Implementation of a comprehensive surveillance system for recording suicides and attempted suicides in rural India

Lakshmi Vijayakumar,1 Soumitra Pathare,2 Nikhil Jain,2 Renuka Nardodkar, Zeeman3

ABSTRACT

Introduction WHO reports that 78 of the 140 low-income and middle-income countries (LMICs) do not have a registration system for suicides and attempted suicides. Absence of data on suicide and attempted suicide in LMICs, which account for 79% of suicides worldwide, is a major impediment in understanding the magnitude of the problem and formulating prevention strategies to reduce suicide and self-harm. A comprehensive surveillance system has the potential to address this data gap. The objective of this study is to describe the development of a comprehensive surveillance system in rural India by adding a community based component and reflect on its added value in obtaining data on suicide and attempted suicide compared with relying only on hospital and police records.

Method The comprehensive system consists of three components. Community surveillance involved collecting information on suicides and attempted suicides from third party key informants such as village heads, teachers, priests, shopkeepers, private physicians, private hospitals and community health workers. The second component consisted of data from public health facilities. The final component consisted of suicide data from police records. Information was collected for a period of 12 months from August 2018 to July 2019 from 116 villages (population 377,276) in Gujarat, India.

Results An average of 710 community informants were interviewed each month (mean: 6.72 informants per village). The community surveillance system identified 67 cases of suicide compared with 30 cases by hospital and police records (Cochran’s Q test 67.9 p<0.01) and 70 attempted suicides compared with 51 from the hospital and police records (Cochran’s Q test 66.6 p<0.01).

Discussion This is the first report of implementing a large-scale comprehensive surveillance system for suicide and attempted suicide in a LMIC. The combination of community surveillance system and official data from hospital and police record addresses the problem of under-reporting of suicide and suicide attempts in India and other LMIC.

INTRODUCTION

Suicide is a global public health problem accounting for 1.4% of all deaths worldwide, making it the 18th leading cause of death in all age groups and the second leading cause of death among young adults between 15 and 29 years of age.1 Suicides occurring in low-income and middle-income countries (LMIC) contribute to 79% of the suicides globally.2

Compared with other countries, suicide rates are higher in the South Asia region3; WHO has estimated that WHO South-East Asia Region accounts for 39% of global suicides and represents 26% of the world population.1 Of the total estimated 817,000 global deaths by suicide reported in 2016, India alone accounted for 36.6% of global suicides in females and 24.3% in men and suicide is the leading cause of death among Indians aged 15–39 years of age.4

A recent WHO report on suicide prevention states that only 60 of 172 member countries have good-quality data on suicide, and
78 out of the 140 LMIC do not have any vital registration systems in place. WHO has developed a manual on case registration which extensively describes the processes to establish a registration system at the structural/institutional level.

The stigma associated with suicide, illegality of suicide in some countries and inefficient or absence of registration systems lead to gross under-reporting of suicides in LMIC. Lack of reliable data on the number of deaths by suicide and attempted suicides in LMICs is an important barrier to measuring effectiveness of suicide prevention strategies. Accurate and reliable data on suicides is crucial in informing policy makers in making effective decisions and investments in suicide prevention efforts, in quantifying the public health costs of suicide and to enact strategies that combat stigma-related issues.

Suicide data in India are officially recorded and publicly reported on an annual basis by the National Crime Records Bureau (NCRB) which collates suicide data from police records across the country, but does not record attempted suicides. In 2018, the NCRB estimated India’s suicide rate at 10.2 per 100,000, whereas the WHO estimate was 16.3 suggesting that NCRB data are a significant underestimate of the true rate. The Million Death Study also concluded that NCRB underestimates suicide deaths in males by at least 25% and females by at least 36%. Research has shown that under-reporting happens due to classification of deaths due to suicide under various ‘hidden’ causes such as accidental deaths, illnesses and/or undetermined deaths, largely made up of drug poisoning and intoxication due to stigma associated with suicides and attempted suicides.

There is no official record of the numbers of attempted suicides in India, as this is not collected systematically by any governmental agency regionally or nationally. Available research on suicide attempts is limited to several small clinic-based studies reporting sociodemographic features of individuals who attempt suicides. Estimates from across the world show that for each death by suicide, there are likely to be 20 or more non-fatal attempts. Attempted suicide was a punishable offence in India until 2017, which created a significant barrier to suicide reporting. This also resulted in those attempting suicide and their families avoid seeking help from formal health services or reporting other reasons. India has enacted a new law, the Mental Health Care Act, 2017, making India’s archaic law redundant.

Considering the gross under-reporting of suicide and attempted suicide in India and other LMIC, establishing a comprehensive surveillance system to gather data on suicidal behaviour is crucial to more accurately assess the effectiveness of suicide prevention interventions. The current study reports on the added value and process of implementing a comprehensive suicide surveillance system in India. This system was established to collect baseline data on suicidal behaviour as part of the Suicide Prevention and Implementation Research Initiative (SPIRIT) project.

The objectives of the study were twofold: (1) To assess the feasibility of adding community-based surveillance data collection to hospital and police records to create a comprehensive suicide surveillance system and (2) To assess the added value of the community surveillance in obtaining additional suicide and attempted suicides data by comparing it to data from hospital and police records.

METHODOLOGY
Context
The SPIRIT is a US National Institute of Mental Health-funded study on suicide prevention using an integrated community suicide-prevention intervention. The study is being implemented in the district of Mehsana in North Gujarat, India. This study has been described extensively elsewhere.

From the pool of 614 inhabited villages, 124 villages were randomly chosen. Village councils were approached for participating in the SPIRIT trial and allow implementation of SPIRIT’s suicide surveillance system in the villages. Of the 124 villages, 54 villages in the intervention arm and 62 villages in the control arm agreed to participate in the trial.

Duration
The study period for development and implementation of the comprehensive surveillance system was August 2018 to July 2019.

Development of the community suicide surveillance system
Design
This surveillance system is based on the methodology used to establish surveillance systems for disease monitoring and has been used for collecting data on suicidal behaviour previously in India. It involves collecting information on suicide attempts and suicides from third-party key informants. Although verbal autopsy has been conducted in other studies, we chose to use community-based third-party informants for two reasons (1) the death registration system is poor in India, as only 79.6% of deaths are registered; and (2) this was a feasible and preferred way to obtain regular monthly data on suicide attempts in the community. Informants were identified based on a mapping exercise to understand contextual factors and a pilot conducted in four non-study villages. These informants were the residents of the village and information was collected on a monthly basis. They resided at a caste-based hamlet (vaas in Gujarati) in a village. One key informant was chosen from each of these hamlets to ensure adequate coverage. These informants were knowledgeable about the village dynamics, geography, sociocultural factors, births and deaths in the villages. Informants included village council head, school principal, community-priests, leader of the milk cooperatives, private physician, shopkeepers and other members of the community. They also included community health workers such as accredited social health activists (ASHA),
Anganwadi workers, (the focal point for implementation of all the health, nutrition and early learning initiatives at grassroot level in India), female health workers and multi-purpose health workers and private hospitals. Informants were approached every month by trained staff (research officers, RO) to gather details about individuals who have attempted suicide or have died by suicide in their villages. Informed consent was obtained from all the informants. Confidentiality was assured for every informant given the sensitive nature of the information they share. Collected data were triangulated and analysed.

**Patient and public involvement**

Community-based informants were involved in mapping and identification of other potential informants in the villages who could be familiar with the health-related emergencies and other day-to-day happenings in the vicinity, who could inform about the incidences taking place in previously under-represented hamlets. They were also consulted for identification of nearby health facilities where attempters or individuals who died by suicide could be taken for treatment or other medical investigations.

**Selection and training of ROs**

Six ROs with master’s degree in social work or psychology and at least 6 months of field experience in health programmes were selected. They underwent a 2-day training on establishing rapport with the informants, interviewing skills, completing case record form, planning data collection and risk mitigation. Each RO was allotted 20–23 villages for data collection. Prior to data collection, villages were mapped for understanding local contextual factors. The mapping exercise enabled the ROs to identify key informants from different geographical areas within the village. A training manual outlining the processes of community surveillance was developed and piloted in four villages not included in the SPIRIT project and appropriate modifications were incorporated. ROs received continuous mentorship and supervision.

**Community data collection**

A semistructured interview schedule, a standardised tool for recording every informant’s response (see online supplemental annexure 1 part-1) was used for collecting data on suicide attempts and suicides in a village every month. This interview began by asking the informants if they were aware of any suicides/attempted suicides that occurred in their village in past month. If the response was affirmative, then the informant was asked to provide further details of the concerned person, details of the incident, and whether the person was taken to any health facility for care. ROs were trained to record as much information as possible from the key informant at the end of the interview. Informants were instructed and encouraged to share this document with anyone in distress.

**Data from health facilities**

Data on attempted suicide and suicide were collected from the regional public and private health facilities that had inpatient care facilities, which constitute healthcare facilities where people from SPIRIT study villages may have sought care or been referred to in the event of a suicide attempt. Some health facilities already record this data systematically, whereas other facilities had no data reporting system in place, or the system did not collect adequate data of the index case. To support the latter group of health facilities, the project team introduced a data collection system based on the CRF (see online supplemental annexure 2). Data from health facilities were collected every 3 months.

**Data from police records**

Data for all unnatural deaths recorded at police stations in Mehsana district was collected annually for the study period. Of these, records for the SPIRIT villages were identified and segregated into accidental deaths, suicides and undecided cases. The police reports of the undecided cases were further perused, content analysed and discussed by two independent researchers to reach a consensus whether these cases were suicides or otherwise.

**Triangulation of data**

Details of each case reported by a key informant were recorded in an individual CRF (see online supplemental annexure 1). Data collected from multiple informants were compiled together, cross-verified and triangulated by independent trained research staff who were not involved in data collection. This was done to arrive at an index episode of suicide attempt or suicide. Similarly, information received from public health facilities and police records were also reviewed and triangulated by independent research staff. For every unique case, a triangulation sheet with unique ID was maintained at the site. The triangulated data were deidentified and recorded in a customised electronic data capture interface. At the same time, a personally identifiable information sheet was also maintained to distinguish between a new unique case or an already identified case (duplicate or common case). In order to identify a common case, village, sex, method, date of the incidence and age were primarily considered as the most reliable variables to be matched across all the data sources. If there was a discrepancy in the data obtained from the three sources, preference was given to the data obtained from the hospital and police record. Accordingly, corrections were incorporated in
the triangulation sheets as well as data entered electronically. Similarly, when a common case was found, corrections were done in the triangulation sheets and the data entered electronically. In case of suicides reported only by community surveillance, we verified these deaths using village-level death registry at the end of the year. Four villages refused to share the data and in one village the register was sent to the district. Initially we perused the aggregated death registry at the district office and found that the details were sketchy. Hence, we decided to get the information from individual register maintained by the Talati (Village Accountant).

To maintain quality of data collection, planned and unplanned visits were scheduled to the key informants every month. Accuracy of the triangulation was reviewed for all the cases recorded. Data entry as well as data corrections was monitored through an audit trail built into the electronic data capture interface.

Informed consent of all the key informants was obtained.

Data analysis
All the data are presented as categorical variables and summarised as frequency counts and percentages. As this is nominal data, hypothesis testing was done using non-parametric tests. The Fisher’s exact test was used to see differences in age, sex and methods of suicides and attempted suicides between the three sources of the information (community surveillance, hospitals and police records and common cases). To assess the added value of community surveillance in obtaining additional data on suicide and suicide attempts by comparing it to the data from hospital and police record, we used Cochran’s Q Test, a non-parametric test to find differences in matched sets of three systems (community surveillance, hospital records, police records) proportions. The test assesses whether the proportion of case/non-case is same between all the three systems. Further, post hoc McNemar’s $\chi^2$ statistic was used to check statistically evidence of differences. The individual alpha level is adjusted using the Bonferroni method to control the overall error rate.

RESULTS
Of the 124 villages, the community suicide surveillance system was implemented in 116 villages which consented to participate in the study, covering 377,276 adults.

Community surveillance
In total, 833 informants initially participated in the community surveillance system, out of which 109 (13%) dropped out. On average, 710 informants were interviewed every month with a mean of 6.72 informants per village. Informants’ categories are detailed in figure 1. Almost half (44%) of the informants were village heads, community health workers and Anganwadi workers. Shopkeepers and community volunteers constituted 13% of the informants.

The number of informants for each suicide/attempted suicide ranged from 1 to 8. Cases where there was only a single informant for a case of suicide/attempted suicide, these informants were mostly ASHA and Anganwadi workers. Overall, 42 attempted suicides and 26 suicides were identified by single informants.

To assess the validity of the community surveillance system, we matched the suicides detected only by

![Figure 1](http://bmjopen.bmj.com/)

Figure 1 Details of the informant categories. ASHA, accredited social health activist.
community surveillance (N=55) which were not recorded in the public hospital or police records, to the village level death register kept by Talatis. The information from the death registers (maintained by the Talati, a local administrative officer) consisted only of demographic details of the deceased along with the details of the person to whom the certificate was issued. The Talathi records do not contain details of the cause of death, as these records are merely meant to serve as a record of death certificates issued by the Talati. We did not find a match for 10 cases (18.1%). These 10 cases mainly belonged to the two major categories: other backward classes (50%) and scheduled caste (40%). Qualitative information from the ROs revealed that individuals in these castes are more likely to have a low socioeconomic status and thus may have been reluctant to approach officials, for fear of harassment, which is not uncommon.

Hospital and police records
Forty (22 private and 18 public health facilities) out of 53 health facilities in the district agreed to share data on suicides and attempted suicides who had sought care; 13 private facilities did not consent to share data; this may be due to attempted suicide being a medico-legal issue in India warranting legal compliance to report these cases to the police.

Data on all unnatural deaths filed under Section 174 of the Code of Criminal Procedure during the study period, from official police records, were received by the project team. Of the 32 unnatural deaths recorded during this study period, 46.8% were suicides, 21.8% were accidents, and of the rest, 6.2% were reassigned as suicides by researchers and 25% were in the undecided category.

Number of suicide attempts and suicides
There were 118 suicide attempts and 82 suicides recorded from 116 villages using community surveillance system, public hospital and police records. Based on the collected data, the crude suicide rate and attempted suicide rate were calculated as 21.7 per 100,000 and 31.3 per 100,000, respectively.

Demographic details of suicide attempters and suicides
Although suicides (76.8%) and suicide attempts (60.2%) among males were high, there was no statistical evidence of a difference for sex found between the source of data (three systems). We had data on age for 191 cases (113 suicide attempts and 78 suicides). The majority of suicide attempts (69.0%) were among individuals under 35 years of age, one-fourth (24.8%) were between 35 and 55 years and rest were above 55 years (6.2%). Around half of deaths by suicide (46.2%) were among individuals below 35 years of age, one-third (37.2%) were individuals aged 35–55 years and 16.7% were above 55 years of age.

Methods used for suicide and suicide attempts
The method of suicide attempts and suicide emerging most frequently in the data were poisoning (83.1% attempts; 31.7% suicides), of which 65.3% attempts and 69.2% suicides used pesticide ingestion as a means.

The other methods were hanging (4.2% attempts; 41.5% suicides), drowning (3.4% attempts; 15.9% suicides), self-in infliction of injury (3.4% attempts; 2.4% suicides) and self-immolation (3.4% attempts; 2.4% suicides). Other less commonly used methods (2.5% attempts; 6.1% suicides) were acid pouring, overdose (medication) and jumping in front of a train.

We also assessed whether there were any differences in age, sex or method of suicides and attempted suicide between the three sources of information, however, there was no statistical evidence of a difference (table 1).

Comparison of the ability of community surveillance in obtaining additional data (suicide and attempts) versus hospital and police records
Of the 118 suicide attempts, 67 cases were reported via community surveillance and 48 from the hospital records. Three cases of attempts were common among community surveillance and hospital records. Of the 82 suicides, 55 were recorded only through community surveillance, 8 were identified only from hospital records and 6 cases were identified only from police records. Two cases of suicides were common from all three systems. Two cases were common in community surveillance and hospital records. Eight cases were common in community surveillance and police records. Only one case was common among hospital and police records (table 2).

Table 3 illustrates that there was statistical evidence of a difference in the proportion of case/non-case for suicide attempts recorded through all the three systems (Cochran’s Q: 66.6 p<0.01). These differences were further assessed using post hoc McNemar’s test for all three combinations (community surveillance and hospital records, community surveillance and police records, police records and hospital records). There was no statistical evidence of a difference between community surveillance and hospital records (p=0.09). Whereas, there was statistical evidence of a difference (p<0.01) between community surveillance and police records, and hospital records and police records.

Table 4 shows that the community surveillance system identified 67 suicides compared with 30 (13 plus 17) from the hospital and police records and the result was significant (Cochran’s Q test 67.9 p<0.01). Additionally, out of the 67 suicide attempts identified by community surveillance, informants reported that 58 individuals were taken to hospital for treatment, 8 were not taken to a hospital and for one case there was no information available.

DISCUSSION
The aims of this study were to develop and implement a comprehensive surveillance system for suicides and attempted suicides consisting of community surveillance, hospital data and police records, examine the feasibility of implementing a community surveillance system and
Table 1  Demographic differences between attempts and suicide cases for all the three categories (community surveillance, hospital and police records and common cases)

<table>
<thead>
<tr>
<th></th>
<th>Attempts (n=118)</th>
<th>Suicide (n=82)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Community surveillance (n=67)</td>
<td>Hospital and police records (n=48)</td>
</tr>
<tr>
<td></td>
<td>Community surveillance (n=55)</td>
<td>Hospital and police records (n=15)</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>40 (59.7)</td>
<td>30 (62.5)</td>
</tr>
<tr>
<td></td>
<td>43 (78.2)</td>
<td>11 (73.3)</td>
</tr>
<tr>
<td>Females</td>
<td>27 (40.2)</td>
<td>18 (37.5)</td>
</tr>
<tr>
<td></td>
<td>12 (21.8)</td>
<td>4 (26.6)</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;35</td>
<td>41 (65.6)</td>
<td>35 (74.4)</td>
</tr>
<tr>
<td></td>
<td>24 (43.6)</td>
<td>8 (53.3)</td>
</tr>
<tr>
<td>35–55</td>
<td>18 (28.1)</td>
<td>10 (21.2)</td>
</tr>
<tr>
<td></td>
<td>21 (38.1)</td>
<td>5 (33.3)</td>
</tr>
<tr>
<td>&gt;55</td>
<td>5 (7.8)</td>
<td>2 (4.2)</td>
</tr>
<tr>
<td></td>
<td>10 (18.2)</td>
<td>2 (13.3)</td>
</tr>
<tr>
<td>Method</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drowning</td>
<td>4 (6.0)</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>6 (10.9)</td>
<td>3 (21.4)</td>
</tr>
<tr>
<td>Hanging</td>
<td>5 (7.5)</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>26 (47.3)</td>
<td>3 (21.4)</td>
</tr>
<tr>
<td>Poisoning</td>
<td>53 (79.1)</td>
<td>42 (87.5)</td>
</tr>
<tr>
<td></td>
<td>18 (32.7)</td>
<td>6 (42.9)</td>
</tr>
<tr>
<td>Self-infliction</td>
<td>1 (1.5)</td>
<td>3 (6.3)</td>
</tr>
<tr>
<td></td>
<td>1 (1.8)</td>
<td>1 (7.1)</td>
</tr>
<tr>
<td>Self-immolation</td>
<td>1 (1.5)</td>
<td>3 (6.3)</td>
</tr>
<tr>
<td></td>
<td>1 (1.8)</td>
<td>–</td>
</tr>
<tr>
<td>Others</td>
<td>3 (4.5)</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>3 (5.5)</td>
<td>2 (13.3)</td>
</tr>
</tbody>
</table>

Values are presented as number (%).
evaluate the value of adding a community surveillance component in reducing under-reporting of suicides and attempted suicides as compared with only collecting such data from public hospitals and police records. The study reveals that the community surveillance system was able to identify additional 55 suicides and additional 67 attempted suicides compared with only 27 suicides and 51 attempts recorded in the hospital and police records in the 116 villages. The results suggest that adding a community surveillance component significantly improved the comprehensiveness of the suicide data and reduced the under-reporting of suicides as compared with relying solely on records from hospitals and police. Hence establishing such a system in addition to the existing official system is an effective mechanism to obtain a more comprehensive suicide data in rural India. This methodology may be particularly relevant to other LMIC with inadequate official reporting and recording systems for suicide and attempted suicide.

Results also reveal that there were 82 deaths by suicide and 118 attempted suicides during the study period. A large national epidemiological study from India21 found that the attempted suicides:suicide ratio was 14.51 nationally, 8.90 in Gujarat and much lower at 1.43 in the present study. The epidemiological study mentioned above used household survey for estimating suicide attempts, while this study used third-party community informants. This may explain the lower rate in our study on data obtained via official health records.1 Community surveillance systems, such as the one described in this study, are an additional strategy to complement or augment the health system or registration system records and provide data where such systems do not exist. Further this could also be useful to monitor local trends and evaluate suicide intervention strategies.
There are several challenges to developing and implementing a community surveillance system. First, informants were initially wary of sharing information about their community members, expressing concerns about confidentiality of such information resulting in conflict with survivors and their families if such information became public. Second, the possibility of getting entangled in legal problems either with police or with survivors and their families was also an issue. Repeated contact to establish rapport, assurance of privacy and confidentiality, and consistent approach towards data collection helped informants share the information without fear of legal or social conflicts.

LIMITATIONS
The use of third-party informants is a major limitation, and direct confirmatory interviews with survivors or their families were not done to ensure informant confidentiality. Verbal autopsy was considered unfeasible as we wanted to design a system which could be easily replicated in routine practice with regular monthly data collection and scaled up in situations of limited resources.

The other limitation is obtaining third party information on suicide attempts. The gold standard is to do a household survey but that was not feasible as a routine method for data collection every month across large geographical areas, as is the case in the present study. We were keen to test the feasibility and utility of adding community surveillance to the existing hospital and police records to reduce under-reporting of suicide attempts. The only indirect validation we can provide is that there was no difference in age, sex or method between community surveillance data and hospital and police data. However, as majority of the suicide attempts have been reported by community health workers like ASHAs and Anganwadi workers, who we believe will be the more reliable sources of information.

Another limitation is that not all suicide attempts registered at the hospitals were picked up by community surveillance and this highlights the need to combine community surveillance with hospital data for more comprehensive data on attempted suicides. A possible explanation could be that the visit or stay in the health facility was kept confidential or attributed to other health conditions by the family. It is also not known where the 58 attempters identified by the surveillance system were treated. As Ahmedabad (the nearest city) was just 1 hour away, many attempted suicide cases may have sought care there, as there are better medical facilities and also a large urban city away from the village could have provided anonymity to the individual and their families. It is also possible that these attempts may have received treatment from private practitioners or practitioners of traditional and alternate systems of medicines in neighbouring villages which are not part of the study villages. Further research is needed to identify the gaps in the system.

A final limitation is that in 68 cases the information was from a single informant. However, the majority of single informants were ASHAs and Anganwadi workers who live in the community and are knowledgeable about the community members.

Despite these limitations, such a community surveillance system is important in capturing additional sources of suicide attempts and suicides in an LMIC like India, where suicides are a leading cause of death, particularly among young people. Strengths of the study are the variety and number of informants used thus ensuring coverage of entire villages, triangulation of data to avoid attempts or deaths being counted more than once, collecting data each month to avoid recall bias and built-in fidelity checks within the surveillance system to ensure quality of data collection.

The community surveillance system also enables capturing more frequent and real-time sort of data on suicide attempts and suicides. WHO also supports the idea of obtaining suicide data on a monthly basis from sources of information such as hospital records, general practitioners, community health workers, teachers, religious leaders, other gatekeepers.

CONCLUSION
This is the first report of implementing a community suicide surveillance system for suicide and attempted suicide in an LMIC. Community surveillance systems added to hospital and police records can be an effective tool to obtain more comprehensive data on suicide and attempted suicide, understand local trends and methods of suicide, and obtain insights into the impact of interventions on suicide attempts and suicide in a specific catchment area. Ultimately, the combination of a community surveillance system and data from health system records are likely to address the problem of under-reporting of suicide and attempted suicide in LMIC.

Twitter Soumitra Pathare @netshrink

Acknowledgements The authors would like to acknowledge the support of Principal Secretary, Department of Health and Family Welfare, Government of Gujarat, the District Administration, Mehsana district, Government of Gujarat and all the informants who participated in the surveillance system.

Contributors The PIs (LV, SP, LS-Z) conceptualised and designed the community surveillance system. NJ, SK, JK developed training manuals, delivered trainings and implemented the roll out of the surveillance system. RN, DP managed and analysed data respectively. All the authors contributed to the drafting of the main text.

Funding The SPIRIT Hub is funded by US National Institute of Mental Health (NIMH) grant No. 5U19MH13174-03 REVISED to SP, LV and LS-Z (PIs).

Disclaimer The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institute of Mental Health.

Competing interests None declared.

Patient consent for publication Not required.

Ethics approval Study was approved by the Ethics Committee of Indian Law Society (ILS/36/2017 dated 22 March 2017). All data collection and data management staff were trained in protection of human subjects and good clinical practice guidelines.

Provenance and peer review Not commissioned; externally peer reviewed.
REFERENCES

# ANNEXURE 1

<table>
<thead>
<tr>
<th>Case Report Form – Suicide Surveillance System - Part 1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A. Village Code:</strong></td>
</tr>
<tr>
<td>ગામનો કોડ:</td>
</tr>
<tr>
<td>Village name:</td>
</tr>
<tr>
<td>ગામનો નામ:</td>
</tr>
<tr>
<td><strong>C. Code of the Surveillance Officer:</strong></td>
</tr>
<tr>
<td>નાણાક્ષ્યા કરાર અધિકારીનો કોડ</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>E. Consent of the informant obtained?</strong></td>
</tr>
<tr>
<td>માહતી આપનાર પાસેથી સંમત લીધે છે?</td>
</tr>
<tr>
<td>☐ Yes ☐ No</td>
</tr>
<tr>
<td>હા</td>
</tr>
</tbody>
</table>

**Source of information (tick one option only):**

- ☐ Head of the village (Sarpanch) ગામની વડા (સરપંચ)
- ☐ School principal/teacher શાળા આચાર્ય/શિક્ષક
- ☐ Head of the village (Sarpanch) ગામની વડા (સરપં�)
- ☐ School principal/teacher શાળા આચાર્ય/શિક્ષક
- ☐ Dudh Mantri દૂધ મંત્રી
- ☐ Community /Village Temple Priest ગામના મંદિરના પૂજારી
- ☐ Police પોલિસ
- ☐ Anganwadi worker આંગણવાડી કમયાચારી
- ☐ Private physician આંગણવાડી તબીબ (ડોક્ટર)
- ☐ Accredited community health workers (ASHA) માન્યતા પ્રાપ્ત સામાજિક આરોગ્ય કાર્યકરો
- ☐ Auxiliary Nurse Midwife (MPHW/FHW) સહારી નાસ્તાસ, માન્યો; સ્પષ્ટ કરો: |
- ☐ Others; specify: _____________________ |

If Yes, ☐ Attempted Suicide ☐ Death by Suicide

---

BMJ Publishing Group Limited (BMJ) disclaims all liability and responsibility arising from any reliance placed on this supplemental material which has been supplied by the author(s)
Number of cases: ___ No. of attempted suicide: ___ No. of deaths by suicide: ___

Note: For every informant reporting an attempted suicide or suicide, complete part 2 of the CRF separately. Similarly, complete separate CRFs for every instance reported.

**Write specifications of the informant’s work.**

For example, if you are interviewing a community priest who is specifically involved in the cremation practices, write 2-3 sentences about his work – where he works [name of the village(s)], for which communities (whether he works for all the communities or any specific ones), number of times a week/month he is involved in this work, etc.

माहिती आपनारंना कार्य विशेष विज्ञानांध माहिती आपो.

उदाहरणार्थ, जे ते जे ते जमना के समुदायना पूजारीनी मुलाकात तरी रक्षा होय के जे माहिती पूरी पावणी प्रृढ़यां संज्ञावेळ ते येंतले के तमाशा मारे माहितीची मूल्य शोधत ते ते ते तेंता विशेष विहंगती वे बी जस्ता वाक्यांमध्ये आ राहतीला – ते ते ज्या काम करे ते जमनू नाम, ते ते ज्या वर्ग अध्ययन समुदाय मारे काम करे (ते ते बापं जस्ता समुदायना लोकी मारे कार्य करे जस्ता कार्य करे अध्ययनज्या ते ते विशेष समुदाय मारे काम करे), ते ते माहिती पूरी पावणी आ ती प्रृढ़यां महिना अध्ययन अध्ययनकाळी मारे येंतली केलेली समय खाली वे वेदिरे ज्या माहिती, माहिती आपनार भाषी प्राप्त करवी.
Case Report Form – Suicide Surveillance System Part 2

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Control</th>
</tr>
</thead>
</table>

Month of incidence ………… Month of surveillance………… Month of storage………

Study ID (Copy from the consent form):

Date: 

Village name/ ગામનો નામ: ……………………………………………………………………………………

Taluka/ તાલુકા: …………………………………………………………………………………………………………

Code of the Surveillance Officer/નનિીક્ષણ કિનાિ અનિકાિીનો કોડ: …………………

Note: નોંધ

Use separate form if more than one case of attempted suicide or suicide is reported.

Information about the person who has attempted suicide or has died by committing suicide
અટમહત્ર્ાનો પ્રર્ાસ કર્ો હોર્ અથવા આત્મહત્ર્ા કરી હોર્ તેવા વ્ર્ક્ક્ત વિશેની માહહતી

1. Name: ______________________________________________________________

2. Age (years): ઉર્િ (વર્ટ)

   □ Known, specify, _________
   યોક્ક્સ જાણો છે, દર્શાવો

   □ Unsure (specify range: ____________)
   યોક્ક્સ નથી, સપટ કરો

   □ Not known
   જાણો નથી
3. **Gender:**
   - ☐ Male  ☐ Female  ☐ Other
   
   जाति: पुरुष  लड़की  अन्य

4. **Religion:**
   - ☐ Hindu  ☐ Muslim  ☐ Christian
   - ☐ Buddhist/Neo-Buddhist  ☐ Jain  ☐ Sikh
   - ☐ Jewish  ☐ Parsi/Zoroastrian
   - ☐ Other, specify: ________________  ☐ No religion  ☐ Not known

5. **Caste:**
   - ☐ General/Open  ☐ OBC
   - ☐ Scheduled Caste  ☐ Scheduled Tribe
   - ☐ Nomadic Tribe  ☐ Not known
   - ☐ Not applicable  ☐ Other (Specify: ________________)

6. **Marital Status:**
   - ☐ Unmarried  ☐ Currently Married
   - ☐ Married but Gauna/Aanu not performed  ☐ Divorced
   - ☐ Separated (no legal separation)  ☐ Widowed/Widower
   - ☐ Status not known

7. **Education:**
   - ☐ Known, specify: ________________
   - ☐ Not Sure/Not known/Not applicable

8. **Vaas code:** ________________
   
   वासकोड
   
   If others (code 26), specify: ________________

9. **Employment Status** (tick multiple options if applicable):
   - व्यावसायिक स्थिति (एक करता वधारे (ि) निशानी करी सकाय)
☐ Student ☐ Salaried person ☐ Self-employed ☐ Housewife

☐ Daily wage earner ☐ Unemployed ☐ Retired ☐ Not known

☐ Other; specify/ अन्य; स्पष्ट करो __________________________

10. Date of attempt of suicide/suicide:

If not known, tentative date (mention range): __________________________

11. Time of attempt of suicide/suicide:

If not known, tentative time of the day: __________________________

12. Method of attempt of suicide/suicide (tick one option only):

☐ Drowning in waterbody ☐ Fire/Self-immolation ☐ Hanging ☐ Self-infliction of injury (e.g. with knife/firearm)

☐ Jumping (e.g. from high-rise / building) ☐ Overdose of medication ☐ Self-electrocution ☐ Intentionally jumping in front of running vehicles/train

☐ Poisoning ☐ Other; specify/ अन्य; स्पष्ट करो __________________________
**13. Number of previous attempts (if known):**

Whether the person was under the influence of any substance when the incident occurred (e.g. alcohol or drugs) / घटना घटी ते समये व्यक्तिको चेतना या माध्यमातून सेवन करेल हतुं ते स्पष्ट करो (द. त. आल्कोहोल अथवा द्रव्य कुस्त):

- □ Yes / हाच
- □ No / नाही
- □ Not known / जाण नाही

**14. Place of attempt of suicide/suicide (if known):**

- □ for medical treatment
- □ for admission
- □ for counselling
- □ Not known

**15. How long did it take for the attempt to be first discovered (if known)?**

आत्महत्या प्रयत्न करणे ते विशिष्ट जाण टेकणे समयगणना दरम्यान दर्शवली हती (जे जाणली होय तो):

___________________________ Minutes / Hour / Days (mark whichever applicable)  

**16. Was the person taken to the health care facility / professional:**

- □ Yes / हाच
- □ No / नाही
- □ Not known / जाण नाही

If yes, - जे हा, तो पूर्ण पावसामान आवेदन सार्वजनिक पक्षी:

- □ for medical treatment
- □ for admission

- □ for counselling
- □ Not known

**B. Specify the facility / professional where the case was referred (public/private/NGO or trust):**

- □ व्यक्तिको सार्वजनिक मात्र मोकद्दम माध्यमातून आवेदन करणे हती ते संख्या के व्यवसायिक केंद्रांमध्ये विगती स्पष्ट करो (जाहीर / बाण्य / एनजीओ अथवा ट्रस्ट):

**C. If admitted, number of days of hospitalization:**

- □ व्यक्तिको द्वारे द्वारा माहित करणे माध्यमातून आवेदन होय,
17. Outcome on discharge:  દવાખાનેથી આપ્યા પ્રાર્થના પછીનું પરિણામ:

☐ Survived from an attempt of suicide/ આત્મહત્ર્ાના કરેલા પ્રર્ાસમાંથી સ્વાસ્્ર્ની પનાપલતિ
☐ Referral to another critical care facility / વધેખરેખ માટે અન્ર્ાતીજ્ઞ પાસે મોકલા
☐ Death/ મૃત્્
☐ Other, specify/ અન્ર્ા, સ્પષ્ટ કરો __________________________
☐ Not known/ જાણ નથી
☐ Not applicable because person was brought dead
કલણુ પડતું નથી કારણ કે, વધેખરેખ મૃત અવસંખ્યાના જ દવાખાને લાવવામાં આવી હતી
☐ Not applicable because person was not brought to the hospital.
કલણુ પડતું નથી કારણ કે, વધેખરેખ દવાખાને લાવવામાં આવી હતી

18. Distance between the place of attempt of suicide or suicide and the nearest health center where the person was taken after the incident:
આત્મહત્ર્ા અથવા આત્મહત્ર્ાનો પ્રર્ાસ કર્ો હોય તે સ્થળથી લઈને નજીકના આરોગ્ર્ કેન્દ્રના સ્થળે સ્વભાવી અંતર ક જયા આત્મહત્ર્ા અથવા આત્મહત્ર્ાની પ્રર્ાસ કર્ો પછી વધેખરેખ લઈ જવામાં આવી હતી

___________________ kilometers/ કિલોમીટર

☐ Not known જાણ નથી
☐ Not applicable. કલણુ પડતું નથી.

19. Informed to police: અનાવ અંગે પોલીસને જાણ કરી હતી:

☐ Yes  ☐ No  ☐ Not known
કે  ના  જાણ નથી

20. Police record available: પોલીસ પાસેથી રેકોર્ડ (માહિતી) પાયા છે

☐ Yes  ☐ No  ☐ Not known
કે  ના  જાણ નથી

Additional Notes: નોંધ
_______________________________________________________________________________
_______________________________________________________________________________
_______________________________________________________________________________
Annexure 2

SPIRIT Suicide Surveillance System/ આત્મહત્રા નનવાણ નનિીક્ષણ વ્યવસ્થા (સુસાઈડ સવેલનસ સિસ્ટમ)

Case Report Form for Hospitals (Attempted Suicide or Suicide)/ દવાખાના ર્ારે કેસ રિપોર્ટ ફોર્મ (આત્મહત્રા પ્રરાસો/આત્મહત્રા)

Name of Hospital/Clinic:/ િવાખાનાં નામ………………………………………………………………

☐ Trust facility/ ટ્રસ્ટ ☐ Public facility/ સરકારી ☐ Private/ ખાનગી

<table>
<thead>
<tr>
<th>S No.</th>
<th>Date of Incidence ઘટના ની રીત</th>
<th>Name નામ</th>
<th>Age ઉમ્ર</th>
<th>Gender જાત</th>
<th>Village ગામનું નામ</th>
<th>Taluka તાલુકા</th>
<th>Method રીત</th>
<th>Attempted / completed suicide સ્વ-હાની/આત્મહત્રા</th>
<th>Additional Notes નોંધ</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

City/ શહેર………………………………………………
Month of surveillance/ નનરીક્ષણ કરેલ માસ…………………………… Year/પાંચ…………………………………….