SUICIDE IN SOUTH ASIA:

A SCOPING REVIEW OF PUBLISHED AND UNPUBLISHED LITERATURE

FINAL REPORT

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HEALTHNET TPO

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ACRONYMS

BRAC: Bangladesh Rural Advancement Committee
CBSS: Central Bureau Statistics
CI: Confidence interval
DFID: Department for International Development
DIG: Deputy Inspector General (Bangladesh)
DSS: Department of Social Services
GBV: Gender based violence
HN TPO: HealthNet Transcultural Psychosocial Organization
IASC: Inter Agency Standing Committee
IASC MHPSS: Inter Agency Standing Committee, Guidelines for Mental Health and Psychosocial Support
ICD: International Classification of Disease
ICDDR, B: International Centre for Diarrheal Disease Research, Bangladesh
INGO: International non-governmental organization
ISS: Institute for Strategic Studies India
MMMS: Maternal Mortality and Morbidity Study
MOH: Ministry of Health
NCRB: National Crime Records Bureau
NGO: Non-governmental organization
NIPORT: National Institute of Population Research and Training (Bangladesh)
RGI: Registrar General of India
RHIME: Resampled Household Investigation of Mortality with Medical Evaluation
RTI: Right to information
SAQOR: Systematic Assessment of Quality in Observational Research
SD: Standard Deviation
SE: Standard Error
SPSS 20.0: Software Package for Statistical Analyses
SRS: Sample Registration System
TPO: Transcultural Psychosocial Organization (Nepal)
UN: United Nations
UNHCR: United Nations High Commission for Refugees
WB: World Bank
WHO: World Health Organization

EXECUTIVE SUMMARY

KEY FINDINGS

- There is a paucity of data on suicide incidence rates in South Asia, especially data that is both national level and of high quality.
- There is an urgent need to establish comprehensive national suicide data collection systems in the South Asian countries where they currently do not exist, evaluate the accuracy of the national suicide data collection systems in countries that currently have them (India and Sri Lanka).
- Best practice for establishing suicide rates identified in this review are studies that combine several data sources including data from large representative samples (i.e. national health/ mortality surveillance system or community survey) and systematic verbal autopsies.
- Overall, reported rates tend to be alarmingly high across countries, except the few official national rates that are available, which generally report lower rates. Most authors interpret the official national rates to be significantly underreported, an assessment that is supported by available comparison data.
- Overall, suicide rates are higher among men than among women in all but one country, Bangladesh. Younger women of reproductive age appear to be at higher risk than men in the other South Asian countries where information is available.
- Reported rates vary vastly between publications, which can be explained by differences in study population and/or quality of data collection. Higher quality studies consistently report higher rates compared to lower quality studies. Sub-population studies report higher rates than national level data, with official rates being the lowest reported rates. Official rates tend to be higher for countries that have better national mortality surveillance systems.

BACKGROUND

According to data retrieved from WHO's World Cause of Death Statistics, June 2013 (http://www.who.int/healthinfo/global_burden_disease/en/), suicides in the world amounted to 797,823 in 2011, representing 1.5% of total mortality and about 16% of injury mortality, with an estimated world-wide suicide incidence rate of 11.5 per 100,000 inhabitants (WHO, 2013). While Asian countries account for approximately 60% of the world's suicides (Chen et al, 2011), there is a huge gap in the information from South Asian countries. For example, the data from the WHO Mortality Database (2008) only includes two of the six South Asian countries (India and Sri Lanka) in this review. However, data from one of these countries (Sri Lanka) is more than 20 years old. Similarly, in a recent review of trends of suicide in Asia (Chen et al, 2011), only 8% of the sources included were from South Asian countries. At the same time there are multiple indicators that suicide in the sub-continent is a growing and serious public health and social problem. The present study therefore aims to provide an overview of the literature and reports on the available suicide incidence rate data and analysis in six South Asian countries.

This study reports on a scoping review of the published and unpublished literature on suicide incidence rates, that is, the rate of suicide deaths per one hundred thousand population, and other metrics related to suicide deaths in six South Asian countries (Afghanistan, Pakistan, India, Bangladesh, Sri Lanka, Nepal). It includes 114 reports and peer reviewed publications (n=64 and n=50, respectively), collected through searches by in-country consultants and systematic searches of scientific databases. To the best of our knowledge, this is the first review that combines different data sources to arrive at a comprehensive overview of all available data on the magnitude of the problem of suicide in South Asia.

METHODS

The primary questions guiding the literature search and review, and addressed in this report were; (1) What are the estimated rates of suicide incidence in the six South Asian countries?, and (2) What methodologies were used to establish these rates? The broad scoping method encompassed two distinct components: (i) an in-country search conducted by consultants in each of the countries, aimed at exploring official and non-official suicide rates (both through online and in-person searches), and (ii) a systematic review of the peer-reviewed literature on suicide rates in South Asia. Studies published in peer-reviewed academic journals were searched through online academic databases (PsycINFO, PubMed, Embase), using 'suicide' and the name of the country as search terms. National level consultants performed the in-country searches, which encompassed national and other official government reports and other 'grey' literature identified through online web searches or in-country contacts with relevant stakeholder organizations and individuals. Data from each of these sources was collected and charted separately, and analyzed for reported overall rates, as well as gender and age specific rates, and means of committing suicide. Quality appraisal of all published studies was conducted, using a tool developed for

the purpose of this study, assessing publications on criteria of sampling, measurement and analysis.

RESULTS

Suicide rates reported in the reviewed documents vary enormously from 0.43/100,000 to 331.0/100,000 (including both national and sub-population rates). With a non-pooled average of 25.2, this is more than twofold the estimated mean suicide rate of 11 for the world (Varnik et al, 2012; WHO, 2013), and about 50% higher than a new estimate of 17.0 for the Southeast Asia region (WHO, 2013). At the same time, this average is only indicative and must be considered with much caution given the presented range, and because it combines national official (i.e. often police) rates which tend to be underestimates, as well as sub-population rates which may be overestimates. However, when judging on the bases of the national-level estimates only, the regional average (14.3) is still above that of the estimated global mean, but below that of the Southeast Asia region as that does not include the countries that do not have official national figures. The strength of the current study is that it includes all categories of data, and therefore provides a more in-depth view of the situation compared to those that rely only or mainly on government rates.

It is difficult to provide a reliable estimate of the true suicide rates per country, especially given the absence of national mortality surveillance systems in most of the countries (Afghanistan, Bangladesh, Nepal and Pakistan). For three of the countries (Nepal, Pakistan and Afghanistan), very few reports and publications are available – especially in Afghanistan which is represented in this review with only a single report.

Importantly, the South Asian countries with more accessible national data (including suicide data as well as overall mortality and cause of death data) tend to report higher national rates, such as an estimated age-adjusted rate of 22.0 for India in 2010 in one study based on a national mortality survey, and (a non-age-adjusted rate of) 19.6 for Sri Lanka in 2009, in a study based on official police data. The relatively low rates found in three of the other countries (Pakistan, Afghanistan and Bangladesh), appear to represent the absence of accurate national-level data. More comprehensive data in these countries is also associated with higher rates (e.g. a rate of 28.0 among women of reproductive age in Nepal). The trend appears to be: the better the data the higher the rates.

The limited available information on longitudinal trends of suicide rates within each country shows that there appears to be an increase in suicide rates over time in all countries where such data is available (India, Sri Lanka, Nepal), except in Sri Lanka where we see a downward trend.

As in most of the data on suicide in the world, the data in South Asia show that, overall more men commit suicide than women. According to WHO's most recent data the global male to female suicide ratio in 2011 was 1.76: 1 (our calculation based on WHO absolute numbers). The ratio in the Southeast Asia region (which includes Bangladesh, India, Nepal and Sri Lanka) was 1.57: 1, and in the Eastern Mediterranean Region (which includes

Afghanistan and Pakistan), was 1.42: 1 (WHO, 2013). With the exception of two outliers, Sri Lanka and Bangladesh, the findings from this scoping review generally correspond to these ratios. Sri Lanka reported very high male rates compared to female rates, while Bangladesh reported *inverse* male to female ratios, that is, *more* female suicide deaths than male. In addition, according to our review younger women of reproductive age seem to be at highest risk among females, and often at greater risk than males in the same age cohort, across the South Asian countries where information is available. This finding also corresponds with the latest data from WHO which shows a low male: female ratio of 1.13: 1 among 15-29 year olds in the Southeast Asia region.

Reliability of suicide rate estimates can be enhanced through high-quality studies. But at present such studies are scarce. Quality appraisal (using a tool developed for this study based on existing best practices) of all peer-reviewed publications in the data set found that few publications (n=10) met most or all of the defined quality criteria for reporting on suicide rates. Most of these higher quality studies were undertaken in India. It is important to note here that there may be other high quality studies in the area of suicide research (e.g. studies of risk factors, studies of self-harm and suicidal ideation), but they did not meet our inclusion criteria (i.e. containing information on suicide incidence rates).

Higher quality studies in this review generally combined several data sources including data from large *representative samples* (i.e. national health/ mortality surveillance system or community survey) and routine standardized verbal autopsies, guided by a clear definitions or classification system, for *validity* of data – and are adequately *analyzed* and presented (i.e. adjusting for age, including confidence intervals). Results demonstrate that higher quality of study methods is associated with higher rate calculations, both for national data and for sub-populations.

With only two countries in South Asia having more comprehensive national suicide data collection systems, and only one nationally representative high quality study, which found considerably higher rates than official rates, there is an urgent need to get more reliable data on the extent of the problem that suicides pose in South Asia.

Getting more reliable data will require conducting separate high quality studies in each of the South Asian countries, systematically evaluating and strengthening the national suicide data collection systems in countries where they currently exist, and establishing them in countries where they don't.

RECOMMENDATIONS

Based on the review, we have formulated the following recommendations related to the key findings:

Reported suicide rates in South Asia are high, and suicide is among the top ten leading causes of death. The problem is particularly severe in the 15-29 year age group,

particularly among females, where numerous sources find it to be the leading cause of death.

> We recommend that information about the gravity of the problem that suicide poses, as summarized in this study, be shared with governments, in particular Ministries of Health, in each of the countries and other relevant international and national public health stakeholders. We further recommend that DFID work together with governments and public health stakeholders, to develop appropriate policy to address this problem.

Given the likelihood of gross underestimation due to social stigma, role of the police in reporting, inadequate national level data collection, and limited quality surveillance, it is expected that suicide is a public health problem of even greater magnitude than presented in this report.

> We recommend that DFID continue to take a leadership role in advocating for and funding further research, policy and program response to the problem of suicide in South Asia.

Given the paucity of quality studies and national level suicide monitoring, there is an urgent need to collect more accurate suicide data in all six countries.

> We recommend that DFID, in partnership with other public health stakeholders, advocate for and support the evaluation and systematic improvement of suicide surveillance systems in South Asian countries where they exist, and their establishment in the countries where they do not exist.

It is equally urgent to gain a more comprehensive understanding of other aspects of suicide in the region including: self-harm and other suicidal behaviors, risk and protective factors, and existing prevention efforts – so that an adequate response can be designed and implemented.

> We recommend that DFID and/or other international public health donors commission a review of the existing knowledge of and evidence related to the drivers of suicide in the region, and initiate efforts to map and evaluate existing prevention initiatives.

1. INTRODUCTION

1.1 RATIONALE

According to data retrieved from WHO's World Cause of Death Statistics, June 2013 (http://www.who.int/healthinfo/global_burden_disease/en/), suicides in the world amounted to 797,823 in 2011, representing 1.5% of total mortality and about 16% of injury mortality, with an estimated world-wide suicide incidence rate of 11 per 100,000 inhabitants (WHO, 2013; Varnik, 2012). While Asian countries account for approximately 60% of the world's suicides (Chen et al, 2011), there is a huge gap in the information from South Asian countries. For example, the data from the WHO Mortality Database (2008) only includes two of the six South Asian countries (India and Sri Lanka). Similarly, in a recent review of trends of suicide in Asia (Chen et al, 2011), only 8% of the sources included were from South Asian countries. At the same time there are multiple indicators that suicide in the sub-continent is a growing and serious public health and social problem. The present study therefore aims to provide an overview of the literature and reports on the available suicide incidence rate data and analysis in six South Asian countries.

From a public health perspective it is important to get a clear picture of suicide rates to gauge the extent of the problem, especially since systematically collected, rigorous data are commonly unavailable in low- and middle income countries. In order to inform policy makers (and policy) a clear understanding of suicide incidence at a country level, as well as a sense of the quality of the data, are essential for interpreting those data. This scoping review aims to do just that.

The present review explored the available literature on suicide incidence rates in six South Asian countries: Afghanistan, Bangladesh, India, Nepal, Pakistan and Sri Lanka. Unpublished 'grey' literature, official governmental reports, and publications in peer-reviewed journals were reviewed. In addition to mapping the available research and evidence base on suicide rates in the South Asian region, the review provides 'benchmarks' for an indication of the severity of the problem based on existing evidence, identifies gaps, and proposes next steps for DFID and other stakeholders to begin to address the problem of suicide in these countries. The period of this review project was from November 19, 2012-October 31st, 2013.

1.2 DEFINITION AND PURPOSE OF SCOPING REVIEW

For this study, we are using the following definition of a scoping review: "A scoping review is an exploratory project to systematically map the available data and literature, both published and unpublished, on a topic. It outlines what is already known and also identifies gaps in existing research." The purpose of this scoping review is to establish a foundation for research-informed decision-making on investments in further research, policy and/or response to address the problem of suicide in South Asian countries. The broad scoping

method encompassed two distinct components: (1) an in-country search conducted by consultants in each of the countries, aimed at exploring official and non-official suicide rates (both through online and in-person searches), and (2) a systematic review of the peer-reviewed literature on suicide rates in South Asia. When referring to the scoping review, we mean the entire study; when we refer to the in-country search or the systematic review, we refer to the different components of the scoping review, each with their separate method.

It is important to note that the review focused solely on reports and publications presenting data on suicide deaths – ***not*** on other suicidal behaviors such as attempts or ideation. So, while this report presents a detailed account of the information available on suicide *incidence* rates, we stress that it does not explore self-harm or suicidal ideation overall (i.e. *prevalence*), of which suicide incidence is only one aspect. Our findings should not be taken as a representation of the magnitude of the problem of self-harm overall in South Asia.

1.3 RESEARCH QUESTIONS

The primary questions guiding the literature search and review, and addressed in this report were:

1. What are the estimated rates of suicide incidence in the six South Asian countries?
    i. Are there reported gender and age differences?
    ii. What are the reported means of committing suicide?
    iii. Are official national suicide rates available for any of the six countries?

2. What methodologies were used to establish these rates?
    i. What is the quality of the methods used to establish these rates?
    ii. What are the strengths and limitations of the methodologies used?

2. STUDY METHODS

2.1 PROCEDURE

A scoping review 'maps' the main sources and types of evidence relevant to a key research area. We have followed a modified version of the Arksey and O'Malley (2008) framework for conducting a scoping review. For the scoping review of suicide in South Asia, we undertook a carefully structured search for and review of published literature and unpublished reports and data on suicide incidence rates for the following six South Asian countries: Afghanistan, Bangladesh, India, Nepal, Pakistan, and Sri Lanka. This body of literature has been analyzed for reported suicide rates, as well as for the quality of methods used. See Figure 1 on the following page for an overview of the search, review and analysis process. In addition to online searches, we established an advisory group and in-country consultation with key organizations and national stakeholders to broaden the search strategy for national data and reports that have not been published in academic journals.

This scoping review followed the 5 stages described by Arksey and O'Malley:

Stage 1: Identifying the research questions

Stage 2: Identifying relevant studies

Stage 3: Study selection

Stage 4: Charting the data

Stage 5: Collating, summarizing and reporting the results

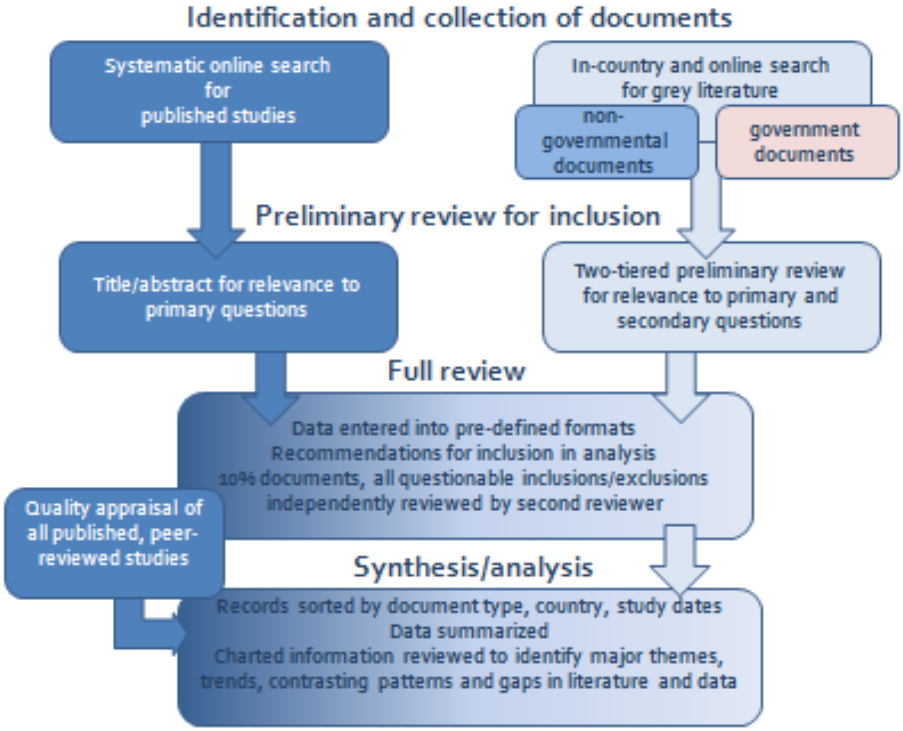
2.1.1 DEFINITIONS

Although a significant body of literature on suicide exists, definitions of suicide vary. The CDC defines suicide as "death caused by self-directed injurious behavior with any intent to die as a result of the behavior" http://www.cdc.gov/violenceprevention/suicide/definitions.html). WHO describes suicide as the act of deliberately killing oneself (http://www.who.int/topics/suicide/en). The codes for suicide in the International Classification of Diseases (ICD) 2010 are those in the range X60–X849, referring to self-harm and including suicides due to a pesticide or an unspecified poison (X68–X699), other poisons (X60–X679), hanging (X70–X709), drowning (X71–X719), firearms and explosives (X72–X759), and jumping from a height (X80-X809), as well as other suicide methods. Some countries, such as the U.K., extend the classification of suicides to injury and poisoning *of undetermined intent* (Y10–Y34) and to sequelae of intentional self-harm/injury/poisoning of undetermined intent (Y87.0/Y87.2) http://www.ons.gov.uk/ons/rel/subnational-health4/suicides-in-the-united-kingdom/2010/stb-statistical-bulletin.html#tab-Context-of-suicide-statistics. How countries classify suicide can have an impact on rates. It is therefore important to map how individual reports and publications

report on these definitions. This is needed for an accurate interpretation of the results, as well as accurate cross-country comparisons.

In this review, *suicide incidence rate* or *suicide rate* refers to the number of suicide deaths in a given population during a given period of time. Suicide rates are generally calculated per 100,000/population over the period of a year. Much of the literature we collected did not include suicide rates expressed in this way, so we broadened our focus to include other suicide metrics, including raw numbers of suicide deaths, and ratios and proportions of suicide deaths to overall deaths. However, most comparisons were done on the bases of rates (calculated per 100,000/population), except for the ones on male female ratios and longitudinal trends, which also included analyses of some absolute numbers.

Figure 1: Overview of search, review and analysis process.



2.1.2 SEARCH PROTOCOL

This scoping review targeted three broad categories of documents reporting on suicide rates in South Asia: (1) studies published in peer-reviewed academic journals; (2) national and other official government reports; and (3) 'grey' literature identified through online web searches or in-country contacts with relevant stakeholder organizations and individuals. The search focused primarily on documents reporting on suicide incidence

and/or rates, methodology used to calculate rates, and means of committing suicide. The process is discussed below and outlined in Figure 2. Please refer to Annex 3 for the full search protocol approved by DFID.

2.2 SYSTEMATIC SEARCH FOR ALL PUBLISHED SUICIDE STUDIES SOUTH ASIA

2.2.1 SEARCH ENGINES AND DATABASES

We conducted an online only search of three major databases for academic literature: PubMed, PsycINFO and Embase. In addition, we searched national journal databases in five countries (excluding Afghanistan, for which we could not identify a national journal database): banglajolinfo (Bangladesh), medindia.net (India), nepjol.info (Nepal), pakmedinet (Pakistan), and sljol.info (Sri Lanka.) Citations in all included studies were checked to identify additional studies of potential relevance to the systematic review.

2.2.2 SEARCH TERMS

In line with the goals of a scoping review, we chose to keep our search terms broad to ensure that we did not miss any relevant documents: [Suicid* AND South Asia] OR [Suicid* AND Afghanistan] OR [Suicid* AND Bangladesh] OR [Suicid* AND India] OR [Suicid* AND Nepal] OR [Suicid* AND Pakistan] OR [Suicid* AND Sri Lanka]. The terms were pilot tested and found to deliver relevant and manageable results. Searches were done on title, keywords and abstract.

2.3 IN-COUNTRY SEARCH FOR DOCUMENTS AND DATA ON SUICIDE

Over a six week period from mid-February through end of March 2013, national consultants hired for each of the six South Asian countries searched for and collected available in-country documents from government agencies and non-governmental organizations. Consultants participated in a one-day workshop in Kathmandu in February to orient them to the scoping review process overall, and the in-country search protocol. Please refer to Annex 4 for the orientation workshop contents.

2.3.1 GOVERNMENT DOCUMENTS AND DATA

Consultants met with key government officials and conducted online searches of relevant government agencies in their respective countries, including the police department, home and interior ministries, health ministry, human rights commissions and other ministries and government offices to locate national or subnational governmental reports and data on suicide. In the case of India, our national consultant filed a Right to Information (RTI) request with the Ministry of Home Affairs to secure suicide data and reports for the past decade.

2.3.2 IN-COUNTRY AND ONLINE SEARCH FOR GREY LITERATURE ON SUICIDE IN SOUTH ASIA

During the same period, national consultants met with a wide range of nationally based experts on mental health and suicide, and representatives of relevant organizations (UN, bilateral agencies, IASC MHPSS reference group member organizations, large INGOs and national non-governmental organizations) to identify additional in-country sources of information on suicide. This included publicly distributed reports, unpublished internal reports, and articles published in periodicals that were not peer-reviewed. As with the government document search, national consultants also conducted searches of the websites of international agencies and national organizations working in health, mental health and suicide, and with vulnerable groups that might be at higher risk of suicide (including adolescents, women, migrant laborers, trafficking survivors, etc.). Please see Annex 5 for a full list of institutions contacted.

3. REVIEW PROCEDURE AND ANALYSES

3.1 SYSTEMATIC REVIEW OF PUBLISHED SUICIDE STUDIES IN SOUTH ASIA

As mentioned above, this scoping review was basically a *composite review*, including (1) studies published in peer-reviewed academic journals; (2) national and other official government reports; and (3) 'grey' literature identified through online web searches or in-country contacts with relevant stakeholder organizations and individuals. The systematic review component was included because it is the method that produces the highest level of reliability and generalizability of the results, due to the standardization of searching. This method is especially applicable to peer-reviewed publications, as all main journals are searchable in existing databases.

3.1.1 INCLUSION/EXCLUSION CRITERIA

The first stage of the review process was to assess the published studies retrieved through the online search of academic journal databases for full review based on the following inclusion and exclusion criteria:

- Were published in a peer reviewed journal;
- Had a publication date between 2002-2013;
- Were in the English language;
- Reported primary data or were systematic reviews;
- Described suicide incidence rates or other metrics (including raw numbers, ratios, proportions) related to committed suicides, and the methodology used to estimate these.

Studies were *excluded* if they were published before 2002, were not in the English language, or were editorial or conceptual papers. Older publications were excluded because the aim of the review was to present a current perspective on suicide in South Asia. If the publication included data from before 2002, but was published afterwards, these data were reported on in this review, with a limit set at 1998 (i.e. 25 years ago). To compensate for the potential bias introduced by the language exclusion criteria, we included native language reports in the in-country search component and included national-level scientific journals. Lastly, conceptual papers and editorials were excluded as we were chiefly interested in primary data on suicides, which are commonly not presented in these types of publications. All publications retrieved through searches were assessed first on the bases of title and/or abstract, according to the inclusion/exclusion criteria. If criteria were met, or there was a question about whether criteria had been met, the publication was selected for full review by one of three members of the review team.

3.1.2 REVIEW AND DATA EXTRACTION

Reviewers extracted and recorded information from the studies in pre-defined Excel formats according to these data categories:

- Study objectives
- Study period
- Study population
- Method of sampling
- Study methodology (including method of estimating rate)
- Study limitations
- Suicide rates
- Other suicide metrics (for committed suicides)
- Gender differences
- Age differences
- Means of committing suicide
- Suicide/death registration and reporting systems
- Suicide definitions

On completing the full review of each article, some publications were excluded for the analysis if upon full reading they did not meet the inclusion criteria. Ten percent (10%) of all publications selected for full review were also reviewed by a second member of the research team (MJ) independently to assess and ensure compatibility between reviewers. The same researcher (MJ) also reviewed those studies for which the primary reviewer was uncertain about final inclusion or exclusion.

After full review, 50 published articles (representing 49 studies) were selected for inclusion in the systematic review portion of this scoping study. Studies selected for final inclusion were also assessed for quality, using a quality appraisal tool developed for this scoping review.

3.1.3 QUALITY APPRAISAL

Development process. Evaluating the quality of peer-reviewed published studies for establishing suicide rates in South Asia is a key element of this scoping review. The evaluation of quality is important in making decisions on how to use suicide rates, e.g. in policy and practice; as such, quality rating can serve as 'benchmarking' for research methodology and ultimately for research results, i.e. suicide rates (i.e. those studies rated highly serve as a benchmark for subsequent studies). This paragraph outlines the approach we have taken to conduct quality appraisal.

Development of our approach started with a review of existing quality appraisal methods currently used in systematic reviews and meta-analyses. Evidence-based medicine has made important progress in the last decades, resulting, for instance, in consensus-based

methods to assess the quality of randomized controlled trials that evaluate health interventions (Guyatt et al., 2008). Similarly, a number of tools have become available for appraisal of the quality of non-randomized evaluation studies (von Elm et al., 2008). However, there is no single consensus-based method to appraise the quality of epidemiological studies.

Therefore, our starting point was an existing systematic review of methods to appraise quality in epidemiological studies (Sanderson, Tatt, & Higgins, 2007), in order to select a method that would best fit our purpose. This review identified 86 different tools, divided along three categories: (1) Scales: resulting in numerical score (n=33); (2) Checklists: lists of items that can be scored yes/no (n=41); and (3) Checklists with summary judgments: as in 2, but with results expressed in overall judgment of quality e.g. high/ medium/ low (n=12). Furthermore, based on their review of quality appraisal methods, Sanderson and colleagues recommend the use of tools that: (a) include a small number of items on key domains; (b) are as specific as possible (e.g. considering topic under study); (c) are a simple checklist rather than scale; (d) show evidence of careful development and psychometrics.

Based on these considerations, we decided to base our quality appraisal method on a checklist developed by Boyle (1998). This checklist has a small number of specific items on key domains, and does not have an overall summary scale. Given that psychometric properties of this tool have not been published – a common problem among highly used quality appraisal methods in this area (e.g. Stang, 2010) – we decided to pilot the checklist before use.

In a final step, we reviewed the Boyle checklist against items in other checklists (e.g. the SAQOR) (Ross et al., 2011) and adapted the tool for this scoping review by adding examples relevant to suicide incidence studies. For example, the item on probability sampling was replaced with an overall judgment of the sampling method; 'psychiatric disorder' was replaced by 'studies on suicide'; and the two items on statistics were rephrased to fit better with a review of studies on suicide.

Final instrument: appraisal criteria. The final instrument (see Annex 2) has 8 indicators, divided over three domains. The first domain looks into the sampling approach used in the study, specifically whether the target/catchment population has been clearly defined (i.e. target population), whether the method of how the sample was established is clearly described and adequate (i.e. sampling method), and whether the characteristics of the sampled population match the target population (i.e. representativeness). The second domain looks into the approach to measurement of suicides, specifically whether data collection was standardized (i.e. standardization), whether the instruments or ways in which suicide was established is reliable (i.e. reliability) and whether the instruments or ways in which suicide was established is valid (i.e. validity). The third domain appraises the approach to analysis, specifically whether the use of analytic and statistical methods are adequate (i.e. statistics), and whether the data are reported and presented accurately (i.e. accuracy of reporting).

The quality appraisal tool was applied to all peer-reviewed publications (n=50, representing 49 studies), with each publication being assessed on all eight indicators. A score was given for each indicator; Yes, study satisfied all criteria (Y); Some, when some of the criteria are satisfied (S); and No, study satisfied none of the criteria (N). N/A indicated not-applicable. Scoring was performed by two researchers (MJ and NB). After pilot-testing the tool mentioned above, inter-rater reliability between both researchers was assessed on 10% of the publications. We have used Cohen's Kappa (*k*) to measure the level of agreement between both raters on each of the criteria (i.e. on categorical scoring), resulting in $k = 0.67$. A Kappa score between 0.61 and 0.80 is commonly considered as substantial. Given the scarcity of reporting on psychometric properties of the quality appraisal tools for these types of studies globally, this result is promising.

After scoring all publications on all indicators, we added an overall quality rating. The overall figure for the quality of studies is the number of indicators fully satisfied (=Y) out of the 8 outlined in the quality appraisal tool. We have chosen not to apply labels or categories to this overall quality rating (e.g. excellent, high, moderate), as such categorization would be largely arbitrary. Furthermore, we have opted to not include the scores for 'Some satisfied criteria (=S)' in the overall rating, to err on the conservative side of rating. Also, when reviewing inter-rater reliability more closely, we found that the level of agreement on Y scores and a combined S/N was above 95%.

Given the unusual subjects of investigation (i.e. the deceased as a result of suicide), populations and samples are often difficult to define. For the purposes of our analysis we took the population to be the population of the geographic area or community under study (if specified) or the catchment area of the data source (e.g. hospital or police department) or a sub-population such as an age group, gender or victim of a particular method. Samples were the individual data sources used to identify suicides (e.g. crime records or verbal autopsies carried out). Evaluations of data collection, validity and reliability refer to the *methods used to measure suicide rates* and not necessarily the study in its entirety (e.g. the methods used to measure risk factors or suicidal behaviors). This also applies to data analysis, which focuses exclusively on the statistical methods that have been used to calculate and present rates. It is therefore important to note that the overall quality rating is not an indicator referring to the quality of the study per se, rather it is a rating on the quality of the study with regard to measuring suicide rates adequately.

3.2 REVIEW OF IN-COUNTRY DOCUMENTS AND DATA ON SUICIDE

The review process for in-country documents was similar to that outlined above for peer-reviewed studies, except that they were not reviewed using the quality appraisal tool. We opted not to undertake quality appraisal of these documents because the majority did not provide the detailed information on study methodology needed to apply the tool. Many of these documents were chapters, charts or sections in a larger report, or stand-alone lists of data without much further information provided. Whereas this might indeed be considered

an indication of the quality, it is also a characteristic of the type of reporting, and might therefore not allow for a balanced appraisal.

As with the published studies, ten percent (10%) of all in-country documents selected for full review along with any questionable inclusions, were also reviewed by a second member of the team (MJ) independently to assess and ensure compatibility between researchers and finalize inclusions.

All documents identified through the in-country search were preliminarily assessed according to the inclusion/exclusion criteria (which differed slightly for government documents and grey literature and are described below) by two members of the research team (AK, RA). If criteria were met, or there was some question about whether criteria had been met, the publication was selected for full review by one of three members on the review team. Reviewers extracted and recorded relevant data in Excel worksheets following the same format outlined above for published studies, and concluded with a recommendation to either include or exclude the publication in the final analysis and report.

Minor variations in inclusion/exclusion criteria, are described below.

3.2.1 GOVERNMENT DOCUMENTS AND DATA

Government documents and data were *included* for full review if they:

- Were produced between 2002-2013
- Were in English or the national language (for each of the six countries)
- Were from an official government source
- Described suicide rates or other metrics (including raw numbers, ratios, proportions) related to committed suicides

Reports/figures were *excluded* if they were published before 2002, or were not from an official government source. If the publication included data from before 2002, but was published afterwards, these data were included in this review, with a limit set at 1998 (i.e. 25 years ago). After full review, 30 government documents were selected for inclusion in the analysis phase of this scoping study.

3.2.2 REVIEW OF GREY LITERATURE ON SUICIDE IN SOUTH ASIA

Grey literature (including articles published in non-peer-reviewed journals) was *included* for full review if it:

- Had a publication date between 2002-2013
- Was in the English language
- Described suicide rates or other metrics (including raw numbers, ratios, proportions) related to committed suicides

Studies, reports and other documents were *excluded* if they were published before 2002, were not English language and were editorial or conceptual papers. After full review, 34 'grey' literature documents identified during the in-country search were selected for final inclusion in analysis and reporting.

3.3 DATA ANALYSIS

As noted above, data from all fully reviewed documents were entered in a pre-structured format designed to capture key results relevant to suicide rates and other suicide metrics, gender and age differences, means of suicide and methodology used to estimate rates. Records were sorted first according to document type: (1) published, peer reviewed studies; (2) government documents and data; and (3) grey literature. Within each document category, records were sorted according to country, and within each country, according to date of study period. Data from each of the three document categories were summarized separately, and within each document category according to country, to facilitate comparison of information from different sources within a country, and between countries. Members of the review team (AK, NB, MJ) then again reviewed the recorded information to identify major themes, trends, contrasting patterns and gaps in the literature and data.

The recorded information of publications and reports that were reviewed by two members of the research team (10%) were compared, demonstrating high congruence on recording. (All double coding was done by one researcher [MJ] to ensure standardization.) Where differences were found in this sub-set, or when any question arose throughout the review process it was discussed within the review team to come to a consensus decision. If this could not be reached, a decision was made by the one of the researchers (MJ).

Results were synthesized by creating summaries of key comparable variables (including suicide rates, means of committing suicide, sources of suicide data, gender/age specific data). Subsequently, this information was included in a master-table, as a basis for reporting (see Annex 1). Summary quantitative data was entered into SPSS 20.0 (IBM, 2012), which allowed for descriptive analyses on rates across the six countries and per country. The quantitative data included country, population (national or sub-population), type of publication (official, grey, peer-reviewed publication), year of suicide rates reported, suicide rates and quality appraisal score. Data was entered, from the above-mentioned master table, by one researcher (NB), and checked by another (MJ). Descriptive analyses included frequencies, means (and standard deviations). Linear regression analyses were conducted to assess whether quality appraisal scores are a predictor of degree of reported rates.

No meta-analyses were conducted, and we have only recalculated data to acquire comparable male: female suicide ratios (i.e. standardizing the presentation of ratios with male : female, as x : 1). The sub-set of peer-reviewed publications was analyzed using the quality appraisal tool as discussed above.

4. RESULTS

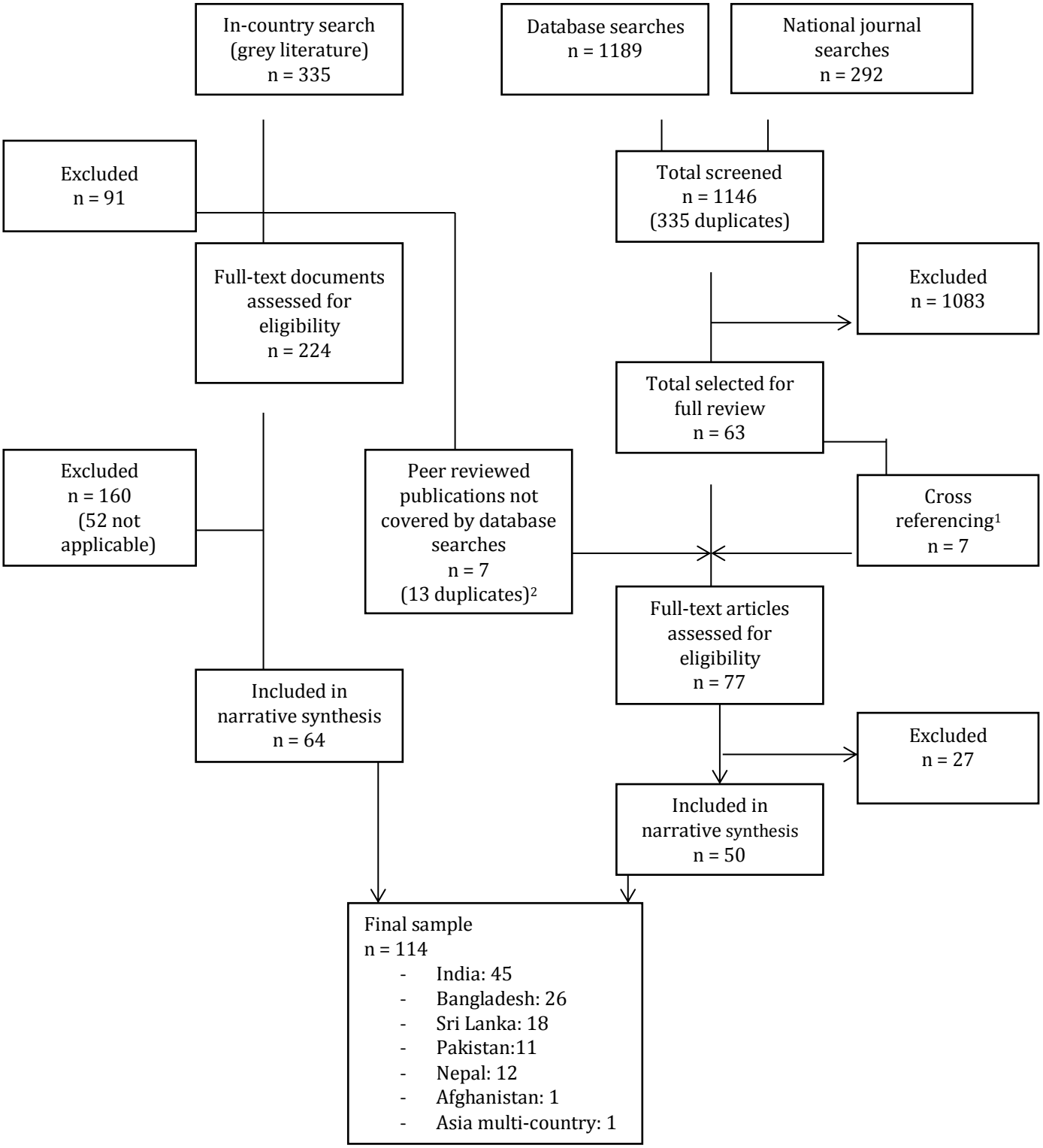
4.1 DESCRIPTIVE ANALYSIS OF DOCUMENTS

In summary, a total of 1,481 documents were identified during the search process. Of these, 301 were selected for full review. After full review, 114 documents were finally included for analysis, and are reported on in this paper. On the following pages we explain how we arrived at this final data set. See Tables 1 and 2, and Figure 2 for an overview.

Table 1: Document search, review and inclusion

	TOTAL	INDIA	SRI LANKA	BANGLA DESH	NEPAL	PAKI STAN	AFGHANI STAN	MULTI-COUNTRY
# DOCS. IDENTIFIED	1481							
Published	1146							
In-country (govt & other 'grey' lit)	335 (80 govt)	94	80	62	44	22	32	1
# DOCS. REVIEWED	301							
Published	77							
In-country (govt & other 'grey' lit)	224	56	65	41	38	14	9	1
# DOCS. INCLUDED	114	45	18	26	12	11	1	1
Published	50	26	7	11	2	4	0	0
In-country (govt & other 'grey' lit)	64 (30 govt, 30 grey, 4 articles in non peer-reviewed journals)	19	11	15	10	7	1	1

Figure 2: Flowchart



Note: [1] Cross references means the references that were identified in the hand search of the selected published papers. [2] These publications refer to peer-reviewed publications that were identified through the in-country search and that did not come up in the online search of databases.

Most common reasons for exclusion were: (1) lack of substantive information on suicide rates; (2) because documents were newspaper articles or opinion pieces; (3) lack of information relevant to South Asia. Table 2 below provides a more detailed outline of reasons for exclusion.

Table 2: Reasons for exclusion

REASON	IN-COUNTRY LITERATURE	PUBLISHED ARTICLES
PRELIMINARY REVIEW STAGE		
Lack of suicide info	**71.5%**	
No info on suicide at all	22%	
No info on suicide deaths	19.5%	
No metrics related to suicide	6.5%	
Lack of info relevant to South Asia	**12%**	n/a
Newspaper articles or editorials	**30%**	
Other reasons (focus on individual cases, book, document not found, published before 2002)	**9%**	
FULL REVIEW STAGE		
Lack of suicide info	**87%**	**89%**
No metrics related to suicide deaths	83%	74%
No info on suicide at all, or suicide deaths	4%	15%
Lack of info relevant to South Asia	**5%**	--
Opinion paper	**4%**	--
Other reasons (case studies, full article not available, no primary data)	**4%**	**11%**

4.1.1 SEARCHED DOCUMENTS

Of the 1,481 documents, 22.6% (335 documents) were identified by the six national consultants through in-country and organizational website searches, and 77.4% (1,146 published articles) through online searches of academic and national journal databases.

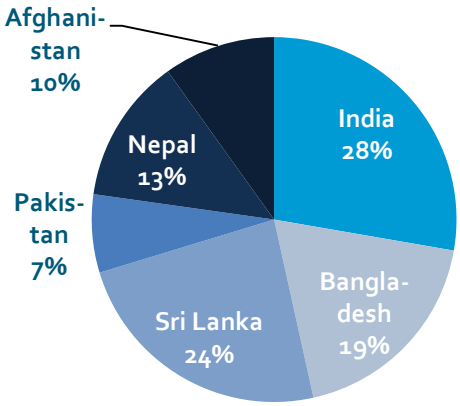
Documents collected by national consultants. Consultants contacted a total of 225 organizations and/or individuals in six countries, and searched 190 local and regional organizational and other websites for documents. The majority of organizations and institutions contacted (56%) were either government offices or NGOs and INGOS, but consultants also met with representatives of research organizations, donor agencies, and

medical colleges and universities. Government agencies contacted included the police department, home and interior ministries, health ministry, human rights commissions and other ministries and government offices. Non-governmental institutions included a wide range of UN organizations, bilateral agencies, IASC MHPSS reference group member organizations, large INGOs and national non-governmental organizations working in health, mental health and suicide, as well as with vulnerable groups that might be at higher risk of suicide (including adolescents, women, migrant laborers, trafficking survivors, etc.). Please see Annex 5 for a full list of institutions contacted.

More than a third of the documents (34%, 114 of 335) were identified through website searches, and nearly a quarter (83 of 335) through direct contacts with organizations and other stakeholders. Consultants also collected documents from university and organizational libraries, and contributed documents from their personal libraries.

India accounted for the greatest number of documents: 28.1% (94 documents), followed by Sri Lanka with 23.8% (80 documents), Bangladesh with 18.5% (62), Nepal with 13.1% (44), Afghanistan with 9.6% (32), and Pakistan with 6.6% (22). One document was a multi-country report that included information on India and Sri Lanka. See Figure 3.

Figure 3: Documents collected by national consultants



The greatest proportion of documents collected through in-country searches (39.4% or 132 out of 335) were published articles, although many were not from peer-reviewed academic journals. More than a third (39.7% or 133 out of 335) were 'grey' literature, comprising both formal organizational documents as well as internal reports. Twenty percent (20.9% or 70 documents) were government reports. The vast majority, 96.1% were in the English language, with only 3.9% (13 documents) in national language.

Systematic online search. Searches of three scientific databases, PubMed, PsycINFO and Embase, produced 1,189 hits. Searches of national journal databases in five countries produced another 292 hits. Out of the combined total hits of 1,481, 335 were duplications, leaving a reduced total of 1,146 unduplicated published journal articles (see Table 3).

Table 3: Total hits per database

SEARCH DATABASE	# HITS
PsycINFO	304
PubMed	366
Embase	519
medind.nic.in	143
banglajol.info	26
nepjol.info	16
sljol.info	15
pakmedinet.com	92
TOTAL HITS	1,481
# duplicates	335
# unduplicated articles	**1,146**

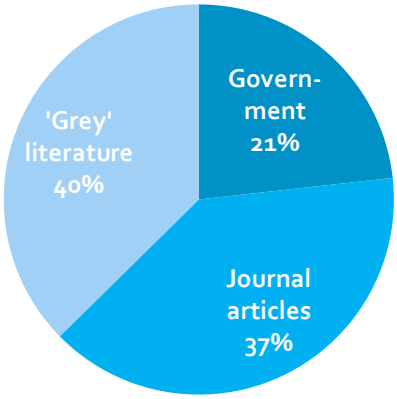
4.1.2 DOCUMENTS SELECTED FOR FULL REVIEW

Of the 1,481 documents initially identified through both the systematic on-line search and in-country search by national consultants, 301 (20.3%) were selected for full review. Two hundred twenty four (224) documents obtained by national consultants were selected on the basis of relevance to the study's primary ***and*** secondary research questions, and 77 published articles based on relevance to the study's primary questions only.

In-country documents. Of 335 documents identified by national consultants, 27.2% (91) were excluded after preliminary review for various reasons, including: lack of substantive information on suicide or suicide in South Asia, no publication date or publication date before 2002, lack of clarity about the source of information on suicide, or because they were newspaper articles or opinion pieces. Twenty published journal articles identified by national consultants were transferred for review along with the other published articles identified in the systematic on-line search. However, in keeping with the broad mandate of a scoping review, we reviewed all in-country documents that addressed any of the review questions: primary (suicide rates, other metrics, means of suicide), or secondary (prevalence of suicidal behaviors and ideation, risk and protective factors, and prevention strategies).

Two hundred twenty four (224) in-country documents were finally selected for full review. Of these, 21% were government documents, 40% organizational reports and other 'grey' literature, and 37% were published articles. See Figure 4. The majority of documents came from either Sri Lanka (65 documents or 29.0%) or India (56 documents or 25.0%), followed by Bangladesh (41, 18.3%), Nepal (38, 17.0%), Pakistan (14, 6.3%) and Afghanistan (9, 4%). One document covered multiple countries in Asia, including India and Sri Lanka.

Figure 4: Types of in-country documents



After the full review, another 52 documents (21.8%) were excluded from any further analysis. Reasons for exclusion at this stage were similar to the reasons for exclusion at the preliminary stage of review. Of the remaining 172 documents (55.8% of the original 335) that were identified for inclusion in analysis, 65.8% (108) did not relate to the study's primary research questions. This further reduced the number of in-country documents for inclusion in analysis to 64.

Articles published in peer-reviewed journals. Out of the 1,146 published articles initially identified through online search, 1,083 (95%) were excluded on the basis of title and abstract, and 63 were selected for full review. An additional seven published articles identified by in-country consultants, and another seven from cross-referencing were added to the 63 from the online search to produce a total of 77 published articles for full review.

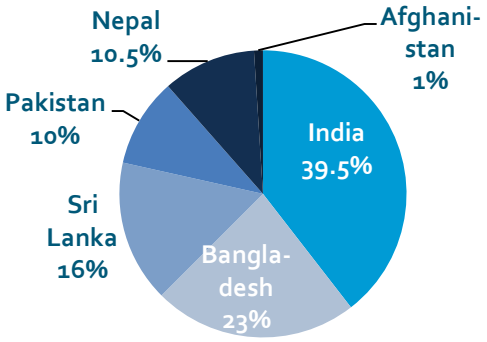
4.1.3 DOCUMENTS INCLUDED IN ANALYSIS

Of the 301 reviewed documents, 114 (38%) were deemed relevant to the primary research questions after the full review, and were included in the analysis. The greatest number of documents (45) were from India, comprising 39.5% of all included documents, followed by Bangladesh (26 documents) with a 22.8% share, Sri Lanka (18 documents) with 15.8%, Nepal (12 documents) with 10.5%, Pakistan (11 documents) with 9.6%, and Afghanistan with only one document in the final inclusion list. See Figure 5. As noted earlier, one document covered multiple countries in Asia including India and Sri Lanka. Refer to Annex 1 for a master table of all included documents. The table is organized by country, and within country by type of document (published study, government report, or grey literature), and study period (with most recent first). See flowchart below for detailed overview.

Included published articles. Out of the 77 articles that were fully reviewed, 27 documents (35%) were excluded for analysis in relation to the primary questions for the following reasons: (1) no suicide rates or other metrics related to suicide, and/or means of suicide in South Asia; (2) document was an abstract or an extract of an article; (3) article offered

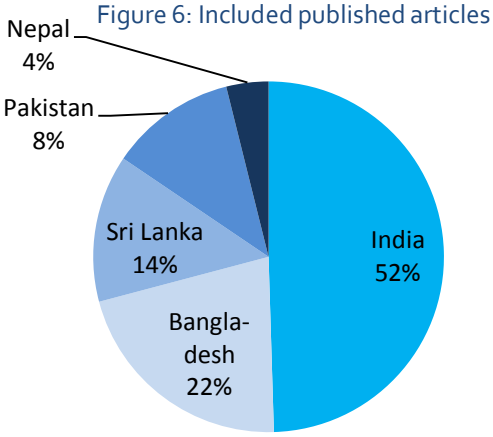
limited or no synthesis or analysis of data; (4) article was an overall review of suicide globally, with little/no info on suicide in South Asia.

Figure 5: All included documents by country



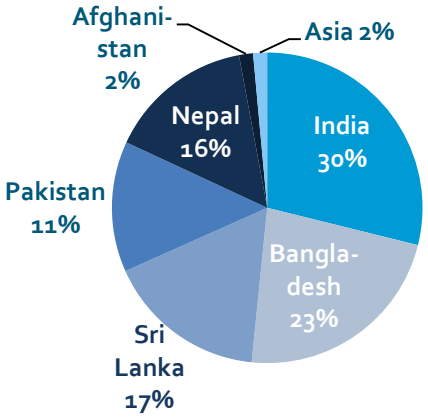
A total of 50 articles based on 49 studies were included in the analysis. (Two published articles were based on the same study.) More than half the articles (52%) were on suicide in India, followed by Bangladesh with a 22% share, Sri Lanka with 14%, Pakistan with 8%, Nepal with 4%. There were no published articles on suicide in Afghanistan included in the analysis. See Figure 6.

Figure 6: Included published articles



Included in-country documents. Of the 64 in-country documents included in analysis, 34.4% were organizational documents and other "grey" literature, 59.4% were government documents and 6.3% were articles published in journals that were not peer-reviewed. The majority were from India (19, 29.7%) and Bangladesh (15, 23.4%), followed by Sri Lanka (11, 17.2%), Nepal (10, 15.6%), and Pakistan (7, 10.9%), and Afghanistan with only one document (see Figure 7). One document covered multiple countries in Asia.

Figure 7: Included in-country documents

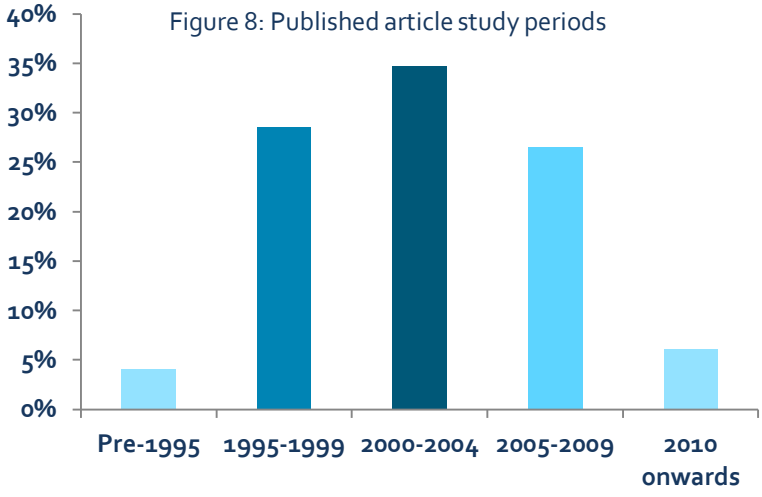


4.1.4 PUBLISHED STUDY CHARACTERISTICS

Study dates. Although we did not include any articles published before 2002, study dates, and, therefore, the currency of data varied considerably. Only three studies were based on or included data from 2010 or later (one of these was a projection based on data from 2001-2003). The majority of studies (61.2%) were based on or included data from 2000-2009: thirteen out of 49 studies (26.5%) were based on data from 2005-2009, and 17 (34.7%) from 2000-2004. Another 14 studies (28.6%) were based on or included data from 1995-1999, and only two were based on data that was pre-1995. See Figure 8.

Study populations. About three-quarters of all studies (75.5%, 37 studies) focused on regional or sub-populations. About one quarter (24.5%, 12 studies) were nationwide studies, including 7 from India, three from Sri Lanka, one from Bangladesh (on women aged 10-50 years), and one from Nepal (a nationally representative injury study). Six

Figure 8: Published article study periods



studies, including the nationwide Bangladesh study of women, focused only on women.

Study length. Most studies (51%, 25 studies) examined suicide incidence over a period of 1-5 years, with 12 (24%) between 1-2 years, and 13 (26.5%) between 3-5 years. Another 28.6% (14 studies) were between 6-15 years duration, with 12 (24.5%) between 6-10 years, and 2 between 11-15 yrs. Three studies (6.1%%) were between 16-20 years, and another three were more than 20 years. On the short end of the spectrum, four studies were only 3-6 months duration. See Figure 9.

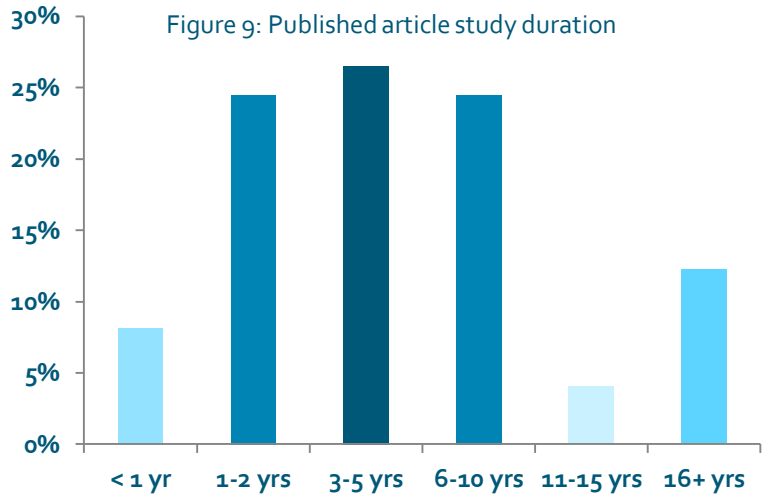


Figure 9: Published article study duration

Types of studies/ data sources. Autopsy studies were the most common type of study represented in this review, accounting for 32.7% (16) studies/published articles. Other types of studies included time and trend analysis using official suicide and mortality data where available (mostly India and Sri Lanka, but also in Nepal), health and demographic surveillance studies (8 studies, 16%), mortality/cause of death studies, rural community surveys, household surveys, and systematic literature review. Thirteen studies (26.5%) utilized verbal autopsy as a method of collecting data/source of data. Ten studies utilized national police records, and, in the absence of official data, one study in Pakistan utilized national and local newspaper reports as a primary source of data on committed suicides, verified with police, health personnel and others.

4.2 FINDINGS ON SUICIDE RATES

4.2.1 NATIONAL SUICIDE DATA COLLECTION AND REPORTING SYSTEMS

As context for the presentation of findings on suicide rates in South Asia, we provide a brief summary of our understanding of the national suicide data collection and reporting systems in the six countries we focused on. This understanding is derived in part from the literature and partially from the reports and observations of our six national consultants.

Since systematic exploration and evaluation of these systems was not part of this scoping review, the descriptions and discussion below should be considered provisional. A summary of governmental reports on suicide for each country is provided in Table 1.

Overview of official suicide reporting systems. There is substantial variation in national suicide registration and reporting systems across South Asia. This ranges from non-existent, in Afghanistan, to fairly comprehensive and transparent in India. In India, data collection is routine and data is regularly compiled and analyzed at the national level. Information, including annual suicide rate calculations and a plethora of disaggregated data, is in the public domain. However, despite this, most experts agree that the system has significant limitations and questionable accuracy as discussed in more detail in the section on limitations of official suicide reporting systems on page.

Suicide is considered a criminal offence in five of the six countries, and has been decriminalized only in Sri Lanka. The legal status of the act has important implications for the reporting (or not) of suicide. In all five countries where there are systems of suicide reporting (even if only nominal), police are the primary repository and source of data. Suicides are reported at the local level to district or sub-district police (albeit with significant inconsistency according to critics in all countries explained in more detail in the section on limitations below.) With the exception of Pakistan, local level data is meant to be transmitted to and compiled at the national level. In Pakistan, Home Ministry authority has been devolved to the provinces, and there is no system of reporting local level suicide data at the national level, nor, reportedly, is it compiled at the provincial level.

Only two countries publish suicide information: India and Sri Lanka. Of the two, only India calculates and publishes rates on an annual basis. India and Sri Lanka both report mortality data, including suicide, to the World Health Organization (WHO), but in the case of Sri Lanka, the suicide data is out of date (the most recent data cited in WHO's Mortality Database from 2008 is from 1996).

Additional sources of information. Although police in all countries are considered the official source of suicide data, we found that in several countries (India, Bangladesh, and Nepal) information on suicide mortality has also been collected through large national mortality surveys. In both India and Nepal, rates calculated on the basis of information in these mortality surveys are considerably higher than rates published by the police. Since data from large mortality surveys are likely to have higher reliability and validity (i.e. a larger sample is generally a better representation of the population) and given that these surveys used multiple methods to obtain data, including verbal autopsy (i.e. representing higher quality study), it is likely that the higher rates are a more accurate reflection of actual suicide rates than rates calculated on the basis of police information.

Although national health management information systems (HMIS) could be used to capture suicide mortality in facilities, in the countries where we examined this information (Bangladesh and Nepal), we found it appeared to be grossly underreported – far more so even than police data, which are already considered to report low rates. Police records

from both Nepal and Bangladesh each report several thousand suicide deaths per year, ranging from 3,990 in Nepal in 2010/11 to 15,551 in Bangladesh 2010. However health facilities report a negligible number: only six suicide deaths were reported in the 2010/11 Department of Health Services Annual Report in Nepal and 34 suicide deaths were reported in a mortality survey of 451 health facilities in Bangladesh. It seems reasonable to assume that a greater number of suicide case fatalities probably occurred in health facilities in both of these countries (for example, self-poisoning cases), but were not recorded as suicides or reported.

Country suicide reporting systems.

Afghanistan. Afghanistan has no system of suicide surveillance at either the local or national level.

Pakistan. In Pakistan, a medico-legal system of reporting and investigating suicides exists on paper. The district police are the primary source of information on suicide. The police department in Pakistan works under the Interior Ministry, and federal authority and oversight of police has been devolved to the four provinces. However, suicide data is not collated at the provincial level, nor is it shared with or collated at the national level. Collection of information on suicide or attempted suicide is not part of the routine health management information system (HMIS), and such information is not collected by the provincial Health Ministries.

Bangladesh. In Bangladesh also, suicides are recorded as unnatural deaths at the sub-district, district and divisional police levels (Bangladesh has seven divisions), and a medico-legal autopsy is mandated by law to determine cause of death. Although not generally publicly available, it does appear that this data is compiled at the national level at police headquarters, as our national consultant was able to obtain national police records with raw numbers of recorded suicides in Bangladesh for the years 2003-2010. In addition, the Bangladesh National Institute of Population Research and Training (NIPORT; www.niport.gov.bd), a research wing of the Ministry of Health and Family Welfare, conducts periodic maternal mortality surveys which contain information on suicides as proportion of all deaths among women of reproductive age, and national health and injury surveys in which deaths from suicide are recorded. The Mortality Profile of Bangladesh, 2011, published by the Directorate General of Health Services reports on causes of death reported by government health facilities. This report contains data on death by suicide. This document showed suicide as a tiny 0.9% of all deaths in hospitals, reflecting a total of 34 suicide fatalities in hospitals, whereas police documented more than 15,000 suicides overall in 2010.

Nepal. Like other South Asian countries, the official channel for suicide reporting in Nepal is through the district police. District police share the suicide data they collect with regional police offices and, at the national level, with the Crime Investigation Department (under the Home Ministry) on a quarterly basis according to our national consultant. Our consultant was able to obtain raw numbers of suicides deaths from central police records for the three

years 2009/10 through 2011/12. In addition, the Maternal Mortality and Morbidity Study (MMMS), which is conducted every 10 years by the Family Health Division of the Department of Health Services, has information on suicide as a proportion of deaths among women of reproductive age. The Maternal Mortality and Morbidity Study 2008/9, focused on eight districts (Kailali; Rupandehi; Okhaldhunga; Surkhet; Jumla; Baglung; Rasuwa; and Sunsari), covering a total population of 3,298,319, and comprising 12% of Nepal's population. Methods included community surveillance system (identifying deaths of women of reproductive age and conducting verbal autopsies), hospital maternal death review, in-depth interviews and focus group discussions with key stakeholders. The 2008/9 MMMS identified suicide as the leading cause of death (16% of all deaths) for women of reproductive age, 15-49 years. Two other sources provided additional data on suicide: (1) an epidemiological study on Injury and Violence for 2008/9, published by the Nepal Health Research Council, which contained information on the gender breakdown of suicide deaths in Nepal, and (2) data from the Ministry of Labor's Foreign Employment Promotion Board on causes of death of Nepali migrant laborers traveling to foreign countries, for the period 2007-12. The latter included data on the number of suicide deaths. Finally, the Department of Health Services' annual reports include ICD codes for suicide in their reporting of health facility mortality. However most health facilities have reported no deaths by suicide; the few district facilities that have reported on suicide mortality have recorded only a couple of deaths. As in Bangladesh, it seems highly likely that the six suicide deaths reported by health facilities in 2010/11 represent significant under-reporting in a country where police records showed more than 3,900 suicides in the same year.

Table 4: Official government reporting of national suicide data

	INDIA	SRI LANKA	NEPAL	BANGLADESH	PAKISTAN	AFGHANISTAN
REPORTS TO WHO (MOST RECENT YEAR)	2009	1996	X	X	X	X
PUBLISHES OFFICIAL NATIONAL SUICIDE RATES	1967-2011	X	X	X	X	X
PUBLISHES #S ANNUAL SUICIDES	1967-2011	2005-2011	X	X	X	X

UNPUBLISHED POLICE DATA AVAILABLE	n/a	X	2009/10-2011/12	2003-2010	X	X
OTHER PUBLISHED GOVT SUICIDE DATA (TYPE, YR)	Report on Causes of Death in India, 2001-3	X	1.Maternal Mortality, 2008/9 2.Labour Migrant Suicides, 2007-12 3.Injury, Violence Study, 2008-9	Mortality profile, 2011	X	X

Sri Lanka. In 1997, suicide and attempted suicide were decriminalized at the recommendation of a Presidential Commission. Abetment of suicide remains illegal and is punishable by death. National level suicide data is collated by the Registrar General and the Sri Lanka Police Department, which provides overall annual suicide numbers on its website (http://www.police.lk/index.php/crime-trends), however, rates are not presented. Total annual suicide deaths (numbers only) are provided, broken down by gender, age and means of suicide. Our national consultant was not able to obtain officially published or internal government documents containing national suicide rates. Suicide rates for Sri Lanka, based on police data, have, however, been reported and/or calculated in both published articles and in grey literature discussed in this report. According to our national consultant, calculations of suicide rates may sometimes be released by the Registrar General to researchers and other parties on request, but the process of obtaining these data is unclear and not readily accessible. Even so, calculations based on these data may vary from author to author, including, for example de Silva et al (2012) and Sumithrayo, a leading suicide prevention NGO in Sri Lanka. In addition, there also appears to be some confusion about whether a national protocol for self-harm and suicide data collection from hospitals exists. At district level some hospitals do report this, but it depends on the individual unit. The National Poisoning Centre collects hospital admissions data nationwide on self-poisoning as part of its data collection protocol, but this is not exclusively concerned with self-harm or suicide. Sri Lanka is one of two countries in our study (along with India) that reports mortality statistics to WHO. However, the Sri Lanka figure for suicide in the 2008 Mortality Database is from 1996, more than 15 years old. At 21.6/100,000, it is also dramatically lower than the rate for that year as calculated from police data and reported in another publication: 40.0/100,000 as reported by de Silva et al, 2012 in the Bulletin of the World Health Organization. WHO has classified the quality of data from Sri Lanka as only level 3: poor to fair (Hendin et al, 2008).

India. While attempts have been made in India over the last decade to decriminalize suicide, it remains a criminal offense. India is the only country out of six for which we were able to obtain official national suicide rates in published government documents. National data on suicides is collected yearly by the National Crime Records Bureau (NCRB), under the Ministry of Home Affairs. This data has been reported annually since 1967 in the publication, Accidental Deaths and Suicides in India, issued by the Office of the Registrar General of India and the NCRB. Data is in the public domain, and the most recent report (2011 at the time of this review) is available through the NCRB website. Our national consultant obtained reports for the years 2002-2010 by filing a Right to Information (RTI) request with the Ministry of Home Affairs. Data and rates in this annual report are disaggregated by age and sex, geographic area (states, major cities), means of suicide and other categories of interest.

Another valuable source of information on suicide as a proportion of mortality is the Special Survey of Causes of Death in India, part of the Million Deaths Study. This was last conducted in 2004 to determine causes of death from 2001-2003. The 2001-2003 Million Deaths Study, published by the Registrar of India, used the RHIME method to investigate cause of death in a representative sample of the Indian population in 14/24 states. This is to complement India's Sample Registration System (SRS), a continuous and longitudinal half-yearly enumeration of vital events occurring in a national random sample of villages and urban areas in India, conducted by the Registrar General of India (RGI) and the main source of reliable information on urban and rural birth and death rates at state and national level. Information on causes of death is poor however, particularly in rural areas, due to paucity of medical personnel and facilities in rural areas. Seventy percent (70%) of the population lives in rural areas, and it is not feasible to build up statistics on causes of mortality based only on Medical Certification of Cause of Death. The RHIME methods include household investigation by lay, non-medical staff of events leading up to death, central medical evaluation and adjudication, 5 % random audit by an independent team, Trained physicians assigning underlying cause of death (ICD-10), 100% second coding by these trained physicians and reconciliation.

Among India's 35 states and union territories, the Kerala Mental Health Authority appears to be the only state authority that regularly publishes updated state suicide figures and rates, available on its website (http://www.ksmha.org/).

Limitations of official suicide data collection and reporting in South Asia. Although India and Sri Lanka's suicide data collection and reporting systems are substantially more comprehensive and regularized than those in the other South Asian countries, there is general consensus among suicide researchers in all countries that there is significant and possibly massive underreporting throughout South Asia. This is due to a complex constellation of factors including criminalization of the act (except in Sri Lanka) and the associated possible legal consequences for survivors and family members of reporting a suicide, the social stigma and strong socio-cultural and religious sanctions against suicide, and public mistrust of and harassment by the police and legal authorities. The problem of

underreporting is further confirmed in countries where more than one source of national data on suicide exists, such as those that conduct national mortality surveys using verbal autopsy to determine cause of death (India, Nepal). These studies generally show significantly higher rates than those published by the police or estimated in studies that rely upon police data.

According to the literature, additional problems with national systems of suicide data collection and reporting include variable standards in certifying deaths, and misclassification, both intentional and unintentional, of suicides as accidents or natural deaths (and, in some settings, intentional misclassification of homicides as suicides). There is great variability across districts and states in consistency of data collection at the local level, and across countries in the compilation of locally collected data at the national level.

Inaccessibility and inadequacy of police reporting has led to a unique system of monitoring suicide incidence by suicide prevention researchers and activists in both Bangladesh and Pakistan, that is, tracking suicides via newspaper reporting. One published study in Pakistan published prior to our review period (Ghaffar et al, 2001) found that out of 91 suicides reported in newspapers, none were registered with the police. While this may be an apparently useful and potentially more accurate source of information in data-scarce settings, the validity of these data is questionable due to lack of standardization.

4.2.2 DEFINITIONS OF SUICIDE

In this review, "suicide" refers to a fatal act of suicidal behavior. All included publications reported on suicide deaths. However, explicit definitions of suicide were rarely presented in their methods. As described in the quality appraisal, the majority (41/49 or 84%) of published studies did not explicitly define suicide in the context of their study. An even larger proportion of the grey literature (59/64 or 92%) did not provide definitions of suicide.

Of the eight published studies that gave a definition, one used an official system (WHO International Classification of Disease-10 codes of self-inflicted injury) whilst the others used their own definitions. Three of these (Feroz et al, 2012; ICDDR, B 2003; Saeed et al., 2002) define suicide broadly as an act which is i) voluntary, ii) self-inflicted and iii) fatal. The remaining four define suicide in terms of the focus of their study, specifically, (1) as deliberately setting oneself on fire with fatal results (Mohanti, Arun, Montiero and Palimar, 2005); (2) as an intentional injury which could be fatal *or* non-fatal (i.e. a suicide attempt) (Kavita, Girish, and Gururaj, 2011); (3) as a violent death that is not a homicide (Ahmed et al., 2004); and (4) as any type of suicidal behaviour including attempt and ideation (Khan et al, 2008). None of the studies that used a verbal autopsy method in a demographic surveillance system gave a predetermined definition of suicide; they did, however, have a standardized process by which the researcher determined whether deaths were classified as suicide.

Of the 30 government documents reviewed, only the series, Accidental Deaths and Suicides in India (NCRB, 2002-2011), contained a definition of suicide. This report defined suicide as the "Deliberate termination of life." It further described, "The essential ingredients of a suicide are: (i) It should be an un-natural death, (ii) the desire to die should originate within him/herself, (iii) there should be a reason for ending the life". Of six studies that give definitions in the in-country grey literature, two studies, one from India (National Report on Causes of Death, 2001-3) and one from Nepal (The Maternal Morbidity and Mortality Study, 2008/9) used the WHO's International Classification of Diseases, classifying suicide cases according to whether the death fits the "intentional self-harm" category. Two studies provided their own definitions of suicide: one from Sri Lanka (Report on Suicides Among Children) and one from Nepal (Legal Study of Suicide Incidence in Nepal) defining suicide in similar broad terms as in the published studies (voluntary, self-inflicted and fatal). The latter study elaborated on the construct by categorizing various types of suicide as egoistic suicide, altruistic suicide, anomic suicide, assisted suicide and abetment of suicide. Within these, it is noted that: "*While it is mostly carried out voluntarily, it can be an involuntary act when one is pressed to do it for reasons that serve other people's interests.*" In a third study from Nepal (Epidemiological Study on Injury and Violence in Nepal, 2009), suicide is defined as deaths under the category of self-inflicted injury and classified in terms of intentionality. A final study from Afghanistan defined suicide in terms of the subject of the study, terrorist attacks, that is: a terrorist attack where the attacker has no intention of surviving.

4.2.3 SUICIDE RATES[1] AND CROSS COUNTRY COMPARISONS

If we take the average[2] of the suicide rates[3] that have been reported for each of the countries represented in this review (ranging from 0.43 to 331.0), we see a large variation across countries. The non-pooled[4] mean rate for Bangladesh is 58.3 (SD=63.22), for India it is 28.8 (SD=32.17), for Sri Lanka it is 25.7 (SD=4.80), for Nepal it is 8.6 (SD=8.87), and for Pakistan it is 3.6 (SD=5.06). For Afghanistan no publication reports actual suicide rates. The non-pooled average suicide rate across all six South Asian countries for the included time period is 25.2 (SD=28.60). This is more than twice the 2011 rate of 11/100,000 as reported in WHO's World Cause of Death Statistics, June 2013

[1] All rates reported are per 100,000 populations

[2] Reporting a mean score for such varying data (using differences sources, populations, definitions etc.) is problematic. We have included these mean scores only for presentation purposes to give an indication of the scope of the problem. Consequently, in the sections below we will present the results for categories of publications that are more comparable.

[3] Suicide rates are age-adjusted only if reported as such in the reviewed publication, in which case we have specified that in the reporting. All other reported suicide rates are not age-adjusted.

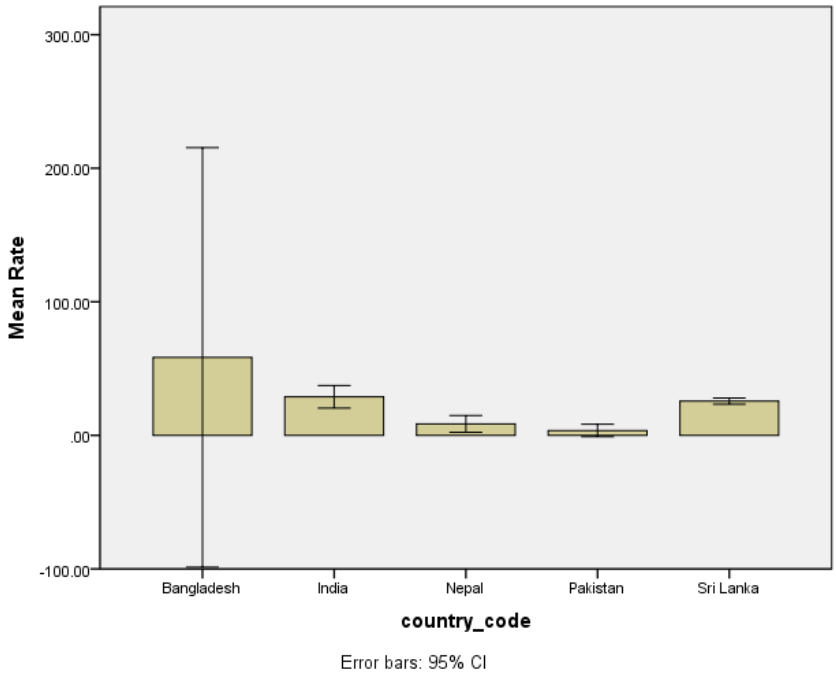
[4] 'Pooled' or 'non-pooled' means refer to whether or not (respectively) the size of studies is taken into account when calculating means.

(http://www.who.int/healthinfo/global_burden_disease/en/) and the WHO Mortality Database of 2008 (Varnik et al, 2012).

As will be explained below, calculating mean scores is problematic (and have been included to be indicative), as it combines data from different sources, from different sub-populations, and using methods of varying quality. For example, the mean of all the officially presented suicide rates is 10.8 (SD=0.36) (taken over different years), but this only includes reporting from India. When taking any nationally representative suicide rates (including those estimated in published studies or other government reports), the average increases to 14.3 (SD=7.60) (taken over different years), including rates from three countries (India, Nepal and Sri Lanka). While these rates are already higher than the world's mean, it should be kept in mind that that the availability and quality of suicide data for surveillance is very limited (Chen et al, 2012). So, while the current study appears to demonstrate high rates of suicide in the sub-continent, a more in-depth examination of these results is needed to understand the real meaning of the data. This is done by interpreting suicide rates for different types or categories of data.

See Figure 10 below for a comparison of the average rates between countries, including the 95% confidence interval. The mean rates presented as bars and in the graph are mainly of interest to see different trends of reporting between the South Asian countries. While the mean rates vary greatly, they cannot be compared at face value, as the reliability of these mean rates is low. As is indicated by the Standard Deviations and the 95% confidence intervals, the range of scores is large (making the mean score for Bangladesh especially unreliable, while those for India most reliable). In addition, there are so many within- and between- country confounding factors (quality of studies, dates of studies, number of studies or reports etc.), making the interpretation of differences between mean scores difficult.

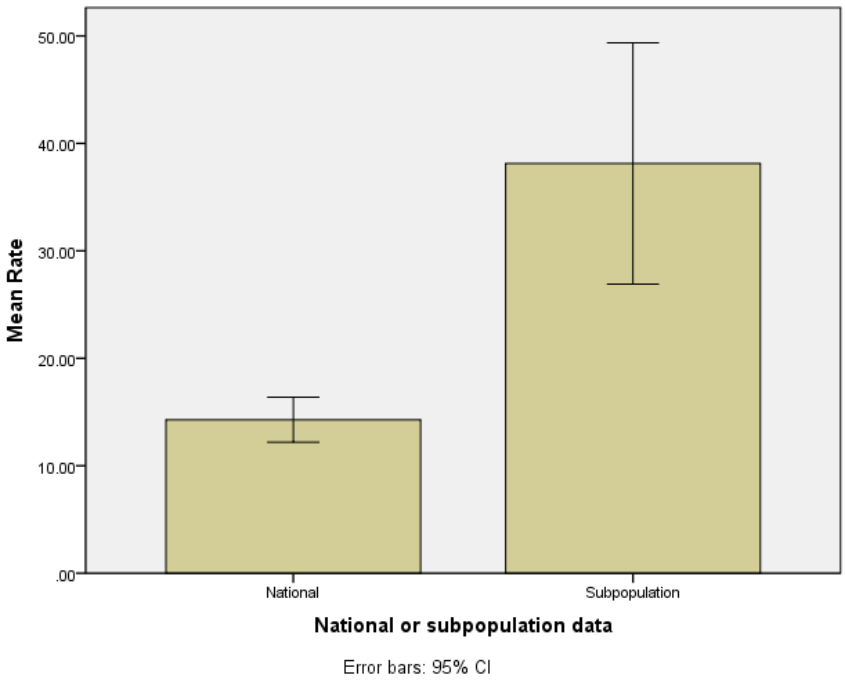
Figure 10: Mean rate across all sources.



Of note, while the table in Annex 1 presents all rates reported in all reviewed documents and publications, the analyses and graphs have been done on those that present rates for the period 1998 and later. This was done to reflect more current trends in suicide rates.

Given that mean scores are associated with the already mentioned problems of reliability, it is important to look at the presented suicide rates individually by type of reporting, thereby differentiating between categories of sources of data. One factor that seems to have a significant impact on the reliability of presented rates is whether the report or publication represents the entire population (national data) or a sub-population. As can be seen in the chart below (Figure 11), studies of sub-populations are associated with much higher rates. The reason for this difference is unclear. It could be related to the fact that these represent a sub-set of studies that have collected suicide data differently. Another explanation is that the latter set of reports and publications look into specific sub-populations that are especially at risk or where suicide is a known problem. For that reason, it is important to look at the overall presentation of suicide rates for these categories separately. We have further differentiated between official national data and nationally representative but unofficial data.

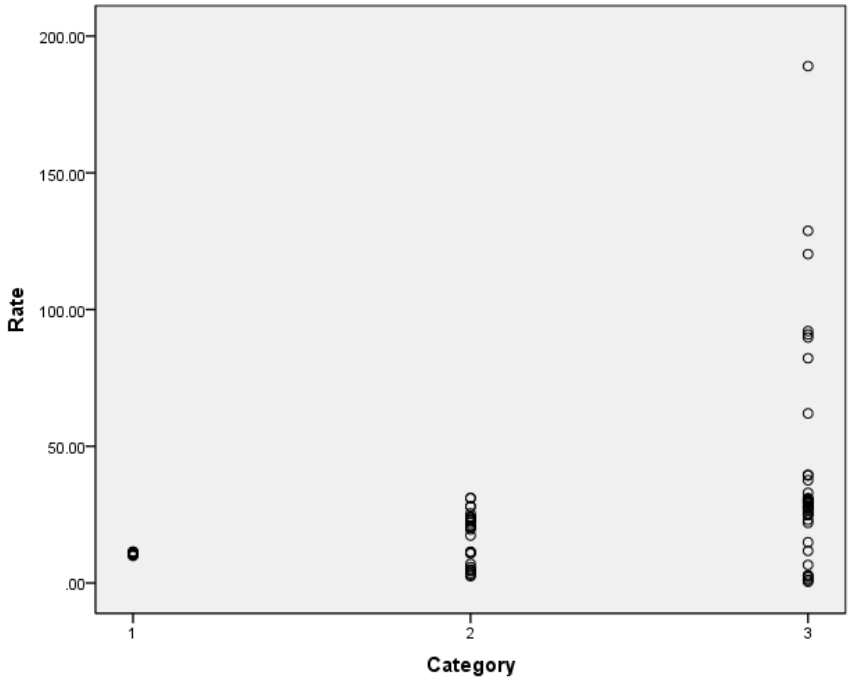
Figure 11: Mean rate between national data and sub-populations data



The charts below show the rates for the individual studies and reports, across countries and for each country, presenting official rates, national non-official rates and sub-population rates. To include the quality criteria, the individual studies that have a high overall quality rating are shown in red. (See Section 4.3, Quality Appraisal Results for an explanation on how these have been determined.)

The chart summarizing rates from all countries (Figure 12) demonstrates how variable the range of rates is according to different categories of reports: official reports present the lowest rates, other national studies show higher rates, and highest rates are reported in sub-population studies. There is also a larger range of non-official national rates compared to official national rates, while the sub-population rates have, predictably, the widest range.

Figure 12: Rates from all 6 countries.



Note: Category 1 = National Official; 2 = National Non-official; 3 = Sub-Population

National longitudinal trends are available for India and Sri Lanka, the two countries with more comprehensive suicide data collection systems. As has been reported in numerous studies (de Silva et al, 2013; de Silva et al, 2012; Thalagala, 2009), suicide rates in Sri Lanka have declined since 1995, when the rate was at its highest: from 47.0/100,000, to the most recent rate available: 19.6 in 2009. In contrast, India has seen a gradual but steady increase in suicide rates, from 9.6 in 1995 (Girdhar, 2003) to the most recent rate of 11.2 in 2011 (Registrar General of India, 2011). Nepal's overall rates based on police data and as reported in The Review of the Evidence: Suicide Among Women in Nepal (Pradhan et al, 2011) have hovered in the low and middle single digits. Police records obtained by our consultant in Nepal for the years 2009/10-2011/12, which record absolute numbers of suicide deaths, do show a constant and slightly upward trend over the three years (data accessed from Nepal Police Crime Investigation Department, 28 January 2013). Refer to Table 5 below for more details on rates over time. According to the latest figures from WHO's World Cause of Death Statistics, (WHO, 2013), globally the rate of suicide declined between 2000 and 2011, from 15.0/100,000 to 11.0/100,000, and in the Southeast Asia region from 20.0 to 17.0 over the same period. The longitudinal trend in Sri Lanka is consistent with

these global and regional trends, while the increasing rates over time in India and Nepal do not conform to the worldwide trend.

Table 5: Recent longitudinal trends of national suicide data in the countries where such data are available

	SRI LANKA*	INDIA*	NEPAL*
2011		11.2	
2010		11.4	4.7 (2009/10)
2009	19.6	10.9	2.5 (2008/9)
2008	20.4	10.8	3 (2007/8)
2007	21.1	10.8	3.5 (2006/7)
2006	22.7	10.5	4.3 (2005/6)
2005	24.1 or 23.2, depending on source	10.3	5.8 (2004/5)
2004	24.2 (Sumithrayo)	10.5	4.9 (2003/4)

Note: Sri Lanka rates from de Silva et al, 2012, Thalagala, 2009) and the website of Sumithrayo, a leading suicide prevention organization in Sri Lanka, http://www.srilankasumithrayo.org/statistics-and-data, which presents estimates based on police and census data; India rates from Registrar General of India, 2011; Nepal rates from Pradhan et al, 2011, based on police data.

While no national rates are available for either Bangladesh or Pakistan, absolute numbers of suicide deaths as reported by the police in Bangladesh and by the Human Rights Commission of Pakistan (a non-governmental organization), both show increases in the number of suicides over time: a small increase in Bangladesh numbers from 2003-2010, and a rather sharp (threefold) increase in Pakistan from 2004-2010.

India

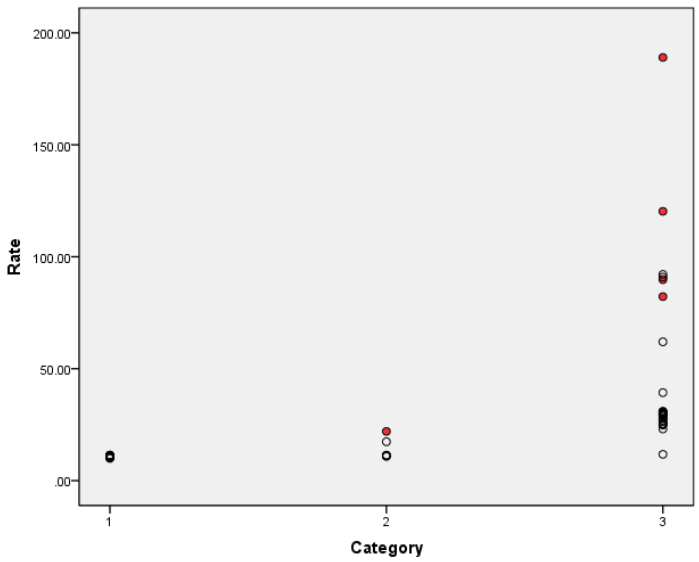
National suicide rates. Sources of data on national suicide rates in India include: (1) the official national annual publication of the NCRB and Registrar General of India, Accidental Deaths and Suicides in India; (2) published studies and grey literature utilizing police data; (3) one published study which provided new estimates of national suicide rates based on other than police data: Patel et al's (2012) 'Suicide Mortality in India' study which estimated 2010 suicide rates based on the Registrar General of India's 'Report on Causes of Death in India', 2001-2003; (4) a WHO publication (Hendin et al, 2007) on 'Suicide and Suicide Prevention in Asia'.

India's official national suicide rate was 11.2 in 2011. Patel et al's study (2012), based on data from the cause of death study, estimated a much higher national rate of 22.0/100,000 in 2010. However this rate is age-adjusted for the population 15 years and older. The rate cited in the WHO publication on Suicide and Suicide Prevention in Asia for 2002 was also considerably higher at 17.4, than the official national rate for that year which was 10.5

Sub-population variations in suicide rates. India was the only country for which we obtained official government rates for geographic sub-populations, through the annual 'Accidental Deaths and Suicides in India' reports, and the Kerala Mental Health Authority website (http://www.ksmha.org/). In comparison with the overall national suicide rate in India, there are large differences in rates between states and cities. For example, in 2010, suicide rates in Indian states ranged from a low of 0.5/100,000 in Nagaland to a high of 45.9 in Sikkim. There were nine states with suicide rates greater than 20.0/100,000 according to NCRB data.

Nine published studies provided overall rates for specific populations in defined geographic areas in India. Sub-populations included entire rural communities, urban populations, participants in a cancer trial, and catchment areas of hospitals at which autopsy studies were undertaken. Despite variation in study populations, the results of these studies did share an important commonality: seven out of eight found suicide rates that were significantly higher than the national rate. Rates from these published independent studies were also higher than the official data for the Indian state where the study population was situated. For example, several studies focusing on Kaniyambadi, a rural area in Tamil Nadu with a well-established demographic and health surveillance system, found rates as high as 120.3 in 2007 (Bose et al, 2009) compared to the official rate of 20.9 for the state of Tamil Nadu in that year. This is more than ten times the official national rate of 10.8 for the year. Six out of the eight published studies on geographic subpopulations, had estimated rates of more than 60.0/100,000, however five of the six studies focused on the same community (Kaniyambadi) at different points in time (Bose et al, 2009; Prasad et al, 2006; Bose et al, 2006; Abraham et al, 2005; Joseph et al, 2003). See Annex 1 for details on these studies.

Figure 13: India National and subpopulation rates from all included documents



Note: Category 1 = National Official; 2 = National Non-official; 3 = Sub-Population

Figure 13 above charts all national and sub-national rates for India from documents included in this review, according to these categories: (1) official national suicide rates, (2) other "non-official" (governmental and non-governmental) estimations of national suicide rates, (3) rates for sub-populations. Rates from published studies that were assessed as higher quality (meeting all or almost all quality criteria) using the quality appraisal tool, are indicated with a red circle. It is important to note that rates are from different years, ranging from 1998 to 2011.

This figure clearly illustrates a couple of important findings: (1) non-official national rates are higher than official national rates; (2) in turn, studies that measured suicide rates for sub-populations are consistently (and sometimes alarmingly) higher than national rates; (3) the higher quality studies (appearing in red) tend to report higher rates, within their respective categories. With regards to the last point it needs to be noted that only the published literature has been appraised for quality.

Longitudinal trend. India's official national suicide rate shows a continuing gradual rise over time, from 9.6/100,000 in 1995 to 11.2 in 2011.

Sri Lanka

National suicide rates. Sri Lanka also publishes information on suicide on its Department of Police website (http://www.police.lk/index.php/ crime-trends), however, only raw numbers of suicide deaths are displayed, not rates. Our national consultant was not able to obtain officially published or internal government documents with national suicide rates. There are, however, national rates reported and/or calculated in published articles and grey literature, based on official police data, supplemented in one case with information from the Ministry of Health. Sri Lanka's national suicide rate in 2009 (the most recent year for which we obtained information) was 19.6, nearly double India's official rate of 10.9 in the same year (NCRB, 2009).

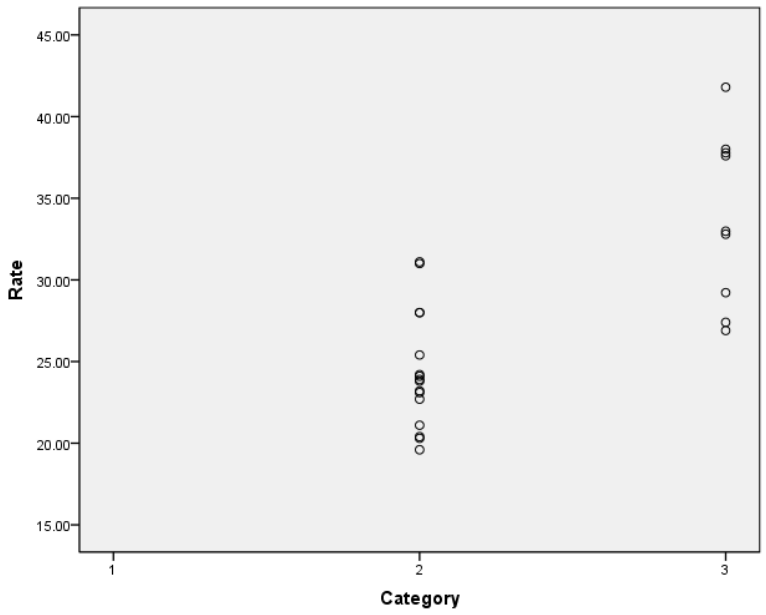
Sub-population variations in suicide rates. Unlike India, we were not able to obtain documents with official government rates for geographic subpopulations in Sri Lanka. Our information on sub-population rates is derived from two grey literature reports: one with rates calculated for 2009/10 and covering 80 of "the most suicide prone villages" in the Northwestern and Southern provinces (Ratnayake, 2010), and another from Trincomalee, a province in the Northeast of Sri Lanka in 2004/5 (Consortium of Humanitarian Agencies, 2007).

As with sub-population rates in India, the studies on geographic sub-populations in Sri Lanka showed rates that were higher than the estimated national rates for those years: 27.4 in Trincomalee in 2004-5, compared to an estimated national rate of 21.0, and 33.0/100,000 in Northwest and Southern provinces in 2009, compared to an estimated national rate of 19.6 in 2009.

As in the preceding section on India, Figure 14 below charts all national and sub-national rates for Sri Lanka from documents included in this review. No national, official rates are

shown as we were able to obtain only raw numbers of suicide deaths from the police website. Rates in the category of "non-official" estimations of national suicide rates are from studies and reports that based calculations on police data, supplemented in one report with information from the Ministry of Health. Rates for geographic sub-populations are from two grey literature reports. Unlike the literature on suicide rates in India, no studies from Sri Lanka were assessed as higher quality, and we cannot, therefore, make a comparison between rates from high quality studies and other literature. Again, it is important to note that rates are from different years, ranging from 1998 to 2012, and that, more than other countries, Sri Lanka's national rates rose and then fell steeply over this period of time.

Figure 14: Sri Lanka National and subpopulation rates from all included documents



Note: Category 1 = National Official; 2 = National Non-official; 3 = Sub-Population

Similar to India, this chart on suicide rates in Sri Lanka clearly shows that studies and reports on suicide among sub-populations generally show higher rates than national rates (regardless of quality of studies, as none fell into the high quality range for Sri Lanka).

Longitudinal trend. In contrast to India, Sri Lanka's national suicide rate showed an inverse trend, dropping from an all-time high of 47.0/100,000 in 1995 (widely, though possibly erroneously, believed to be the highest national suicide rate in the world at the time) to 19.6 in 2009 (based on the same data sources).

Bangladesh

National suicide rates. Unlike India and Sri Lanka, Bangladesh does not report suicide statistics to WHO or publish publicly available official suicide data or rates. As a consequence we were unable to identify any documents (government, published or grey

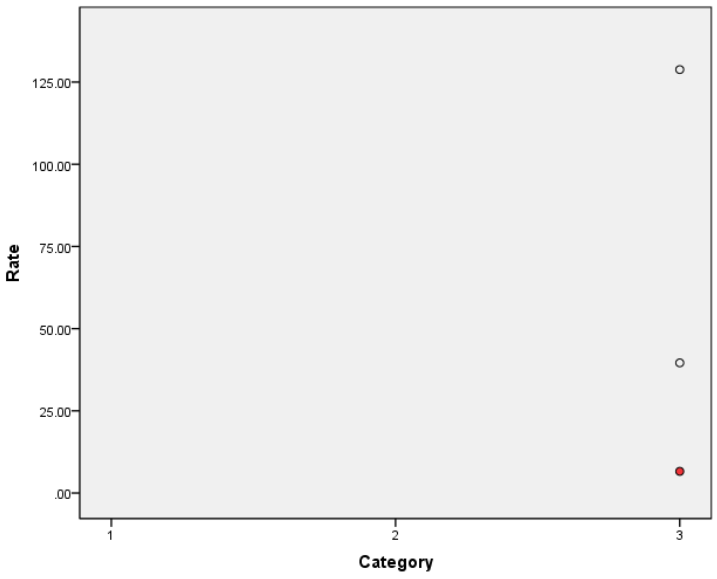
literature) with estimates of an overall national suicide rate. Our consultant was able to access police records of annual suicide deaths for the period 2003-2010, however, the records contain only raw numbers, not rates.

Sub-population variations in suicide rates. Our information on suicide rates in Bangladesh is derived from three published studies: one from 2009/10 covering a subsection of Chuadanga, a district in the west of Bangladesh (Feroz et al, 2012), a longitudinal study from 1982-2002 conducted in a rural and semi-urban area of Jessore district in the southwest (ICDDR,B 2003), and a third longitudinal study from 1990-1999, covering 70 villages served by the NGO Bangladesh Rural Advancement Committee (BRAC) (Hadi, 2005). Two out of the three studies on geographic sub-populations in Bangladesh showed quite alarmingly high rates: 128.8/100,000 in the 2009/10 study in Chuadanga district, and a mean of 39.6/100,000 in the longitudinal study (1982-2002) in Jessore district, with an annual range of rates from 10.7 to 119.5. The BRAC study conducted from 1990-1999 showed a modest rate of 6.6/100,000.

As in the preceding sections, Figure 15 below shows suicide rates cited by the studies included in this review. Neither official nor unofficial national rates are displayed, reflecting the complete absence of national rate estimations in the literature. The rates that are displayed are all from published studies on the subpopulations described above.

Although there is clearly a dearth of suicide rate data overall for Bangladesh as well as for subpopulations, the very limited data suggests, and this chart illustrates, that rates for subpopulations can be alarmingly high. In contrast to India, the one study in Bangladesh that received a higher quality rating showed the lowest rates (6.6/100,000). Again, it is important to note that rates are from different years, ranging from 1998 to 2010.

Figure 15: Bangladesh National and subpopulation rates from all included documents



Note: Category 1 = National Official; 2 = National Non-official; 3 = Sub-Population

Longitudinal trends. Due to the paucity of rate data, we cannot comment on longitudinal trends in suicide rates in Bangladesh. However, police data from the years 2003-2010 showed a small overall rise in absolute numbers of suicide deaths over the period 2003 to 2010, with a downward trend from 2003-2006, an increase of about 10% in 2007-2008, and then another downward trend in 2009-2010 (data obtained from Additional DIG, Crime and Prosecution Branch, Dhaka Police Headquarters, via e-mail communication on 12 March 2013.)

Nepal

National suicide rates. Like Bangladesh, Afghanistan and Pakistan, Nepal does not report suicide statistics to WHO or publish publicly available official suicide data or rates. Police records accessed by our consultant for the three years 2009/10-2011/12 reported only absolute numbers of suicide deaths, not rates. However, the landmark (the first of its kind in Nepal, which subsequently received a lot of information due to its unexpected results) exploration of female suicide in Nepal, the Review of the Evidence on Suicide Among Women in Nepal, cites overall (both sexes) suicide rates based on police data of 4.7 in 2009/10, with annual rates ranging from 2.5, a recorded low in 2008/9 to a recorded high of 5.8 in 2004/5. A published study, Leading Causes of Mortality from Diseases and Injury in Nepal (Sharma, 2006) estimated a higher national rate of 7.0/100,00 overall, and 9.0/100,000 for ages 15-65, based on a 2001 nationally representative sample census survey which included both men and women.

In general, Nepal's national suicide rates based on police reports are very low (between half and one quarter) compared with both India and Sri Lanka rates using police data: in 2008/9, Nepal's reported rate was 2.5/100,000 (although in the following year it jumped to 4.7), compared with India's rate of 10.9 and Sri Lanka's rate of 19.6 in 2009. It is important to note that there are only three publications/reports presenting Nepal rates.

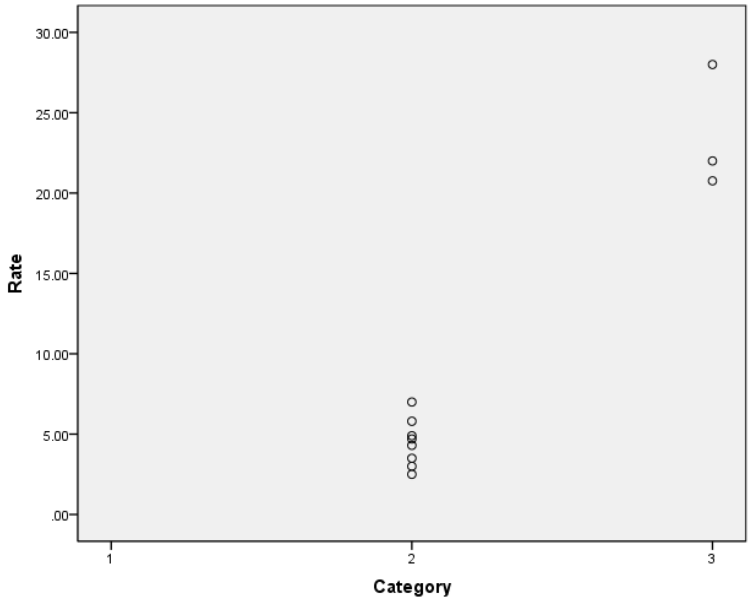
Sub-population variations in suicide rates. The most recent source of information on suicide rates in sub-populations in Nepal is the Review of the Evidence: Suicide Among Women in Nepal (Pradhan et al, 2012). This study estimated rates of suicide for the population of Nepali women of reproductive age (15-49), building upon the Nepal government's Maternal Mortality and Morbidity Study (Pradhan et al, 2010) finding that suicide was the leading cause of death in this population. The Review estimated a suicide rate of 28.0/100,000 in 2008 in this group, up from the estimated rate of 22.0/100,000 in 1998 for women of reproductive age, based upon that year's Maternal Mortality and Morbidity Study.

We had one additional source of information on sub-population suicide rates in Nepal, a report on Psychosocial Needs and Suicide Risk Factors among Bhutanese Refugees (Schinina et al, 2011). This showed a rate of 20.8/100,000 in 2009/10, reflecting a huge increase from the rate of between 2-3/100,000 in 2007. One possible reason for this increase is the stress associated with the process of resettlement to third countries, which became an option for refugees from Bhutan in 2007. This report also cited a rate of 16.3 for

the district of Jhapa, where the refugee camps are situated. The report did not, however, cite the source for the Jhapa rate. Due to the extremely limited sub-population data, and the fact that both refugees and women of reproductive age are special populations likely to be at higher risk for suicide, we cannot make comparisons between national rate estimates and sub-population estimates.

Figure 16 illustrates rates from studies and publications on suicide in Nepal included in this review. Only unofficial national rates are displayed, reflecting the absence of available government reports showing calculated national rates as noted above. The one published study cited did not receive a higher quality (five or above) rating. Again, it is important to note that rates are from different years, ranging from 2001 to 2010.

Figure 16: Nepal National and subpopulation rates from all included documents



Note: Category 1 = National Official; 2 = National Non-official; 3 = Sub-Population

Longitudinal trends. Unlike India, which shows a rising trend, and Sri Lanka, which shows a diminishing trend, Nepal's national rate data shows no longitudinal trend, shifting a point or two up or down from year to year (Pradhan et al, 2012). However, the police records obtained by our consultant in Nepal for the years 2009/10-20011/12, which record absolute numbers of suicide deaths, do show a constant and slightly upward trend from 3,522 in 2009/10 to 3,990 in 2011/12. While relevant, the reporting of absolute numbers needs to be interpreted with caution as it says little about population levels of suicide, for which a denominator is essential.

Pakistan

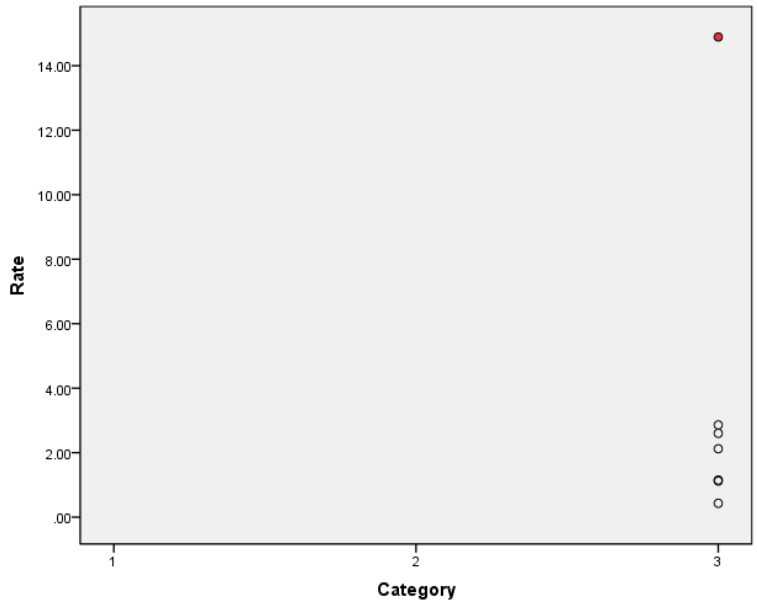
National suicide rates. Like Bangladesh, Nepal and Afghanistan, Pakistan does not report suicide statistics to WHO or publish publicly available official national suicide rates.

Therefore no studies or reports that calculated national rates were identified or included in the review. However, our consultant did obtain the reports of the National Human Rights Commission of Pakistan (a non-governmental organization) from 2004-2011, which include information on absolute numbers of suicide deaths in Pakistan.

Sub-population variations in suicide rates. Our information on sub-population suicide rates in Pakistan is derived from four published studies: (1) a systematic review of suicide studies over 20 years (Khan et al, 2008); (2) a study of female suicides in Ghizer district from 2000-4 (Khan et al, 2009); (3) an autopsy study of suicides in Faisalabad over the period 1998-2001 (Saeed et al, 2002; and (4) a study based on police records in Sindh province from 1985-1999 (Khan et al, 2006). Rates in these sub-populations were generally extremely low (with the exception of one study, all were below 3.0/100,000), and ranged from a low of 0.43, in Peshawar during the period 1991-2000, to a high of 14.9 among women in Ghizer district during the period 2000-2004.

Figure 17 below charts rates from documents on suicide in Pakistan included in this review. No national rates are displayed, reflecting the absence of both official government rates and studies that have estimated national rates based on government or other data. Among the sub-population studies reflected in the chart, one received a higher quality (five or above) rating. It is notable that this higher quality study found rates that were 5 or more times higher than any other. Again, it is important to note that rates are from different years, ranging from 1998 to 2006.

Figure 17: Pakistan National and subpopulation rates from all included documents



Note: Category 1 = National Official; 2 = National Non-official; 3 = Sub-Population

Longitudinal trends. Although we have no national rates (official or unofficial) for Pakistan, we can see from the Human Rights Commission reports obtained by our consultant in

Pakistan for the years 2004-2010, which track absolute numbers of suicide deaths, that there appears to be a fairly steep rise in the number of suicides recorded annually: a threefold increase from 724 in 2004 to 2,115 in 2010 (Human Rights Commission of Pakistan, 2004-2010). Again, while relevant, the reporting of absolute numbers need to be interpreted with caution as it says little about population levels of suicide, for which a denominator is essential.

4.3 QUALITY APPRAISAL RESULTS

Especially in countries in South Asia, where suicide is seen as a criminal offence in most settings and suicide data is scarce, it is particularly difficult to gauge the extent of the problem accurately. As mentioned before, the presentation of suicide rates is fraught with multiple problems that may hamper the reliability of the results. For example if suicide rates are based on police reports or hospital morgue data, the representativeness of data can be questioned. With no high-quality mortality surveillance system in place that ensures the validity and reliability of data, it is important to interpret the information that is available accurately. For that reason, the 49 peer-reviewed published studies presenting data on suicide deaths in South Asia, have been assessed for quality of methods and reporting.

The results of the quality appraisal will be discussed per domain and subsequently for the overall quality rating. Please refer to Table 5 for the detailed scoring results. Importantly, the table also contains information on the source of data.

4.3.1 SAMPLE

Populations were well defined in 32 of the 49 studies (65%), while the remaining 17 failed to give a fully adequate description or figure for number of people represented in the study. This was deemed to be important as it gives an indication of the representativeness of the sample. Populations were often defined by the source of data, such as the district hospital or police department, but in these cases, authors rarely reported the population that this covered and who it may exclude (i.e. effectively failing to present a denominator).

Few studies (17; 38%) reported a systematic sampling method and inclusion of cases was largely pragmatic, given the common lack of readily available information on deaths. Many relied on available retrospective data, such as crime or medical records, which cannot be controlled for representativeness. This meant that even studies with very large quantities of data (such as NCRB data) could not be assumed to be representative, particularly as underreporting of unnatural deaths is a known problem across settings. Because selecting a representative sample of deaths is so difficult without relying on existing reports or records, the most successful studies were those which try to capture the whole population with a community or demographic surveillance system and gather data prospectively. Although strictly speaking no sampling method was adopted in these studies, they satisfied the sampling criteria as they were seen as most representative of the study population.

Another important element of the sampling procedure -- particularly for those whose sample consisted only of classified suicides -- is the definition given to 'suicide'. All of the studies included in this review implicitly or explicitly referred to suicide as an act of self-harm resulting in death; no studies that focused only on suicidal behavior, attempts or ideation were included. However, 41/49 (84%) studies did not explicitly define suicide at all, seven gave their own definitions of suicide and one study from India used an official system (WHO International Classification of Disease-10 codes) to classify deaths as fatal intentional self-harm. This meant that the inclusion criteria was unclear for all studies that only studied suicide cases but did not give a suicide definition.

4.3.2 MEASUREMENT

Data collection methods were wide ranging, both between and within studies, as it was common for more than one method to be adopted in a study. Methods were considered to be standardized if all cases in the sample underwent the same procedure for identifying suicide. Those studies that applied different methods to different cases, for example using medical records *or* interviewing the family, did not satisfy this criterion. The completeness of case identification -- the extent to which all cases of suicide would be captured from the given sample -- depended on how systematic the data collection method was. Studies must deal with primary data (as opposed to relying on existing data such as autopsy records) and clearly describe their own criteria for case identification to satisfy all criteria on this indicator. Nineteen (19) out of 49 studies (39%) used sufficiently standardized and systematic data collection methods.

The reliability of studies was evaluated according to the instruments or assessment methods used to investigate potential suicide cases. Almost none of the studies conducted reliability tests on these methods, explaining the very low number of studies that met this criterion (only 2/49; 4%). Nevertheless, studies that demonstrated consideration of the reliability of their methods (e.g. through describing a thorough and standardized interview schedule, or by using an endorsed tool/method) were considered 'somewhat' reliable. This constituted a further 24 studies (49%) -- including most of the highest scoring studies in terms of overall quality rating -- whilst the remaining 22 (plus one non-applicable literature review of secondary sources), did not meet the criteria on this indicator. These were largely studies that relied on police data or media reports, where the level of reporting in a particular context and rigor of previous investigations would determine the results of the study, rather than a replicable method of investigation.

Studies were more likely to satisfy validity criteria than reliability criteria, although there were more studies with no validity criteria met than those with no reliability criteria met. Validity was evaluated according to the data sources used by researchers, with those reporting multiple sources, or verifying findings with an external source (such as an independent doctor or psychiatrist), scoring highly on validity. 16/49 (33%) studies described assessment methods that met the validity criteria. These included almost all studies that adopted the verbal autopsy technique and most of the studies that combined

official data with their own qualitative or community-based data collection. Methods were not considered to satisfy the validity criteria if they relied on one data set (such as some of the Indian studies which worked only with NCRB data).

4.3.3 RESULTS/ ANALYSES

Very few studies fully satisfied the 'choice and use of statistical methods' criteria, as it required that rates were calculated *and* that confidence intervals were reported for these rates. Only three (12%) studies did so, but a further 29 studies (59%) satisfied some of the criteria related to the choice and/or use of statistical methods, the vast majority of which gave suicide rates but no confidence intervals. Of these 32 studies that 'somewhat' or fully satisfied the choice statistics criteria, 24 reported this data accurately (75%). This meant that rates were clearly presented, with no confusion or flaws apparent in the reported figures. The studies that did *not* choose or use statistical methods (16/49; 33%) were classed as 'non-applicable' for the accuracy of reporting criteria because this information was considered irrelevant for the purposes of this evaluation. See Table 6.

4.3.4 OVERALL QUALITY

The overall quality ratings are presented in the final column of the table, in descending order. Only one study (2%) satisfied all 8 criteria and the majority satisfied four or less (80%), with seven studies scoring 0 (14%); the mean number of quality indicators with satisfied criteria was 2.6. This highlights the lack of rigorous data on assessing suicide rates available from the published literature, and indicates that the majority of rates reported in this body of research should be treated with caution. The most common number of criteria met was 2/8 and the 13 studies which scored this show a clear pattern; the population definition and presentation of statistics were adequate, while all the data collection and measurement techniques were not. This reflects their pragmatic use of existing data from police or medical records, which cannot be controlled or tested for issues of representativeness, reliability or validity.

When plotting the quality of the studies against the rates that the individual studies report we see an interesting pattern (see Figure 18). There is a trend towards higher presented rates for higher quality studies. Given the significant difference between national and sub-population level rates, it is essential to separate these two categories, yet the same trend appears in both. While the trend is distinct, it is only an indication as there are a several limitations to this chart. There are too few studies in the national category, the subpopulations vary, and there are clear outliers (e.g. relatively high rates among the subpopulation studies with only one criterion satisfied). Linear regression analyses confirm this overall trend (β=.017; SE=.006; p=.012), and specifically for the sub-population studies (β=.015; SE=.005; p=.009), yet fail to do so for the national studies due to a lack of included studies (β=.100; SE=.126; p=.463).

4.3.4 BEST PRACTICES

The highest quality studies (10 studies scoring 5 or more; 20%) are mainly characterized (with one exception, Khan et al, 2009) by the use of data that is both representative and high in validity. This involves:

(a) Gathering data from large representative samples of the target population or- even better- entire demographics using a health surveillance system or community survey. This aspect of quality depends on having a clearly defined target population, which is well represented by the sample (not absolute the volume of data). As such, both sub-population and national level studies are included in the highest quality studies.

(b) Using the verbal autopsy technique, whereby the interpretation of death is determined by a thorough, standardized method that uses a combination of different data sources. A solid tool for verifying possible cases of suicide is vital for ensuring the validity of the study.

It should be noted here that the quality appraisal is only geared towards the methods and reporting related to rates for suicide deaths. The reviewed studies might have had different objectives than reporting on rates. It is therefore possible that studies with relatively low quality rating are high quality for the aims set out in the particular research.

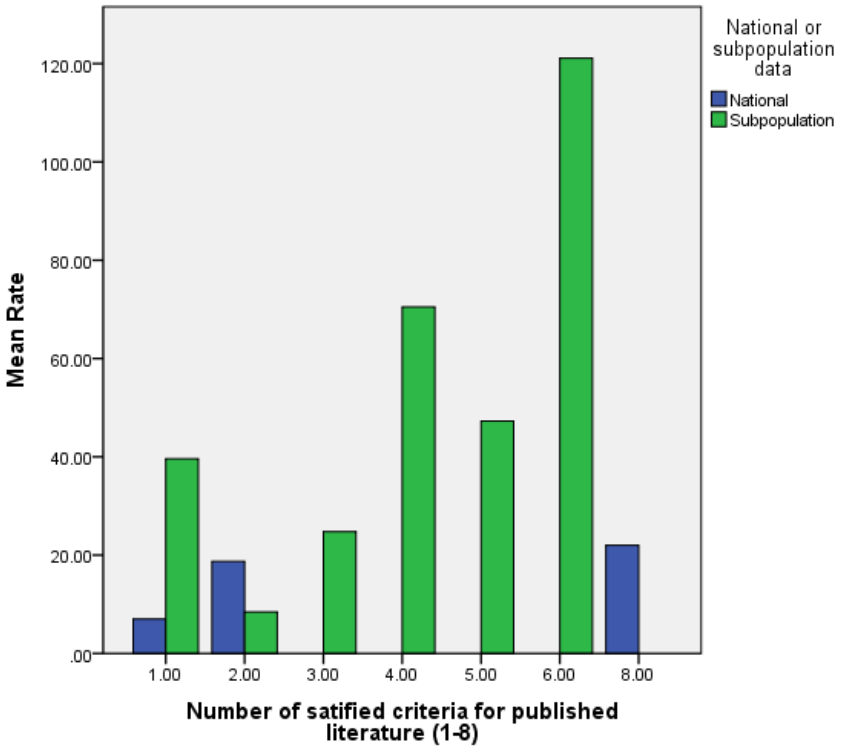


Figure 18: Bar chart demonstrates a general trend of higher rates for those with more criteria fulfilled. Lower rates for National studies overall but still see the same pattern within this group when broken down into National and Subpopulation.

4.3.5 LIMITATIONS OF THE DATA SET

Aside from the quality of individual study methodologies, there are several limitations to the data set as a whole (including official and grey literature), which should be taken into account when making comparisons or drawing conclusions from the entire body of data. The biggest limitation is the large gaps in suicide data, particularly in Afghanistan and Pakistan. As outlined in other sections of the report, national registration systems responsible for capturing suicide data vary hugely between countries, and the same is true for regional systems within countries. Some districts and communities use thorough demographic surveillance systems, whilst others simply record deaths that are reported to the police or that are autopsied in the hospital under study. This makes it difficult to make cross country or regional comparisons from studies, as the proportion of cases actually identified in these reports will vary as a function of the reporting system as well as true rates. Another limitation is that, due to the scarcity of data, this review is looking at the aggregate of studies that are very different in terms of population, gender and/or ages. While we avoid making direct comparisons, some analyses (such as means, charts) do combine the rates from these different studies.

Table 6: Quality appraisal results

			QUALITY APPRAISAL DOMAINS								
			Sample			Measurement			Analysis		
REFERENCE	COUNTRY	DATA SOURCE	Target population	Sampling method	Representativeness	Data collection	Reliability	Validity	Statistics	Accuracy of reporting	QUALITY
Patel et al. (2012)	India	Nationally representative mortality survey; verbal autopsy (RHIME) method.	Y	Y	Y	Y	Y	Y	Y	Y	8
Soman et al. (2012)	India	Community questionnaire; WHO verbal autopsy method	Y	Y	Y	Y	S	Y	S	Y	6
Bose et al. (2006)	India	CBSS; Verbal autopsy method	Y	Y	Y	Y	S	Y	S	Y	6
Abraham, Abraham and Jacob (2005)	India	CBSS; Verbal autopsy method and health records	Y	Y	Y	Y	S	Y	S	Y	6
Prasad et al. (2006)	India	CBSS; verbal autopsy method and health records	Y	Y	Y	Y	S	Y	S	Y	6
Aaron et al. (2004)	India	CBSS; Verbal autopsy method and health records	Y	Y	Y	Y	S	Y	S	S	5
Bose et al. (2009)	India	CBSS; Verbal autopsy method	Y	Y	Y	Y	S	Y	S	S	5
Ahmed, van Ginneken, Razzaque & Alem (2004)	Bangla-desh	Longitudinal DSS; Death registration forms (verified by family interviews)	S	Y	Y	Y	S	Y	S	Y	5
Hadi (2005)	Bangla-desh	DSS; verbal autopsy method	Y	Y	Y	Y	S	N	S	Y	5
Khan, Ahmed & Khan (2009)	Pakistan	National and local newspaper reports*	Y	Y	Y	N	N	Y	S	Y	5
Sauvaget et al. (2009)	India	Medical records or verbal autopsy method	Y	Y	Y	S	S	S	S	Y	4
Gajalakshmi & Peto (2007)	India	Rural survey; verbal autopsy method	Y	N	S	Y	Y	N	S	Y	4
Kulkarni, Chauhan, Shah & Menon (2010)	India	Household survey; verbal autopsy method	N	Y	Y	Y	S	Y	N	N/a	4
Joseph et al. (2003)	India	Health worker home visits; verbal autopsy method	S	N	N	Y	S	Y	Y	Y	4
Wasserman, Cheng & Jiang (2005)	Sri Lanka	Police records	Y	S	Y	Y	N	N	S	Y	4

Kavita, Girish & Gururaj (2011)	India	ISS; Police records and subsequent family interviews	Y	Y	S	N	S	Y	N	N/a	3
Mohanti, Sahu, Mohanti & Patnaik (2007)	India	Medico-legal autopsies; subsequent police/ acquaintance interviews of autopsied cases.	Y	S	N	S	S	Y	S	Y	3
Abeyasinghe & Gunnel (2008)	Sri Lanka	Community based psychological autopsies	Y	N	N	S	N	Y	S	Y	3
Yusuf, Akhter, Chowdhury, & Rochat (2007)	Bangla-desh	Case reports from medical records and health service staff interviews	Y	S	S	S	S	Y	S	Y	3
Feroz et al. (2012)	Bangla-desh	Community surveys	Y	S	S	Y	N	N	Y	S	3
Khan, Naqvi, Thaver & Prince (2008)	Pakistan	Literature review; studies of at least 1 year over last 20 years	Y	Y	S	N/a	N/a	N/a	S	Y	3
Mayer & Ziaian, (2002)	India	NCRB	Y	N	N	N	N	N	S	Y	2
Girdhar, Dogra, & Leenaars, (2003)	India	NCRB	Y	N	N	N	N	N	S	Y	2
Ambade, Godbole, & Kukde (2007)	India	Medical autopsy and police records	Y	Y	N	N	N	N	S	N	2
Mayer & Ziaian, (2002)	India	NCRB	Y	N	N	N	N	N	S	Y	2
Steen & Mayer (2004)	India	NCRB	Y	N	N	N	N	N	S	Y	2
Hanwella, & Senanayake, (2013)	Sri Lanka	Police records	Y	N	N	N	N	N	S	A	2
de Silva, Senanayake, Dias & Hanwella (2012)	Sri Lanka	Police records and MoH data	Y	N	N	N	N	N	S	Y	2
Thalagala, (2009)	Sri Lanka	Police records	Y	N	N	N	N	N	S	Y	2
Eddleston et al. (2006)	Sri Lanka	Medical records	Y	Y	S	N	N	N	N	N/a	2
Islam & Islam (2003)	Bangla-desh	Autopsy reports	N	S	N	Y	S	Y	S	S	2
Rahim & Das, (2009)	Bangla-desh	Medical autopsy reports	N	Y	N	Y	S	N	N	N/a	2
Khan & Hyder (2006)	Pakistan	Police reports	Y	N	N	N	S	S	S	Y	2
Saeed et al. (2002)	Pakistan	Autopsy reports; subsequent family interviews, police inquests and crime scene visits	Y	N	N	N	S	N	S	Y	2
Babu & Babu (2011)	India	NCRB	N	Y	S	N	N	N	N	N/a	1

Batra (2002)	India	Mortuary data and Police records	Y	N	N	N	S	N	N	N/a	1
Mohanti, Arun, Montiero & Palimar (2005)	India	Medical autopsies and hospital case records	N	N	N	Y	S	N	N	N/a	1
Steen & Mayer (2003)	India	NCRB	N	N	N	N	N	N	S	Y	1
Sharma (2006)	Nepal	2001 census sample survey	Y	S	S	N	N	N	S	N	1
Khan & Hossain, (2011)	Bangla-desh	Medical autopsy reports	Y	N	S	N	N	N	N	N/a	1
ICDDR,B (2003)	Bangla-desh	Autopsy records	S	S	S	Y	N	N	N	N/a	1
Hossain, Rahmann & Akhter (2011)	Bangla-desh	Medical autopsy reports	N	Y	S	Y	S	S	N	N/a	1
Kanchan, Menon, & Menezes (2009)	India	Police investigation records and medico-legal autopsy records	N	S	S	N	N	S	N	N/a	0
Singh, Dewan, Pandey, & Tyagi (2003)	India	Medico-legal autopsy records	N	N	N	N	N	N	N	N/a	0
Singh, Marak, Longkumer, & Momonchand (2005)	India	Medical autopsy records	N	N	N	N	N	N	N	N/a	0
Agnihotram (2004)	India	Registrar General of India; annual rural community survey	N	N	N	N	S	N	S	S	0
Sharma et al. (2006)	Nepal	Autopsy records	S	N	N	N	N	N	N	N/a	0
Fernando et al. (2010)	Sri Lanka	Coroners court inquest verdicts	N	N	N	N	S	N	N	N/a	0
Hoq, Ahmed, Yasmeen, Das & Sarker (2010)	Bangla-desh	Medical autopsy reports	N	N	N	S	S	S	N	N/a	0
TOTAL	X	X	32	18	13	19	2	16	3	25	**Average: 2.6**

Note: Y = satisfied all criteria met; S = satisfied some criteria; N = satisfied no criteria; N/a = not applicable; Quality = frequency of 'Y' per publication. * Verified with a structured questionnaire for police, health personnel, religious leaders and police reports. NCRB = National Crime Records Bureau (India). (Aaron et al., 2004; Abeyasinghe & Gunnell, 2008; Abraham, Abraham, & Jacob, 2005; Agnihotram, 2004; Ahmed, van Ginneken, Razzaque, & Alam, 2004; Ambade, Godbole, & Kukde, 2007; Babu & Babu, 2011; Batra, 2003; Blasco-Fontecilla et al., 2012; Bose et al., 2006; Bose et al., 2009;

Chowdhury et al., 2005; de Silva, Hanwella, & Senanayake, 2013; de Silva, Senanayake, Dias, & Hanwella, 2012; R Fernando, 2003; Ravindra Fernando, Hewagama, Priyangika, Range, & Karunaratne, 2010; Feroz et al., 2012; Gajalakshmi & Peto, 2007; Girdhar, Dogra, & Leenaars, 2003; Gruère & Sengupta, 2011; Gunnell et al., 2007; Hadi, 2005; Hanwella, Senanayake, & de Silva, 2013; Hoq, Ahmed, Yasmeen, Das, & Sarker, 201o; Hossain, Rahman, & Akhter, 2011; ICDDR, 2003; Islam, 2003; Joseph et al., 2003; Kanchan, Menon, & Menezes, 2009; Kavita, Girish, & Gururaj, 2011; M. B. H. Khan & Hossain, 2011; Murad M Khan, Ahmed, & Khan, 2009; Murad Moosa Khan & Ali Hyder, 2006; Murad M Khan, Naqvi, Thaver, & Prince, 2008; Kulkarni, Chauhan, Shah, & Menon, 2010; Manuel et al., 2008; Mayer, 2003; P. Mayer & T. Ziaian, 2002; P. B. Mayer & T. Ziaian, 2002; Milner, Sveticic, & De Leo, 2012; Mitra & Singh, 2007; Mohanty, Sahu, Mohanty, & Patnaik, 2007; Palimar, Arun, & Babu, 2009; Patel et al., 2012; Prasad et al., 2006; Radhakrishnan & Andrade, 2012; Rahim & Das, 2009; Rodrigo, McQuillin, & Pimm, 2009; Saddichha, Prasad, & Saxena, 2010; Saeed et al., 2002; Samaraweera, Sumathipala, Siribaddana, Sivayogan, & Bhugra, 2008; Sauvaget et al., 2009; GK Sharma, 2006; Gyanendra Sharma et al., 2006; D. Singh, Dewan, Pandey, & Tyagi, 2003; K. Singh, Marak, Longkumer, & Momonchand, 2005; C. Soman, S. Safraj, V. R. Kutty, K. Vijayakumar, & K. Ajayan, 2009; Somasundaram, 2003; Steen & Mayer, 2003, 2004; Sultana, 2002; Thalagala, 2009; Värnik, 2012; Vijayakumar, 2010; Vishnuvardhan & Saddichha, 2012; Wani, Dhar, Hussain, & Qureshi, 2008; Wasserman, Cheng, & Jiang, 2005; Yusuf, Akhter, Chowdhury, & Rochat, 2007).

4.4 OTHER SUICIDE METRICS

While the primary focus of this review and report is on suicide rates, because of the relative paucity of information on rates we also included studies and reports that contained other metrics related to suicide deaths which may give an indication of the magnitude of the problem. These metrics include suicide as a proportion of all deaths, as a proportion of autopsies, and as a percent of injury mortality.

4.4.1 SUICIDE AS PERCENT OF ALL DEATHS

Twelve documents reported on suicide as a percent of all deaths, including eight published studies and four government reports (nine documents from India, two from Nepal, and one from Bangladesh.) All of these documents reported on sub-populations. Seven of the 12 documents did not have information on suicide rates. WHO's most recent Cause of Death database showing that suicides represented 1.5% of total mortality globally, and 2.2% of mortality in the Southeast Asia region in 2011 (WHO, 2013). In contrast, the studies in this review all found considerably higher proportions of suicide mortality to overall mortality within their given study populations, ranging from a low of 3.3% deaths among people 35 years and older in Thiruvananthapuram, India (Sauvaget et al., 2009) in 1996-2004, to a high of 16% of all deaths among women of reproductive age in Nepal in 2008, about 11 times the global mean, and seven times the Southeast Asia regional average. The mean of all eight studies from India reporting on suicide as a percent of all deaths is 9.3% of all deaths -- more than six times the global mean and more than four times the regional mean. The mean of all studies is 9.9% of all deaths, more than 6.5 times the global mean and 4.5 times the regional mean. See Table 7.

Table 7: Suicide as percent of all deaths

COUNTRY	STUDY POPULATION	STUDY PERIOD	SUICIDE AS % OF ALL DEATHS	DOCUMENT REFERENCE
INDIA	7 rural villages in Kerala	2002-2007	6.6%	Soman et al. (2012)
	Women of reproductive age, Maharasthra	2003-2005	7.2%	Kulkarni, Chauhan, Shah & Menon (2010)
	Rural and peri-urban population, Kaniyambadi, Tamil Nadu	1998-2004	11.3%	Bose et al. (2006)
	35 years and over, Thiruvananthanpuram	1996-2004	3.3%	Sauvaget et al. (2009)
	85 villages, Kaniyambadi, Tamil Nadu	2000-2002	9.8%	Prasad et al. (2006)
	85 villages, Kaniyambadi, Tamil Nadu	1994-1999	8-12%	Joseph et al. (2003)
	Villupuram district, Tamil Nadu	1997-1998	9%	Gajalakshmi & Peto (2007)
	15-24 years, all India	2001-2003	15.6%	(Office of the Registrar of India, 2009)
	25-34 years, all India	2001-2003	10.2%	(Office of the Registrar of India, 2009)
	Women of reproductive age, Rural North India	2006-2011	10.2%	(Padda, Kaur, Kaur, Kaur, & Devgun, 2012)
BANGLADESH	Women of reproductive age, 10-50 years	1996-1997	10.7%	Yusuf, Akhter, Chowdhury, & Rochat (2007)
NEPAL	Nepali migrant workers	2007-2012	9.4%	(National Human Rights Commision, 2012)
	Women of reproductive age, all Nepal	2008	16%	(Pradhan, Suvedi, Barnett, Sharma, & et al., 2010)

For three of the study populations, suicide was identified as the leading cause of death: 15-24 year olds in India, 25-34 year olds in India, and women of reproductive age in Nepal.

4.4.2 SUICIDE AS PERCENT OF AUTOPSIED DEATHS

Fourteen documents were autopsy studies, including 12 (of 49) published, peer-reviewed articles and two grey literature documents (six from Bangladesh, five from India, and one each from Sri Lanka, Nepal and Pakistan). See Table 8. These studies and reports provided information on the percent of autopsied deaths that were suicides: suicides accounted for from 4.6% of deaths (reported to the Coroner's Court in Colombo Sri Lanka in 2000-2004, (Ahanganna, 2006) to 49.0% of total unnatural deaths (in Punjab, Haryana, India in 2005 (B. Sharma et al., 2007)), and a mean of 17.4% of autopsied deaths. In the two studies that

provided data disaggregated by sex (both from Dhaka, Bangladesh), suicide accounted for from 31.5% (Hoq et al., 201o) to 60.1% (Hossain et al., 2011) of autopsied female deaths.

Table 8: Suicide as percent of autopsied deaths

COUNTRY	STUDY POPULATION	STUDY PERIOD	SUICIDE AS % OF AUTOPSIED DEATHS	DOCUMENT REFERENCE
INDIA	Berhampur city and adjacent rural areas	2000-2003	28.0%	Mohanti, Sahu, Mohanti & Patnaik (2007)
	Population of Chandigarh zone, NW India	1977-2002	15.7%	Singh, Dewan, Pandey, & Tyagi (2003)
	Catchment area, Apex Medical Centre, Maharashtra	1998-2000	19.5%	Ambade, Godbole, & Kukde (2007)
	Imphal	1993-2001	7.1%	Singh, Marak, Longkumer, & Momonchand (2005)
	Punjab, Haryana, Himachal Pradesh	2005	49.0%	(B. Sharma et al., 2007)
SRI LANKA	Catchment area, Coroner's Court, Colombo	2000-2004	4.6%	(Ahanganna, 2006)
BANGLADESH	Catchment area, Forensic Dept, Dhaka Medical College	2008-2009	19.0% (60.1% female deaths)	Hossain, Rahmann & Akhter (2011)
	Catchment area, Salimullah Medical College, Dhaka	2008	20.4% (31.5% female deaths)	Hoq, Ahmed, Yasmeen, Das & Sarker (2010)
	Rural and semi-urban sub districts of Jessore district	1983-2002	8.0%	ICDDR,B (2003)
	Dhaka metropolitan city	1996-2000	10.8%	Sharma (2006)
	Catchment area of Dhaka mortuary	1988-1997	18.4%	(Nurul, Toufique, & Nasimul, 2002)
	Catchment area, Dhaka Medical College	1996	8.0%	Rahim & Das, (2009)
NEPAL	Catchment area, Forensic Medicine Dept., Kathmandu	2000-2004	25.0%	Sharma et al. (2006)
PAKISTAN	Population of Faisalabad	1998-2001	10.3%	Saeed et al. (2002)

4.4.3 SUICIDE AS PERCENT OF INJURY DEATHS

Three documents, all focusing on women, reported on suicide as a percent of injury deaths: two from India and one from Bangladesh. In all of these studies, suicide comprised more than a third of injury deaths: a study of injuries among the female population of Bangalore, India in 2007-8 found that suicide accounted for 48% of fatal injuries (Kavita, Girish & Gururaj, 2011), while another study of women of reproductive age in Maharashtra, India found that suicide accounted for 35% of injury and poisoning deaths (Kulkarni et al., 2010). A third study of women of reproductive age from 10-50 in Bangladesh in 1996-1997 found that suicide

accounted for 47% of injury deaths. These are double and triple the 16% of injury mortality that suicide represents globally and one and half to two times the 20% of injury mortality (our calculation) that suicide represents in the Southeast Asia region according to the latest figures from WHO (WHO, 2013).

4.5. GENDER AND AGE DIFFERENCES

4.5.1 GENDER: NATIONAL STUDIES AND REPORTS

Studies or national government reports and records from four countries either report on male to female ratio of suicides, or have national rates or other suicide metrics (absolute numbers) broken out according to sex from which male: female ratios can be calculated: India, Sri Lanka, Nepal and Pakistan. Data for Sri Lanka, Pakistan and Nepal were not expressed as ratios, but as absolute numbers of suicides for men and women, hence we calculated ratios for the purpose of this analysis. In national reports from India, the ratios were expressed as a proportion of 100 (e.g. 64:36), so for the purpose of comparability, we recalculated these as well.

As shown in Table 9 below, in all four countries, most recent reports show that men are at higher risk of suicide. Sri Lanka showed the highest male to female ratios, at 3.54: 1 in 2011 (Police data, 2011), Pakistan a ratio of 2: 1 (HRCP data, 2011), India a lower ratio of 1.84 in 2011 (Registrar General, 2011), and Nepal showing almost equal numbers of male and female suicides in 2011/2012, with a ratio of 1.02: 1. These ratios compare to a global male: female ratio of 1.76: 1 in 2011, a ratio of 1.57: 1 in the Southeast region (where Bangladesh, India Nepal and Sri Lanka are located), and a ratio of 1.42: 1 in the Eastern Mediterranean region (where Afghanistan and Pakistan fall). (All ratios are our calculations based on the latest figures from WHO published in 2013, for 2011 (http://www.who.int/healthinfo/global_burden_disease/en/).)

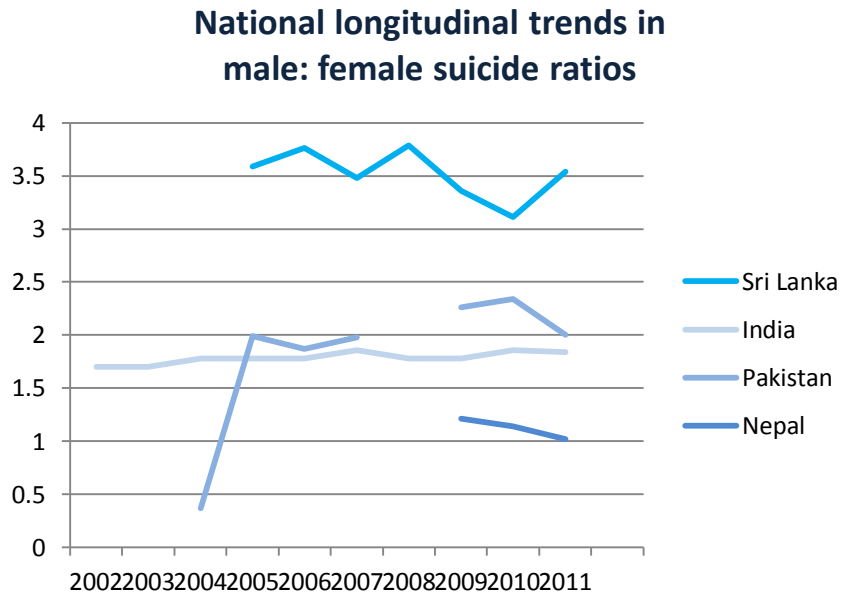
Table 9: National longitudinal trends in male : female suicide ratios

	SRI LANKA (1)	INDIA (2)	PAKISTAN (3)	NEPAL (4)
2011	3.54:1	1.84:1	2.0:1	1.02:1
2010	3.11	1.86	2.34	1.14
2009	3.36	1.78	2.26	1.21
2008	3.79	1.78	--	
2007	3.48	1.86	1.98	
2006	3.76	1.78	1.87	
2005	3:59	1.78	1.99	
2004		1.78	0.37	
2003		1.70		
2002		1.70		

Note: (1)Sri Lanka: Gender ratios calculated from data on police website, mode of suicides table http://www.police.lk/images/others/crime trends which reports the years 2005-2011; (2) India: Gender ratios calculated from Accidental Death and Suicides in India reports, 2002-2011; (3) Pakistan: Gender ratios calculated from HRCP reports, 2004-2011; (4) Nepal: Gender ratios calculated from police reports; Nepali years straddle Roman calendar (e.g. 2011/12 which we are designating as 2011)

Sri Lanka has the greatest male suicide risk among the four countries for which data is available. Male to female ratios have been consistently high (greater than 3 to 1) over the period 2005-2011. India's reported male: female ratios have been quite consistent over time, but do show a slight increase in male suicide risk over time, from 1.70 in 2002 to 1.89 in 2011. In Pakistan, rates were consistently a little less than 2:1 for the period 2005-2007, (we see an apparently aberrant ratio in 2004), and reached levels a bit above 2:1 in 2009-2010. For the three years of police data available for Nepal, we see a diminishing male to female ratio over the period 2009/2010- 2011/2012, with almost equal numbers of male and female suicides in 2011/2012. Refer to Figure 19 for comparison of male: female ratios over time in four countries.

Figure 19: Longitudinal trends



National suicide rates disaggregated by sex (see Table 10 below) were far more limited in the literature we reviewed, than information on male to female suicide ratios. We found rates for only three countries: India, Sri Lanka and Nepal for the years since 1998. Although most were based upon police data, none were rates actually published by the police; all were from either published studies or WHO reports. There are numerous problems with comparability of gender disaggregated rates both within and across countries, including significant variations in rates estimated for the same year in different publications; for example de Silva (2011) estimates the male suicide rate in Sri Lanka to be 46.0, significantly more than the male rate of 38.2 estimated by Thalagala (2009) for the same year, 2005. There are similar issues with the

use of age adjusted rates for different age ranges; Patel et al (2012) estimated rates for men and women ages 15 years and over in India and Mishra (2006) for 5 years and over, while in Nepal, Sharma (2006) estimated rates for both men and women ages 15-65, and Pradhan et al (2011) estimated rates only for women ages 15-49. However, we can see from these studies that, despite the fall in the overall suicide rate in Sri Lanka from 1998 to the present, and a decline in male suicide rates as well, national rates for males overall continue to be very high, at 34.8/100,000 in 2011 (de Silva, 2011). While not nearly as high as Sri Lanka, the male suicide rate in India estimated for 2010 by Patel et al (2012) is also quite high, at 18.6, with an age adjusted rate for 15 years and above of 26.3 for men and 17.5 for women. In Nepal, the rate for women of reproductive age, based on the government's Maternal Mortality and Morbidity studies which take place every 10 years, has been consistently and alarmingly high at 28.0 in 2008, up from 22.0 in 1998.

Table 10: National suicide rates by country and sex

	INDIA		SRI LANKA		NEPAL	
	M	F	M	F	M	F
2011			34.8 (de Silva)	9.24 (de Silva)		
2010	18.6 (Patel)	12.7 (Patel)				
	26.3 (age adjusted 15+) (Patel)	17.5 (age adjusted 15+) (Patel)				
2009	13.0 (WHO)	7.8 (WHO)				
2008						28.0 (age adjusted 15-49) (Pradhan)
2005	12.3 (WHO)	7.4 (WHO)	46.04 (de Silva) 38.2 (Thalagala)	12.47 (de Silva) 10.4 (Thalagala)		
2002	18.0 (Hendin)	15.0 (Hendin)				
2001					8.0 (Sharma)	5.0 (Sharma)
	14.0 (age adjusted 5+) (Mishra)	9.5 (age adjusted 5+) (Mishra)			10.0 (age adjusted 15-65) (Sharma)	8.0 age adjusted 15-65) (Sharma)
2000	12.6 (WHO)	8.6 (WHO)	51.75 (de Silva) 44.1 (Thalagala)	17.3 (de Silva) 14.8 (Thalagala)		
	14.2 (age adjusted 5+) (Mishra)	9.8 (age adjusted 5+) (Mishra)				
1998						22.0 (age adjusted 15-49) (Pradhan)

Note: India rates for 2000, 2005, 2009 from WHO, 2009; 2010 overall and age adjusted rates from Patel et al, 2012; 2000 age adjusted rates from Mishra, 2006; Sri Lanka rates from de Silva et al, 2011 and Thalagala, 2009; Nepal rates from Pradhan et al, 2011 and Sharma, 2006.

4.5.2 GENDER: SUB-POPULATION STUDIES AND REPORTS

Thirteen (13) subpopulation studies: nine from India, one from Sri Lanka, two from Bangladesh and one from Pakistan, disaggregated suicide rates by sex. These generally confirm the national trends described above, that is, that more males commit suicide in India and Pakistan, but more females commit suicide in Bangladesh. Two of the studies in Bangladesh and most studies in India shown in the table below are high in validity (using a verbal autopsy and/or a surveillance system).

In India, the majority of studies (7/9) showed a male: female ratio ranging from as low as 1.19: 1 (Bose et al, 2009) in Vellore, Tamil Nadu, to as high as 5: 1 (Sauvaget, 2009) in Thiruvanathapuram. (Note: where male: female ratios were not provided in studies, we calculated them ourselves based on data in the studies.) Overall, male rates ranged from a low of 2.1 in Chandigarh to a high of 130.9 in a 2006-7 Vellore study. Seven of the nine studies had male rates above 40. The mean rate for men in these nine studies was 85.3, about eight times higher than the national rate for India in any year and about four and half times the highest national male rate (not age-adjusted) cited in any study. (Note: we calculated the mean rate for these nine studies.) Female rates ranged from a low of 2.8 in Chandigarh to a high of 148 in a 1992-2001 study in Vellore on youth. Five of the nine studies had female rates above 40. The mean rate for women in these nine studies was 65.7, nearly six times higher than the national rate for India in any year and nearly four and half times the highest national female rate (not age-adjusted) cited in any document.

Two studies (one in Chandigarh in Northwest India looking at the period 1977-2002, and the study of 10-19 year olds in Vellore over the period 1992-2001) found an inverse trend, that is, higher rates of suicide among women than men. In the Chandigarh study the suicide rate for women was 2.8/100,000 compared with 2.1 for men (an inverse sex ratio of 0.75: 1). In the Vellore study of 15-19 year olds, the estimated rate for young women was 148.0/100,000 compared with a still high rate for young men of 58 (an inverse sex ratio of 0.39: 1.)

The one review study from Pakistan (Khan et al, 2008), found male suicide rates in the low single digits, ranging from a low of 0.61 in Peshawar to a high of 5.2/100,000 in Rawalpindi, compared to even lower female rates ranging from of 0.23 in Peshawar to 1.8 in Larkana. Male: female sex ratios ranged from a low of 1.6: 1 in Karachi to a high of 16: 1 in Rawalpindi.

Three studies in Bangladesh corroborated the inverse trend seen in national suicide data for Bangladesh, showing male to female ratios ranging from 0.43: 1 to 0.83: 1. The most recent study, conducted in 2010 in Chuadanga district, had a male to female ratio of 0.43 to 1 (calculated by our team using study data), with an astonishingly high female suicide rate of 183.1/100,000, more than double the rate of 77.9 for men. An older study, conducted in BRAC

project villages in 1990-1999, had a male: female ratio of 0.47: 1 (also calculated by our team), with a rate of 8.9/100,000 for women and 4.2 for men. A series of reports over a 10 year period on a small population in Matlab sub-district covered by a health surveillance system, also generally corroborated the inverse male: female suicide trend in Bangladesh. The one study from Sri Lanka (Rupasinghe & al., 2006), with rates for children aged 15-19 from two sites in Monaragala district, showed much lower male: female ratios than the national data, ranging from an inverse ratio of 0.22: 1 in Thanamalwila to 1.73: 1 in Wellaway, both much lower ratios than the overall national ratio of more than 3.5: 1 in both 2005 and 2006. Refer to Table 11 on the following page for details of rates and ratios in studies included in the discussion above.

Table 11: Subpopulation studies with mixed sex data, suicide rates per 100,000

STUDY DATES	STUDY POPULATION	INDIA			SRI LANKA			BANGLADESH			PAKISTAN		
		M	F	RATIO	M	F	RATIO	M	F	RATIO	M	F	RATIO
2010	CHUADANGA DISTRICT, BD							77.9	183.1	0.43:1			
2001-2010	MATLAB SUBDISTRICT, BD*							5.19*	6.23*	0.83			
2006-7	VELLORE DISTRICT, IN	130.9	109.7	1.19:1									
2002-7	KERALA, IN	44.7	26.8	1.7:1									
2006	RAWALPINDI, PK										5.2	0.34	16:1
2000-6	THANAMALWILA, SL, AGES 15-19				7.3 *	33.0*	0.22:1						
2001-5	WELLAWAYA, SL, AGES 15-19				16.6*	9.6*	1.73:1						
2002-4	LARKANA, PK										3.3	1.77	2:1
1996-2004	THIRUVANANTHAPUR DISTRICT, IN	78.0	16.4	5:1									
1994-2003	KANIYAMBADI, VELLORE, IN, AGES 55+	234.0	147.0	1:0.66 (Recalc: 1.51:1)									
2002	KERALA, IN	38.06	15.35	73:21 (Recalc: 2.96:1)									
2000-2	KANIYAMBADI, VELLORE, IN	112	72.2	1:0.66 (Recalc: 1.51:1)									
1977-2002	CHANDIGARH, IN	2.1	2.8	0.75:1									
1998-2001	FAISALABAD, PK										1.51	0.68	2.3:1
1995-2001	KARACHI, PK										2.49	1.70	1.6:1
1992-	VELLORE, IN, AGES	58	148	0.39:1									

2001	10-19												
1993-1995	PESHAWAR, PK										0.61	0.23	2.9:1
1990-1999	BRAC VILLAGES, BD							4.2	8.9	0.47:1			
1997-1998	VILLUPURA, TAMIL NADU, IN	71	53	1:0.72 (Recalc 1.33:1)									

Note: *Based on study data, we calculated the means of all male and all female suicide rates over the years reported in these studies.

Interestingly, given evidence that suicide rates in four out of the five countries with data are generally higher among men, there were a significant number of included studies and reports (10) that focused only on female populations: four in India, three in Bangladesh, and one each in Nepal, Pakistan and Sri Lanka. No studies focused only on men. This abundance of women-focused studies may be due in part to the greater attention to women's specific health and mortality issues in national and local health services and programming. While there is no clear aggregate picture of female suicide across South Asian countries, several studies do highlight the magnitude of the problem among women. The Maternal Mortality and Morbidity Study (MMMS) 2008 in Nepal found a high rate of suicides (28.0/100,000) among women of reproductive age overall (15-49). The study of women participating in the Cause of Death Survey in India 1994, found extremely high rates of suicide among women in the age groups 15-19 (87.0/100,000) and 20-24 (46.3), and relatively high rates in the age groups 24-29 (27.7) and 30-34 (25.5). A study on women in Ghizer, Pakistan 2006 found an unusually high rate of 14.9, very high in comparison with rates for other sub-populations in Pakistan, including male rates. Two studies in India found suicide to be a large proportion of injury deaths: 48% of female injury deaths in one study in Bengaluru city and 35% of deaths of women of reproductive age in another study in Maharashtra. Finally, a study on women of reproductive age in Sri Lanka, found a suicide fatality rate of 12.1/100,000 live births over the period 2002-2010. Details of rates and other metrics from these studies are presented in Table 12.

Table 12: Studies of female only populations

STUDY DATES	STUDY POPULATION	INDIA	BANGLADESH	SRI LANKA	PAKISTAN	NEPAL
2006-2011	WRA*, RURAL N. INDIA	10.2% all deaths				
2002-2010	WRA, SL			12.1/100,000 live births		
2007-2008	FEMALES, BENGALURU, IN	48% fatal injuries				
2008	WRA, NP					28/100,000; 16% deaths; leading cause of death
2003-2005	WRA, MAHARASTHRA, IN	35% injury/ poisoning deaths; 7.2% all deaths				
2000-2004	WOMEN, GHIZER, PK				14.89/100,000	
1983-2002	MARRIED WRA, BD		4.6% all deaths			
1992-1998	WRA, BD					
1996-1997	WRA, 10-50 YRS, BD		9.0/100,000			
1994	WOMEN SURVEYED IN CAUSE OF DEATH SURVEY, INDIA	Rates by age: 15-19: 87.0 20-24: 46.3 25-29: 27.7 30-34: 25.5 35-39: 13.4 40-44: 3.5				

Note: *WRA refers to women of reproductive age, variously defined as ages 15-49 or 10-50

4.5.3 AGE: NATIONAL STUDIES AND REPORTS

We found limited national suicide data disaggregated by age for only two countries: India and Sri Lanka. Limited data and different age categories used in analyses make comparisons between studies and countries somewhat complicated and/or inconclusive. For example,

some India studies use 10 year age bands, while others use 15 year age bands. Sri Lanka studies use different 10 year age bands than the India studies. Despite these problems, a number of patterns do emerge at the national level in the case of both India and Sri Lanka.

The Report on Causes of Death in India, 2001-2003 (Registrar General of India, 2009), reported that suicide was the leading cause of death overall for Indians aged 15-24 and 25-34. Applying data from this same report to the age range 15-29, Patel et al (2012), found that suicide was the second leading cause of death. The Accidental Death and Suicide in India reports from 2002-2011 which are included in this review, show absolute numbers of male and female suicides broken out by age, although *rates* are not disaggregated by age. Looking at Table 12 below, we can compare trends over the 10 year period. The 15-29 year age group accounts for the largest number of female suicides in each year, and the second greatest number of male suicides, while the 30-44 year age group accounts for the largest number of male suicides in each year. These findings are generally consistent with the latest findings from WHO for 2011, which show that suicide is the third leading cause of death among both male and female 15-29 year olds, and the *leading* cause of death among female 15-29 year olds and second leading cause of death among males in this age group in the Southeast Asia region (WHO, 2013).

However, absolute numbers only tell one part of the story. The data in the tables below were extracted from two studies on suicide in India (Mayer, 2003, and Mayer and Ziaian, 2002), covering the periods 2001-2003 and 1997, and one study on suicide in Sri Lanka (de Silva et al, 2012) spanning a 16 year period. (For illustrative purposes in the Table 13 showing Sri Lanka rates below, we have included only 5 year intervals of data for the period 2000-2011.)

Table 13: National suicide rates by age and sex

INDIA

	0-14		15-29		30-44		45-59		60-69		70+	
	M	F	M	F	M	F	M	F	M	F	M	F
2001-2003	1.19	1.68	25.6	24.9	27.4	15.9	26.2	8.4	23.7	13.2	30.2	9.1
1997	0.8	0.9	13.9	14.5	21.8	14.9	22.4	11.5	14.2	7.1		

Note: Data extracted from Mayer, 2003 and Mayer & Ziaian, 2002. Highest female rates in blue, highest male rates in green

SRI LANKA

	10-19		20-29		30-39		40-49		50-59		60+	
	M	F	M	F	M	F	M	F	M	F	M	F
2011	10	11.98	31.85	13.98	32.2	9.15	44.78	5.29	47.30	5.47	59.95	7.94
2005	13.23	13.5	43.42	20.03	49.03	11.41	64.14	8	60.36	8.29	65.56	9.95
2000	20.40	15.32	42.87	20.81	57.02	17.77	67.24	13.95	80.24	14.26	77.93	21.36

Note: Data extracted from de Silva et al, 2012. Highest female rates highlighted in blue, highest male rates in green

While absolute numbers of male suicides in India are highest in the 30-44 year age group, suicide *rates* among males in both India and Sri Lanka appear to be highest in the older age categories. According to Mayer's 2003 analysis, males 70 years and above in India had the highest rate of 30.2/100,000, followed by the 30-44 year age bracket and the 45-59 age bracket. In the Sri Lanka analysis as well, older men, over the age of 60, had the highest suicide rates in 2011 (60.0/100,000) and 2005 (65.6), and the second highest rate in 2000 (77.9) followed by 50-59 year olds and 40-49 year olds.

Among women, however (and consonant with both the picture that absolute numbers reveal for Indian women and the latest figures from WHO for the Southeast Asia region), the reverse trend is apparent in both India and Sri Lanka: that is, females are at highest risk for suicide at younger ages. This may help explain why there are more women-focused studies. In the 2001-2003 India study, the female rate was highest for the 15-29 year age group: at 24.9/100,000, the rate was almost the same as the male rate of 25.6 for the same age group. The rate in 1997 for females of the same age group, 14.5, was higher than the rate for males, which was 13.9. In Sri Lanka, the highest rates for women were in the 20-29 age group in 2005 and 2011. In 2000, women above the age of 60 had the highest rate of suicide, (21.4), followed very closely by the 20-29 year age group (20.8).

4.5.4 AGE: SUB-POPULATION STUDIES AND REPORTS

Although the many variables in sub-population studies and reports (differences in country, study population, sample size, study period, quality of study, and so on) are even more confounding when it comes to comparing age data, young adults and the elderly were fairly consistently identified as the groups at highest risk. See Table 14.

We identified six sub-population studies on suicide in India with suicide data disaggregated by age group. Five of these studies included both males and females, and one focused only one women. The most recent study, in Kaniyambadi, Vellore (Bose et al, 2009) found elderly men 65 years and above to be at greatest risk of suicide, with the extremely high rate of 302.4/100,000. An earlier study in the same community (1994-2002) that focused only on the aging population from 55 years and up, also found high rates that increased with age, from 137.0/100,000 among 55-64 year olds to 204.0, among 65-74 year olds, to 331.0/100,000 among people 75 or older (Abraham et al, 2005).

The same study by Bose et al (Bose et al, 2009) reporting high rates among elderly men, found an inverse trend of higher suicide rates among females in the 15-24 year age group than males, with a rate of 148.0/100,000 among females compared to 82.7 among males. Another study conducted in Villupuruam, Tamil Nadu, in 1997-1998 also found an inverse trend in the same age group, with the female suicide rate of 109.0/100,000 exceeding the male rate of 78.0/100,000, and suicide accounting for 49% of all female deaths and 38% of all male deaths at these ages (Gajalakshmi, 2007). A third study, conducted in Kerala (C. R. Soman, S. Safraj, V. R. Kutty, K. Vijayakumar, & K. Ajayan, 2009), also found women's rates exceeding men's rates in the 15-24 range (exact rate not reported). This study found that rates for women exceeded men once more at the other end of the age spectrum, in the 75+ range, where they reached

their peak, at 132.6/100,000. Three sub-population studies of women, in Nepal, Pakistan and India, also found high rates of suicide among younger women. In Nepal, Pradhan et al estimated rates of 33.8/100,000 among 25-29 year olds, and 32.1 among 20-24 year olds based upon data from the Maternal Mortality and Morbidity Study 2008/9. In Pakistan, a study of women in Ghizer District in 2000-2004, found a very high rate of 61.1 among 15-24 year olds and 49.4 among 25-34 year olds. The 1994 study of Indian women who participated in the Survey of Causes of Death found the extremely high rates of 87.0/100,000 among 15-19 year olds and 46.3 among 20-24 year olds (Agnihotram, 2004).

Table 14: Age rates for female only studies

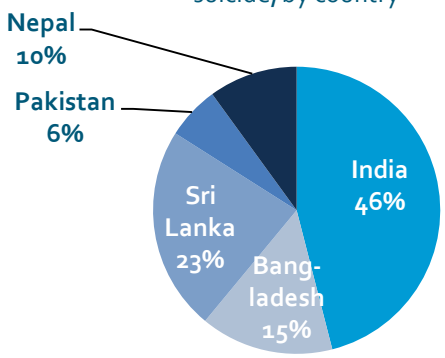
	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-60	60+
8 DISTRICTS, NEPAL, 2008	28.1	32.1	33.8	26.5	21.7	20.3	32.3		
GHIZER, PAKISTAN 2000-4	61.1		49.4		3.8		6.4		
ALL INDIA, 1994	87	46.3	27.7	25.5	13.4	3.5			

Note: Nepal (Pradhan et al, 2008); Pakistan (Khan et al, 2009); India (Agnihotram, 2004). Highest rates highlighted in blue.

4.6 MEANS OF COMMITTING SUICIDE

Less than half of included documents (48/114, 42.2%) contained disaggregated information on *multiple* means of committing suicide. Almost half of these (22 documents) were from India; 11 from Sri Lanka, seven from Bangladesh, five from Nepal and three from Pakistan. Three-quarters (75%, 36/48) focused on sub-populations; only twelve were national studies/reports. Official government data on means of suicide was available for four countries: India, Sri Lanka, Bangladesh and Nepal. See Figure 20 below.

Figure 20: Documentation of means of suicide, by country



The wide range of types of reports and study populations make comparison within and between countries challenging, however, we did discern some patterns. Both poisoning and hanging were common in Bangladesh, India, Nepal and Sri Lanka. Poisoning was clearly the most frequent means of committing suicide in Sri Lanka, although the margin between poisoning as the leading method and hanging as the second most common method appears to be narrowing. Poisoning also appears to be the most common method in Bangladesh; while in Nepal, hanging is the most reported means of committing suicide. The limited number of studies (3) from Pakistan each identified a different method: drowning, hanging or poisoning as most common. Self-immolation was also mentioned as a fairly common method of suicide in India and Sri Lanka, particularly (but not exclusively) among women.

In almost all studies and reports across all countries where the poisoning agent was specified, pesticides (usually organophophorus compounds) were cited as the main means of poisoning. According to Sri Lankan researchers, there appears to be a trend away from the use of pesticides due to stricter government controls, and an increase in the use of less lethal medical drugs. Although this has reduced fatalities it has not resulted in a reduction in suicide attempts (de Silva et al., 2013; de Silva et al., 2012).

Twelve (12) studies (11.2%) reported on only one type of suicide method, and therefore did not report overall suicide rates, only the incidence of suicide by a particular means. The majority of these studies came out of Sri Lanka and India, and their focus generally corresponded to the most common method found in these countries: self-poisoning (see below). Burning or self-immolation was also the sole focus of several studies, despite not being among the most common methods overall.

The lethality of the means of suicide was also reported on by several studies, two from India and two from Sri Lanka. In South India an association was found between lethality and means: hanging, drowning and self-immolation were highly lethal while poisoning was the least lethal (Bose et al., 2009). Another (unpublished) study of self-burning found it to be highly lethal, compared to other methods (Shah et al., 2005). The lethality of suicide methods was also shown to have a contextual element as two studies from Sri Lanka (de Silva et al., 2012 and de Silva, Hanwella, and Senanyaki, 2011) report a reduced case fatality rate for poisoning cases in hospitals over their study periods, due perhaps to more effective treatment offered by hospitals recently. Both were national studies and ranged from 1995- 2009 and 1995-2011 respectively.

India. In India, hanging and poisoning appear to be the most common methods of committing suicide. Two national government studies showed both hanging and poisoning to each account for about one-third of suicides (sometimes trading places from year to year). The Kerala Mental Health Authority reported hanging to be most common (57%), followed by poisoning (26%).

More published studies (11) found hanging to be the most common method, with the majority (10/11) finding poisoning to be the second most common means. All of these studies focused on sub-populations. Another eight published studies, including three covering all of India,

found poisoning to be the most common method, followed by hanging. Most grey literature reports found that poisoning was the most frequent method of committing suicide, with the second most frequent either hanging or self-immolation. Two grey literature reports found that while poisoning was most common among men, self-immolation was the leading means of committing suicide among females.

All studies that described *differences* in the patterns of means used by males and females (8 out of 22) found that males are most likely - or more likely than women - to choose self-poisoning or hanging as suicide methods, while women are most or more likely than men to choose self-immolation or drowning. This finding spanned a range of different geographical sub-populations but came predominantly from studies in South Indian settings. A further two studies took gender into account but found that self-poisoning was the most common means for *both* males and females (Mohanty et al., 2007; Patel et al., 2012); one of these was from a nationally representative sample of the whole of India and the other from a sub-population in the Northeast of India.

Four studies compared means across age groups, with various findings. Both a South Indian sub-population and a national study found that hanging was the most common means among younger adult age groups (under 44). However, the sub-population study found that among children (under 14), poisoning was most common. Another study of young people in South India found the highest proportion of hangings among 10-19 year-old suicide victims, closely followed by self-poisoning with pesticides.

Studies and reports that reported on the means of poisoning in India identified pesticides (primarily organophosphates) and other agrochemicals as the major poison used. Ten out of 18 published studies reporting that poisoning was a major means of suicide did not describe types of poisons used; eight studies specified that the great majority of poisoning cases were from “pesticide”, “organophosphates”, “organophosphorus compounds”, or “insecticides”. One reported the use of poisonous plants as the second most commonly used poison after organophosphates, followed by other toxic substances such as corrosive acid, rodenticide and phenyl. Among the five government and other unpublished reports that identified poisoning as a major means of suicide, only two identified the type of poisons: one referenced “insectides” and the other identified various agrochemicals including aluminum phosphate, organophosphorus, organochlorine, paraquat and weedicides.

Sri Lanka. Of the 11 documents reporting on means of suicide in Sri Lanka, almost all documents, including all published studies and the police website which has data from 2005-2011, identified poisoning as the most common means of committing suicide in Sri Lanka, followed by hanging. Police data showed a narrowing margin between poisoning and hanging over time. In the grey literature, five reports identified poisoning as the leading method.

Like India, all studies from Sri Lanka which found differences between methods for males and females (4 out of 11), found that a higher proportion of men chose self-poisoning as their suicide method than women. Two of these studies also found that the main means of suicide

for women was self-immolation. These were all geographical sub-population studies. No studies reported on the influence age had on suicide means in Sri Lanka.

As in India, most studies and reports reporting on the means of poisoning in Sri Lanka also identified pesticides and other agrochemicals as the major poisons used. Only one study did not specify the type of poison. The police website does not have a broad category for "self-poisoning" in its report on modes of suicides, but breaks out suicide deaths according to type of poison, with ingestion of insecticides and pesticides as the leading cause. Three studies (de Silva et al., 2013; de Silva et al., 2012) commented on a relatively recent (last 10-15 years) shift away from use of highly lethal pesticides for self-poisoning to less lethal medical drugs. Restrictions on the availability of pesticides is largely credited with this change and the decrease in suicide deaths in Sri Lanka. However, authors caution that the decrease in suicide deaths due to less lethal means is *not* accompanied by a parallel decrease in suicide attempts/self-harm.

Bangladesh. In Bangladesh, poisoning and hanging were the most reported means of committing suicide. Poisoning was the most common method in three out of four studies, and in two out of three reports based on police data. One of the three reports based on police data found hanging to be the most common method, while another study found hanging to be the leading method among women.

Only two sub-population studies out of the seven (both published studies from Dhaka) reported method of suicide according to sex. Both found that men tended to self-poison while women were more likely to hang themselves The latter finding is in contrast to India and Sri Lanka, where hanging is far more likely to be associated with men than women. One study from Bangladesh (Rahim and Das, 2009) reported suicide means in relation to age group: in Dhaka, hanging was the predominant means for young people in the 11-20 age group.

Like India and Sri Lanka, the four studies and reports that reported on the means of poisoning in Bangladesh also identified insecticides or pesticides, specifically organophosphates and, earlier, organochlorides, as the major substances used for self-poisoning. Four studies did not specify the type of poison used.

Nepal. Four of the five documents (including police records for all Nepal) reporting on means of suicide in Nepal showed hanging to be the most common method. Only one study, the government's national Maternal Mortality and Morbidity Study 2008/9, found that poisoning was the most common method of committing suicide among women of reproductive age.

No studies from Nepal compare male and female choices in means of suicide, although one national study, The Maternal Mortality and Morbidity Study, 2008, focusing solely on women of reproductive age, found that poisoning and hanging were the main means of suicide for this population. This contrasts with India and Sri Lanka, where these methods were often found to be the most common methods among men but not among women. There was no information on the means of suicide disaggregated by age in Nepal.

Only one of the five documents that reported poisoning to be a significant means of suicide in Nepal reported on the specific poisons used; the one report indicated that pesticides were the primary substance used for self poisoning.

Pakistan. The three studies, all focusing on sub-populations, that reported on means of committing suicide, showed no visible pattern in most common method: in one study drowning predominated (40%) followed by poisoning, in another hanging was most common followed by firearms, and in the third, poisoning was followed by hanging.

Two out of the three studies disaggregated means by gender: one found a higher proportion of Pakistani women chose poisoning than men, in contrast to Bangladesh, Sri Lanka and India. Both found that a higher proportion of males chose hanging than females. As with Sri Lanka and Nepal, there was no information on the means of suicide disaggregated by age in Pakistan.

None of the studies or reports from Pakistan that identified self-poisoning as a major means of suicide specified the type of poison.

Afghanistan. With only one piece of grey literature on Afghanistan included in the review, it is impossible to report trends in means of suicide. However, the single included study reported solely on suicide attacks as a means of suicide; specifically, using vehicle or body-borne explosive material. All recorded suicide attacks were male and were usually young, sometimes even children.

5. DISCUSSION

5.1 INTERPRETATION OF RATES

5.1.1 SUICIDE RATES: GLOBAL AND NATIONAL TRENDS

The rates presented in the reviewed documents are high compared to other parts of the world. The average of all presented rates across the six countries is more than double the estimated mean rates for the world. If we take the average of the suicide rates that have been reported for each of the countries represented in this review (ranging from 0.43 to 331.0), we see a large variation across countries. The mean rate for Bangladesh is 58.3 (SD=63.22), for India it is 28.8 (SD=32.17), for Sri Lanka it is 25.7 (SD=4.80), for Nepal 8.6 (SD=8.87), and for Pakistan 3.6 (SD=5.06). For Afghanistan no publication reports actual suicide rates. The average suicide rate across all six South Asian countries across the included time period is 25.2 (SD=28.60). This is more than twice the estimated suicide rate for the world, 11/100,000 in 2008 and 2011 (WHO, 2013; Varnik et al, 2012). When taking just the nationally representative rates, as is common for cross country comparisons, the mean rate (14.3) is still well above this global mean. This is consistent with previous research that has indicated that the majority of the world's suicides are committed in Asia (Beautrais, 2006). Mean rates are especially high in Sri Lanka, India and Bangladesh.

However, comparisons between countries and with the rest of the world based on mean rates can be problematic, because of the differences in methods and quality of data collection. Notably, Pakistan, Afghanistan Bangladesh and Nepal have no systematic suicide surveillance system, and have very few publications and reports on suicide death rates, and therefore rely mostly on police data which tends to lead to underestimating actual rates. On the other hand, some of the studies demonstrating very high rates in Sri Lanka, Bangladesh and India are not nationally representative, as they are done with sub-populations of interest. The fact that India has the highest number of studies on suicides is understandable given its large population. The high number of studies in Sri Lanka is somewhat disproportional to its population size, and is likely due to historically high rates reported there.

5.1.2 SUICIDE RATES: INTRA-COUNTRY TRENDS

There is considerable variation in suicide rates from *within* each country - even if they report national suicide rates. For example, studies of national rates from India produce figures ranging from 9.9 to 22.0 (over different years). This can be understood by considering the variation in data collection methods between studies (the difference over years is generally small). Whilst some studies (such as a WHO report that gave the rate of 9.9) used only figures recorded in the National Crime Records Bureau, others (such as Patel et al., 2012) used data from a nationally representative mortality survey, which used verbal autopsies to identify suicidal causes of death. This explains some of the variations, as the higher quality studies,

that do not simply rely on police data, are more likely to capture more possible suicides. Indeed, many authors of studies expressed concerns that national rates were underestimated as a result of serious underreporting of suicides to police. Moreover, in the present study, a significant relationship was shown between the quality of studies and the rates, suggesting lower quality studies produce lower rates.

This observation also applies to sub-population studies within countries; for example, the rates on suicide rates of Nepalese women from police records (coming out at just 2.5) compared to those from the representative Maternal Mortality and Morbidity survey that used verbal autopsies (indicating a much higher rate of 28 – though focusing on women of reproductive age only). Variations between sub-populations within countries can of course simply indicate actual differences in suicide rates between populations or geographical locations. However, these examples demonstrate that methodological variations are likely to play a significant part in explaining these figures.

Another pattern in intra-country rates was that sub-population rates generally came out much higher than national rates. This is particularly apparent for India, where some sub-population rates reached over 300, whilst the highest national rate was 22. This may be at least partly due to a bias in the selection of sub-populations: those sub-populations which are known to be high-risk groups, either because they live in an area where suicide is known to be common, or because they belong to a certain vulnerable demographic, are more likely to be studied for suicide rates. Another explanation for this is that many of these small scale, sub-population studies employ overall higher quality methods, and higher quality methods are associated with higher calculation of rates. Among the sources that present national level data, those that are governmental/official tend to be lower than national rates reported by other sources. Again, this may be because these studies are generally based on police data, rather than new data gathered using more sensitive methods.

Finally, the limited available information on longitudinal trends of suicide rates within each country shows that there appears to be an upward trend in rates in all countries, except in Sri Lanka where we see a downward trend. It is important to note again that suicidal ideation and self-harm were not included in this study. If these were to be included the picture of suicidal behavior in South Asia would be even more grim. A comprehensive look at suicidal ideation and self-harm behaviors overall would provide important context for this report on suicide deaths, and should be topics for future review.

5.1.3 NATIONAL SUICIDE DATA COLLECTING AND REPORTING

There is substantial variation in national suicide registration and reporting systems across South Asia, ranging from non-existent, in Afghanistan, to fairly comprehensive and transparent in India, where data collection is routinized, regularly compiled and analyzed at the national level, and information, including annual suicide rate calculations and a plethora of disaggregated data, is in the public domain.

Only two countries' governments *publish* suicide information: India and Sri Lanka. Of the two, only India calculates and publishes rates on an annual basis. Many authors of the reviewed publications agree that even the more comprehensive systems in India and Sri Lanka have significant limitations and questionable accuracy.

5.1.4 SUICIDE DEFINITIONS

Although all included documents reported on suicide deaths, most (both published and grey literature) did not present an explicit definition. Without an explicit (and common) definition of suicide it is difficult to compare across studies or sources. Those that did provide definitions flagged up potential issues relating to definition. For example, some authors were studying both fatal suicidal behaviors and non-fatal attempts. Some documents referred to suicide as a "voluntary" act; but it is of course difficult to determine whether a suicide is fully voluntary. Some stated that suicide was an "intentional" fatal act of self-harm, and here too, determining intentionality – whether an individual intended to actually die from the act of self-harm or not – is also problematic. As can be seen in the quality appraisal of the published studies, the definition, or lack thereof, has an impact on the quality of the sampling procedure; given the ambiguities flagged up by some of the included studies, failing to provide a definition of suicide makes the inclusion criteria for the study sample unclear.

5.1.5 UNDERREPORTING AND MISCLASSIFICATION

Although India and Sri Lanka's suicide data collection and reporting systems are quite comprehensive, particularly in comparison with other South Asian countries, suicide researchers in all countries generally agree that there is significant and possibly massive underreporting throughout South Asia. This is due to a complex constellation of factors including criminalization of the act in all countries except in Sri Lanka, potential legal consequences for survivors and family members of reporting a suicide, social stigma and strong socio-cultural and religious sanctions against suicide, and public mistrust of and harassment by the police and legal authorities. Additional problems with national systems of suicide data collection and reporting include variable standards in certifying deaths, and misclassification, both intentional and unintentional, of suicides as accidents or natural deaths (and, in some settings, intentional misclassification of homicides as suicides).

5.1.6 COMPARABILITY

Comparability of information (within countries, between countries) is challenging because of limited national data from all six countries except for India, vast range in quality of data and studies, non-comparable study populations, range of study dates, and lack of common definitions of what is meant by the term "suicide".

5.1.7 GENDER AND AGE

Overall, studies we reviewed showed that men have higher risks of committing suicide than women do, except in Bangladesh where a reverse pattern was reported, and except certain age cohorts. Globally, there is greatly increased risk of suicide for both males and females in the 15-29 year age groups; WHO reports that in 2011, suicide was the third leading cause of death for this age group (WHO, 2013). The same report shows that there is even greater risk among 15-29 year olds in the Southeast Asia region (where Bangladesh India, Nepal and Sri Lanka fall), where it is the second leading cause of death for young men (a close second after road injury and accounting to 15% of all deaths according to our calculations based on WHO numbers), and the *leading* cause of death by far for young women, accounting for 17% of all female deaths in the 15-29 year age group (WHO 2013). Nearly double the numbers of young women in the Southeast Asia region are dying by suicide than the second leading cause of death for females 15-29, which is diarrheal disease. According to WHO's statistics for the region, vastly greater numbers of both young men and women are dying of suicide than are dying of other leading causes which include interpersonal violence, HIV/AIDS and diarrheal disease for males and HIV/AIDS, maternal conditions in addition to the diarrheal disease already noted. We found similar patterns in the data in our review: multiple sources indicated that women in the reproductive age group (15-49 years, according to WHO's definition) were at high risk of suicides, and more vulnerable than men in the same age group. While there may be a study selection bias towards research related to women, as there are numerous publications focusing exclusively on women and none on men despite evidence that rates of suicide among men overall are higher than among women, mixed sex data we reviewed also showed the highest risk period for women to be the youth/young adult category. Suicide is clearly a public health problem of major proportions for both men and women in this age group in South Asia.

The trend of higher male rates than female rates is found worldwide (WHO, 2011) but this is often cited alongside research demonstrating higher rates of suicidal *ideation and attempts* in women (Canetto & Sakinofsky, 1998). We did not explore this in the included body of literature, as this report focuses only on suicide incidence rates, which refer to suicide deaths. However, reports such as the Review of the Evidence from Nepal (Pradhan et al., 2012) suggest a high incidence of non-fatal suicide attempts among women.

5.1.8 MEANS OF COMMITTING SUICIDE

Overall, poisoning and hanging are the two leading means of committing suicide. However, there are context-specific variations, such as the disproportionately high numbers of studies reporting self-poisoning as the main method in Sri Lanka, compared to other countries. This is likely to be dependent on the availability of such substances in the time and context of measuring; indeed, the restrictions on the import and sales of pesticides and insecticides in Sri Lanka in the 1990's (Gunnel et al., 2007) coincide with the downward trend in suicide rates and the narrowing gap between poisoning and hanging as the most popular means of suicide in this setting. This has implications for possible suicide prevention strategies, and also raises

questions about whether restricting access to means would reduce suicide rates overall or simply reduce the widespread use of that particular method.

One proposed explanation for the differences (noted in the section above) between men and women in patterns of suicide fatalities and attempts, is that women are more likely to choose less lethal or less violent methods. However, our data showed that preferred methods (including more lethal methods) may vary for women and men between countries. For example, in Nepal and Bangladesh, women were most likely to choose poisoning or hanging, which were more associated with males in India and Sri Lanka. And, although lethality of method is often more associated with men, two studies from India found that self-immolation is both a predominantly female method and a highly lethal means of suicide (Bose et al., 2003; Shah et al., 2005). Suicidal ideation and non-fatal behaviors in all six countries should be further investigated in future research. Such research will shed more light on the full spectrum of suicidal behavior in men and women and reasons why differing patterns emerge both within and between countries

Bose et al (2006) made an important methodological point about lethality of means and how it affects findings related to preferred means of suicide. The authors warn that findings may not be a reflection of the actual prevalence of those methods for attempted suicide, but rather a reflection of the lethality of the methods chosen. As this review does not report on the incidence of non-fatal suicide attempts, this limitation should be considered in relation to findings and discussion related to means of suicide.

It is also important to consider how choice of method may impact on reporting of suicide deaths, and whether they are captured in research. A case of poisoning may well be more likely to result in a hospital admission or medico-legal autopsy than, for example, a case of drowning, because of the increased likelihood of finding the person before they have died and treating them, or finding the body after death. Because many studies we reviewed relied on medical or legal sources of data to calculate suicide rates and metrics, there could be a reporting bias towards those methods that are more visible to the hospitals or police. Further, the 'publication bias' towards studies focusing on women (see above) and the social and political visibility of self-immolation may explain why this was the primary focus of several studies, despite not being identified among the most common overall.

5.2 QUALITY AND ACCURACY OF FINDINGS

There is a scarcity of rigorous studies that report on suicide rates in South Asia. Of all publications (n=50) found and reviewed in this study on suicide in South Asia, only 10 met most or all of the eight quality criteria defined for and used in this study – representing studies in India, Bangladesh and Pakistan.

Two major factors emerged that determined how accurate we considered rates to be:

1. Representativeness of samples (to comprehensively cover the nation or sub-population)
2. Sensitivity/ validity of methodologies (in order to accurately interpret causes of death)

Higher quality studies in this review generally combined several data sources including data from large *representative samples* (i.e. national health/ mortality surveillance system or community survey) and routine standardized verbal autopsies, guided by a clear definitions or classification system, for *validity* of data – and are adequately analyzed and presented (i.e. adjusting for age, including confidence intervals). These were 'best practices' that were consistently applied by the best quality studies. However, even these high quality studies did not fulfill all the criteria on our instrument. Almost no studies conducted reliability tests on their assessment tools for identifying suicides. This doesn't necessarily mean they were unreliable but it does mean we were not able to make a real assessment of their reliability. Similarly, only one high-quality study reported confidence intervals. Tighter, more rigorous analysis and reporting would highlight possible problems with the data and indicate where tools can be improved to ensure all incidences of suicide are captured in future studies.

Our observation that higher quality study methods were associated with finding higher rates, both for national data and for sub-populations, suggests that these are the more accurate rates, since more rigorous methodology is likely to produce more accurate rates. At the same time it should be noted we are not directly comparing rates between different studies, because the studies report on different populations (geographic, sex, age groups).

Despite the usefulness of developing high-quality studies according to the above observations, there remain some serious barriers to gathering accurate information given contextual realities in each country. Barriers include: (1) The stigma attached to suicide, along with its criminalization in all countries but Sri Lanka, which means that recognition and reporting of suicides will continue to be seriously limited; (2) The lack of accurate national suicide surveillance systems in most South Asian countries; (3) Problems with (mis)classification of suicides, resulting in part from inconsistent definitions, possible lack of consistent training, oversight and monitoring, and (at times) intentional misclassification; (4) The problematic locus of suicide reporting in all South Asian countries in police be the primary point of reporting and repository of the information (related in part to criminalization) on a matter that is in fact a matter of public health is problematic; (5) The resources and logistics required to carry out top-quality research is considerable, and not something that most countries in South Asia will have at their disposal.

Whilst nation-wide studies and rigorous health surveillance surveys (such as that that conducted by Patel et al., 2012) may be viewed as a 'best practice' study, smaller-scale research can also make important contributions to the knowledge base. For research with limited resources, it is crucial that samples are at least representative of the target population, and that more than one source of data is utilized in data collection.

5.3 GAPS AND LIMITATIONS OF THE DATA SET

5.3.1 SCARCITY OF DATA

While the review identified more relevant publications and reports than was expected based on an existing review of suicide in Asia (Chen et al, 2012), which identified nine publications for South Asian countries, the current collection of publications is still rather scant given the apparent scale of the problem and the size of the population in South Asian countries (about 40% of the world population). Even within the six countries there are significant differences in the number of documents included, with nearly two-fifths (39.5%) from India alone, and 78% from India, Sri Lanka and Bangladesh combined. While this is understandable in terms of proportionality of the populations of these countries within the region, because of distinct socio-cultural, religious, and development contexts, comprehensive data on these countries is essential to assess magnitude of problem.

Afghanistan is notable for its almost complete absence in the report. Although 32 documents were collected, only one document was finally included in the review, and that focused on terrorist suicide attacks. There is simply no data at all available on suicide rates or means of suicide in Afghanistan.

This paucity of official statistics and data is perhaps unsurprising, given the lack of resources and funding for research, and the competing priorities within these low and middle income South Asian countries (Hendin et al., 2008). The impact of suicide being a criminalized act in all countries but Sri Lanka is also bound to limit the accuracy of information about suicidal acts, particularly as police records are the main source of available data. Moreover, the cultural stigma of committing suicide (and the mental health/psychosocial problems associated with it) makes it a largely hidden problem, reducing recognition of suicide as a potentially significant public health concern, and contributing to a lack of urgency among governmental and non-governmental organizations to accurately assess the scope of the problem, and develop policies and programs to address it. Building a body of research that illuminates high, or unknown suicide rates, will help to underscore the urgency of the issue and the need for further research and action, as it did in Sri Lanka during the period of extremely high suicide rates in the 1990s. More consistent, easily available and reliable data will provide a concrete foundation for further research and development of interventions.

5.3.2 COMPARABILITY

Comparability of information (within countries, between countries) is challenging because of limited national data from all six countries except for India, vast range in quality of data and studies, non-comparable study populations, the range of study period/dates, and lack of common definitions of what is meant by the term “suicide”.

5.4 FUTURE STEPS: IMPLICATIONS AND RECOMMENDATIONS

- Based on the (albeit limited) evidence, reported suicide rates in South Asia are high in comparison with other parts of the world, and suicide is among the top ten leading causes of death. The problem is particularly severe in the 15-29 year age group, particularly among females, where numerous sources find it to be the leading cause of death.

  We recommend that these findings be shared with governments, in particular Ministries of Health, in each of the countries, as well as other relevant international and national public health stakeholders. We further recommend that DFID work together with governments and public health stakeholders to develop appropriate policy to address this problem.

- Given the likelihood of gross underestimation due to social stigma, role of the police in reporting, inadequate national level data collection, and limited quality surveillance, it is expected that suicide is a public health problem of even greater magnitude than presented in this report.

  We recommend that DFID continue to take a leadership role in advocating for and funding further research, policy and program response to the problem of suicide in South Asia.

- Given the paucity of quality studies and national level suicide monitoring, there is an urgent need to collect more accurate suicide data in all six countries. Higher quality studies in this review generally combined several data sources including data from large *representative samples* (i.e. national health/ mortality surveillance system or community survey) and routine standardized verbal autopsies, guided by a clear definitions or classification system, for *validity* of data – and are adequately analyzed and presented (i.e. adjusting for age, including confidence intervals).

  We recommend that DFID, in partnership with other public health stakeholders, advocate for and support the evaluation and systematic improvement of suicide surveillance systems in South Asian countries where they exist, and their establishment in the countries where they do not exist.

- It is equally urgent to gain a more comprehensive understanding of other aspects of suicide in the region including: self-harm and other suicidal behaviors, risk and protective factors, and existing prevention efforts – so that an adequate response can be designed and implemented.

  We recommend that DFID and/or other international public health donors commission a review of the existing knowledge of and evidence related to the drivers of suicide in the region, and initiate efforts to map and evaluate existing prevention initiatives.

With only one nationally representative high quality study, there is a vital need for the generation of more reliable data on the magnitude of the problem that suicide deaths pose in South Asia. In the absence of comprehensive national-level mortality surveillance systems, high quality prospective studies can play an important role in this process. Such studies will need to meet some key quality indicators in order to produce accurate rates – a reliable method of identifying and reporting suicides and adequate statistical analyses are two areas of improvement in the future. In the longer term, it will be essential to systematically evaluate and strengthen the existing national suicide data collection systems in each country.

Although this review did not actually evaluate mortality surveillance systems or other methods of establishing cause of death, there are a number of recommendations that can be made to improve monitoring of suicide deaths: (1) Systematic evaluation of the surveillance systems in the 5 countries that have governmental systems for collecting suicide data. India and Sri Lanka have fairly comprehensive systems that could be learned from, improved upon, and possibly serve as models depending on outcomes of the evaluation. (2) Identify in each country, and evaluate the potential for using, (other) regular forms of mortality data collection to collect information on suicide. These include HMIS systems (although of limited value as these only collect facility based information), birth and death registration systems, periodic cause of death surveys (e.g. Million Deaths Study in India), maternal mortality studies, injury surveillance studies. (3) Undertake prospective suicide surveillance studies in representative sampling of populations in each country. Although an expensive undertaking, such studies would provide the most accurate current picture of the magnitude of the problem, as well as a standard for comparing existing suicide data collection systems in these countries.

Accurate national overviews will provide an essential starting point for developing prevention and intervention strategies, which can target the most high-risk groups or areas on a large scale. *Comparable* data on age, gender and sub-population rates will help identify where national level initiatives should focus their attention. This will also enable researchers to identify characteristics of groups with particularly high or low rates to make hypotheses about population-wide predisposing factors (e.g. socio-economic status, cultural norms, local policies etc). *Reliable* data on the means of suicide is a first step towards identifying whether laws and restrictions on access to poisons (including pesticides and medicines) or other means might have an impact on overall suicide rates. This retrospective, correlational research will lay the groundwork for more rigorous trials of suicide prevention policies and programs.

While policy makers and intervention researchers need accurate figures and estimates for large-scale planning purposes, there is also an equally pressing need for more in-depth understanding of underlying causes of suicide within specific groups or populations. Context-specific research into the risk and protective factors associated with completed suicides, as well as the causes and burden of suicidal ideation and self-harming behaviors is needed to develop effective prevention strategies, particularly given that a prior non-fatal suicide attempt is one of the biggest predictors of completed suicide later. We identified many studies

and other reports on these other aspects of suicide during the course of this review, and believe a comprehensive review of this literature, including quality assessment of studies, is an important next step in assessing the existing body of evidence prior to undertaking new studies. At the other end of the spectrum, large-scale inter-country research can be carried out in order to gauge how suicide rates in South Asia compare with other LMIC settings, and place the present findings in a wider context of low-resources countries.

Finally, it must also be recognized that prevention initiatives - although limited and often unsystematic - are already in place and active in many of the South Asian settings included in this review. All forthcoming research into suicide prevention should build on existing work and intervention evaluations; the first step being to identify what and where such programs exist, and then investigating what works, what doesn't and by what mechanisms.

Given the paucity of peer-reviewed studies on suicide in South Asia, and more generally in low and middle income settings, the procedure followed for this review should be considered for replication. The broad scoping method encompassed two distinct components: (a) an in-country search conducted by consultants in each of the countries, aimed at exploring official and non-official suicide rates (both through online and in-person searches), and (b) a systematic review of the peer-reviewed literature on suicide rates in South Asia. The fact that so many reports and publications were added as a result of the in-country search, demonstrates that an online-only search would have missed out on a significant set of data, and is therefore a strategy to include in other similar scoping reviews.

5.5 STRENGTHS AND LIMITATIONS

Major strengths of this review are: (1) the inclusion of different sources of information to present the most complete overview of available data, including peer-reviewed publications as well as national and sub-population reports searched in-country; (2) the systematic review and (3) the quality assessment of all published studies.

The review also had a number of limitations. First, the use of national consultants to conduct the in-country search for reports and data may have introduced some bias as it was difficult to fully standardize this component between countries. Also, the in-country search component was undertaken over a relatively short time period, which meant that it was done mostly from within the capital cities. Second, we have limited this research to reports and publications of completed suicides that use primary data. This means we did not go directly to the data source, but relied on reporting thereof. Also, while we included all publications and reports that presented any data on completed suicides (including small scale studies presenting crude numbers of suicides), synthesizing was done for studies and reports that have presented suicide rates, except for the analyses on male to female ratios and longitudinal trends that also took into account absolute numbers reported in studies. Third, psychometric properties, including sensitivity analyses, of the Quality Appraisal tool that was developed for the purpose of this study were not assessed (except Inter-Rater Reliability, which was substantial). Fourth, in the results section we have reported mean suicide rates for the region

(a mean of all reported rates), as well as for each country. As mentioned before, taking a mean of such varying data (using differences sources, populations, definitions etc.) is problematic. We have included these only for presentation purposes to give an indication of the scope of the problem, while continuing to mentioned the problems with such presentation and presenting the results in a more accurate fashion. In addition, an actual arithmetic mean score could not be calculated because many of the publications and reports did not report absolute suicide and population numbers. Fifth, we have only presented age-adjusted suicide rates if the reviewed publication reported these. Age-adjusted rates present a more reliable estimate of the suicide rates (i.e. a much smaller standard deviation). However, we were not able to conduct meta-analyses, and thereby conduct age-adjusted analyses for all publications.

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ANNEX 1: MASTER TABLE OF ALL INCLUDED DOCUMENTS

Indicates rates used in analyses

	COMPONENT	DOC NO./ TITLE	NAT'L (Y/ N)	SUB-POPULATION (SPECIFY)	YEAR(S) OF DATA	RATES (ALL DATES; HIGHLIGHT MOST RECENT)	OTHER METRICS (M: F RATIO, PERCENTAGES, PROPORTIONS ETC.)	DATA SOURCE	QUALITY RATING (# OF 8 CRITERIA, FINAL COLUMN OF QA)	MEANS (TOP 3 IN ORDER WITH % WHERE AVAILABLE)
INDIA	A PUBLISHED STUDIES	**CA38** Suicide mortality in India: a nationally represent-tative survey	Y	Whole India age adjusted for 15 yrs+	2010 UN estimates and 2001-2003, RHIME, for mortality info	22.0	Suicide= 3% of surveyed deaths (15 yrs or older). At ages 15–29 years, suicide was 2nd leading cause of death in both sexes. Suicide deaths occurred at younger ages in women M:F ratio approx: 1.5: 1 M:26.3, F: 17.5 NOT AGE ADJUSTED (ALL AGES): M: 18.6, F: 12:7	Nationally representative mortality survey; verbal autopsy (RHIME method)	8	Poisoning: 49% men; 44% women Hanging: 35% men; 26% women
		CA24 Burden, charac-teristics & outcome of injury among females	N	Female population Bengaluru city	2007-8	-	Suicide= 48% of fatal injuries	ISS; Police records and family interviews (after identification)	3	Hanging: 59% Burns: 22% Poisoning: 15%
		CA9 Self-harm & self-poi-soning in southern India	N	Kaniyambadi Block, Vellore District, Tamil Nadu	2006-7	120.3	M:F ratio=1:19:1 (AK calc) M rate: 130.9; F: 109.7	CBSS; Verbal autopsy method	5	Poisoning: 43.7% Hanging: 42.5% Burning: 7.9%
		CA52 Suicide in South India: a community-based study	N	7 rural villages in Kerala	2002-7	-	Suicide= 6.6% of all deaths M:F ratio= 1.7 M: 44.7, F: 26.8	Community questionnaire; based on WHO verbal autopsy method and hospital records	6	Hanging: 64% Poisoning: 10% Drowning: 9.3%
		CA68 Dowry deaths: a neglected public	Y	Whole India	2005-6	-	31% increase in dowry-related suicides	NCRB	1	-

		health issue							
		CA29 Cause of death among reproductive age women	N	WRA in Maharashtra	2003-5	-	Suicide = 35% of injury/poisoning deaths (leading cause of injury death) and 7.2% of total deaths studied.	Household survey; verbal autopsy method	4	Poisoning
		CA8 Mortality rate & years of life lost from unintentional injury & suicide	N	Rural and peri-urban population Kaniyambadi block, Vellore, Tamil Nadu	1998-2004	82.2	Suicide= 11.3% of all deaths	CBSS; Verbal autopsy method	6	Hanging Poisoning Burning
		CA46 Completed suicide in adults of rural Ker ala: rates & determinants	N	Persons 35 years and above Thiruvananthapuram district	1996-2004	39.3	Suicide= 3.3% of all deaths studied M:F ratio=5:1 M: 78, F:16.5	Medical records or verbal autopsy method (if records not available)	4	Hanging 50% Poisoning 30% Drowning 9%
		CA23 Methods of choice in completed suicides: gender differences & review of lit	N	Population Mangalore (Region district hospital)	2000-3	-	M:F ratio=1.9:1	Police investigation records and medico-legal autopsy records	0	Hanging 36.9% Poisoning 34.7% Data on gender diffs in means
		CA36 Suicide in India – a four yr retrospective study	N	Berhampur city and the adjacent rural areas	2000-3	11.76	Suicide= 28% total autopsies M:F ratio= 1.04:1	Medico-legal autopsies; police/ acquaintance interviews of autopsied cases	3	Hanging: 32.6% Poisoning: 30.6%
		CA71 Self-Inflicted Burns Fatalities in Manipal, India	N	Catchment area Kasturba Hospital, Manipal. (Burn victims)	1993-2003	-	M: 20.5%, F: 79.5%	Medical autopsies and hospital case records	1	Self-immolation
		CA3 Suicide in the elderly in Kaniyambadi, Tamil Nadu, S. India	N	Population of Kaniyambadi Block people aged 55 and over.	1994-2003	189 (annual mean rate)	M:F ratio = 1: 0.66 (AK recalc: 1.51:1) M:234, F: 147	CBSS; Verbal autopsy method and health records	6	Hanging 52% Poisoning 39%
		CA39 Rates & factors associated w/	N	85 villages Kaniyambadi Block, Vellore	2000-2	92.1 (average)	Suicide= 9.8% total deaths studied M:F ratio= 1:0.66.	CBSS; verbal autopsy method and health records	6	Hanging: 49% Poisoning 40.5%

		suicide in Kaniyambadi, Tamil Nadu, S. India, 2000–02					(AK recalc: 1.51:1) M: 112, F: 72.2			
		CA50 Spectrum of unnatural fatalities in Chandigarh, NW India – 25 year auto-psy study	N	Population of Chandigarh zone of NW India	1977-2002	-	M:F ratio=0.75:1 (AK calc) M: 2.1, F:2.8/ 100,000 Proportion of suicidal deaths out of total unnatural deaths studied increased from 6.5% to 15.7% with a peak of 18.2% in 1992–1997.	Medico-legal autopsy records	0	Burns
		CA51 Suicides in Imphal	N	Imphal, India.	1993-2001	-	Suicide= 7.1% of total post mortems studied. M:F ratio= 1.98:1	Medical autopsy records	0	Hanging: 52.03% Poisoning: 23.98% Firearm: method of choice of security personnel.
		CA1 Suicides in young people in rural southern India	N	Catchment area of Christian Medical College and Hospital, Vellore, Focus on age 10-19 years	1992-2001	-	Suicide leading cause of death in 10–19 yrs, M:F ratio=0.39:1 (AK calc) M (avg rate): 58/100,000 F (avg rate): 148	CBSS; Verbal autopsy method and health records	5	Hanging: 44% Poisoning with insecticide: 40% Self-immo-lation: 9%
		CA75 Burn mor-tality: trends & socio-cul-tural deter-minants in rural India	N	Catchment area of Yavatmal district burn ward.	1997-2001		Suicidal burns= 47.8% of total deaths studied Burn mortality rate: 15.1/100,000	Mortuary data and police records	1	Self-burning
		CA6 Suicidal & homicidal deaths	N	Catchment area of Apex Medical Centre, District of Maharashtra	1998-2000	23.1 (per year)	Suicide= 19.5% of medico-legal deaths studied M:F ratio= 1.7:1.	Medical autopsy records and police records	2	Poisoning (42.3%) Burning (21.5%). Hanging (20.4%)
		CA16 Suicide in India, 1995-1999	Y	Whole India	1995-9	**1999: 11.2*** 1998:10.8 * 1997:10.0* 1996: 9.5*	M:F ratio= 5.8:4 During 1989-1999 incidence of suicide rose at compound rate of 4.3	NCRB; MoHA data	2	Poison: 37.20%) Hanging: 25.20%

						1995: 9.7* *Asterisk indicates data duplicated elsewhere				Fire/self-immola-tion: 11.10%
		CA22 Evaluation of suicide rates in rural India using verbal autopsy	N	Population of 85 rural villages of Kaniyambadi region, Tamil Nadu	1994-9	**1999:90.9** 1998:89.8 1997:103.6 1996:83.7 1995: 106.3 1994:96.7 Average: 95.2	Suicides = between 8% and 12% of total deaths over the study period	Health worker home visits; verbal autopsy method	4	Poisoning (45%) Hanging: (41%)
		CA15 Suicide rates in rural Tamil Nadu, S. India: verbal autopsy of 39000 deaths	N	Villupuram district, Tamil Nadu	1997-8	62.0	Suicides = 9% of total deaths. M:F ratio= 1: 0.72. M: 71, F: 53	Rural survey: verbal autopsy method	4	Self-poison-ing: 50% Hanging: 33% (our calcula-tion) Self-immola-tion: 12.5% (our calcula-tion)
		CA32 Suicide, gender, & age variation in India	Y	Whole India	1991-1997	**1997: 10.0 *** 1996: 9.5* 1995: 9.7* 1994: 9.9 1993: 9.5 1992: 9.2 1991: 9.2	M:F ratio= 1.32:1	NCRB	2	Poison: 34.8% Hanging:23.4 % Self-immola-tion: 11.5%
		CA54 Patterns of suicide by age & gender in Indian states	Y	14/24 Indian states	1997	10.4	The highest suicide rate at 94.3 occurs in Kerala for males (45 to 59 years). Manipur has the lowest overall rate for males at 0.60.	NCRB	1	-
		CA55 Moderniza-tion & male-female suicide ratio in India 1967–97	Y	All India	1967-1997	-	Rates/100,000: **1997: M: 11.5, F: 8;60** 1987: M: 8.49, F: 6.43 1977: M: 7.23, F: 5.39 1967: M: 8.59, F: 6.53	NCRB	2	-
		CA33 Indian suicide & marriage: a research note	Y	All India, age 15+	1995	15.66	M:F ratio=: 1.32:1	NCRB	2	-

	CA4 Reviewing disease burden among rural Indian women	N	Indian women who took part in Survey of Causes of Death (rural) 1994 (region unclear)	1994		Female rates by age: 15-19: 87.0 20-24: 46.3 25-29: 27.7 30-34: 25.5 35-39: 13.4 40-44: 3.5	Registrar General of India; annual rural community survey reports; National family health survey	0	-
C G O V T D O C S	**ID77** Kerala State Mental Health authority website	N	Kerala	2010-11	**2011: 25.3** 2010: 24.8 2009: 25.5 2008: 25.2 2007: 26.6 2006: 27 2005: 27.9 2004: 27.7 2003: 29.6 2002: 30.8 2001: 30.1 2000: 28.8 1999: 30.6 1998: 29.4 Note: has rates from 1991-1997 also	M:F ratio= 3:1	Kerala state MH authority website		Hanging: 57% Poisoning: 26%
	ID78 Accidental Deaths & Suicides in India, 2011 (same doc as ID79, 80, 85 below)	Y	All India	2001-11	**2011:11.2*** 2010:11.4* 2009:10.9* 2008:10.8* 2007:10.8* 2001:10.6*	M:F ratio: 64.8:35.2 (AK recalculation: 1.84:1)	The Registrar General of India (original source document for official national data)		-
	ID79 Accidental Deaths & Suicides in India, 2011 (same doc as ID78, 80, 85)	Y	All India	2011	11.2*	(All 88 cities rates available but not reported here.)	The Registrar General of India		-
	ID80 Accidental Deaths & Suicides in India, 2011 (same doc as	Y	All India	2010-11	-	Highest suicide increases: Nagaland (175%), Meghalaya (41.7%) and Uttarpradesh (33.5%)	The Registrar General of India		-

		ID78, 79, 85)								
		ID85 Accidental Deaths & Suicides in India, 2011 (same doc as ID78, 79, 80)	Y	All India	2011	-	-	The Registrar General of India		Hanging 33.2%, Poison: 32%; Fire/self-immola-tion: 8.8%
		ID4a Accidental Deaths & Suicides in India, 2002	Y	All India	2002	2002:10.5 2001:10.6* 2000:10.8 1999 11:2* 1998:10.8* 1992: 9.2	2002: M:F ratio: 63:37 (1.7:1)	The Registrar General of India (based on NCRB data)		
		ID4b Accidental Deaths & Suicides in India, 2003	Y	All India	2003	2003:10.4	2003:M:F: 63:37 (1.7:1)	The Registrar General of India (based on NCRB data)		
		ID4c Accidental Deaths & Suicides in India, 2004	Y	All India	2004	2004:10.5	2004:M:F: 64:36 (1.78:1)	The Registrar General of India (based on NCRB data)		
		ID4d Accidental Deaths & Suicides in India, 2005	Y	All India	2005	2005:10.3	2005: M:F: 64:36 (1.78:1)	The Registrar General of India (based on NCRB data)		
		ID4e Accidental Deaths & Suicides in India, 2006	Y	All India	2006	2006:10.5	2006: 64:36 (1.78:1)	The Registrar General of India (based on NCRB data)		
		ID4f Accidental Deaths & Suicides in India, 2007	Y	All India	2007	2007:10.8*	2007: 65:35 (1.86:1)	The Registrar General of India (based on NCRB data)		
		ID4g Accidental Deaths & Suicides in India, 2008	Y	All India	2008	2008:10.8*	2008: 64:36 (1.78:1)	The Registrar General of India (based on NCRB data)		
		ID4h Accidental Deaths & Suicides in India, 2009	Y	All India	2009	2009:10.9*	2009: 64:36 (1.78:1)	The Registrar General of India (based on NCRB data)		
		ID4i Accidental Deaths & Suicides in	Y	All India	2010	**2010:11.4***	**2010 M:F: 65:35 (1.86:1)**	The Registrar General of India (based on NCRB		2010: Poisoning 33.1%

		India, 2010						data)		Hanging 31.4% Self-immolation 8.8% (BUT in cities, hanging leads)
		ID27 Suicide rates, India, WHO	Y	All India	1980-2009	**2009: 10.5** 2005: 9.9 2000: 10.6 1995: 9.6 1990: 8.9 1985: 7.1 1980: 6.3	**2009, M:13.0 , F:7.8** 2005: M:12.3, F:7.4 2000: M:12.6 , F:8.6 1995: M:10.9, F: 8.2 1990 M:10.5, F: 7.3 1985: M:8.2 , F: 6.0 1980: M: 7.3, F:5.3	NCRB; MoHA (but via WHO)		
		ID2 Report on Causes of Death in India, 2001-03	Y	All India	2001-3		Intentional self -harm (suicide)= leading cause of death in 15-24 (15.6%) and 25-34 (10.2%) age groups	Survey of Deaths under SRS; Verbal autopsy method (RHIME method)		-
		ID14b Study of domestic burns in young women, from Mental Health Research in India	Y	Female burn victims	1988	-	-	Psychological autopsy		Self-burning
	D G R E Y L I T	**ID39** Suicides in India, Maithri	Y	All India	1989-2011	**2011:11.2*** 2010:11.4 * 1989:8.47 (Rates by state given but not reported here)	-	NCRB	-	-
	D P U B	**ID92** Cause of death among reproductive age women in rural N. India	N	WRA, Rural N India	2006-11	-	Suicide =10.2% of overall deaths	Medical records	-	-
		ID7 Suicides in Northern India Comparison of trends & review	N	Punjab, Haryana and Himachal Pradesh	2005	-	Suicides = 44.7% of total unnatural deaths. Increase in the percentage of suicides from 34% in 1996 to 49% in 2005	Hospital and inquest records; then police and family info		Poison= 47% Self-immolation: 39%. Hanging: 8%

		of lit								
	DG	**ID21** Suicides in Kerala: an analysis	N	Kerala	1995-2002	**2002:30.24*** 2001:29.74* 2000:29.22* 1999:31.00* 1998:29.79* 1997:28.96 1996:26,38 1995:26.38 Note: starred rates are duplicative of Kerala Mental Health Authority rates (ID77)	**2002:M:F ratio:73: 27** **Rates:M:38.06, F:15.35** 2001:M: 42.72, F:16.85 2000:M:42.72, F:16.46 1999:M:44.72, F:18.04 1998:M:42.84, F:17.45 1997:M:41.33, F:17.26 1996:M:36.35, F:16.95 1995:M:38.06, F:15.35	NCRB		
	DP	**ID41** Suicide Mortality Rates across States of India, 1975-2001: A Statistical Note	Y	All India Age adjusted 5 yrs +	1975-2001		**2001, M:14.0, F: 9.5** 2000, M:14.2, F: 9.8 1999, M:14.4, F:10.6 1998, M:13.8,F:10.4 1997: M:12.9, F:9.7 1996:M:11.9, F:9.3 1995: M:12.5, F9.5 1990, M:11.5, F:8.7 1985, M:9.0, F:7.1 1980, M:8.0, F:6.2 1975, M:9.7, F:6.8	NCRB		
SRI LANKA	**A** **P** **U** **B**	**CA11** Age & sex specific suicide rates in Sri Lanka 1995-2011	Y	All Sri Lanka	1995-2011	-	2011 M:F ratio=: 3.76: 1 **2011: M: 34.8, F: 9.24** 2005: M: 46.04, F: 12.47 2000: M: 51.75, F: 17.3 1995: M: 89.94, F:30.79	Suicide data from police records, population data from WB database	2	-
		CA49 From pes-ticides to medicinal drugs: time series analyses of me-thods of self-harm in Sri Lanka	Y	All Sri Lanka	1995-2009	**2009: 19.6** 1995: 47.0*	-	Police records and MoH data	2	-Self-Poisoning -Non-poison-ing methods -No % but rates showing reduction of 26.2/ 100,000 for poisoning & only 1.5 for non-poison-

									ing over time)
	CA13 Study of suicides reported to the Coroner in Colombo, Sri Lanka	N	Catchment area Colombo Coroners Court	2006	-	-	Coroners court inquest verdicts	0	Self-poisoning: 44% Self-immola-tion: 34% Hanging 11%
	CA57 Suicide trends in Sri Lanka 1880-2006	Y	All Sri Lanka	1880-2006	**2005: 24.1** 2000: 28.0* 1995: 47.0* 1990: 38.5 1985: 38.7 1980: 34.8 1975:17.7 1970: 19.2 1965:13.7 1960: 9.9 1880: 2.3	**2005:M:F 3.7;M:38.2, F:10.4** 2000 M:F 3.0;M:44.1,F:14.8 1995:M:F 2.7;M:68.3,F:25.2 1990:M:F 2.9;M:56.8,F:19.5 1985:M:F 2.2;M:48.8,F:22.3 1980:M:F 2.1:M:46.7,F:22.1 1975:M:F 2.2;M:24.0,F:11.1 1970:M:F 2.3;M:26.3,F:11.5 1965:M:F 2.3;M:18.7,F: 8.2 1960:M:F 2.0;M:12.7,F: 6.3	Police data	2	-
	CA72 Patterns of hospital transfer for self-poisoned patients in rural Sri Lanka	N	Population Anuradhapura district	2002	For fatal self-poisoning: 27.0	-	Medical records	2	Self-poisoning (only method studied)
	CA2 Psychological autopsy study of suicide in three rural & semi-rural districts of Sri Lanka	N	Population 3 rural districts: Kurunegala Hambantota Anuradhapura	1997	71.0 (avg of 3 sites, range from 54/ 100,000 to 84/100,000)	-	Community based psychological autopsies	3	Self-poisoning: M=70.0%; F=68.4% Hanging: M= 12.6; F= 3.8%
	CA62 Global suicide rates among young people aged 15-19	N	15-19 Year olds globally	1980-1986 (SR data)	1986: 46.5	M: 43.9; F: 49.3	WHO mortality database 2004	4	-
C **G** **O** **V** **T**	**SD79** Crime trends, Sri Lanka Police Website	Y	All Sri Lanka	2005-2011	--	Absolute numbers **2011: M:F ratio: 2939:831 (AK recalc: 3.54:1)** 2010 (1/2 yr only): M:F: 1531:492 (3.11:1) 2009: M:F: 3097:921 (3.36:1) 2008: M:F: 3260:860 (3.79:1)	Police		Pesticides: M:1447/ 2939 F: 310/831 Hanging (strangling) M:1122/

						2007: M:F: 3281:944 (3.48:1) 2006: M:F: 3558:946 (3.76:1) 2005: M:F: 3708:1034 (3.59:1			2939 F: 224/834
		SD80 Suicide rates by gender and age, WHO website	Y	All Sri Lanka	1996	**1996: 21.6** 1991:31.0 1985: 35.8 1980: 29 1967: 16.9 1960: 9.9 1955: 7.4 1950: 6.5	-- M: 44.6, F: 16.8 M: 48.8, F: 22.3 M: 37.3, F: 19.7 M: 23.3, F: 10.0 M. 13.2, F: 6.0 M: 9.8, F: 4.8 M: 9.6, F: 3.9	WHO Website		
	D **G** **R** **E** **Y**	**SD66** Sri Lanka Sumithrayo Rural Program Annual Report	N	80 of most suicide prone villages in the Northwestern and Southern provinces	2009-10	**2010: 37.6** 2009: 32.98 2008: 26.9 2007: 38 2006: 32.8 2005: 37.78 2004: 29.23 2003: 41.8		Police records		Poisoning Hanging
		SD70 Suicide in Sri Lanka: Past, Present & Future Transforma-tions	N	WRA	2002-10	-	12.1/100,000 live births	Maternal Mortality Surveillance system		Poisoning: 38% Burns 23%) Hanging 16%
		SD78 Sumithrayo website	Y	All Sri Lanka	1993-2009	**2009:20.3** 2008: 20.4 2007: 21.1 2006: 22.7 2005:23.2 2004: 24.2 2003:23.1 2002:23.8 2001:25.4 2000:28.0* 1999:31 1998:31.1 1997:34.6 1996:40.1 1995:47 1994:43.1 1993:41.7	Has absolute numbers of males and females for all years	Pop figures: Census and Statistics Dept; Suicide figures: Police Dept		
		SD57 Suicides among children in	N	Monaragala District; Children aged	2000-6		**<u>Wellawaya</u>** **2005, M: 35, F: 24** 2004, --	Local police data, Official documents; qu'airre survey;		Ingestion of pesticide 80-82%

		Monaragala District in Sri Lanka		15-19			2003, M: 12, F: 12 2002, M: 12, F: 12 2001, M:24, F: -- **<u>Thanamalwila</u>** **2006, M: --, F: 50** 2005, M: --, F: 25 2004, M: --, F: 51 2003, M: --, F: 26 2002, M:25, F: 52 2001, -- 2000: M: 26, F: 27 Note: We assume that rate is 0 for years that do not show a rate overall, or a rate for one or the other sex.	interviews		
		SD56 Suicide report from Psycho-social Forum of Consortium of Humani-tarian Assn	N	Population Trincomalee	2004-5	27.4		Hospital and police records		Men: poisoning or hanging Women: burning
		SD59 National Report on Violence & Health Sri Lanka	Y	All Sri Lanka	1880-2004	2001: 26.5	2004, M:F ratio: 3.5:1	Department of Health Services. Annual Health Bulletin 2002		2004 Poison: 63.4%
		SD60 Suicide among women in Sri Lanka	N	Catchment area Coroners' Courts Colombo	2000-4	-	Suicides= 4-6% of sudden deaths M:F ratio = 1.6:1	Coroner's records of sudden deaths		Men: self-poisoning Women: self-immola-tion
	D **P** **U** **B**	**SD25** Intention-al self-poisoning in rural Sri Lanka	N	Population of rural area, southern Sri Lanka	1990-2002	-	Median incidence rate for self-poisoning (not suicide in general) = 158 Note: Rate does not seem to refer to fatal self-poisoning only: "focus of present study is on incidence [of self poisoning] not mortality."	Recorded hospital admissions		Self-poisoning (only method studied)
	DG	**SD62** Youth suicides in Sri Lanka	N	Youth of Anuradhapura, Kurunegala and Hambantota, districts	Aug-Oct, 1997	104	M:F ratio: 1.28	Police, hospital, coroner, Registrar, Samurdhi Agents.		Pesticides: 76%

BANGLADESH	**A P U B**	**CA14** A community survey on the prevalence of suicidal attempts & deaths in a selected rural area of Bangladesh	N	Population Sadar Upazilla of district Chuadanga	2009-10	128.8	M: 77.9, F: 183.1	Community-based survey	3	Common methods (NO ORDER): hanging, ingestion of insecticides, burning, jumping in front of train
		CA66 Suicidal death autopsy analysis at Dhaka Medical College	N	Catchment area Forensic Dept, Dhaka Medical College	2008-9	-	Suicide= 19% total deaths studied Female: 60.1% Male: 39.9%	Medical autopsy reports	1	Hanging 59% Poisoning: 31%
		CA76 Manner of deaths at a selected medical col-lege morgue house	N	Catchment area Salimullah medical College, Dhaka	2008	-	Suicide= 20.4 % total deaths studied (2nd leading cause of death) M: 68.75%, F: 31.25%	Medical autopsy reports	0	-
		CA65 Mortality due to suicide in rural Bangladesh	N	Population rural and semi-urban sub districts of Jessore District	1983-2002	39.6 (Annual range: 10.7-119.5)	Suicide= 8% total deaths studied (5th most common cause of death) (Note:absolute numbers, percents age/gender data available)	Autopsy records	1	Poisoning: F =84%, M=72%
		CA25 Study on unnatural death patterns in Dhaka City	N	Population Dhaka metro city	1996-2000	-	Suicides: 10.76% total deaths studied M: 26.55%, F: 73.45% of suicide deaths	Medical autopsy reports	1	-
		CA19 Risk factors of violent death in rural Bangladesh, 1990-1999	N	70 Villages covered BRAC DSS	1990-9	6.6	Suicide: 3rd main cause of violent deaths (AK: 23.43%) Suicide deaths higher among women than men AK:M:F= 0.47:1	DSS; verbal autopsy method	5	-
		CA5 Violent deaths among women of reproductive age in rural Bangladesh	N	Bangladesh WRA	1982-1998	-	Suicide rates per 10,000 person years: Males: 0.8 Females: 1.3 AK: 5.48% suicide of total deaths	Longitudinal DSS; Death registration forms (verified by family interviews)	5	-
		CA67 (BD28) A ten year retrospective	N	Catchment area of Dhaka mortuary	1988-1997	-	Suicides: 18.43% total post-mortem cases M: 54.18%, F: 45.82	Autopsy reports	2	Where docu-mented (178/467):

		study of suicide cases reported at Sir Salimullah Medical College Mortuary								Poisons: 58.46% Hanging: 40.90%.
		CA21 A ten year retrospective study of suicide cases reported at Sir Salimullah Medical College Mortuary Note: CA21 & CA67 are same study, different articles.	N	Catchment area of Dhaka mortuary	1988-1997	-	Note: because CA21 and CA67 are the same study, different articles, data only entered once. See above.	Autopsy reports	2	
		CA63 Causes of death among women aged 10-50 years in Bangladesh, 1996-1997	Y	Women aged 10-50	1996-7	9.0	Suicide= 10.7% all deaths studied, 47% of injury deaths studied (AK: From tables, suicide appears to be 3rd leading single cause of death, & single leading cause of death among 15-19 yr olds, although not highlighted by authors.)	Case reports from medical records and health service staff interviews	3	-
		CA41 Mortuary profile for unnatural deaths at Forensic Med Dept, Dhaka Medical College	N	Catchment area Dhaka Medical College, Dhaka city	1996	-	Suicide accounted for 8% unnatural deaths. M:F= 1.7:1	Medical autopsy reports	2	Poisoning Hanging
	C G O V T	**BD46** Mortality Profile Bangladesh 2011	N	Catchment area of 451 govt health facilities	2011	-	Suicides = .09% of all deaths reported	Govt. health facility reports		-
		BD34a	Y	All Bangladesh	2003-10	-	Only absolute figures for	Police headquarters'		Poisoning

		Record of unnatural death in Bangladesh, 2003-2010					numbers of suicides	records		(absolute figures given-show in-crease over study years)
		BD13a Suicide report of 6 subdistricts of Jheneidah District, 2003-2012	N	Population Jheneidah district	2003-2012	-	Annual absolute numbers of attempts, deaths, disaggregated by sex and means	Police (district and subdistrict) and hospital records		Hanging Poisoning/ sleeping pills
		BD47a Suicide report of 6 subdistricts of Jheneidah District, 2012	N	Population of Jheneidah district	2011	-	Monthly absolute numbers of attempts, deaths, disaggregated by sex and means	Police and hospital records		Poisoning/ sleeping pills
	D G R E Y	**BD35** Health & demographic surveillance system, Matlab Rrgistration of health & demographic events 2010	N	Population of Matlab	2010	-	Rates /1000: Service group: M: 11.07 F: (6.61) Control: M: (9.49) F: 10.20 Not included in analysis (rates/1000)	DSS	(NOTE: BD35-44: v. small sam-ple sizes. Absolute numbers suicides between@ 10-20)	-
		BD36 HDSS, Matlab Registration of health & demographic events 2009	N	Population of Matlab	2009	-	Rates /1000: Service group: M: (4.71) F: 12.81 Control: M: (1.64) F: 9.75 Not included in analysis (rates/1000)	DSS		-
		BD37 HDSS, Matlab Registration of health & demographic events 2008	N	Population of Matlab	2008	-	Rates /1000: Service group: M: (1.47) F: (4.65) Control: M: 8.42 F: (6.97) Not included in analysis (rates/1000)	DSS		-
		BD38 HDSS, Matlab	N	Population of Matlab	2007	-	Rates /100,000: Service group:	DSS		-

		Registration of health & demographic events 2007					M: 0 F: (4.76) Control: M: 11.05 F: 9.59			
		BD39 HDSS, Matlab Registration of health & demographic events 2006	N	Population of Matlab	2006	-	Rates /1000: Service group: M: (4.60) F: (1.48) Control: M: (7.41) F: 14.28 Not included in analysis (rates/1000)	DSS		-
		BD40 HDSS, Matlab Registration of health & demographic events 2005	N	Population of Matlab	2005	-	Rates /100,000: Service group: M: (1.56) F: 13.28 Control: M: (3.86) F: (4.75)	DSS		-
		BD41 HDSS, Matlab Registration of health & demographic events 2004	N	Population of Matlab	2004	-	Rates /100,000: Service group: M: (4.43) F: 0 Control: M: 9.54 F: 9.61	DSS		-
		BD42 HDSS, Matlab Registration of health & demographic events 2003	N	Population of Matlab	2003	-	Rates /100,000: Service group: M: 0 F: (2.68) Control: M: (2.57) F: (1.63)	DSS		-
		BD43 HDSS, Matlab Registration of health & demographic events 2002	N	Population of Matlab	2002	-	Rates /100,000: Service group: M: (5.72) F: 9.93 Control: M: (4.97) F: (1.39)	DSS		-
		BD44 HDSS, Matlab	N	Population of Matlab	2001	-	Rates /100,000: Service group:	DSS		-

		Registration of health & demographic events 2001					M: 2.75 F: 2.82 Control: M: 11.17 F: 1.66			
		BD7 Mortality due to suicide & homicide in rural Bangladesh	N	Married WRA	1983-2002	-	Suicide and homicide: 5% of all deaths 90% suicide, 10% homicide. Deaths due to suicide & homicide higher among females (65%), of which 40% aged below 19 years, 36% 20-29	DSS: verbal autopsy; household survey		-
NEPAL	**A P U B**	**CA48** A review of violent & traumatic deaths in Kathmandu, Nepal	N	Catchment area Forensic Medicine dept. Kathmandu	2000-2004		Suicide= 25% total fatalities studied (second leading cause after accidents)	Autopsy records	0	Hanging: 54% Posioning 14% Burns: 5% Undeter-mined: 23%
		CA47 Leading causes of mortality from diseases & injury in Nepal	Y	All Nepal	2001	7.0 (overall) 9.0 (15-65 years)	Suicide= 9th leading cause of death for all ages M: 8/100,000 M: 10 (15-65 yrs) F: 5/100,000 F: 8 (15-65 yrs)	2001 census sample survey	1	-
	C G O V T	**ND4** Suicide Record 2009/10 to 2011/12	Y	All Nepal	2009-12	-	Absolute numbers of suicides, broken out by sex, means **2011/12: M:F ratio: 1942:1906 (AK recalc: 1.02:1)** 2010/11: M:F: 1904:1663 (1.14) 2009/10: M:F: 1820:1507 (1.21)	Police records		Hanging Poison Self-burning
		ND6 Causes of death of foreign workers	N	Nepalese foreign employees	2007-12	-	Absolute numbers of suicides and other deaths	Foreign Employment promotion board reports		-
		ND7 Foreign labor migration & trafficking in persons in Nepal	N	Nepalese foreign employees	2007-12	-	Suicide= 9.4% of all deaths of Nepali foreign labor migrants May 2008 – Sep 30, 2012.	Foreign Employment promotion board reports		
		ND9 Epidemiolog-ical	Y	All Nepal	2007-8	-	Absolute numbers of suicides from hospital records	Tertiary care center records		-

		study on injury & violence inNepal								
		ND1 Nepal Maternal Mortality & Morbidity Study 2008/2009	Y	WRA in all Nepal	2008	-	Suicide = 16% of all deaths (10% in 1998) Suicide = nearly 50% non-maternal pregnancy related deaths Suicide= leading individual cause of death for WRA	The Maternal Death Review (endorsed by WHO); verbal autopsy method		Poison (mainly pesticides): 57% Hanging: 39%
	D G R E Y	**ND33** Legal study of suicide inci-dents or cases & collaborating factors in Nepal	Y	All Nepal	-	-	Absolute numbers of suicides, broken out by sex, means	Newspaper reports		Hanging: 54% Jumping into rivers/ off buildings:17% Poisonings: 14%
		ND16 Assessment of psycho-social needs & suicide risk factors among Bhutanese refugees in Nepal & after third country resettlement	N	Bhutanese refugees in Nepal	2004-11	2009/10: 20.76 (from table) Note: figures below from graph & not exact, there-fore not included in analysis **2010: 19-20** 2009: 18-19 2008: 5-6 2007: 2-3 2006: 6-7 2005: 11-12 2004: 11-12	-	Certified cases from UNHCR database		Hanging (almost all)
		ND14 Acid & burns violence in Nepal, a situational analysis	N	Victims and survivors of acid and burn violence	2003-9	-	Rate of suicide increase @ 10% compared to population increase of @ 3% from 2003/4-2007/8.	Police data/ secondary lit		Self-immolation (only method studied)

		ND22 Security & justice in Nepal, district assessment findings	N	Banke, Jumla, Kailali, Nawalparasi, Siraha and Sunsari districts	2008-9		Banke district, suicide= 24.34% of total police cases (73/204) (2nd[d] most common after vandalism) Nawalparasi: attempted suicide 31.48% of total police cases (85/270)	District Police records		
		ND17 A review of the evidence: suicide among women in Nepal	Y	WRAs (15-49) in Nepal	2008	**Police data, overall pop rates** **09/10 = 4.7** 08/09 = 2.5 07/08 = 3.0 06/07 = 3.5 05/06 = 4.3 04/05 = 5.8 03/04 = 4.9 **MMMS data, WRAs:** **08/09: 28** 1998: 22	Police data for women reprod. age: 08/09 = 6.1	Multiple secondary sources		**Police data, 2003-2011:** Hanging: 59% Poison: 35% MMMS, 2008, WRAs, 15-50: Poisoning: 56% Hanging: 41%
PAKI-STAN	**A P U B L I S H E D S T U D I E S**	**CA28** Epidemiology of suicide in Pakistan: determining rates in six cities	N	Study populations of systematic review: Larkana, Rawalpindi, Peshawar, Lahore, Faisalabad, Karachi	1993-2006	**2006, Rawalpindi: 2.86** 2002-4, Larkana: 2.6 1998-2001, Faisalabad: 1.12 1995-2001, Karachi: 2.12 1991-2000, Peshawar: 0.43 1993-1995, Lahore: 1.08 (Lahore not included in analysis: pre 1998.)	2006 M:F ratio: 16:1 M: 5.2, F:0.34 2002-4, M:F ratio: 2:1 M: 3.3, F:1.77 1998-2001 M:F ratio: 2.3:1 M: 1.51, F:0.68 1995-2001, M :F ratio: 1.6:1 M: 2.49, F:1.70 1991-2000 M :F ratio: 2.9:1 M: 0.61, F: 0.23 1993-1995, M :F ratio: 1.8:1 M: 1.3, F:0.79 (Lahore not included in analysis: pre 1998.)	Systematic review: Suicide studies of at least 1 year over last 20 years	3	-
		CA26 Female suicide rates in Ghizer, Pakistan	N	Women in Ghizer District	2000-4	14.89	Women over 15: 33.22 Women 15-24: 61.07	National and local newspaper reports (verified with qu'airre for police,	5	Jumping in river/lake: 40% Poison: 33%

								health personnel religious leaders etc.)		Hanging/ Strangula-tion: 11%
		CA44 Epidemiology of suicide in Faisalabad	N	Population of Faisalabad	1998-2001	1.12 (average)	M:F Ratio= 2.4: 1 Suicide=10.3% total autopsies reviewed	Autopsy reports (subsequent family interviews, police inquests and crime scene visits)	2	Hanging: 51.51% Firearm: 18.17% Poisoning: 15.15%.
		CA27 Suicides in the developing world: case study from Pakistan	N	Population of province of Sindh	1985-1999	1.15	M:F Ratio overall: 2.5	Police records	2	Poisoning: 40% Hanging: 27% Drowning: 17%
	C	**PD1-7** (7 docs) Suicide report from the Human Rights Commision of Pakistan	Y	All Pakistan	2004-11	-	Absolute numbers of suicides, broken out by sex, means, marital status, etc. **2011: M:F ratio:1411:704 (AK recalc: 2.0:1)** 2010: M:F: 1677:718 (2.34:1) 2009: M:F: 1270:563 (2.26:1) 2007: M:F: 1371:692 (1.98:1) 2006: M:F: 1429:766 (1.87:1) 2005: M:F: 1037:520 (1.99:1) 2004: M:F: 197:527 (0.37:1)	Various secondary sources including press and international agency reports		Poisoning most common by far all years, followed by shooting and/or hanging
AFGHA-NISTAN	**DG**	**AD12** Suicide attacks in Afghanistan (2001-2007)	Y	Afghan suicide attackers	2002-2007	-	-	UNDSS Database system		Body borne and vehicle borne suicide attacks using explosive material
ASIA	**DG**	**ID93** Suicide prevention in Asia,WHO	Y	All India	2002	17.38	M:F ratio=1.2:1 Male rate: 18 Female rate: 15	2002 suicide estimates: WHO (2007)		Poisoning: 38% Hanging: 29%
				All Sri Lanka	2003	23.9		2003 suicide estimates: National Police Department statistics		Poisoning by pesticides: 40-80%

ANNEX 2: QUALITY APPRAISAL TOOL FOR DESCRIPTIVE SUICIDE STUDIES[5]

Authors	Year	Title	Journal

Q	What source of data is used to establish committed suicides?	

		Yes (satisfied all criteria)	Some (some criteria)	No (not satisfied)	N/A (not applicable)
	1. Sample **Does the survey design yield a sample of respondents representative of a defined target population?**				
1	**Is the target/catchment population defined clearly?** *Are eligibility criteria defined? Is the source population appropriate (denominator)?*				
2	**Is the sampling method clearly described and adequate?** *Is the method of participant inclusion given (i.e. committed suicide)? Is the source of the sample clearly stated? Is a definition given? If relevant, was randomization used?*				
3	**Do the characteristics of respondents match the target population?** *Is the sample representative of the population from which it was drawn? Is sample size adequate?*				
	2. Measurement **Do the survey instruments yield reliable and valid measures of committed suicides?**				
4	**Are the data collection methods standardized?** *Is the case identification complete (all relevant people included)?*				
5	**Are the instruments/ ways in which suicide was established [6] *reliable*?** *Are psychometric properties of instruments acceptable and accurate?*				
6	**Are the survey instruments/ ways in which suicide was established [1] *valid*?** *To assess suicide rates, are multiple data sources used? Was an external source used to verify death as suicide?*				
	3. Analysis				
7	**Are you confident with the authors' choice and use of statistical methods?** *Do the reports include rates and confidence intervals for statistical estimates?*			IF NO → Q8 IS N/A	
8	**Are data accurately presented?** *There is no confusion in regards to any data? Do all data/ numbers add up?*				↓

[5] Adapted from: Boyle (1998). Guidelines for evaluating prevalence studies. Evidence Based Mental Health, 1, 37-39

[6] Includes method of establishing suicide, such as national death certification, post mortem (psychological) autopsy, police records

ANNEX 3: SEARCH PROTOCOL[7]

1. BACKGROUND

There are multiple indications that suicide in South Asia is a growing and serious public health problem, however, there have not been either systematic or scoping reviews of the literature on suicide incidence/rates in individual South Asian countries or for the region overall. DFID UK has recently contracted with HealthNet TPO, an Amsterdam-based INGO that works in health and mental health systems development in fragile settings, to undertake a scoping review of the literature on suicide rates in six countries of South Asia: Afghanistan, Bangladesh, India, Nepal, Pakistan and Sri Lanka. The scoping review will summarize available literature and reports in a way that is accessible to policy makers and development practitioners, as well as researchers. The review will take place during the period November 19, 2012-August 13, 2013.

2. PURPOSE/OBJECTIVE

The purpose of this scoping review is to map the existing evidence on suicide incidence/rates in South Asia in order to facilitate research-informed decisions on the need for further research, policy advocacy and/or responses to the problem of suicide in South Asian countries.

3. SCOPE OF INQUIRY

The primary review questions are:

1. What are the estimated rates of suicide in the six South Asian countries?
   i. Are there reported gender and age differences?
   ii. What methods of suicide are reported?
   iii. Are official national suicide rates available for any of the six countries?

2. What methodologies have been used to establish these rates?
   i. What definitions of suicide are used in establishing rates?
   ii. What is the quality of the methods used to establish these rates?
   iii. What are the strengths and limitations of the methodologies used?

Secondary questions are:

3. How do suicide rates in South Asia compare with rates found in other LAMIC settings (limited to high quality studies)?

[7] Abbreviated from Final Protocol, March 6th 2013. Protocol after consultation with review committees and as approved by DFID

i. What are best research practices for gathering and analysing suicide incidence/rates in global literature?

In addition, if time permits, and the search, using the methodology outlined below, produces literature that contains significant information on suicidal ideation and non-fatal suicidal behaviors, risk and protective factors, and prevention strategies, the review team will consider these tertiary questions:

4. What is reported, in the searched body of literature, on prevalence of suicidal ideation and behaviours?
5. What is reported, in the searched body of literature, on risk and protective factors associated with suicide and suicidal ideation?
6. What is reported, in the searched body of literature, on suicide prevention strategies?

We will not, however, be conducting a separate search (or including separate search terms) for prevalence of suicidal ideation, risk and protective factors, and prevention strategies.

4. METHODS

We will follow a modified version of the Arksey and O'Malley framework for conducting a scoping review. A scoping review 'maps' the main sources and types of evidence relevant to a key research area. It differs from a systematic review in a number of key ways, as described in this 2005 paper published in the International Journal of Social Research Methodology:

> "The method adopted for identifying literature in a scoping study needs to achieve in-depth and broad results. Rather than being guided by a highly focused research question that lends itself to searching for particular study designs (as might be the case in a systematic review), the scoping study method is guided by a requirement to identify all relevant literature regardless of study design. It is likely that as familiarity with the literature is increased, researchers will want to redefine search terms and undertake more sensitive searches of the literature. To this end, the researcher may not wish to place strict limitations on search terms, identification of relevant studies, or study selection at the outset. The process is not linear, but iterative, requiring researchers to engage with each stage in a reflexive way and, where necessary, repeat steps to ensure that the literature is covered in a comprehensive way." (Arksey and O'Malley, 2005)

This scoping review follows the 5 stages described by Arksey and O'Malley:

Stage 1: Identifying the research questions

Stage 2: Identifying relevant studies

Stage 3: Study selection

Stage 4: Charting the data

Stage 5: Collating, summarizing and reporting the results

For this scoping review of literature on suicide rates in South Asia, we will undertake a carefully structured search for and review of published literature, as well as unpublished reports and data on suicide incidence/rates for the following six South Asian countries: Afghanistan, Bangladesh, India, Nepal, Pakistan, and Sri Lanka. This body of literature will be analyzed for reported suicide rates, as well as for quality of research methods used. Quality of studies will be evaluated using pre-determined guidelines for reporting of observational studies. Guidelines will be selected/ developed on the basis of a review of different tools to assess quality of observational studies such as the STROBE guidelines for reporting of observational studies. The selected publications will further be assessed for methods of committing suicide. In addition to searches of online databases, we will make use of an advisory group and in-country consultation with key national stakeholders to broaden the search strategy for national data and access reports that have not been published in academic journals or are available online.

4.1. Definitions

Suicide. Although a significant body of literature on suicide exists, definitions of suicide may vary. The CDC defines suicide as "death caused by self-directed injurious behavior with any intent to die as a result of the behavior"

(http://www.cdc.gov/violenceprevention/suicide/definitions.html.) WHO defines suicide as the act of deliberately killing oneself (http://www.who.int/topics/suicide/en.)The codes for suicide in the International Classification of Diseases (ICD) 2010 are those in the range X60–X849, referring to self-harm and including suicides due to a pesticide or an unspecified poison (X68–X699), other poisons (X60–X679), hanging (X70–X709), drowning (X71–X719), firearms and explosives (X72–X759), and jumping from a height (X80-X809), as well as other suicide methods. Some countries extend the classification of suicides to injury and poisoning ***of undetermined intent*** (Y10–Y34) and to sequelae of intentional self-harm / injury/poisoning of undetermined intent (Y87.0 / Y87.2) http://www.ons.gov.uk/ons/rel/subnational-health4/suicides-in-the-united-kingdom/2010/stb-statistical-bulletin.html#tab-Context-of-suicide-statistics. This review will carefully document and compare definitions and classification systems used in the literature reviewed.

Suicide incidence or ***suicide rate*** refers to the number of people who commit suicide in a given population during a given period of time. Suicide rates are generally calculated per 100,000/population over the period of a year. As noted above, the classification system used to calculate rates may be a significant variable in comparing rates across countries and populations.

4.2. Search strategies

This scoping review will identify several types of documents related to suicide rates in South Asia, as well as, for comparison, high quality studies on suicide rates in non-South-Asian low and lower middle income countries:

A. Systematic review of all published suicide studies in South Asia

i. Suicide incidence/rates
ii. Methods of estimating rates
iii. Methods of committing suicide

Sources/ databases

On-line only search of the following databases for academic literature:

- Pubmed/Medline
- EMBASE
- PsychLIT/ PsycINFO
- SafetyLit
- World Health Organization Regional Databases for EMRO and SEARO regions

Online search of key national-level journal databases in South Asia, including:

- banglajol,info
- medindia.net
- nepjol.info
- pakmedinet
- sljol.info

References of all identified studies will be checked to identify further studies of relevance to the systematic review. All first authors of identified studies will be contacted to request if other studies are available.

Search terms[8]

- Suicid* AND South Asia
- Suicid* AND Afghanistan
- Suicid* AND Bangladesh
- Suicid* AND Bhutan
- Suicid* AND India
- Suicid* AND Maldives
- Suicid* AND Nepal
- Suicid* AND Pakistan
- Suicid* AND Sri Lanka

Inclusion/ exclusion criteria

Studies will be ***included*** if they:

- Have been published in a peer reviewed journal
- Have a publication date between 2002-2013
- Are in the English language
- Report primary data or are systematic reviews

[8] We are aware that these terms constitute a broad search strategy. This is to ensure that we are not missing relevant documents (in line with the goals of a scoping review.) Furthermore, the terms have been pilot tested and have delivered relevant and manageable results.

- Describe suicide incidence/rates and methodology used to estimate suicide rates

Studies will be ***excluded*** if they:

- Were published before 2002
- Are not English language
- Are editorial or conceptual papers

The process of determining inclusion or exclusion will follow these steps. First, based on above-mentioned inclusion criteria all records retrieved through searches will be assessed on the bases of title and/or abstract. Second, if criteria have been met, or there is some question about whether these criteria have been met, the publication will be selected for full review by at least two collaborators independently. Third, after full review, a final number of articles will be included in the study. Fourth, data from all included articles will be extracted for analysis in spreadsheets (see below) and cross-referenced.

B. Grey-literature search of suicide in South Asia

i. Suicide incidence/rates
ii. Methods of estimating rates
iii. Methods of committing suicide

Sources/ databases

- Contact experts in the field; (a) authors of published academic studies on suicide in South Asia that have come up in component A above, (b) member organizations in developing the IASC MHPSS Guidelines, and (c) and other key organizations and individuals coming up in searches.
- Internet searches (agencies: UN, large INGOs, regional MH/PS networks and institutions)

Inclusion/ exclusion criteria

Studies and other reports will be ***included*** if they:

- Have a publication date between 2002-2013
- Are in the English language
- Describe suicide incidence/rates and methodology used to estimate suicide rates

Studies and other reports will be ***excluded*** if they:

- Were published before 2002
- Are not English language
- Are editorial or conceptual papers

The process of determining inclusion or exclusion will follow these steps. First, based on above-mentioned inclusion criteria all records retrieved through searches will be assessed on the bases of title and/or abstract or executive summary, and/or table of contents, and/or major findings section, and/or tables in document. Second, if criteria have been met, or there is some question about whether these criteria have been met, the publication will be selected for full review by at least two collaborators independently. Third, after full review,

a final number of articles will be included in the study. Fourth, data from all included articles will be extracted for analysis in spreadsheets (see below) and cross-referenced.

C. In-country search of official national figures

i. Suicide incidence/rates
ii. Methods of estimating rates
iii. Methods of committing suicide

Sources/ databases

- Individual stakeholder consultations with key Government officials and local office of WHO
- Online search of websites of relevant government agencies: Health Ministry, Police, Home ministry

Inclusion/ exclusion criteria

Reports/figures will be ***included*** if they:

- Were produced between 2002-2013
- Are in English or the national language (for each of the 6 countries)
- Are from an official government source
- Describe suicide rates/incidence of suicide

Reports/figures will be ***excluded*** if they:

- Were published before 2002
- Are not from an official government source

D. In-country search for additional data and reports

i. Suicide incidence/rates (incl. for specific sub-populations)
ii. Methods of estimating rates
iii. Methods of committing suicide

Sources/ databases

- Online search of websites of relevant organizations (government institutions, research institutions, UN agencies, health/MHPS donors, INGOS and national NGOs working in health and/or MHPS)
- Individual stakeholder consultations with representatives at key organizations for unpublished reports and documents

Inclusion/ exclusion criteria

Studies, reports and other documents will be ***included*** if they:

- Were produced between 2002-2013
- Are in English or the national language (for each of the 6 countries)
  Describe suicide incidence/rates and methodology used to estimate suicide rates

Studies, reports and other documents will be ***excluded*** if they:

- Were published before 2002
- Are editorial or conceptual papers

The process of determining inclusion or exclusion will follow these steps. First, based on above-mentioned inclusion criteria all records retrieved through searches will be assessed on the bases of title, and/or abstract or executive summary, and/or table of contents, and/or major findings section, and/or tables in document. Second, if criteria have been met, or there is some question about whether these criteria have been met, the publication will be selected for full review by at least two collaborators independently. Third, after full review, a final number of articles will be included in the study. Fourth, data from all included articles will be extracted for analysis in spreadsheets (see below) and cross-referenced.

Guidelines for in-country search protocol detailed

National consultative process

- Individual stakeholder consultations to identify key people, organizations, and sources of data, reports and other documents.[9]
- Document people/organizations met with in the "Contact Log"

Government data, reports (2002-present)

Based on consultations and review of government ministries/departments, identify/map all potential sources of official government statistics and reports. First points of contact likely include:

- Ministry of Health, Department of Health Services
- Health Management Information Division, Department of Health Services
- Mental Health Focal Point, Ministry of Health
- National Mental Hospital
- Police and/or Home Ministry

Secondary points of contact may include:

- HIV/AIDS Division, Department of Health Services, Ministry of Health
- Ministry of Women, Children and Social Welfare (section dealing with GBV)
- National Human Rights Commission
- National Women's Commission
- Ministry of Labour (Office of Foreign Employment)

Online search of websites for identified government offices for official reports

Use the site search function to search the term "suicide" and "suicide rates"

Look in the "Reports" or "Publications" section

Phone conversations /individual meetings with officials in identified government offices to:

- Obtain reports
- Identify:
  - Other sources of official government information and
  - Key non-governmental stakeholders (individuals, organizations and relevant networks and working groups
- Record basic info on reports, documents obtained in the "Document Log"

[9]This will include key governmental officials, and experts in mental health and public health.

Other in-country grey literature (2002-present)

Identify/map all non-government potential in-country sources of grey literature on suicide

- National research organizations working on health, mental health
- National medical colleges/institutes
- Donors[10], INGOs[11] and national NGOs working in health, mental health, or with "vulnerable," "at-risk" groups or other special populations.[12]
- Relevant national networks
    - Attend meetings of relevant networks (if any scheduled during consultancy period) to make announcement re: scoping review and ask for documents

Online search of organizational (donor, INGO, NGO) websites for reports related to suicide

- Search websites of identified organizations (see above)
- Google search with defined country 'IP' address
- Use the site search function to search the term "suicide"
- Look in the "Reports" or "Publications" section
- Also search under "What we do" and "Projects" headings to look for relevant health, MH/psychosocial projects, or other projects that have a psychosocial component, that may have a "Documents" or "Reports" section

Phone interviews and/or individual meetings with contact persons of INGOs, NGOs re: reports related to suicide:

- Obtain reports
- Identify:
    - Additional sources of official government information
    - Additional organizations (research, donor, INGO, NGO,) that have worked on suicide or with potentially vulnerable, at-risk groups

Record basic info on reports, documents obtained in the "Document Log"

Data checking and validation

- Documents identified in the contact log and in the organizational search log should be cross-checked by the national consultant him/herself against the document log to ensure that all documents are captured.
- The Research Coordinator will also undertake a random cross-check between the 3 logs submitted by each consultant.
- A random selection of records in the organizational search log will be validated by the Research Coordinator or the Project Manager

[10]These may include DFID, GIZ, USAID, ILO, IOM, OHCHR, UNFPA, UNHCR, UNICEF, WHO

[11] These may be identified through review of IASC member organizations present in country, as well as through websites and member lists of associations/networks of INGOs

[12] Special populations and vulnerable and at risk groups will vary from country to country and will be more specifically identified during the review of the literature itself. At this preliminary stage, could include trafficking survivors, GBV survivors, persons living with HIV/AIDS, conflict victims, sex workers, persons living with disabilities, high risk children (abused, abandoned, orphaned), substance users/abusers, single women, elderly, sexual minorities, adolescents, migrant laborers. Consultants will need to prioritize 3-4 groups according to country context, and then evaluate utility of exploring other groups given time and resource constraints.

4.3. Data analysis

The search outputs for each of the five search components (A-D) will be recorded in separate Excel formats that include date of search, search terms used, number of total results, and number of results meeting inclusion criteria. All files will be kept in a Dropbox for ease of sharing. All documents meeting inclusion criteria will be entered in a pre-structured format to record key aspects of the results relevant to suicide incidence/rates, and methodology used to estimate rates.

Analyses of the selected publications will be conducted in several steps:

First, publications will be read by one or more study team members and summarized in the pre-defined format, specifying the type of publication. This format will include information about (a) the source of the data; (b) method of sampling or selection and population; (c) measures or indicators used; (d) methods of analyses, and (e) results.

Second, all publications from components A and D will be categorized according to the level of quality of the assessment. Quality will be determined using a Quality Appraisal Tool, which ranks the studies reporting suicide rates from 1-4. This Quality Appraisal Tool will be established for the purpose of this study, based on the following existing guidelines: (a) STROBE (guidelines for reporting observational studies in epidemiology), (b) CASP (Critical Appraisals Skills Program for cohort studies). Based on the answer to a number of questions and criteria, taken from these guidelines, we will rate the quality of the study (ranging from high=1, moderate=2, low=3, very low=4). We will do this following a process developed to rate the quality of evidence (i.e. GRADE: Grading of Recommendations Assessment, Development and Evaluation methodology.) See Figure 1 on the following page for an example.

Third, further extraction of data, where applicable, will include methods of committing suicide. Any differences in extraction or categorization of data will be resolved through discussion within the larger study team.

ANNEX 4: NATIONAL CONSULTANT ORIENTATION/TRAINING

- Welcome from TPO Nepal
- Introductions
  - Name, institutional affiliation, experience with suicide, interest in this project specifically?
- Overview of project
  - Genesis (PPT)
  - Background/purpose (PPT)
  - Conceptual framework (PPT)
  - Organizational structure (PPT)
  - Timeframes (PPT)
- Overview of search protocol (PPT, Conceptual Framework handout)
- In-country search guidelines (PPT, handout, e-copy)
  - Secondary data
  - Noting primary data sources
- Logging information (forms and filled-in samples from Nepal)
  - Contact log (PPT, handouts, e-copy)
  - Search log (PPT, handouts, e-copy)
  - Document log (PPT, handouts, e-copy)
- Other documents
  - Introductory letter template (e-copy)
  - One-page Project Summary (handout, e-copy)
  - Contact list (handout, e-copy)
- Challenges anticipated in own country and ways of overcoming (metacards)
  - Individuals list on cards
  - Group discussion
- Examples of challenges in Nepal and how overcome (Ramesh)
  - No reference to suicide in title, executive summary or table of contents, OR people saying there's nothing, when in fact if look closely at document, there is (e.g. in DoHS annual report tables)
- Document management
  - Folders and files
  - Submission to HNTPO
    - Soft copy
    - Hard copy documents
- Monitoring and support
  - Documenting time (weekly, major activities)
  - Distance support (weekly phone meetings)
  - Quality monitoring (weekly log submissions)
  - Lessons learned
    - Weekly phone meetings
    - Narrative notes on limitations, problems, solutions

ANNEX 5: ORGANIZATIONS AND INDIVIDUALS CONTACTED BY NATIONAL CONSULTANTS

GOVERNMENT OFFICES	NATIONAL ORGANIZATIONS	ACADEMIC INSTITUTIONS	UN, INGOS AND OTHER DONORS	OTHER
AFGHANISTAN				
Afghanistan Independent Human Rights Commision	Afghanistan Human Rights Organization		Colombo Plan	
Ministry of Interior Affairs	Afghan Liber		European Union	
Ministry of Public Health	Afghan Women Education Center		HNTPO- Afghanistan	
Ministry of Public Health, Mental Health Program	Afghan Women Network		International Medical Corps	
Ministry of Women Affairs	Afghan Women Resource Center		International Psychosocial Organization	
Specialty Mental Hospital	Afghanistan Research and Evaluation Unit		United Nations Assistance Mission in Afghanistan	
	ALTAI Consulting		UNFPA	
	Humanitarian Assistance for Women and Children in Afghanistan		World Health Organization	
	Medica Afghanistan			
	Tabish Social Health Education Organization			
	Women and Children Legal Research Foundation			
BANGLADESH				
Bangladesh Bureau of Statistics	Bangladesh Acid Survivors organization	Bangladesh College of Phy-sicians and Surgeons, Library	Befrienders International	Dr. Nasima Selim, BRAC, PhD candidate
Bangladesh Ministry of Law and Justice	Bangladesh Ain-o-Salish Kendra	Dept. of Law, Chittagong Univ. (Mostofa Mahmud Naser)	DFID Bangladesh	Nafisa Kamal

Bangladesh National Institute of Population Research & Training	Bangladesh Manabadhikar Bastabayan Sanstha, Monitor-ing Cell (Pravin Akhter)	Dhaka Medical College	International Centre for Diarrheal Disease Research (ICDDR), Bangladesh	Lawyers $ Jurists: to contact AM Masum.
Bangladesh National Library	Bangladesh Mahila Parishad	Dhaka University Library	International Alert	Seventeen psychiatrists contacted by phone
Directorate General of Health Services	Bangladesh National Woman Lawyers' Association (BNWLA)	Dhaka University, Dept of Psychology (several faculty)	International Assn for Suicide Prevention (Dr Ainoon Naher)	
Ministry of Women and Child Affairs	Bangladesh Red Crescent Society	Dhaka University, Dept of Sociology (Ishrat Shamim, and 11 other faculty members)	Population Council, Bangladesh	
National Health Library and Documentation Center	Bangladesh Rural Advance-ment Committee (BRAC)	ICDDR,B Library	Saferworld-Bangladesh	
National Human Rights Commission	Bangladesh Womens Healath Coalition	Independent University of Bangladesh (IUB)	SNV (Dutch Aid)	
National Institute of Mental Health	Center for Injury Prevention & Research, Bangladesh	Rajshahi Univeristy	Transparency International, Bangladesh	
National Inst of Preventive & Social Medicine (NIPSOM)	Jatiya Mahila Ainjibi Samity	Shahruardy Medical College Hospital,Sere-Bangla Nagar		
Police Head Quarter	Manusher Jonno Foundation	Social Science Medicine Journal		
University Grants Commission	Naripokkho			
	Research Initiatives Bangladesh			
	Society for Voluntary Activity (SOVA)			
INDIA				
Annual Health Survey	Indian Council for Medical Research	AIIMS		Jocelyn Chua
Central Statistics Office	International Institute for Population Sciences	Tata Institue of Social Sciences		Magistrate Manu
Delhi Metropolitan Court	Maithri			Daniel Munster
Delhi Police	Public Health Foundation of India, Resource Center for Public Health News			Prof Vikram Patel

National Crime Report Bureau	Saarthak-Operation Hope Helpline			Dr Pratap Sharan
National Health Systems Resource Centre	Sneha India			Dr. Rahul Shidhaye
Office of Registrar General of India	Sir Dorabjo Tata Trust			Jacintha and Sidharth
	Sumaitri			Dr Lakshmi Vijayakumar
NEPAL				
Department of Health Services	Forum for Women, Law and Development			
Family Health Division	TPO Nepal			
Home Ministry/Crime Investigation Department	United Mission to Nepal			
Mental Health Focal point, Ministry of Health				
Ministry of Women, Children and Social Welfare				
National Health Education Information and Communitation Centre				
Office of Prime Minister and Council of Ministers				
Population Division				
PAKISTAN				
Benazir Income Support Program	Aurat Publication and Information Service Foundation		Action Aid	Murad Musa
Federal Investigation Agency	Edhi Foundation		CARE	Prof Adnan Haider
Islamabad (Federal) police	Human Development Foundation, Pakistan		EngenderHealth	Junaid Razzak
Law and Justice Commission Pakistan	Human Rights Commission of Pakistan - PILDAT		Handicap International	Dr Atif Rahman

National Commission on the Status of Women	Mental Health Association of Pakistan		International Alert	
National Institute of population studies	National Rural Support Program (NRSP)		JHPIEGO	
National Police Academy, Islamabad	Pakistan National Forum on Women's Health		Pathfinder	
National Police Foundation	ROZAN-Youth help line		Population Council	
Pakistan Bureau of Statistics	Sachet Pakistan		Saferworld	
Police Line Islamabad	Shirkatgah-Women's Resource Center		Save The Children	
			SNV (Dutch Aid)	
			Terre des hommes	
			UNDP	
			UNHCR	
			UNICEF	
			United Nations Office on Drugs and Crime	
			WHO	
			The White Ribbon Campaign Pakistan	

SRI LANKA

Health Education Bureau	Arthacharya	Centre for Women's Research	Basic Needs	Nilanga Abeysinghe
Ministry of Health, Dept of Policy Analysis & Development	Association of Psychological Counsellors of Sri Lanka	College of Community Physcians of Sri Lanka	CARE International	Dr Erminia Colucci
National Institute of Mental Health	Association of War-Affected Women	International Centre for Ethnic Studies	International Alert	Professor Ravindra Fernando
National STD/AIDS Control Programme	Brave Hearts Fund	Marga Institute	Save the Children	Dr Ananda Galappatti
School & Adolescent Health Unit, Family Health Bureau	Mel Medura	Social Scientists Association	UNICEF Sri Lanka	Professor Jeanne Marecek
	Nest Sri Lanka	South Asian Clinical Toxicology Research Collaboration	World Bank	Dr Chandanie Senadheera

	Sahanaya	Sri Lanka College of Psychiatrists		Professor Tudor Silva
	Samutthana			Dr Athula Sumathipala
	Sarvodaya			
	Shanthinam: Association for Health & Counselling			
	Siyath Foundation			
	Sri Lanka Sumithrayo			
	Women in Need			