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Original Article

Reducing suicidal ideation through protective media content in India: randomised controlled trial

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Background

Responsible media reporting of suicide is a population-level suicide prevention intervention, yet there is no experimental evidence from low-income settings.

Aims

We assessed the effects of exposure to educative suicide prevention content and stories of surviving a suicide crisis in the print media on reducing suicidality in India.

Method

A three-arm randomised controlled trial (Clinical Trials Registry of India, ref: CTRI/2022/09/045439) was conducted in Chennai, India, between August 2023 and March 2024. Participants were young adults (18–29 years), recruited through social media advertisements, randomised 1:1:1 to a control group and two intervention groups. Data were analysed during June–September 2024. All three groups were exposed to three 600-word purpose-designed Tamil-language print media articles on digital tablets. Intervention group 1 was exposed to three print media articles containing educative suicide prevention content. The same articles given to intervention group 2 were modified to contain brief accounts of young adults who had coped with experiences of suicidal ideation. The control group was exposed to three print media articles on diabetes. Suicidal ideation was measured using the 23-item Survival and Coping Beliefs subscale of the Reasons for Living Scale at baseline, post-test and 14-day follow-up.

Results

Of 375 participants, randomisation resulted in 125 being assigned to the control group and 124 and 126 to intervention groups 1 and 2, respectively; 16 were lost to follow-up. At post-test, participants randomised to intervention group 1 demonstrated small improvements in suicidal ideation at post-test (standardised mean difference (SMD) = 0.15, $p = 0.019$) and follow-up (SMD = 0.17, $p = 0.038$). Larger effects were observed among participants with greater vulnerability (post-test, SMD = 0.25, $p = 0.039$; follow-up, SMD = 0.32, $p = 0.023$). There were no improvements in suicidal ideation in intervention group 2 at post-test, yet a marginal (SMD = 0.16, $p = 0.053$) effect was observed at follow-up.

Conclusions

Exposure to educative print media articles can result in small improvements in suicidal ideation that would represent a substantial population-level impact.

Keywords

India; suicide; self-harm; low and middle income countries; experimental design.

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Suicide rates in India are among the highest in the world, with the most recent estimates ranging between 18 and 21 deaths per 100 000 population (*c.f.* the global average of 11/100 000). This equates to an estimated 230 000 suicides annually with far-reaching consequences.[1] Young people are a particularly important and high-profile group at risk in India, with the suicide rate among youth aged 15–29 years roughly double the national average.[1] The first national suicide prevention strategy, developed in 2022,[2] identified media reporting of suicide as a key area for intervention. Responsible media reporting of suicide is a population-level suicide prevention intervention recommended by the World Health Organization (WHO).[3–5] Numerous ecological studies from 'Western' high-income country settings have demonstrated that some media reports of suicide incidents can be a stimulus for imitation acts.[6–8] This is known as the *Werther effect*. Consequently, media guidelines published by the WHO recommend avoiding some media reporting practices,[4] such as publishing a detailed description of the suicide method. These media guidelines also encourage reporting practices that are potentially protective, such as educating the public about suicide, providing details for a suicide helpline and reporting on stories of people who have found ways to navigate through and cope with suicidal thoughts. However, there has been less research into the potential to generate protective effects from media stimuli. A recent meta-analysis of eight experimental studies, all undertaken in either Austria or Australia, observed that exposure to educative suicide prevention media content containing stories of hope and recovery from a suicide crisis can have protective effects on suicidal ideation among people with greater pre-existing vulnerability.[9] This has become known as the *Papageno effect*. These narratives are hypothesised to exert their effects by presenting models of coping and help-seeking, strengthening beliefs about the possibility of surviving suicidal crises and thereby reducing suicidal ideation, particularly among individuals with higher baseline vulnerability.

Mass media in India

Until now, no experimental studies[10] have been undertaken in low- and middle-income countries, where this intervention is appealing because of the potential to generate population-level effects at low cost. The mass media market in India has until recently continued to observe exponential growth and diversification in the number of mass media outlets since the market was privatised in the late 1990s, with particular growth in print and digital news platforms.[11] In contrast to many high-income countries, where newspaper circulation has declined, India has maintained steady annual growth in terms of publications and income.[12,13] Print media

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therefore reaches very large segments of the population, and most major titles now also have strong online editions. Competition is fierce to attract lucrative advertising revenue, and there is a high level of global commercial interests in the purchasing power of the rapidly expanding middle class in India.[14] As in many countries, this has seen the rapid expansion of a '24/7' breaking news culture. Alongside this trend, the diversity of cultures in India has seen strong demand for a wide array of local/regional news channels, catering to diverse languages and tastes.[11] Of the 400 million copies of newspapers circulated daily, approximately 50% are in Hindi, and the remainder are in English and a wide range of regional vernacular languages.[13]

Media coverage of suicide in India

In India, the setting of our study, 'attempt to commit suicide' was a crime under the Indian Penal Code until 2017, which has resulted in strong social taboos and a high level of stigma around suicide.[15] Relatedly, our prior research has shown that readers of print media in India are exposed to a daily diet of brief, explicit and simplistic reporting of suicides and suicide attempts, predominantly developed by crime reporters.[16,17–20] Recommended reporting characteristics, such as providing information on suicide prevention programmes are rare, and hopeful stories of people who have survived a suicide crisis are almost non-existent. Importantly, even when individuals do not read the original print media articles, suicide reports from newspapers and online print media are frequently repackaged and shared via social media and other digital platforms, further amplifying their potential reach and impact. The poor quality of media reporting in India compares starkly to countries such as Australia, where there has been more than a decade of dedicated work to improve media reporting of suicide and where, for example, inclusion of information on suicide helplines in news coverage has become common practice.[21]

Current study

Our study reports on a three-arm randomised controlled trial (RCT) with young adults in India to assess the effects of exposure to educative suicide prevention content in the print media on reducing suicidality and improving stigma of suicide, knowledge of suicide and intentions to seek help. We also assessed whether modifying the print media stimuli to include brief lived experience stories of hope and survival of a suicide crisis would result in larger reductions in suicidal ideation than educative content alone. Finally, we examined whether the effects of the print media articles differed by the degree of participant vulnerability to suicide.

Method

Study design

The study design was a three-arm RCT measuring the effects of protective suicide content in print media articles, with an allocation ratio of 1:1:1 to achieve equal group sizes. Measurement occurred at baseline (before randomisation), post-test and 14-day follow-up. The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national and institutional committees on human experimentation and with the Helsinki Declaration of 1975, as revised in 2013. All procedures involving human subjects were approved by the Human Ethics Committee at the University of Melbourne (Ref: 2021-20927-15388-3) and by the Schizophrenia Research Foundation (SCARF) in India (Ref: SRF-SAMARTH/02/FEB-2022), a WHO Collaborating Centre for Mental Health Research and Training. The study also received approval from the Health Ministry Steering Committee at the Indian Council of Medical Research and was registered with the Clinical Trials Registry of India (Ref: CTRI/2022/09/045439; https://ctri.nic.in/Clinicaltrials/advancesearchmain.php).

Participants

Eligible participants were young adults (18–29 years of age) living in Chennai, India. Exclusion criteria included: (a) low literacy, which prevented completion of the study questionnaire, or (b) being a health professional or a student of a health-related course.

Participants were recruited using social media advertisements on Facebook and snowball sampling, and written informed consent was obtained. They were informed that the study was about the effects of reading media reports on health and social issues. Participants were provided with Rs500 (~US$6) at post-test and Rs750 (~US$9) at follow-up to reimburse travel expenses and time spent participating in the study. Data were collected in a hired office space setting in central Chennai.

Randomisation and masking

In blocks of six, participants first completed baseline measures on digital tablets using a Research Electronic Data Capture (REDCap) survey and were then randomised using the randomisation module in REDCap at an allocation ratio of 1:1:1 to achieve equal group sizes. REDCap then immediately exposed participants to the intervention and control articles on the same digital tablet. Participants were blinded to group allocation and the study hypotheses; to support this, the questionnaire also contained measures related to the control condition (i.e. knowledge and attitudes related to diabetes) to maintain blinding. Because randomisation was implemented entirely within REDCap, the research assistants facilitating data collection were blinded to group allocation, and both the research assistants and the data analyst were blinded to both group allocation and the study hypotheses.

Procedures

Participants were randomised to one of two intervention groups (intervention groups 1 and 2) or a control group. All three groups were exposed to three brief (~600 words) Tamil-language print media articles that varied by group, on digital tablets (see Supplementary File 1 available at https://doi.org/10.1192/bjp.2026.10799). The articles used in the study were co-designed with a senior Indian media professional. Each article was first written in English (for our multi-lingual investigator team), then translated into Tamil, then back-translated into English to ensure equivalence of meaning. Intervention group 1 were exposed to three articles containing educative suicide prevention content. These articles were characterised by coverage of the new national suicide prevention strategy, real suicide prevention programmes; debunking suicide myths, opinions from mental health experts, encouraging people to seek help and messages of hope that people with suicidal thoughts can find a way to survive a suicide crisis with support. Intervention group 2 were exposed to a modified version of the same three print media articles given to intervention group 1. The articles were of the same length but were modified to each contain one ~250-word account of a young adult who had coped with experiences of suicidal ideation, emphasising examples of help-seeking and a range of different coping strategies and supports. To accommodate these narratives while maintaining the same article length, there was a reduction in the amount of expert commentary. These articles were based on real stories, but with fictional identities and locations. The control group

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was exposed to three print media articles on diabetes, a public health issue unrelated to suicide and unlikely to impact responses on the study measures.

Outcomes

Data were collected using a self-administered questionnaire on digital tablets implemented using REDCap (Research Electronic Data Capture; hosted on University of Melbourne servers and accessed via Windows 10/11; Vanderbilt University, Nashville, Tennessee, USA; https://projectredcap.org), a secure, web-based application for building and managing online surveys. We randomised the sequence of the outcome measures to avoid bias.

Primary outcome

Suicidal ideation was measured using the Survival and Coping Beliefs subscale of the Reasons for Living Scale (RFLS),[22,23] a 24-item measure of suicidal ideation that explores positive reasons to refrain from suicide (e.g. 'I believe I can learn to cope with my problems'). Scale scores are reverse-coded, resulting in higher scores indicating higher suicidal ideation. Participants rate each reason for not personally dying by suicide on a scale from 1 (not at all important) to 6 (extremely important). It has a solid theoretical base and by focusing on strengths rather than weaknesses, it has been used to assess beliefs about internal capacity to refrain from suicide. It has been used to assess media-induced changes in suicidal ideation.[24–26] We translated the tool into Tamil and undertook a validation study in Chennai, India, which recommended dropping item 4 to improve internal consistency. The 23-item Tamil version of the subscale yielded acceptable content validity, excellent internal consistency (Cronbach's alpha > 0.9) and test–retest reliability (ICC = >0.8).

Secondary outcomes

Stigmatising attitudes towards suicide were measured using the 44-item Suicide Stigma Assessment Scale (SSAS).[27,28] Participants are presented with a brief vignette about a person who has recently attempted suicide and are asked whether they endorse items such as 'How cowardly would you feel XX is?' and 'I would look down on XX'. Items are scored on a 9-point scale anchored by 'very much = 9' and 'not at all' (= 0), with scores ranging from 56 to 337. We translated the tool into Tamil language and back-translated it into English, and adapted the vignette to be culturally relevant.[29] In our data, the SSAS had excellent internal consistency (i.e. Cronbach's alpha = 0.87).

Suicide prevention knowledge was measured using the Literacy of Suicide Scale (LOSS).[30] Participants are asked to agree or disagree with 12 true (e.g. there is a strong relationship between alcoholism and suicide) or false (e.g. talking about suicide always increases the risk of suicide) statements regarding suicide. Items are scored as correct/incorrect and summed to yield a total literacy score.

Intentions to seek help were measured using the General Help-Seeking Questionnaire (GHSQ).[31] Participants were asked how likely they are to seek help if experiencing suicidal thoughts in the next 4 weeks from any of nine pre-coded options (for example, friends, parents, phone helplines, mental health professionals, other persons). Responses are captured on a 7-point Likert scale anchored by 'extremely unlikely' = 1 and 'extremely likely' = 7. We calculated an overall help-seeking intention score and also examined item-level intentions for specific sources of support (e.g. phone helplines), reflecting the source-specific structure of the instrument rather than assuming a single unidimensional scale.

Statistical analysis

We had powered the study to detect a small-to-moderate (Cohen's $d = 0.4$) effect size between study groups with 80% power (alpha = 0.05). We required 300 participants, which we raised to 375 to allow for a dropout rate of 25% by 14-day follow-up measurement. We recruited 375 participants, evenly spread across the three study groups (control group = 125, intervention group 1 = 124, intervention group 2 = 126). All participants completed baseline and post-test measurements, and only 4.3% ($n = 16$) had dropped out at 14-day follow-up. This sample size allowed us to have >80% power (alpha = 0.05) to detect small effect sizes (Cohen's $d = 0.2$) between study groups.

All analyses were undertaken using Stata version 18 (Stata/SE 18.0 for Windows; StataCorp LLC, College Station, Texas, USA; https://www.stata.com). Chi-square tests were used to check for differences in participant characteristics between study groups, and we observed a difference in the distribution of age between the three groups. Mean and s.d. were calculated for each outcome measure at each point of measurement. Linear regression (analysis of covariance (ANCOVA)) models were used to estimate the effects of the group (control, intervention group 1, intervention group 2) on the outcome measures at post-test, with group as an indicator variable, adjusting for age and the respective baseline values of the outcome measures. Similar models were then run for outcomes measures at follow-up. To examine whether the effects on suicidal ideation differed by participant vulnerability, we undertook *post hoc* subgroup analyses that only included participants with above-median scores on the suicidal ideation measure at baseline, consistent with prior studies.[9] Multiple imputation was used to handle the data from the small number of study dropouts. Effect sizes were expressed as standardised mean differences (SMDs), calculated as the regression coefficient divided by the pooled s.d., to provide a common effect-size metric across outcomes measured on different scales. SMDs of 0.2, 0.5 and 0.8 were considered small, medium and large, respectively. We conducted a sensitivity analysis for treatment effect estimates using linear mixed models.

Role of the funding source

The funder of the study had no role in study design, data collection, data analysis, data interpretation or writing of the report.

Results

Participants

Figure 1 shows the progress of participants through the trial. Recruitment commenced on 1 August 23, and between August 2023 and March 2024 a total of 562 people expressed interest, of whom 375 met the inclusion criteria and consented to participate. Randomisation resulted in 125 participants being assigned to the control group and 124 and 126 assigned to intervention groups 1 and 2, respectively. At 14-day follow-up, six participants were lost from the control group, and four and six from intervention groups 1 and 2, respectively.

Two-thirds (65%) were male, most (92%) were aged between 18 and 25 years, most (86%) had some exposure to higher education, more than two-thirds (70%) were students and most were unmarried/single (90%) (see Table 1). Half (50%) had known a friend or family member who had attempted or died by suicide, just over one in ten (12%) reported seriously thinking of killing themselves in the past 12 months and a little more than half (60%) recalled being exposed to news media related to suicide in the past 2 weeks. There was a significant difference in the age distribution

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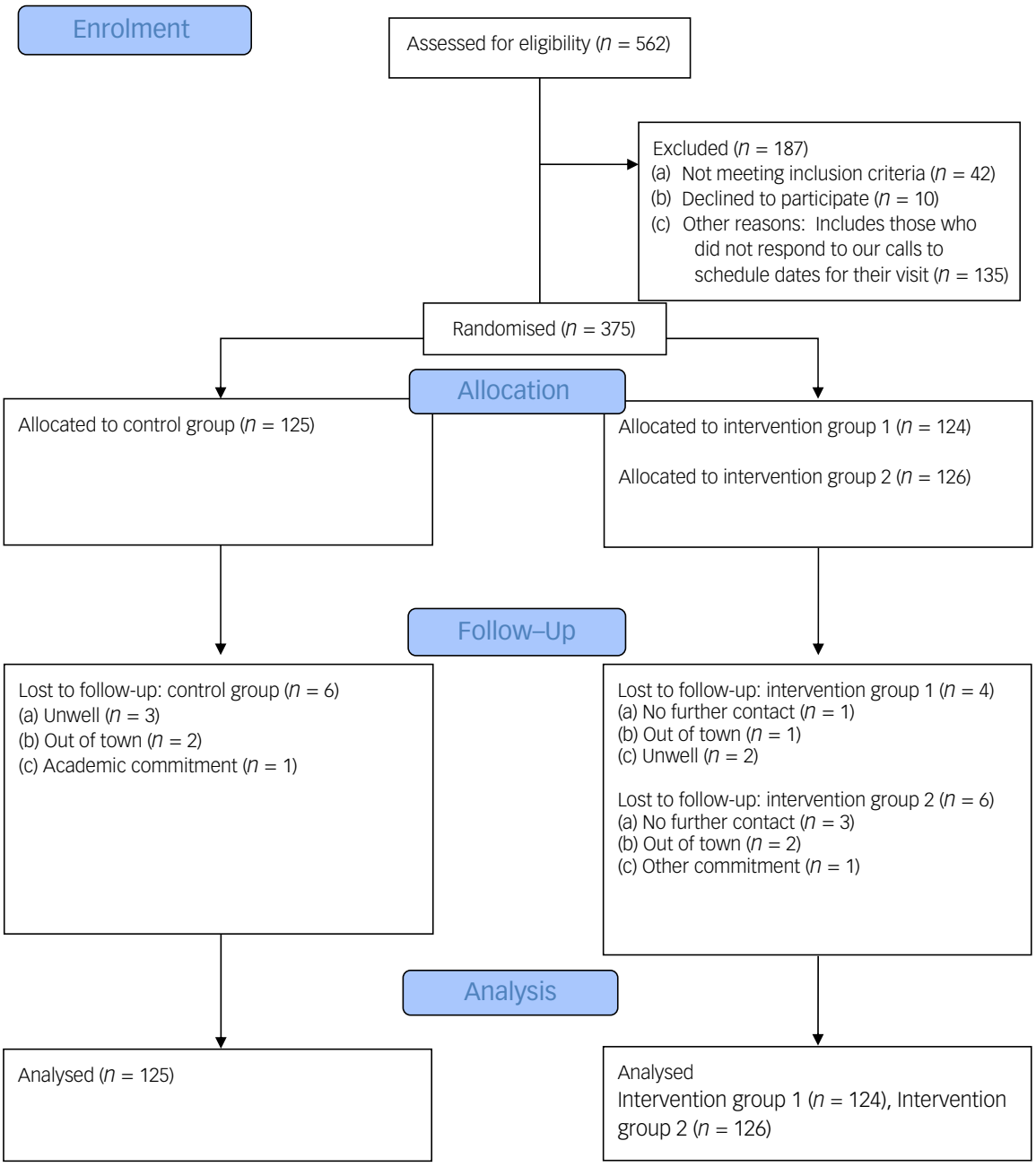


Fig. 1 CONSORT flow diagram.

across groups. At baseline, there were no statistically significant differences in the outcome measures between groups.

Primary outcome analyses

Table 2 shows the mean scores on the primary and secondary outcomes for the intervention and control groups at baseline/post-test and follow-up, and the results of the linear regression analyses.

Suicidal ideation

For the primary outcome, we observed a small and significant decrease in suicidal ideation in intervention group 1 at post-test (SMD = 0.15, $p = 0.019$), which was sustained at 14-day follow-up (SMD = 0.17, $p = 0.038$) (see Fig. 2). There was no significant effect on suicidal ideation in intervention group 2 at post-test (SMD = 0.05, $p = 0.534$), yet a marginal ($p = 0.053$) reduction in suicidal ideation was observed at 14-day follow-up (SMD = 0.16), which was comparable in size to the small effects in intervention group 1. There were no statistically significant differences in intervention effects on suicidal ideation between the two intervention groups at post-test and 14-day follow-up (see Supplementary Table 1).

In our subgroup analysis among participants with above-median scores on the suicidal ideation measure at baseline, we observed a statistically significant decrease in suicidal ideation in intervention group 1 at post-test (SMD = 0.25, $p = 0.039$), which was sustained at 14-day follow-up (SMD = 0.32, $p = 0.023$). In this subgroup, there was no effect on suicidal ideation in intervention group 2 at post-test (SMD = 0.09, $p = 0.349$), yet a significant decrease was observed at 14-day follow-up (SMD = 0.32, $p = 0.024$).

Secondary outcome analyses

Stigmatising attitudes

At both post-test and 14-day follow-up, we observed small and statistically significant reductions in stigmatising attitudes in

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Table 1 Baseline characteristics of study participants

Background characteristics	Control group ($n = 125$) *n* (%)	Intervention group 1 ($n = 124$) *n* (%)	Intervention group 2 ($n = 126$) *n* (%)	Total ($n = 375$) *n* (%)	p^a
Gender					
Male	83 (66.4)	80 (64.5)	79 (62.7)	242 (64.5)	0.829
Female	42 (33.6)	44 (35.5)	47 (37.3)	133 (35.5)	
Age group					
18–21 years	66 (52.8)	55 (44.4)	75 (59.5)	196 (52.3)	0.037
22–25 years	54 (43.2)	54 (43.5)	42 (33.3)	150 (40)	
26–29 years	5 (4)	15 (12.1)	9 (7.1)	29 (7.7)	
Highest educational qualification					
Completed high school	15 (12)	9 (7.3)	18 (14.3)	42 (11.2)	0.44
Currently undertaking a college/tertiary qualification	54 (43.2)	62 (50.0)	59 (46.8)	175 (46.7)	
Completed a college/tertiary qualification	53 (42.4)	51 (41.1)	44 (34.9)	148 (39.5)	
Others	3 (2.4)	2 (1.6)	5 (4.0)	10 (2.7)	
Main occupation					
Student	87 (69.6)	83 (66.9)	92 (73.0)	262 (69.9)	0.849
Employed or business	14 (11.2)	17 (13.7)	16 (12.7)	47 (12.5)	
Unemployed	20 (16.0)	18 (14.5)	13 (10.3)	51 (13.6)	
Others, including housewife	4 (3.2)	6 (4.8)	5 (4.0)	15 (4.0)	
Relationship status					
Unmarried/single	112 (89.6)	114 (91.9)	111 (88.1)	337 (89.9)	0.598
Others – engaged, living together, etc.	13 (10.4)	10 (8.1)	15 (11.9)	38 (10.1)	
In the past 2 weeks, how often did you read or watch news in the news media?					
Not at all	10 (8.0)	18 (14.5)	22 (17.5)	50 (13.3)	0.078
Once or twice	62 (49.6)	52 (41.9)	57 (45.2)	171 (45.6)	
Most days of the week	43 (34.4)	39 (31.5)	28 (22.2)	110 (29.3)	
Daily	10 (8.0)	15 (12.1)	19 (15.1)	44 (11.7)	
In the past 2 weeks, how often have you read or seen news about suicide?					
Never	33 (26.4)	35 (28.2)	42 (33.3)	110 (29.3)	0.171
Once	48 (38.4)	31 (25.0)	38 (30.2)	117 (31.2)	
Twice or more	29 (23.2)	45 (36.3)	34 (27.0)	108 (28.8)	
I don't remember	15 (12.0)	13 (10.5)	12 (9.5)	40 (10.7)	
Have you ever known a friend or family member who attempted suicide or died by suicide?					
Yes	63 (50.4)	63 (50.8)	60 (47.6)	186 (49.6)	0.86
No	62 (49.6)	61 (49.2)	66 (52.4)	189 (50.4)	
In the past 12 months, have you seriously thought about killing yourself?					
Yes	19 (15.2)	11 (8.9)	16 (12.7)	46 (12.3)	0.309
No	106 (84.8)	113 (91.1)	110 (87.3)	329 (87.7)	
Drop-out at 14 days	6 (4.8)	4 (3.2)	6 (4.8)	16 (4.3)	0.782

a. *p* values are from a chi-square test.

intervention group 1 (post-test SMD = 0.19, $p = 0.011$; 14-day SMD = 0.19, $p = 0.035$) and intervention group 2 (post-test SMD = 0.16, $p = 040$; 14-day SMD = 0.26, $p = 0.003$).

Suicide prevention knowledge

At both post-test and 14-day follow-up, we observed moderate and statistically significant increases in suicide prevention knowledge in intervention group 1 (post-test SMD = 0.52, $p < 0.001$; 14-day SMD = 0.50, $p < 0.001$) and intervention group 2 (post-test SMD = 0.36, $p < 0.001$; 14-day SMD = 0.44, $p < 0.001$).

Intended help-seeking behaviour

We observed a small and statistically significant increase in total intended help-seeking behaviour scores in intervention group 1 at post-test (SMD = 0.16, $p = 0.011$), which was not sustained at 14-day follow-up (SMD = 0.02, $p = 0.852$). There was no change in total intended help-seeking behaviour scores in intervention group 2 (post-test SMD = 0.03, $p < 0.687$; 14-day SMD = 0.03, $p < 0.698$). *Post hoc* analyses examined the effects on intentions to seek help from specific types of support (see Supplementary Table 2). Compared with the control group, participants in intervention group 1 exhibited small increases in intentions to seek help from intimate partners (SMD = 0.16, $p = 0.028$), phone helplines (SMD = 0.32, $p > 0.001$) and mental health professionals (SMD = 0.15, $p < 0.040$). We also observed an increase in intentions to seek help from phone helplines (SMD = 0.26, $p = 0.067$) in intervention group 2 at post-test. No effects were sustained at 14-day follow-up in either group.

Sensitivity analysis

The treatment effect estimates were consistent across ANCOVA and linear mixed models, indicating that the substantive findings are robust. Differences in *p*-values arise because mixed models partition variance differently and incorporate correlation across repeated measures, which affects standard errors but not the underlying effect size (see Supplemental Table 3).

Discussion

Young adults who viewed the print media content with educative suicide prevention messaging demonstrated small reductions in suicidal ideation and stigmatising attitudes, and improvements in suicide prevention knowledge and intended help-seeking. These improvements were sustained at 14-day follow-up, other than for intended help-seeking. Importantly, the improvements in suicidal

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Table 2 Linear regression of intervention effects compared with control group

Measures	Control ($n = 125$) Mean (s.d.)	Intervention group 1 ($n = 124$) Mean (s.d.)	Linear regression[a] β (95% CI)	p	SMD[c]	Intervention group 2 ($n = 126$) Mean (s.d.)	Linear regression[b] β (95% CI)	p	SMD[c]
Suicidal ideation									
Baseline	41.7 (15.1)	41.7 (13.7)				44.2 (14.6)			
Post-test	39.9 (16.1)	37.8 (13.5)	−2.20 (−4.03, −0.36)	0.019	0.15	41.5 (17.0)	−0.75 (−3.11, 1.61)	0.534	0.05
14 days	40.7 (16.7)	38.0 (13.8)	−2.76 (−5.37, −0.16)	0.038	0.17	40.5 (15.4)	−2.57 (−5.17, 0.03)	0.053	0.16
Suicidal ideation (among those with above the median score at baseline)									
Baseline	53.6 (13.4)	54.7 (10.8)				54.4 (13)			
Post-test	51.0 (15.3)	48.5 (13.7)	−3.68 (−7.17, −0.19)	0.039	0.25	50.5 (16.5)	−1.62 (−5.04, 1.79,)	0.349	0.09
14 days	52.5 (15.8)	48.2 (14.8)	−5.63 (−10.49, −0.77)	0.023	0.32	48.5 (16.5)	−5.23 (−9.76, −0.69)	0.024	0.32
Stigmatising attitudes									
Baseline	185.8 (39.5)	186.9 (37.8)				181.1 (37.9)			
Post-test	179.2 (52.5)	169.6 (46.1)	−9.90 (−17.48, −2.31)	0.011	0.19	166.8 (48.8)	−8.20 (−16.02, −0.38)	0.040	0.16
14 days	179.7 (51.2)	171.1 (41.8)	−9.04 (−17.45, −0.62)	0.035	0.19	163.5 (46.6)	−12.6 (−20.95, −4.26)	0.003	0.26
Suicide prevention knowledge									
Baseline	0.9 (3.2)	1.4 (2.8)				1.2 (3.0)			
Post-test	0.6 (3.0)	2.8 (3.7)	1.74 (1.01, 2.46)	<0.001	0.52	2.0 (3.3)	1.19 (0.55, 1.83)	<0.001	0.36
14 days	0.8 (3.2)	2.7 (3.4)	1.58 (0.83, 2.33)	<0.001	0.50	2.4 (3.2)	1.40 (0.66, 2.15)	<0.001	0.44
Intended help-seeking									
Baseline	35.1 (10.3)	34.1 (10.3)				35.0 (9.7)			
Post-test	35.8 (10.5)	37.0 (11.2)	1.84 (0.43, 3.25)	0.011	0.16	36.0 (9.5)	0.25 (−0.95, 1.44)	0.687	0.03
14 days	36.5 (9.9)	36.3 (10.1)	0.18 (−1.74, 2.10)	0.852	0.02	36.6 (10.0)	0.38 (−1.53, 2.29)	0.698	0.03

a. Effects on intervention group 1: change in respective outcome variables, adjusting for age, with an indicator variable for group.
b. Effects on intervention group 2: change in respective outcome variables, adjusting for age, with an indicator variable for group.
c. Standardised mean difference (SMD): linear regression beta coefficient divided by pooled s.d.

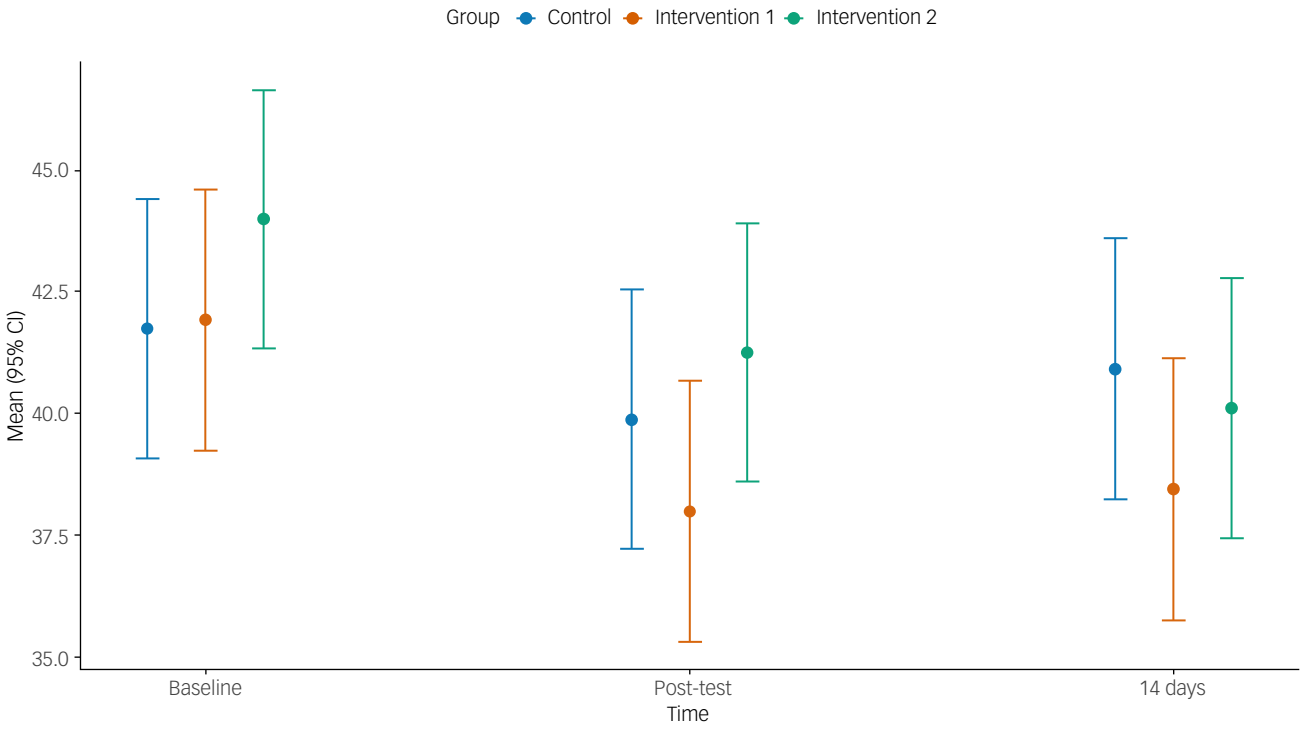


Fig. 2 Mean (95% CI) of suicidal ideation score by intervention groups and timepoints.

ideation were also observed in the subgroup of participants with greater vulnerability to suicidal ideation at baseline. The effect sizes were small, which is consistent with comparable previous studies on the effects of brief media stimuli on suicidal ideation.[9]

These findings are notable given participants were only exposed to three short (~600 words) print media articles. In line with conventional benchmarks, the effect sizes (i.e. SMDs) observed in this trial fall within the 'small' range (around 0.2), indicating modest individual-level changes in suicidal ideation. Many psychological interventions also yield small effects on suicidal ideation, and these are resource-intensive interventions that reach a limited number of at-risk people.[32,33] While the effects on suicidal ideation in our study were small, print media reaches many thousands of people in the general population in India,[13] and these small effects

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across a large number of people can represent a substantial population-level impact that is highly cost-effective. For example, the print media sector in India circulates an estimated 400 million copies daily across all languages. If brief educative content with effects of the magnitude observed in this trial were embedded routinely in widely read newspapers or their online editions, even a small average reduction in suicidal ideation could translate into a large absolute number of young adults experiencing lower levels of suicidal distress. Our findings therefore support the view that protective media content is best conceptualised as a population-level strategy that shifts risk distributions slightly for many people, rather than as an intensive clinical intervention targeting a few individuals at very high risk. Our findings suggest that protective media content may be a feasible and scalable component of a broader public-health strategy, when the intervention can be embedded in widely consumed media and repeatedly encountered over time.

This RCT was accompanied by a nested qualitative study using semi-structured interviews with 20 trial participants exposed to the protective media content.[34] That study showed that young adults in Chennai described routine suicide reporting as sensational, distressing and often misleading, while the educative and recovery-oriented articles used in our interventions were experienced as unexpectedly hopeful, myth-busting and supportive of help-seeking, thereby triangulating and enriching our quantitative findings.

Contemporary research in 'Western' cultural settings and international media guidelines recommend the use of hopeful narratives of people surviving suicide crises.[4,9,35] In our trial, adding brief lived-experience narratives to educative content did not clearly produce larger or more immediate effects on suicidal ideation than educative content alone, although a delayed effect emerged at 14-day follow-up among participants with greater baseline vulnerability. One plausible explanation is methodological: unlike most Papageno-type interventions where the media piece is entirely devoted to a recovery story, our narratives were short vignettes (about 250 words) embedded within broader educative articles, with a corresponding reduction in expert commentary to maintain equal length, so the 'dose' of narrative content may have been too small to produce incremental benefits within a single exposure. One possible explanation for the delayed effect is that these hopeful survival narratives are almost non-existent in the media in India,[16,36] and time may have been required to reflect on and digest these stories. It is also possible that the reception and impact of lived-experience narratives differ across cultural contexts. Although the vignettes were based on real lived experiences and co-designed with local experts, they may not capture all the help-seeking pathways and contexts that feel most salient or realistic for all young adults in this setting. In view of these design and contextual considerations, our findings should not be interpreted as evidence against the Papageno effect in India or other low- and middle-income countries, but rather as indicating that both the format (brief embedded vignettes versus full recovery stories) and the cultural tailoring of narratives are crucial design elements that warrant further investigation.

Our finding of a reduction in stigmatising attitudes, sustained at 14-day follow-up in both intervention groups, is also remarkable. Prior research has found suicide-related attitudes to be resistant to change after exposure to brief media stimuli.[24,37] However, these prior studies have been undertaken in settings where the general population has been exposed to prior suicide prevention campaigns, potentially causing ceiling effects in these studies. It is plausible that media stimuli may be more likely to have effects on attitudes in locations where protective media content related to suicide is rare. Although suicidal ideation was specified as the primary outcome, the observed improvements in suicide-related knowledge and stigma are central to the public health significance of this intervention and likely represent important mechanisms through which brief protective media content may contribute to longer-term prevention.

Strengths and limitations

A strength of the study was that it is the first experiment to report effects of protective media content related to suicide in South Asia, where there is a significant suicide burden. Indeed, it is the first such experiment outside of Austria or Australia. A further strength is the follow-up period of 14-days, which goes beyond prior studies that tested either immediate effects or effects at 1 week.[9,26] The study also has some limitations. First, we used a convenience sample, which was well educated, and students were over-represented, limiting generalisability. Second, suicidal ideation was ascertained through participants' responses to a questionnaire, without clinical evaluation. Finally, although it is encouraging that some effects persisted at 14-day follow-up, this remains a relatively short timeframe, and our findings should be interpreted as evidence of short-term impact pending further research on the durability of effects and the optimal frequency of exposure in real-world prevention settings.

In conclusion, this study indicates that exposure to brief media stimuli with educative suicide prevention messaging can lead to small improvements in suicidality, stigmatising attitudes, suicide prevention knowledge and intentions to seek help. Media stimuli can reach very large numbers of people, and educative suicide prevention media messaging is an important strategy for suicide prevention in India.

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Supplementary material

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Data availability

Data may be obtained from a third party and are not publicly available. Raw data cannot be shared publicly due to ethical restrictions, as permission from participants was not sought to place their data in a public repository given the highly stigmatised nature of suicidality. Requests for access to the raw data can be sent to the Human Research Ethics Committee at the University of Melbourne (Ref: 2021-20927-15388-3) at HumanEthics-Enquiries@unimelb.edu.au.

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Author contributions

G.A., L.V., T.N. and J.P. conceptualised the study. G.A., T.H., R.M. and S.K. verified the data. R.M., S.K., T.H. and G.A. curated the data. T.H. and M.J.S. conducted the formal analysis. G.A., L.V., T.N. and J.P. secured funding. G.A., L.V., S.K. and R.M. conducted the investigation. G.A., L.V., T.N., T.H. and M.J.S. developed the methodology. R.M., S.K., B.N., D.S. and G.A. administered the project. G.A., L.V., S.K. and R.M. provided resources. G.A. and L.V. supervised the

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study. G.A. and T.H. wrote the original draft. G.A., S.K., R.M., T.H., M.J.S., T.N., J.P., B.N., D.S. and L.V. reviewed and edited the manuscript. All authors read and approved the final version of the manuscript.

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Declaration of interest

L.V. is a member of the editorial board of the *British Journal of Psychiatry*, and did not take part in the review or editorial decision-making process for this paper.

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