Non-suicidal self-injury and other self-directed violent behaviors in India: A review
of definitions and research

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Highlights

- We reviewed definitions of various forms of self-directed violent behaviors in India.
- Inconsistent use of 8 self-harm behaviors was observed in Indian literature.
- NSSI may function as a gateway to suicide.
- In India, NSSI has major public health implications and further research is required.
- Further, NSSI research should be contextualized within Indian cultural.

Abstract

The interpersonal theory of suicide suggests that most forms of self-directed violent behaviors lie on a continuum, with each behavior successively increasing the capability of committing suicide. There is increasing evidence to suggest that the continuum may begin with Non-Suicidal Self-Injury (NSSI). This theory can be important in developing interventions for suicide prevention. However, in India, consistent usage of definitions of various forms of self-directed violent behaviors is lacking. In the present study, we reviewed definitions of various forms of self-directed violent behaviors that have been investigated in India. Further, we compared the usage of these definitions with the usage by WHO. Additionally, we reviewed NSSI research in India. Thirty-eight publications were identified by a comprehensive electronic search undertaken in Indian psychiatry, psychology, and mental health-related databases. Inconsistent definitions of eight self-directed violent behaviors were observed in Indian literature. Agreement on consistent definitions of various forms of self-directed behaviors is essential. Based on the findings of the current review, it can be suggested that culturally relevant large-scale research on NSSI in India is required to confirm the limited evidence that suggests high prevalence of NSSI in India.

Keywords: Non-suicidal self-injury; Self-directed violent behaviors; Suicide; Definitions; India.

1. Introduction

Suicide is a major public health concern in India. In the year 2012, about 0.25 million suicides were reported in the country (World Health Organization, 2014a). The National Crime Records Bureau (2014) reported a 21.6% rise in suicide rates from 2003 to 2013. The suicide statistics suggest that targeted interventions for suicide prevention are needed in India. However, as Van Orden and colleagues (2010) suggest, because most prevention strategies are not based on comprehensive theories that explain dynamic interaction between personal and environmental factors, few prevention strategies are effective in reducing suicide.

The Interpersonal theory of Suicide (Joiner, 2009) is one of the most comprehensive theories proposed to explain this interaction. Joiner argues that because of the extreme and lethal nature of suicide, most people are fearful to attempt suicide. In the presence of certain enabling factors, individuals may feel more courageous to engage in suicidal acts. Joiner (2009) argues that individuals acquire a 'capability to suicide' through the interaction of three factors: a) perceived burdensomeness: the perception that one is a burden on loved ones b) thwarted belongingness: a function of social alienation; and c) learned fearlessness: reduced fear of death because of various reasons including high pain tolerance (See Figure 1).

In the West, Non Suicidal Self Injury (NSSI) has been identified as an important self-directed violent behavior with major public health implications. NSSI is defined as 'intentional destruction of one's body tissue without suicidal intent' (Nock and Favazza, 2009). Extant literature suggests that about 70% of people engaging in NSSI behavior also report a lifetime prevalence of at least one attempted suicide (Nock et al., 2006). Further, the presence and frequency of NSSI can predict

Figure 1. Pathway from non-suicidal self-injury to various form of self-directed violent behavior (based on process-based suicide models of Joiner, Ribeiro and Silva, 2012 and Baca-Garcia et al., 2011).

the history of suicide attempts more than depressive symptoms and hopelessness can (Andover and Gibb, 2010).

Given that repeated engagement in NSSI may lead to increased pain tolerance and reduction in the fear of death, which in turn, may increase the risk for suicide attempts, some theorists consider NSSI as a gateway to suicide (Joiner et al., 2012). There is also evidence to suggest that disclosure of NSSI may lead to a reaction of confusion, fear, or disgust from health professionals (Muehlenkamp et al., 2013), teachers (Heath et al., 2010), and peers (Favazza, 1998). Self-injuring individuals may also isolate themselves as they worry about possible rejection, stigmatization, or punishment as a reaction to the discovery of NSSI (Turner et al., 2014). Strong reactions from others towards NSSI and perceived isolation may lead to a decreased sense of belongingness to others. Finally, the shame and guilt associated with NSSI, may lead to an increase in perceived burdensomeness. NSSI, hence, may predispose individuals to the three factors proposed by Joiner, which, in turn, may increase the risk for suicidal ideation and suicide (See Figure 1).

Apart from its association with suicide, NSSI has other public health implications. Existing research suggests strong associations between NSSI and disorders like anxiety, depression (Wilkinson and Goodyer, 2011), eating disorders (Muehlenkamp et al., 2011), and personality disorders (especially Borderline personality disorder; Welch et al., 2008). NSSI is also associated with developmental and personality related vulnerabilities (Barrocas et al., 2011). Hence, NSSI may serve as an indirect indicator of the aforementioned mental health disorders in community settings and may be helpful in early assessment and interventions.

Based on the public health utility of NSSI, it can be suggested that researching NSSI in community and clinical settings may be necessary. However, overlapping

usage of various forms of self-directed violent behaviors including NSSI in Indian research is a major concern impeding this endeavor. Inconsistent definitions of self-directed violent behaviors are a major hurdle in developing clinical (e.g. assessment of risks), research (for e.g., estimation of burden), and epidemiological (for e.g. international reporting and comparison of prevalence rate) knowledge about these behaviors. So far, attempts to streamline use of definitions is lacking in India. To fill these gaps, the present study reviewed definitions of various forms of self-directed violent behaviors investigated in India so far. We compared these definitions with present-day international usage. Further, given that NSSI may be an important risk factor for developing suicide, we identified publications that investigated NSSI behavior, although under different names, and summarized the findings of these studies.

2. Methods: Search and inclusion criteria

PRISMA guidelines (Moher et al., 2009) were followed to identify articles that defined and investigated various types of self-directed violent behaviors in India. Articles were searched in the following databases: ProQuest, PubMed, Pubmed Central, Indian Citation Index, IndMED, and Google scholar. Query strings like self-injury, self-harm, self-damage, self-aggression, self-mutilation, NSSI, India, etc. were used in various combinations for the literature review. Articles that did not define the self-directed violent behavior being investigated, non-English articles, letters to the editor, and editorial articles were excluded from the review. Overall, 38 studies were included in the review (see Figure 2 for details).

Figure 2: Flowchart for study selection for the review (Based on PRISMA guidelines)

Defining various forms of self-directed violent behaviors: A review

Defining various forms of suicidal behaviors is difficult since internationally accepted guidelines in Diagnostic and Statistical Manual of Mental Disorders (5th edition; American Psychiatric Association [APA], 2013) or ICD-10 are lacking. However, since agreeing on some conventions regarding definitions of these behaviors is essential, we used the WHO guidelines for classification of various forms of self-directed violent behaviors (see Figure 3 for more details). Intent to die is the core element that not only differentiates between self-directed violent behaviors and other reasons of death, but also between various subtypes of self-directed violent behaviors (WHO, 2002, p. 6). Although elementary differentiation between presence

Figure 3. Classification of various forms of self-directed violent behaviors (Based on WHO (2002) and Nock and Favazza (2009))

and absence of intent may be possible to some extent, quantifying intent as high and low is often difficult because of its vague and interpretive nature (De Leo et al., 2004). Hence, WHO favors an outcome-based classification of self-directed violent behaviors. With these observations as the guiding framework, in the following sections, we review various terminologies and definitions of self-directed violent-behaviors used in India.

3.1. Suicidal behaviors

Since suicide has been almost consistently defined in Indian literature, in the present work, we only reviewed suicidal behaviors like suicidal ideation and non-fatal suicidal behavior.

3.1.1 Suicidal ideation: Few Indian studies so far have defined suicidal ideation. Srivastava and Kulshreshtha (2000) defined suicidal ideation as ‘thoughts, talk, or writing about suicide without expression of any definite intent or performing any relevant action.’ Although this definition is similar to the definition of suicidal ideation proposed by WHO (see Table 1. for definition), it should be noted that WHO’s definition is more inclusive as it is not contingent on expression of intent and performance of suicidal acts.

3.1.2 Non-fatal suicidal behavior: WHO currently prefers the outcome-oriented term ‘Non-fatal suicidal behavior’ over terms like parasuicide and suicide attempts. Yet, few researchers in India have used this term so far. Jena and Sidhartha (2004) and Sidhartha and Jena (2006), define non-fatal suicide behavior as ‘a global category that involves all forms of self-directed violent behaviors except completed suicide.’ They further classify non-fatal suicidal behavior with intent to die as suicide attempt and as deliberate self-harm when intent is unknown. However, in accordance to the current WHO guidelines that rely more on an outcome based approach than

Table 1. Definitions of various forms of Self-directed violent behaviors discussed in the review.

Sr. No	Self-directed violent behavior	Definitions
1	Suicidal ideation	Thoughts of killing oneself, in varying degrees of intensity and elaboration (WHO, 2002, p. 185)
2	Non-fatal suicidal behavior	Intentional self-inflicted poisoning, injury or self-harm which may or may not have a fatal intent or outcome (World Health Organization, 2014a).
3	Parasuicide	Act with a nonfatal outcome in which an individual deliberately initiates a non-habitual behavior that, without intervention from others, will cause self-harm, or deliberately ingests a substance in excess of the prescribed or generally recognized therapeutic dosage, and which is aimed at realizing changes which the subject desired, via the actual or expected physical consequences (World Health Organization, 1986).
4	Suicide attempts	Self-initiated sequence of behaviors by an individual who, at the time of initiation, expected that the set of actions would lead to his or her own death (American Psychiatric Association , 2013).
5	DSH	Act with nonfatal outcome, in which an individual deliberately initiates a non-habitual behavior that, without intervention from others, will cause self-harm, or deliberately ingests a substance in excess of the prescribed or generally recognized therapeutic dosage, and which is aimed at realizing changes which the subject desired via the actual or expected physical consequences (Hjelmeland and Grøholt, 2005).
6	Self-Injurious Behavior	As all behaviors involving the deliberate infliction of direct physical harm to one's own body without any intention to die as a consequence of the behavior. (Simeon and Favazza, 2008)
7	Self-mutilation	The definition of self-mutilation is very similar to NSSI. However, in contemporary usage, the term is generally reserved for self-directed violent behavior involving extreme degrees of destruction of body tissues that may result in permanent disfigurement or impairment (Klonsky et al., 2011).
8	NSSI	Intentional destruction of one's body tissue without suicidal intent (Nock and Favazza, 2009).

intent, distinct categorization suggested by these researchers may be unnecessary.

3.1.3. Parasuicide/suicide attempts: WHO/EURO officially adopted the term parasuicide in the year 1986 (see Table 1. for definition). However, the prefix ‘para’ when translated to some languages means ‘mimicking’ or ‘pretending’, which failed to represent the real nature of the acts in question (De Leo et. al., 2004). Because of these linguistic difficulties, the term parasuicide was eventually replaced by other terms like suicide attempt and non-fatal suicidal behavior.

Although WHO continues to use the term suicide attempt (see Table 1. for definition) interchangeably with the term Non-Fatal Suicidal Behavior, the latter is preferred over the former. In the present review, the terms parasuicide and suicide attempts are considered here together since the two terms have been consistently used to define similar behaviors in the Indian literature.

Indian researchers have used the term parasuicide to describe two forms of behaviors: non-fatal, self-inflicted direct injury or self-poisoning (see for example, Kumar et al., 2013a, b). Although this definition of parasuicide/suicide attempt is similar to WHO’s definition, as suggested earlier, the term non-fatal suicidal behavior (De Leo, et al., 2006) may be preferred in accordance to the WHO guidelines (WHO, 2014b).

3.1.4. Intentional self-harm: The tenth edition of the International Classification of Diseases (ICD-10; WHO, 1992) introduced a new taxonomical category called ‘Intentional Self-Harm’ to indicate ‘purposefully self-inflicted poisoning or injury and suicide (attempted).’ While this was done to avoid value-laden terms such as suicide and suicide attempts, the term itself remains undefined. Intentional self-harm behavior in ICD-10 is further classified based on the method

used for inflicting injury (e.g., drowning, jumping from a high place, etc.). In the Indian literature, Das and colleagues (2008) used this term to indicate non-fatal suicidal behavior. It should be noted that though the ICD-10 diagnostic category of intentional self-harm includes suicide attempts, the term non-fatal suicidal behavior may be used instead of intentional self-harm because the latter term is of more recent origin (WHO, 2014b).

3.1.5. Deliberate self-harm: The term Deliberate Self-harm (DSH) originated in Europe and is less commonly used in America (Silverman, 2011). In Europe, the term was originally used to indicate any type of self-directed violent behavior (including both self-injury and self-poisoning) irrespective of the intent behind it. The term DSH was however replaced by the term parasuicide (Silverman, 2011). On the other hand, American scholars like Pattison and Kahan (1983) used the term deliberate self-harm to describe NSSI behavior. In recent years, DSH has also been used to indicate NSSI even in Europe (Cerutti et al., 2012), which added to the already existing confusion over the usage of the term.

The term DSH has been used to refer to two forms of self-directed violent behavior in Indian literature: a) non-fatal suicidal behavior or suicide attempts (Bhattacharya et al., 2011; Sreelatha et al., 2014); and b) NSSI-like behavior (Sarkar et al., 2006).

Based on intentionality, lethality, mode, and age, Bhattacharya et al. (2011) and Sarkar et al. (2006) differentiated hospitalized cases of self-harm into two categories: individuals with high intent to die (classified as '*failed suicide*') and those with low intent to die (classified as deliberate self-harm). However, as mentioned earlier, such classification may be difficult to implement, as clinically quantifying intent to die, is not always feasible. Additionally, most DSH cases in study by

Bhattacharya and colleagues (2011) perpetrated self-directed violence using organo-phosphates. Hence, they cannot be classified as NSSI. On the other hand, most DSH cases classified by Sarkar and colleagues (2006) engaged in self-cutting (coupled with ‘low’ or no suicidal intent), and hence these cases may be classified as NSSI-behavior. To minimize overlap in usage of terms, we suggest current ICD-10 nomenclature is followed: a non-fatal suicide attempt with or without an intention to die can be classified as non-fatal suicidal injurious behavior, whereas self-directed violent behaviors (involving direct injury to the body) without intention to die can be classified as NSSI.

3.1.6. Self-injurious behavior: In the international literature, the term Self-injurious behavior (see Table 1. for definition) has been used to indicate NSSI. Rao and colleagues (2008) documented a series of cases involving self-directed violent behaviors from a general hospital under the rubric of self-injurious behavior. Rao and colleagues suggested redefining the term self-injurious behavior as ‘commission of deliberate injury to one's own body without the aid of the other person causing tissue damage.’ They argue that self-injurious behavior should be a phenomenological category that includes all cases involving direct tissue damage (and excluding self-poisoning) irrespective of intent. Such a broad category seems unnecessary as most cases reported by Rao and colleagues can be classified as self-mutilation, non-fatal suicidal injury, and NSSI.

3.2. Self-abuse

Self-abuse is the second major sub-category of self-directed violent behaviors. It includes at least two behaviors: NSSI and self-mutilation. Both forms of behaviors have been researched in India.

3.2.1. *Self-mutilation*: Literature on self-mutilation in India exists in the form of case studies. The common types of self-mutilative cases reported in India include: genital self-mutilation (e.g., Mago, 2011; Nerli et al., 2008), pricking with multiple pins (Bharath et al., 1998; Gaur et al., 2013); evisceration; and repeated stabbing (Patra et al., 2014), enucleating of eye (Rao and Begum, 1996), and sever tongue biting (Bhat et al., 2011) were found.

Based on the current definition of self-mutilation (see Table 1.), it is clear that some cases mentioned above can be classified under other categories of self-directed violent behaviors. For example, the case report by Rao and colleague (2002) (an 82 years old man attempted suicide by amputating his testicles and scrotum using a razor blade) as the authors clearly report a high intent to die. On the other hand, the cases reported by Bharath and colleagues (1998) (a 56 years old man inserted 40 needles in his lower limbs) and Gaur and colleagues (2013) (a 23 years old man who inserted 10 simple needles in the skin around his eyes) are better diagnosed as severe NSSI as an intent to die was absent.

3.2.2. *Non-suicidal self-injury*: Although many researchers have attempted to define NSSI (Lloyd-Richardson et al., 2007; Nook et al., 2009), most of these definitions have certain common elements that distinguish NSSI from the previously mentioned self-directed violent behaviors. First, NSSI is characterized by direct and deliberate destruction of one's own body tissue (e.g., cutting, burning, etc.) hence behaviors that cause indirect harm (e.g., self-poisoning, starvation) are excluded. Second, NSSI is characterized by lack of intention to die. Third, NSSI is a repetitive behavior hence single acts of self-mutilation (self-castration, etc.) are not classified as NSSI. Finally, culturally sanctioned behaviors like tattooing, mutative rituals, etc. are not diagnosed as NSSI.

A recent community-based study by Kharsati and Bhola (2014) and case studies reported by Chittoria and colleagues (2014) are the only Indian studies that have used NSSI in the way it is defined in the international literature.

4. NSSI in India: Research so far

Studies on NSSI in India can be classified under three categories: case studies, hospital-based studies, and community-based studies.

Apart from the case studies already mentioned (Bharath et al, 1998; Gaur et al, 2013; Sarkar et al., 2006), Chittoria and colleagues (2014) also reported three cases of camphor related burns on the palms as NSSI. In all the cases, the burning of blocks of camphor was a religious ritual and in all the three cases, extensive tissue damage was reported. If existing diagnostic criteria for NSSI are followed, cases reported by Chittoria and colleagues cannot be considered as NSSI because burning camphor on hands is a culturally accepted ritual in some parts of India (Al-Qattan and Al-Zahrani, 2009). However, on closer examination of the cases, it can be noticed that injuries resulting from camphor burning were extensive enough to require medical or surgical intervention. Although none of the reported cases were evaluated for psychiatric disorders, Chittoria and colleagues reported that at least one of the patients did report psychotic features. This observation indicates that genuine cases of pathological NSSI may remain masked due to religious sanctioning of various forms of self-mutilative rituals in India. Further research should also be directed towards developing culturally informed theoretical and diagnostic approaches that assist differentiation between clinical cases of NSSI with diagnosable psychopathology and religious self-mutilative rituals.

Hospital-based studies from India generally involved patients who were admitted in a tertiary care center after an episode of self-directed violence. As

mentioned above, Sarkar and colleagues (2006) differentiated between patients with high intent to die and those with low or no intent to die. They found that patients from the latter group (about 85% of their total sample) were young adults or adolescents and most of them endorsed self-injurious behavior with low lethality (e.g., superficial cutting). The majority of the 'Deliberate Self-Harm' cases did not have any major diagnosable psychiatric condition. Although, Sarkar and colleagues did not use the term NSSI, it is clear that some of the participants from their sample were in fact engaging in NSSI.

The only Indian community-based study on NSSI by Kharsati and Bhola (2014) reported a lifetime prevalence of almost 31% in a sample of emerging adults. Around 19.8% of this sample engaged in moderate and severe forms of NSSI (e.g., erasing skin to draw blood). The average age of onset of NSSI in their sample was 15.9 years. The most common reasons reported for engaging in NSSI behavior were: to feel relaxed, to get control of the situation, to stop feeling bad, and to punish oneself (Kharsati et al., 2014). One of the possible conclusions to be drawn from the existing limited data is that lifetime prevalence of NSSI in India may be higher than international average (lifetime prevalence of NSSI among adolescents is 17.2%, among young adults is 13.4%, and 5.5% among adults; Swannell et al., 2014). However, this conclusion may be premature given that Indian NSSI research is in a nascent stage and future large-scale research with a special consideration of the unique cultural and other contextual factors is essential to confirm these preliminary findings.

5. Conclusion

Findings of the review suggest that an international lack of consensus over the use of various forms of self-directed violent behaviors has permeated in Indian

literature on suicidology. It could also be observed that most terms and definitions used to describe various self-directed violent behaviors evolve over time and, therefore, presenting concrete guidelines is difficult. However, as agreeing to some standardized conventions to define various forms of self-directed violent behaviors are important, internationally applicable WHO guidelines were presented in this paper. Indian research on NSSI is in its early stages of development. However, even in these initial stages, a need for development of culturally informed and contextually relevant research is necessary. Developing contextualized knowledge regarding NSSI may be important as it may have important public health implications.

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