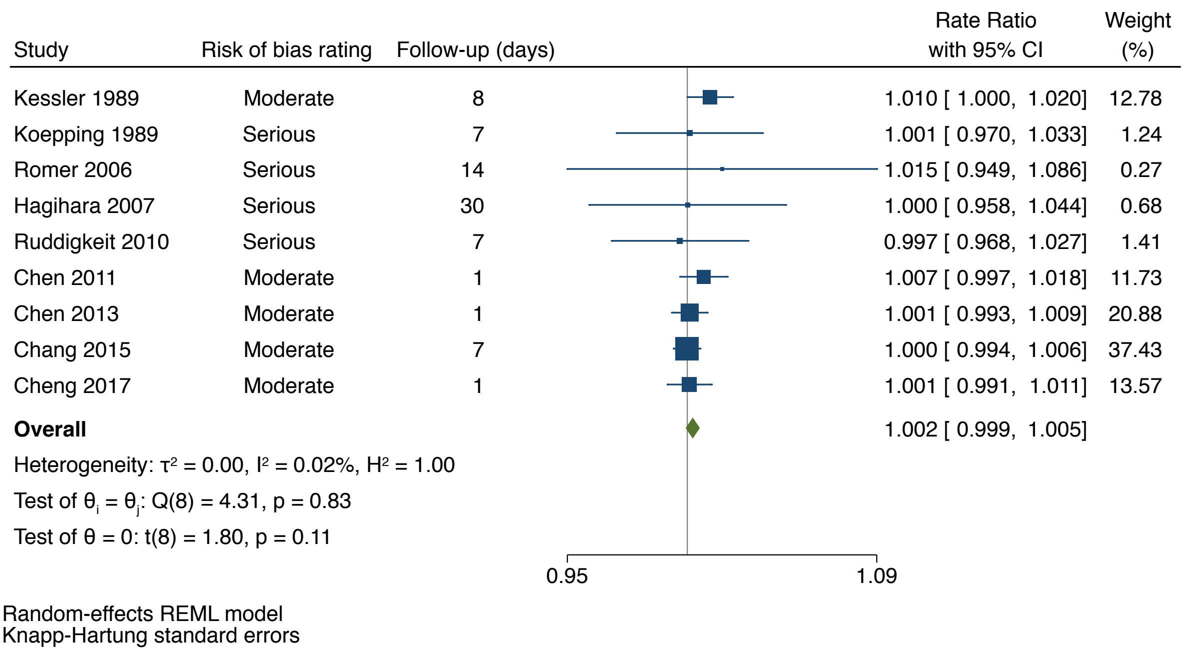


Table S5. Univariate meta-regressions of the effect of reporting on deaths of celebrities by suicide on total suicides by study factors (all studies at moderate and serious risk of bias)

	Number of studies	RR (95% CI)[a]	P-value	I^2 [b]
Period published			0.42	86.8%
≤2005	5	1.05 (0.97 to 1.14)		
2006 to 2010	3	1.15 (1.03 to 1.28)		
2011 to 2015	4	1.08 (1.00 to 1.17)		
≥2016	8	1.12 (1.06 to 1.19)		
Follow-up time			0.48	89.6%
≤14 days	6	1.08 (1.01 to 1.15)		
≥15 days	14	1.11 (1.06 to 1.16)		
Location			0.95	90.7%
Asia	8	1.11 (1.03 to 1.18)		
Europe	6	1.09 (1.01 to 1.18)		
North America/Australia	6	1.10 (1.03 to 1.18)		
Study design			0.23	89.3%
Multiple arm pre-post comparison	7	1.06 (0.99 to 1.13)		
Interrupted time-series analysis	13	1.11 (1.07 to 1.17)		
Study length (per 1000 days)	20	1.00 (0.99 to 1.01)	0.50	93.2%
Unit of analysis			0.52	90.7%
Day	10	1.08 (1.03 to 1.14)		
Week	4	1.17 (1.03 to 1.34)		
Month	6	1.10 (1.03 to 1.18)		
Adjustment for confounders			0.51	94.0%
No	13	1.09 (1.04 to 1.14)		
Yes	7	1.12 (1.04 to 1.20)		
Celebrity recognition			0.05	85.4%
Local	7	1.12 (1.05 to 1.20)		
International	4	1.17 (1.09 to 1.26)		
Local and international	9	1.06 (1.02 to 1.10)		
Celebrity type			0.002	81.4%
Entertainer	7	1.17 (1.11 to 1.24)		
Other	13	1.06 (1.03 to 1.09)		
Number of celebrities			0.002	81.2%
1	8	1.17 (1.11 to 1.24)		
≥2	12	1.06 (1.03 to 1.09)		

[a] The rate ratio in each category calculated using the exponential of the linear combination of coefficients from the meta-regression model.

[b] Heterogeneity remaining after meta-regression.

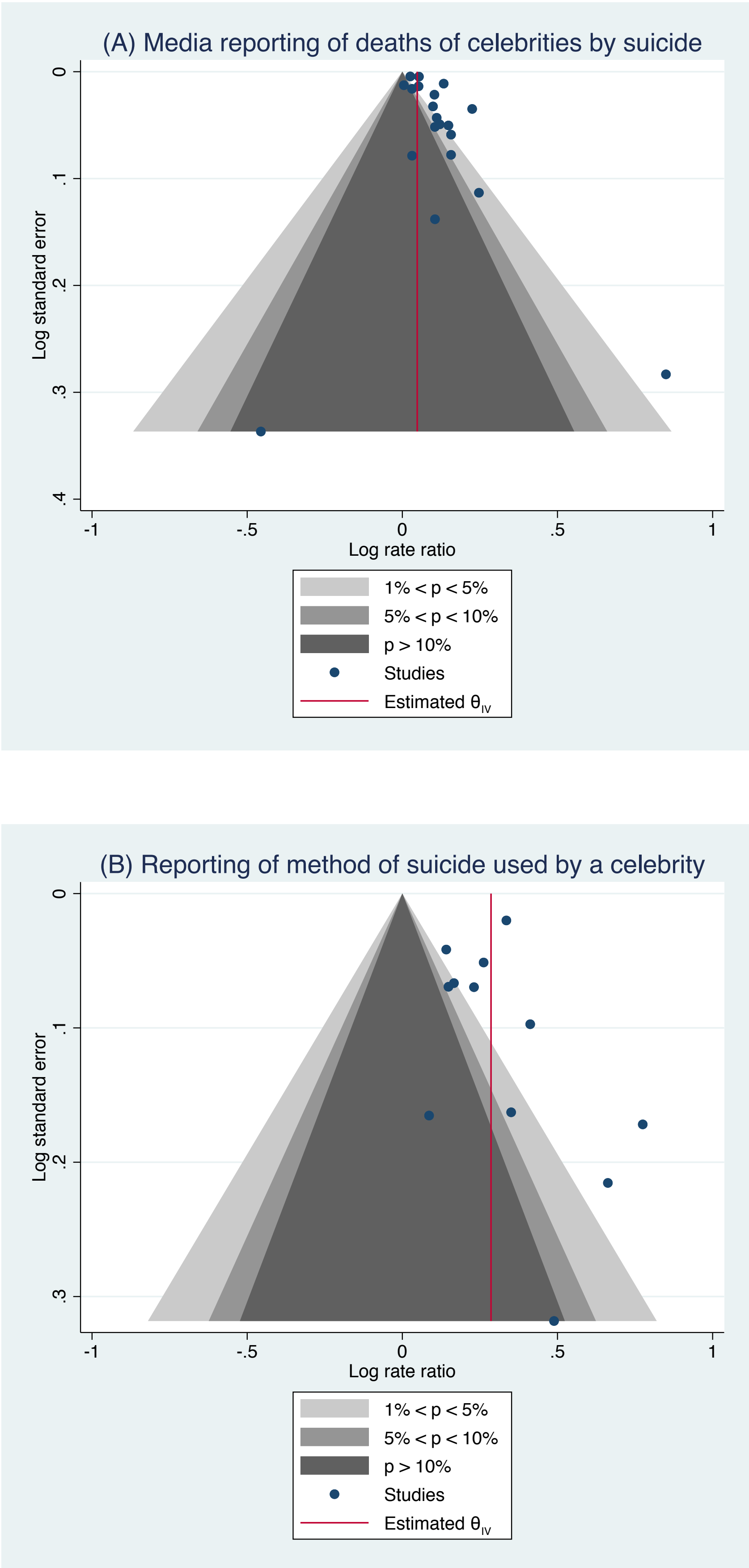
Table S6: Univariate meta-regressions of the effect of method-specific reporting of deaths of celebrities by suicide on total suicides by study factors (all studies at moderate and serious risk of bias)

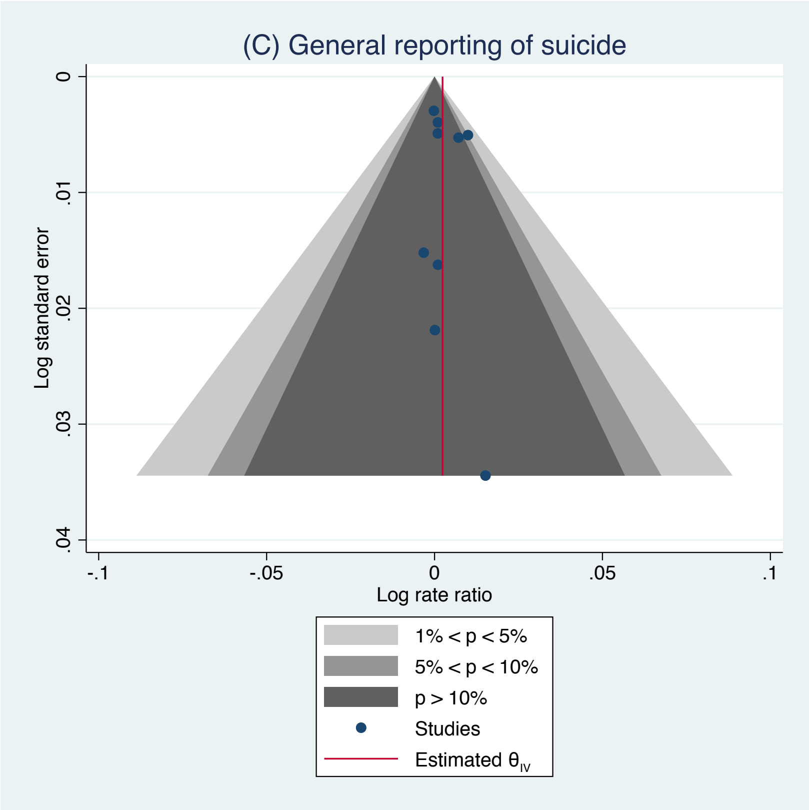
	Number of studies	RR (95% CI)[a]	P-value	I^2 [b]
Method			0.91	75.5%
Hanging	8	1.34 (1.12 to 1.59)		
Other methods	4	1.32 (1.13 to 1.55)		
Period published			0.94	79.3%
≤2010	4	1.35 (1.06 to 1.73)		
2011 to 2015	5	1.35 (1.09 to 1.66)		
≥2016	3	1.30 (1.05 to 1.61)		
Location			0.94	79.3%
Asia	3	1.36 (1.02 to 1.81)		
Europe	6	1.35 (1.11 to 1.63)		
North America/Australia	3	1.30 (1.05 to 1.61)		
Celebrity recognition			0.65	76.2%
Local	4	1.39 (1.07 to 1.79)		
International	8	1.31 (1.15 to 1.48)		
Celebrity type			0.86	77.8%
Entertainer	6	1.32 (1.12 to 1.55)		
Other	6	1.35 (1.12 to 1.61)		
Study length (per 1000 days)	12	0.99 (0.96 to 1.02)	0.51	79.5%
Unit of analysis			0.66	76.3%
Day	6	1.27 (1.07 to 1.50)		
Week	4	1.44 (1.12 to 1.85)		
Month	2	1.35 (1.06 to 1.72)		
Adjustment for confounders			0.58	77.8%
No	7	1.30 (1.13 to 1.49)		
Yes	5	1.38 (1.13 to 1.68)		

[a] The rate ratio in each category calculated using the exponential of the linear combination of coefficients from the meta-regression model.

[b] Heterogeneity remaining after meta-regression.

Figure S2: Funnel plot for sensitivity analyses (all studies at moderate and serious risk of bias)




(C) General reporting of suicide
Log standard error
0
.01
.02
.03
.04
-.1
-.05
0
.05
.1
Log rate ratio
1% < p < 5%
5% < p < 10%
p > 10%
Studies
Estimated θIV