

Suicide and self harm in Nepal: A scoping review

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ARTICLE INFO

Keywords:

Mental Health Nepal
Suicide
Self harm
Asia
Nepal
Suicide prevention
Suicide research
Prevention strategies

ABSTRACT

Background: Suicide and self harm behavior has become a major public health issue in recent years in Nepal. This small south Asian country was ranked 7th by suicide rate globally by the 2014 World Health Organization report with an estimated 6,840 suicides annually, or 24.9 suicides per 100,000 people. We decided to explore the epidemiology of suicidal behaviour and self harm, modes of attempt, associated risk factors and trends in specific population.

Methodology: Two researchers independently reviewed 47 studies published in the US National Library of Medicine's PubMed electronic Database and Google Scholar till December 2016. Finally, twenty articles meeting the objective were included. This article summarizes findings on epidemiology of suicidal behavior, associated patterns, risk factors and trend in specific population in Nepal.

Results: Most of the data available till date are hospital based and either cross-sectional or retrospective. Some of the studies have relied on mortality statistics whereas few have done community based screening. Some of the key findings include higher rate among women and younger age group, a rising trend among specific groups such as marginalized, migrant workers and disaster affected population. The studies also show role of mental illness, predominantly mood disorders and psycho-social factors such as interpersonal or marital conflicts and socio-economic issues in triggering suicide and self harm behavior.

Conclusion: Overall, the studies provide satisfactory information about the burden of suicide in Nepal. Some of the limitations include discrepancy in suicide reporting, lack of longitudinal follow up and qualitative studies and absence of studies on preventive aspects. Further, more research is warranted in this area not only at the assessment level but also at an intervention level. Several challenges such as poor distribution of mental health resources, social attitude towards mental illness and suicide in particular need to be addressed.

1. Introduction

Globally, over 800,000 people die due to suicide every year making it the second leading cause of death in 15–29-year-olds. There are indications that for each adult who died of suicide there may have been more than 20 others attempting suicide. The low- and middle-income countries bear an estimated 75% of all global suicide burden. The South-East Asia Region of the World Health Organization (WHO SEARO) accounts for 39% of global suicides (WHO, 2014). It has also been highlighted that, due to lack of high quality data and national suicide surveillance systems in most of these countries, reports are likely to underestimate the actual burden of suicide (Jordans et al., 2014). In high-income countries (Europe and US), mental disorders are present in up to 90% of the cases of mortality due to suicide depression being the most common diagnosis (Conner et al., 2001). However, mental disorders seem to be less prevalent among those who die by

suicide in Asian countries, and acute life stresses related to socio-economic and cultural issues have been shown to play a greater role in suicide than they do in Western countries (Radhakrishnan and Andrade, 2012; Chen et al., 2011).

In South Asia, suicide is characterized by higher use of organophosphate insecticides, larger numbers of married women, fewer elderly subjects, and role of causative factors such as interpersonal relationship problems and life events (Khan, 2002). Despite the huge burden, there is less emphasis on suicide in these countries due to lack of resources and competing priorities. Other factors like cultural influences, religious sanctions, stigmatization of the mentally ill, political imperatives, and socio-economic factors have also resulted in indifference towards mental health and its suicide. As a result, the magnitude of the problem is unknown in some Asian countries and although there are some highlights in terms of preventive initiatives, overall efforts are uncoordinated, under-resourced, and generally unevaluated

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(Vijayakumar et al., 2005).

Nepal is a multi-ethnic landlocked country in South Asia situated between India and China. It has a population of 28.5 million with the majority (86%) living in rural areas. It is geographically divided into seventy five districts, five development regions and fourteen zones. Nepal has been a victim of frequent political conflicts and natural disasters over the last twenty years, which has diverted the attention of the politically unstable governments away from important issues such as mental health. Unfortunately, delivery of mental health services is facing several hurdles such as limited treatment settings, lesser human resources mainly concentrated at cities and private sectors (60 in mental health (120 psychiatrists, 25 psychiatrist nurses; 16 clinical psychologists); limited awareness in the public due to poor mental health education, availability of fewer psychotropics at primary care level and limited training of community health workers. At present, government spending is less than 1% of its total healthcare budget on mental health. This has led to a huge treatment gap with over 90 percent of the population who needs mental health services having no access to treatment (Luitel et al., 2015; Regmi et al., 2004)

Amidst growing coverage of high profile suicide cases in the media, suicide has recently received a wider attention as a potential public health problem in Nepal and is frequently labelled as the silent or the hidden epidemic (Cousins, 2016). More recently, WHO had estimated an age-standardized suicide rate for Nepal in 2012, ranking it 7th in the world at 24.9 per 100,000 (WHO, 2014). Hence, understanding the various aspects of suicide and self harm behaviour in Nepal is useful to devise effective suicide prevention strategies for this country.

In this article, we have done a scoping review (Grant and Booth, 2009) of published studies on suicide and self harm behaviour and different associated factors in Nepal with an aim to discuss the existing literature and provide a road map for developing appropriate suicide prevention strategies.

2. Methodology

We searched the US National Library of Medicine's PubMed electronic Database and Google Scholar in January 2017, using the title and abstract search terms: "suicide in Nepal", "Deliberate self harm in Nepal", "risk factors for suicide in Nepal" "Suicide prevention in Nepal". The search was conducted independently by the two researchers. Studies retrieved from the databases were selected after reading the abstracts and titles, following a calibration exercise with 10% of the studies read by two independent reviewers to determine inter examiner agreement (Kappa: 0.68 to 0.97). Disagreements were resolved by consensus.

The search yielded total 47 abstracts (Fig. 1). We chose 30 publications based on the relevance of their title and further filtered them based on inclusion and exclusion criteria. However, sample size, methodology and quality of the studies weren't considered in the selection process due to paucity of available literature.

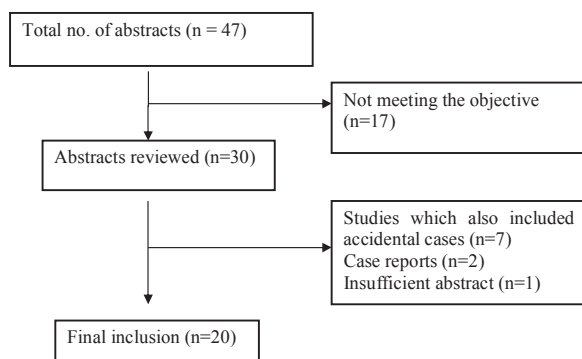


Fig. 1. Results of literature review.

2.1. Inclusion criteria

We included all the published hospital or community based studies conducted till December 2016 which have studied attempted/completed suicide or deliberate self harm (DSH) cases to explore epidemiology, pattern or associated risk factors. We also included studies conducted among specific groups with objective of either studying the prevalence of suicidal ideas or risk factors.

2.2. Exclusion criteria

We excluded seven studies which included both suicidal and accidental cases presenting to medical emergency without elaborating on the pattern of self harm and suicide among the subjects. One study was excluded due to lack of details in the abstract and unavailability of the full article despite repeated attempts to contact the authors. Two case reports were further excluded.

Finally, a total of 20 studies were selected after stepwise review of literature (Fig. 1). Besides these articles, we have also incorporated data from the police, post-earth quake trend and comments from available review articles wherever relevant.

3. Results

Majority of the studies are tertiary hospital based, conducted mainly in medical colleges or government hospital settings. Most of the data collection is based on either retrospective review of medical records or cross-sectional study on patients from outpatient/inpatient services of Psychiatry Department (Table 1). Some of the studies have focussed specific population groups like geriatric population, medical students, migrant workers, refugees with temporary settlements in Nepal etc. (Table 2).

3.1. Incidence/Prevalence

The data on suicide reaches Central Bureau of Statistics (CBS) via Ministry of Health and Population, Local administration body and the Police departments and is reported to World Health Organization along with other indicators of health; however, Nepal is not currently able to enact this reporting pathway because a formal vital surveillance system does not exist. The issue is further complicated by limited engagement of families in reporting suicide because of fear of legal entanglements anticipated with reporting Suicide, anticipated stigma for families of suicide victims, and greater time and financial burden compared to reporting natural deaths (Hagaman et al., 2016). According to data released by the police there were 4667 deaths by suicide during one year period, 2015/16 CE (B.S. 2071/72 as per Nepali calendar). Based on this data, the calculated crude suicide rate for the given year turns out to be 16.4/100,000. The common modes of suicide were hanging (72%), poisoning (25.3%), jumping (1.4%) and others (1.3%). Further, percentage of suicide by development regions showed the following trend: Eastern: (23.6%); Central (20.7%) with 400 cases in the capital Kathmandu, Western (21.2%), Mid-western (16.8%) and Far-western (17.7%) (Nepal Police suicide data). Besides the record from the police, nationwide representative prevalence study of suicide in Nepal is lacking. The earliest hospital based data available (Upadhyaya and Pol, 2007) reviewed the post-mortem records of 287 completed suicide cases over a period of two years (1996–97CE/B.S. 2052–53) in Western Regional Hospital estimating the overall crude Suicide rate to be 12.4/100000; higher in men (18.9) than women (4.8). The study had a small sample size and didn't calculate age specific rates. The authors discussed certain limitations like over-representation of data from a single city; exclusion of potential suicide cases e.g. those by road traffic accidents and hazardous drug use due to difficulty in assessment of the intent of the victims.

Table 1
Hospital based studies on suicide and self harm in Nepal.

S.N.	Author	Study setting	Study methodology and sample	Sample size
1	Upadhyaya and Pol (1998)	Western Regional Hospital	Phase I: Post-mortem review of completed suicide cases Phase II: Interview with family members of completed and attempted suicide cases	Phase I: 287 Phase II: 31
2	Chakravarti and Devkota (2004)	Tertiary hospital, Kathmandu	Retrospective suicidal attempt cases	118
3	Pradhan and Adhikary (2009)	Tertiary hospital, Kathmandu	Cross-sectional attempted cases	43
4	Subba et al. (2009)	Western Regional Hospital	Retrospective Deliberate Self Harm cases	173
5	Sapkota et al. (2011)	Tertiary hospital, Eastern Nepal	Cross-sectional attempted cases	100
6	Pradhan et al. (2012)	Tertiary hospital, Eastern Nepal	Autopsy review and interview with the family members of completed suicide cases	100
7	Risal et al. (2013)	Tertiary hospital, Central Nepal	Cross sectional self poisoning cases	100
8	Pradhan et al. (2013)	Tertiary hospital, Kathmandu	Descriptive study	46
9	Shakya (2014)	Tertiary hospital, Eastern Nepal	Cross-sectional Self harm and suicidal attempt cases	115
10	Ghimire et al. (2014)	Tertiary Hospital, Eastern Nepal	Cross sectional Deliberate Self Harm cases	200
11	Lama et al. (2015)	Central Govt. Hospital, Kathmandu	Retrospective review of burn admissions	1148

3.2. Suicide among women

Majority of the hospital studies found that most of the suicide/self harm attempts were done by females, anywhere between more than half to nearly two third of the cases (Chakrabarti and Devkota, 2004; Subba et al., 2009; Ghimire et al., 2014; Shakya, 2014; Lama et al., 2015; Sapkota et al., 2011). A review of Police data of completed suicides from January 2005 to December 2009 among children and younger adults showed that 72.4% belonged to female gender (Mishra et al., 2013). However an earlier study that collected data nearly a decade back in Western Nepal showed higher rate of completed suicides in men compared to women (Upadhyaya and Pol, 2007). As per the most recent WHO data on suicide in Nepal, completed suicide among men (30.1/100,000) remains higher in Nepal compared to women (20.0/100,000). However, Nepal is ranked 17th for male suicide rates but 3rd for female suicide rates (WHO suicide data). Further, Nepal Maternal Mortality and Morbidity Study (MMMS) of 2008/2009 (Suvedi et al., 2009) conducted under the management of Family Health Division of the Department of Health Services showed that among 1496 deaths of Women in Reproductive Age (WRA i.e. 15–49 years of age) in eight districts, suicide was leading cause of death in nearly 16% of cases. It has also been observed that the suicide rate recorded from the districts studied is much higher from the MMM study (28 per 100,000 WRA) compared to the whole country data from the police (6.1 per 100,000 WRA). Hence, it is likely the police data is under-reporting suicide cases. Further, the MMM study also showed that 21% of suicides occurred among women 18 years of age or younger, “indicating that youth is a factor to be investigated”. The MMM study (2008/2009) showed that higher proportion of completed women suicide victims were married (72.8%), belonging to 15–29 years age group (63%), janajati ethnicity (20%) and illiterate (44%). Further, a verbal autopsy review identified risk factors like conflict with husband, illiteracy, financial burden, chronic medical illness etc. The authors also highlighted the need to understand the relationship between female suicide and caste and ethnicity to identify vulnerable social groups and develop suicide prevention strategies accordingly (Pradhan et al., 2011).

In a qualitative study (Robkin, 2012) conducted in the remote Jumla district of Mid-Western Nepal, 12 women who had changes in their Beck Depression Inventory (BDI) scores collected in 2007 and 2011 (half with increasing scores over time and half with decreasing scores) over time were interviewed. Both in-depth interviews and case studies were used to approach the research questions. Four dominant sub-themes around suicide emerged from the in-depth-interviews: a) reasons for committing suicide; b) impulsivity in suicide; c) speculation of family involvement in suicide; and d) reactions toward suicide. This study provided a complex view of the women's attitudes and beliefs relating to suicide in the region. In general, the common reasons for committing suicide for both men and women were domestic issues, male alcoholism, economic concerns and educational stress.

Interestingly, mental health issues were mentioned rarely as a cause of suicide. This study suggested that cultural stressors negatively impact female mental health and eventual suicidal ideation and/or decision to attempt suicide.

3.2.1. Age

In most of the studies the suicide attempts occurred among younger population, more than two third less than 35 years of age (Ghimire et al., 2014; Sapkota et al., 2011; Risal et al., 2013) and 60% below 30 years of age (Subba et al., 2009; Shakya, 2014). A study looked into the pattern of suicide among younger population by retrospectively reviewing 2172 cases of completed suicide cases in police records among age group less than 21 years between 2005 and 2009. It was estimated that annual incidence of suicide among adolescents had increased from 5.8/10,000 in 2005 to 15.7/100,000 in 2009 per 100,000 in that group highlighting the increasing trend of youth suicide. In younger age group nearly 60% used hanging as the mode of suicide. Among the this age group, burning as a method of suicide was more common among women with female to male ratio of 4.75:1 (Mishra et al., 2013). Among adolescents with completed Suicide, academic failure accounted for nearly 16% of cases, predominantly high during declaration of exam results of whom 47% were students of grade 10. Further young people with had also history of parental abuse (13.5%), teacher's abuse (2%).

3.3. Modes of attempt

The earliest study of post-mortem records of completed suicide has shown hanging as the most common mode (Upadhyaya and Pol, 2007). The national police data of completed suicide cases of recent five years (2010–2015 CE) shows that there is a rising trend of hanging cases in all the development regions of Nepal whereas a slight decreasing in trend of pesticide poisoning (Nepal Police suicide data). Although both the police data and the MMM 2008/09 data reveal hanging and poisoning as the most common modes of suicide in women, the police data revealed hanging to be more common than poisoning opposite to the finding from MMM study. This discrepancy can be explained from the fact that hanging cases are acutely lethal and likely to be reported to the police, while self harm poisoning cases are more likely to present to health facilities leading to lesser possibility of police involvement. Majority of hospital based studies have found self poisoning as the main mode of suicidal behaviour and majority had consumed pesticides, commonly organophosphates (Chakrabarti and Devkota, 2004; Subba et al., 2009; Ghimire et al., 2014; Shakya, 2014; Pradhan and Adhikary, 2009; Sapkota et al., 2011; Risal et al., 2013). Suicide by the abuse of pharmacological drugs has been found in less than 3% to nearly one third of the cases (Ghimire et al., 2014; Pradhan and Adhikary, 2009). A review of ten years data of 1148 burn admissions in a tertiary government hospital in the capital showed that self inflicted burn victims were more likely to be females (79%), married (84%) and age younger than 25 years (Lama et al., 2015). It appears that high use of self

Table 2
Studies on suicide and self harm among specific population in Nepal.

S.N.	Author	Study setting/Population	Study methodology	Sample Size
1	Khattri and Nepal (2006)	Geriatric population from Tertiary hospital Outpatient setting, Kathmandu	Cross sectional	100
2	Suvedi et al. (2009)	Maternal Mortality and Morbidity study from eight districts	Verbal autopsy of all maternal mortality cases	239 suicides/1496 deaths
3	Schininā et al. (2011)	Bhutanese refugee community in Eastern Nepal	Case-control	Completed cases:67, Attempted cases:64, 189 controls
4	Menezes et al. (2012)	Medical students from a medical college in Western Nepal	Cross sectional study of suicidal	206
5	Robkin (2012)	Rural community in Jumla	Quantitative and Qualitative exploration	Quantitative = 100, Qualitative = 12
6	Mishra et al. (2013)	National data of children and young adults	Review of Police record of completed suicide cases	2172
7	Amiya et al. (2014)	People living with HIV/AIDS attending NGO based health service Kathmandu	Cross sectional survey	322
8	Kohlbremer et al. (2016)	Nationwide community survey among MSM and TG men	Cross-sectional respondent driven sampling	400
9	International Labour Organization (2016)	Nepali migrant workers Registered in Foreign Employment Board	Mortality data review	451 suicide cases/4322 deaths

poisoning as a mode of self harm/suicide attempt is due to easy availability of insecticides and pesticides esp. in rural agricultural settings. A study from Eastern Nepal mentioned that 16.5% of the victims of DSH had easy access to lethal means (Shakya, 2014).

Among the cases of completed suicide in Eastern Nepal, around 83% of the cases were the first attempters and 17% had history of prior attempts (Pradhan et al., 2012) whereas in a study of attempted cases in Central Nepal nearly 5% had prior attempts (Risal et al., 2013).

3.4. Intent of self harm and suicidal attempt

Only one study conducted in a tertiary hospital in Kathmandu has exclusively explored severity of intention of suicide in various psychiatric diagnoses (Pradhan and Adhikary, 2009). This study employed Suicide Intent Scale (SIS) in all the attempted suicide cases. Overall, severe intent was present in 14% cases and moderate intent in 58.1% of cases. The commonest mode of attempt was poisoning 83.7% (n = 36) in which moderate suicide intent was present in 58.3% (n = 21) subjects followed by mild suicide intent in 33.3% (n = 12) and severe suicide intent in 8.3% (n = 3) subjects. All the cases of hanging (n = 2) had moderate intent whereas severe suicide intent was seen in two out of three cases of jumping and drowning. The commonest psychiatric diagnosis was Depressive episode 62.9% (n = 27), in which moderate suicide intent was 70.4% (n = 19) followed by mild suicide intent 14.8% (n = 4) and severe suicide intent 14.8% (n = 4). Among patients with schizophrenia, moderate suicide intention was present in 75% (n = 3) and severe suicide intention was 25% (n = 1). Mild intent was the most common in those diagnosed with adjustment disorder (60%, n = 3/5) and impulsive attempts (100%). However, the implications of these findings are limited by the small sample size of the study. Other studies conducted in Nepal have only briefly commented upon the severity of intent while summarizing the major findings. A descriptive study from eastern Nepal showed that high intent was present in 40.9% of the cases where as moderate intent in nearly 34% of the cases. Interestingly, a study conducted in 100 self poisoning cases presenting to a tertiary care in Central Nepal showed that high intent was present in 68% of the cases (Risal et al., 2013). However, both the studies have neither discussed about the tool used for the assessment of intent nor given any detail information regarding variation in severity of intent across different modes of attempt and psychiatric diagnoses.

3.5. Suicide and mental illness

The earliest study of 31 completed and 14 attempted cases of suicide in Western Nepal showed role of mental illness in 55.6% (25/45) cases and history of treatment seeking for mental illness in 20% of the cases (Upadhyaya and Pol, 2007). More recent studies have shown that psychiatric illnesses account for almost two-third of cases and impulsivity for remaining one third (Shakya, 2014). Mood disorders are present in nearly one third to half of the cases, depression being the most common diagnosis (Chakrabarti and Devkota, 2004; Sapkota et al., 2011; Risal et al., 2013). Other common diagnoses included stress related/adjustment disorders, substance related disorders, psychotic disorders and personality disorders. Alcohol use related disorders have been found to be frequently diagnosed among subjects with suicidal behaviour. The study from Eastern Nepal showed that 13% of the cases had substance related disorders with alcohol intoxication being the commonest (8%) followed by alcohol withdrawal (14%) and opioid intoxication (1%) (Sapkota et al., 2011). In case of burn victims, it was seen that greater proportion of intentional burns were associated with alcohol/substance abuse when compared to unintentional burns (17% vs. 4%) (Lama et al., 2015).

3.5.1. Psychosocial factors

Different studies have summarized the role of psychosocial factors in precipitating self harm and suicide behaviour while summarizing the

major findings. A study found presence of stressor in nearly all subjects of suicide attempt which was either perceived and reported by the subjects or revealed by the informants (Shakya, 2014). Similarly interpersonal conflict/dispute was present among two-third of the cases. The presence of interpersonal issues such as marital problems, domestic violence, family disputes, failure in romantic relationships have accounted for a substantial number of cases of suicidal behaviour in other studies as well (Lama et al., 2015; Pradhan and Adhikary, 2009; Risal et al., 2013). Suicidal behaviour may also be due to low socio-economic status, chronic physical illness and treatment related issues (Pradhan et al., 2012; Shakya, 2014). Among male victims of completed Suicide, occupational issues such as unemployment (6.12%), debt (6.12%), loss in business (4.8%) played a major role (Pradhan et al., 2012). In the famous MMM study, the verbal autopsy of completed female suicide in women identified factors like failure in romantic relationships, forced marriage, inter-caste marriage and marital disharmony due to real or rumoured second marriage of spouse to be involved. Some of the cases of suicide among unmarried women were related to chronic illness (Suvedi et al., 2009).

3.5.2. Personality factors

Only one study conducted in a tertiary center of the capital exclusively focussed on the personality aspects of the suicide attempters. The study among 46 subjects of attempted suicide using Sixteen Personality Factor Questionnaire (16PF) showed 37% having apprehensive personality traits, 34.8% having low intelligent traits, 30.4% having tough minded traits, 30.4% having been affected by feelings, 26.1% had experimenting traits (Pradhan et al., 2013). The authors highlighted the importance of personality factors in attempted suicide and suicide prevention. Other studies have briefly mentioned about personality issues in triggering self harm/suicidal behaviour. A study in central Nepal revealed diagnosis of a personality disorder in 23% in attempted self poisoning cases (Risal et al., 2013). However, the study didn't elaborate the role of different personality disorders. A study from Eastern Nepal in 100 consecutive suicide attempt cases during one year period (2008–2009) showed that 6% (n = 6) were having personality disorder, mainly Emotionally Unstable (n = 4), Histrionic (n = 1) and dissocial (n = 1). Another study from same region conducted in 2012 mentioned that 20% of the subjects had “not well adjusted pre-morbid personality” without further elaborating on the personality trait or disorder in specific (Ghimire et al., 2014).

A study pointed that suicide attempts/self harm behaviours in Nepal are results of the interaction of three major factors, i.e. 1) decreased coping capacity in the pretext of high psychiatric co-morbidity, 2) increased impulsivity in pretext of high prevalence of substance abuse and 3) easy access and availability of the suicide means in the background high positive status of stressor (Shakya, 2014).

3.6. Suicidal behaviour in specific groups

3.6.1. Geriatric population

A cross sectional study in 100 random geriatric patients presenting to different department OPDs in a tertiary care hospital based in the capital used the suicidal component of HRDS for screening. The study showed suicidal symptoms to be present in 16% of the subjects with female preponderance, suicidal ideas or gestures in 4% subjects with male preponderance and history of suicidal attempts among three patients (Khattri and Nepal, 2006).

3.6.2. Medical students

Another cross sectional study in 206 medical students using suicide component of GHQ-28 found one year prevalence of suicidal ideas among 10.7% students and life time prevalence among 18.4% students whereas two had plans to commit suicide with the same number having history of attempted suicide. The students dissatisfied with their own academic performance or abusing drugs had nine times higher risk of

suicidal ideations. Further, suicidal ideation was more common among male, alcohol users and smokers without statistical significance (Menezes et al., 2012).

3.6.3. Nepalese migrant workers

A comprehensive overview by International Labour organization on the number of deaths of migrant workers based on data by Foreign Employment Promotion Board from Fiscal year 2008–09 to 2014–15 showed that there were a total of 451 (10%) cases of suicide in the seven-year period with almost ten times rise during the period. Further to Suicide, 68% of them occurred in Middle Eastern countries and Malaysia. A large number of suicides among male migrant workers occurred in Malaysia (186 of the total 422 cases among men), whereas Kuwait and Lebanon had a large number of death by suicide among Nepalese women. Of the 33% of all female migrant worker deaths; Kuwait and Lebanon accounted for 62% of those deaths. There are no studies to explore the reasons for this harrowing status of Nepalese women working abroad. However, inability to deal with extreme stress and/or feelings of hopelessness with possible violence at the workplace possibly played important role (International Labour Organization, 2016).

3.6.4. Refugee population

In a case control design study in Bhutanese refugee population with settlement in Eastern Nepal, comparison was made between the groups of refugees who committed (67 individuals) or attempted (64 individuals) suicides from 2004 to 2010 with a control group of 189 refugees randomly selected in the UNHCR database (Schinina et al., 2011).

The results showed more number of suicidal attempts among women and more completion among men. Overall, gender was not significantly associated with odds of suicide. Interestingly, presence of Gender Based Violence (GBV) among the refugees emerged to be a significant risk factor for both suicidal attempts and completion. However, mental disability or mental illness at the individual level was not significantly associated with suicide. The authors highlighted that this could be attributed to inadequate mental health surveillance and identification system rather than actual lack of association of mental illness with suicide.

3.6.5. People living with HIV/AIDS

A cross-sectional study was conducted among 322 people living with HIV/AIDS in the Kathmandu valley by employing Beck Depression Inventory (BDI) to assess depressive and suicidal symptoms in the past two weeks and the 10-item Nepali Family Support and Difficulty Scale to measure perceived family support. The results showed 14.0% reported suicidal thought in the last two weeks, with significantly lower rates among those with highest perceived family support (Amiya et al., 2014).

3.6.6. Gender minorities

A nationwide survey was conducted among 400 Men having Sex with Men (MSM) and Transgender (TG) population based on respondent-driven sampling to assess prevalence of suicidal symptoms through face-to face interview (Kohlbrenner et al., 2016).

Throughout their lifetime, 26.8% of the participants had experienced suicidal ideation, 12.0% had made a suicide plan, and 9.0% had attempted suicide. In particular, more TG than MSM had experienced suicidal ideation (39.8% vs. 21.3%), had made a suicide plan (19.5% vs. 8.9%), and had attempted suicide (15.3% vs. 6.4%). The study found that lifetime prevalence of suicidal ideation was 26.8% among the participants, higher among TG than MSM group (39.8% vs. 21.3%). Astonishingly, 12% of the participants had made a suicidal plan and 9% had attempted suicide in a lifetime. It was significantly higher among the 38.3% of participants who had perceived discrimination based on their sexual orientation. Further, the odds of suicidal ideation were

significantly higher with the increase in perceived discrimination (AOR: 1.35; 95% CI: 1.15–1.60). The odds of attempted suicide were, however, not significantly associated with perceived discrimination (AOR: 1.40; 95% CI: 0.62–3.15). The study highlighted perceived discrimination as an independent risk factor for suicidal ideation and the need for research and suicide prevention programs among gender minorities.

3.6.7. Post earthquake suicide trend

A three months comparison before and after the earthquakes of April and May 2015 showed that there was 41% increase in people choosing to take their own lives, according to Nepal Police data. The data from January 15 to April 13 shows that 965 had committed Suicide, while the number rose to 1363 in three months till July following the earthquake. Further, an assessment of mental health need four months post-earthquake showed 10.9% prevalence of suicidal ideation ($n = 513$, 15.1% in women and 5.7% in men), which was higher in the most seriously affected districts (Gorkha: 24.5%, Sindhupalchowk: 25.1%) than in the capital Kathmandu (8.3%) (International Medical Corps, 2016). There was also higher trend of reporting suicidal symptoms among older age group i.e. 60 years and above (17%) compared to younger i.e. 20–59 years old (10.5%) and under 20 years of age (2.9%). Percent of respondents who reported mental health symptoms by caste/ethnicity was higher among dalit (11.1%) and janajati (15%) ethnicity compared to Brahmin (7.8%) and Chhettris (9.3%). The study also pointed out some of the limitations like it did not follow and track respondents overtime and some areas from the assessed districts were excluded from the sampling frame because they were inaccessible due to earthquake damage.

3.7. Limitation of the studies

From the research perspective, limitations of the studies published from Nepal are massive. Majority of the studies are conducted in hospital settings based on retrospective review of medical records or cross-sectional data collection which are subject to bias. None of the studies have tried to follow up suicide and self harm attempters to generate a longitudinal follow up data. The studies also suffer from dearth of adequate sample size and shorter study duration i.e. preferably one year in most of the studies. In most of the studies on attempt cases, the sample size is 100 or lesser number of consecutive subjects presenting to the Psychiatry OPD. Considering that many subjects who commit non fatal self harm may not present to the hospital, the actual burden in the community is yet to be explored. Majority of the studies haven't defined suicide and self harm behaviour. Lack of validation of the tools used in the survey in the Nepalese setting is another pitfall. The hospital based studies also seem to be more focussed on Eastern and Central Nepal. No studies have tried to synthesize the findings from any region or attempted a multi-centric data collection. It has been argued that mixed methods using qualitative and quantitative measures are needed to understand problem like suicide (Kral et al., 2012) but we have very few qualitative data. Both distal and proximal risk factors can and do co-occur in individual, family, and environmental domains, and their co-occurrence is likely to be associated with the greatest risk for suicide. For complex outcomes like Suicide, epidemiological studies looking at the risk factors at all levels are must (Mościcki, 1997) but we lack them in studies from Nepal. Looking at the raw facts and socio-demographic variables in a group of a homogenous population is useful to some extent in preliminary research models. However, there is a need of studies that look the whole population and give facts and correlations to devise a strategy. Future research should also focus on role of risk factors like psychosocial stressors, impulsivity and personality issues in a larger sample size in multi-centric and multi-cultural settings across the country. Though most of the studies have suggested about suicide prevention strategies, no specific studies have developed or tested any intervention in the population of Nepal. In this context, a nationally

representative cause of death survey like one conducted in India (Patel et al., 2012) is needed to estimate the actual burden of suicide in Nepal.

3.8. Future directions towards suicide prevention

The findings from the above studies provide useful information on suicide and self harm behaviour in Nepal which can guide towards development of suicide prevention strategies in future. Many low-resource countries such as Nepal struggle to address barriers to mental health care due to limited mental health resources and issues such as stigma, workforce and mental health literacy posing a challenge to suicide prevention (Benson and Shakya, 2008). At present, some of the activities initiated in the direction of suicide prevention in Nepal are mainly led by mental health professionals and NGOs. These include mental health training of primary health workers and general physicians based on mental health Gap Action Programme (mhGAP), bringing awareness about suicide prevention through mass media and community based activities (e.g. during world suicide prevention day), beginning of 24 h suicide hotlines in different regions of the country etc. The lack of publication of these activities in scientific forum might have undermined the works that are being done in the country (Marahatta et al., 2017).

In this context, some of the potential strategies identified by Strategies to Prevent Suicide (STOPS) Project in Asia are also applicable in Nepal (Hendin et al., 2008). These include conducting a more detailed study of epidemiology, socio-economic, cultural, and religious factors affecting suicide and suicide prevention, developing innovative approaches to identify those at risk for suicide (e.g. those with prior attempts and emerging vulnerable groups), developing public awareness of mental illness (mood disorder, depression in particular) as treatable and suicide as preventable, improving media portrayal of Suicide, educating gatekeepers, reducing access to lethal means, improving treatment of mental illness and addressing the problems of suicide and self-harm survivors. In Nepal, frequent sensational and glorified reporting of suicide in media, more recently through social networks, is possibly propagating various myths and stigma in the society. Hence, media needs to be sensitized and trained to report suicide and suicide behaviour, based on standard available guidelines. Availability of lethal means (esp. toxic pesticides) should be restricted by controlling import and easy accessibility among rural population. To sum up, a long term co-ordinated effort between experts of various sectors is required to initiate a national suicide prevention program that can provide an important framework to design, test and implement economically feasible, evidence based and socio-culturally appropriate suicide prevention strategies.

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