SYSTEMATIC REVIEW

Non-suicidal self-injurious behavior among the Saudi population: a systematic review [version 1; peer review: awaiting peer review]

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Abstract

Background: Self-harm is a serious public health problem across the world, impacting not only people who self-harm but also their families and society as a whole through higher resource costs and productivity losses. This review was conducted among the general Saudi population to investigate the prevalence of non-suicidal self-injury (NSSI) and factors affecting it.

Methods: An electronic literature search of four major databases, PubMed, Web of Science, Scopus Science Direct, and Google Scholar, was conducted to include eligible studies. All studies reporting NSSI or relevant to the subject were included.

Results: A total of five articles with 1758 participants were included. The lowest recorded NSSI prevalence was 0.47% while the highest was 10.2%, both in Al-Khobar city.

Conclusion: We recorded a relatively low but increasing prevalence of NSSI. The review also demonstrated that NSSI was more common among the female population and young people. Self-poisoning, including drug overdose, was the most prevalent method of self-harm. Interpersonal difficulties, marital problems, academic failure, and family and self-conflicts were common motivating factors of NSSI.

Keywords
Self-harm; NSSI; DSH; Overview
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Author roles: Bahamdan A: Conceptualization, Data Curation, Formal Analysis, Funding Acquisition, Investigation, Methodology, Project Administration, Resources, Software, Supervision, Validation, Visualization, Writing – Original Draft Preparation, Writing – Review & Editing; Aldhawyan A: Conceptualization, Data Curation, Formal Analysis, Funding Acquisition, Investigation, Methodology, Project Administration, Resources, Software, Supervision, Validation, Visualization, Writing – Original Draft Preparation, Writing – Review & Editing

Competing interests: No competing interests were disclosed.

Grant information: The author(s) declared that no grants were involved in supporting this work.

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How to cite this article: Bahamdan A and Aldhawyan A. Non-suicidal self-injurious behavior among the Saudi population: a systematic review [version 1; peer review: awaiting peer review] F1000Research 2022, 11:257 https://doi.org/10.12688/f1000research.106946.1

First published: 02 Mar 2022, 11:257 https://doi.org/10.12688/f1000research.106946.1
Introduction
Non-suicidal self-injury (NSSI) behavior is becoming more of a clinical and public health issue. NSSI is defined as the intentional and direct destruction of one's biological tissue in the absence of deadly intent and for non-socially sanctioned causes.1,2

The prevalence of NSSI, such as self-cutting, poisoning, drug overdose, self-immersing or burning, among children and adolescents is less obvious due to the lack of NSSI evaluations in most large epidemiological research.1 However, preliminary research findings indicate that adolescent participation in NSSI is increasing.1,3 According to research, those who engage in NSSI have a high prevalence of suicide attempts, exposing them to a greater chance of committing suicide. Because the general public is becoming more aware of self-injurious behavior among teenagers, research into the epidemiology, phenomenology, and management of NSSI is expanding. However, as this assessment will demonstrate, there is still a significant amount of work to be done.4–7

There has been a lack of widely accepted terminology. Over the years, self-injurious behaviors have been defined in many different terms: syndrome of delicate self-cutting, self-wounding, self-mutilation and deliberate self-harm.8,9

Self-harm has long been related to other conditions, such as post-traumatic stress disorder, depressive disorders, obsessive-compulsive disorder, anxiety disorder, borderline personality disorder, and eating disorders.10–13 Earlier estimates varied from 40% to 82% among teenagers in psychiatric inpatient settings, with 4% of the general population having a history of NSSI. Recent studies estimate the prevalence of NSSI to be approximately 10% among general population worldwide.14,15

Researchers discovered that self-harming behavior is becoming increasingly common especially among female adolescents and young adults.16,17 The first attempt to identify this tendency may be found in Menninger's book “Man against himself,” in which the author defines self-injurious behavior as a type of “partial suicide”.18

Daradkeh investigated the impact of national and religious events on the rate of parasuicide in Jordan and discovered that significantly fewer parasuicides were reported during Ramadan than in the preceding and following months.19 Self-inflicted kerosene burning is a widespread, historic, and theatrical method of female suicide attempt in Jordan.20

In Saudi Arabia, self-harm is mostly committed by young girls, and the most common method is deliberate self-poisoning with analgesics and psychoactive substances.21

Reducing the risk of suicide after self-harm must be a crucial component in national suicide prevention programs. Much as restricting the supply of pharmaceuticals is beneficial in lowering suicide rates in the past.22 In order to develop context-specific preventative strategies, information on risk categories and precipitating factors is required.23

Our research aims to provide an up-to-date and reliable evidence synthesis by defining the characteristics (rates and risk factors) of NSSI among the general population in Saudi Arabia.

Methods
This review was implemented and reported following established guidelines for systematic reviews (Preferred Reporting Items for Systematic Reviews and Meta-Analyses, PRISMA).

Information sources and search strategy
A comprehensive research was done to overview current available primary literature on NSSI and deliberate self-harm (DSH) observed among the general population in Saudi Arabia. A literature search was conducted using four major databases to identify relevant and eligible study articles: PubMed, Web of Science, Scopus, Science Direct, and Google Scholar. Our search was restricted to the English language and was adjusted to each database as necessary.

The following keywords were used to identify the eligible study articles that adjusted into Mesh terms in PubMed or subject terms as in Scopus: “Self-injury,” “non-suicidal self-injurious behavior,” “NSSI,” “Parasuicide,” “Self-harm,” “deliberate self-harm,” “DSH,” and “Saudi Arabia.” The relevant keywords were combined with Boolean operators like “OR” and “AND.” No filters or limits were applied.

Eligibility criteria
Full-text publications, freely accessible articles and human trials were eligible for inclusion over all dates the databases existed for. The search was conducted between August and September 2021. Our overview included the studies with the
following criteria: 1) Articles reporting cases diagnosed with NSSI or DSH; 2) Including subjects in Saudi Arabia; 3) English language publications; 4) Any age group. Any study that did not meet our criteria were excluded.

Selection process and data collection
Rayyan (QCRI)\textsuperscript{24} was used to identify duplicates of the search strategy outcomes. Both authors screened titles and abstracts for convenience by investigating the search results using the eligibility criteria. The reviewers evaluated the full text of the papers that met the inclusion criteria. They overcame any conflicts by debate and discussion.

A data extraction form was established to include the eligible research. The authors extracted information about the study titles, authors, study year, study design, study population, participant number, participant age (age range and mean age), and gender, the prevalence of NSSI or DSH, the associated factors representing the risk of self-harm incidence, follow-up duration, and the most frequent method of harm.

Summary tables comprising the collected details from the eligible studies were presented to generate a qualitative overview of the included research features and outcome data by two independent reviewers and differences between reviewers were resolved by discussion. The extent of the recommended pooled analyses was examined once the data processing was assessed. After data was extracted from the included studies, authors decided how to best utilize and analyze it to serve the purpose of the study.

Figure 1. PRISMA flow chart presenting the study selection results.
<table>
<thead>
<tr>
<th>Study</th>
<th>Study design</th>
<th>City</th>
<th>Total participants</th>
<th>Mean age</th>
<th>Prevalence of NSSI or DSH (%)</th>
<th>Follow-up</th>
<th>Prevalent method of harm</th>
<th>Motivation for self-harm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mahgoub et al., 1988</td>
<td>Retrospective</td>
<td>Al-Khobar</td>
<td>40</td>
<td>20.65 ± 5.18</td>
<td>0.47%</td>
<td>4 years</td>
<td>Drug overdose</td>
<td>Interpersonal problems; followed by marital then personal problems</td>
</tr>
<tr>
<td>Daradkeh et al., 1985</td>
<td>Retrospective and prospective</td>
<td>Al Hasa</td>
<td>30</td>
<td>23.4</td>
<td>20.7 per 100,000</td>
<td>1 year</td>
<td>Non-opiate analgesics</td>
<td>Marital conflicts, conflicts with parents, and academic failure</td>
</tr>
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<td>33</td>
<td>24</td>
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<td>1 year</td>
<td>Non-opiate analgesics</td>
<td>Marital conflicts, conflicts with parents, and academic failure.</td>
</tr>
<tr>
<td>Al Habeeb et al., 2013</td>
<td>Cross-sectional</td>
<td>Riyadh</td>
<td>557</td>
<td>39 ± 11.7</td>
<td>7.7%</td>
<td>1 year</td>
<td>NR</td>
<td>Physical comorbidity and self-conflicts</td>
</tr>
<tr>
<td>Al-Sharqi et al., 2012</td>
<td>Cross-sectional</td>
<td>Riyadh, Dammam, Al-Amal, and Jeddah</td>
<td>736</td>
<td>32.3 ± 9.2</td>
<td>6.9%</td>
<td>NR</td>
<td>NR</td>
<td>Socioclinical variables</td>
</tr>
<tr>
<td>AbuMadini et al., 2001</td>
<td>Prospective</td>
<td>Al-Khobar</td>
<td>362</td>
<td>26.3 ± 9.5</td>
<td>10.2%</td>
<td>6 Years</td>
<td>Self-poisoning by overdose followed by self-cutting</td>
<td>Nearly half of the participants had family conflicts followed be self and personal conflicts</td>
</tr>
</tbody>
</table>
Results
Search results
A total of 301 study articles resulted from the initial systematic search. Rayyan (QCRI) identified and removed 45 duplicates from these results. Following the title and abstract screening, 162 studies were removed either due to irrelevant findings, inappropriate research type, or design, followed by the full-text assessment and removal of an additional 89 studies due to irrelevant analysis or wrong outcome. This eventually resulted in a total of 5 eligible studies. The selection process and identification are presented in Figure 1.

Characteristics of the included studies
Table 1 includes the characteristics of the five included studies.

Of the five included studies, one was retrospective,\(^{25}\) one retrospective and prospective,\(^{26}\) two studies were cross-sectional,\(^{27,28}\) and one prospective.\(^{29}\) In total, there were 1758 participants and five different cities in Saudi Arabia were included.

Mahgoub et al.\(^{25}\) conducted a retrospective study on 40 subjects with a four year follow-up period and recorded the lowest NSSI prevalence with a percentage of 0.47%. They reported that the majority of subjects were single and under the age of 30 (95%), with the majority under the age of 20 (52.5%); the female to male ratio was 4:1. Interpersonal difficulties that resulted in quarrels caused the conduct in more than two-thirds (72.5%) of the incidents. Eighty percent of the cases involved drug overdose. Almost equally, psychotropic, analgesic, and other medications were used. The most common diagnosis was reactive depression (60%). Among the recommended preventive measures were limited analgesic sales, the disposal of unwanted drugs, and the discrete prescription of psychotropics, particularly to young women.

Daradkeh et al.\(^{26}\) conducted a study prospectively and retrospectively for two years on 63 participants and reported that NSSI was prevalent in 20.7 per 100,000. They reported that young women primarily were affected and that dysfunctional interpersonal connections with spouses and parents serve as triggering factors. The most common diagnosis was acute stress reaction, followed by depression. The most common approach was deliberate self-poisoning with analgesics and psychoactive medications. The findings of this study disagree with the concept that parasuicide is uncommon in this region of the world.

Al Habeeb et al.\(^{27}\) conducted a cross-sectional study on 557 patients diagnosed with depression with one-year follow-up and reported an NSSI prevalence of 7.7%. This hospital-based study gave a wide picture of the prevalence of suicide and non-suicidal self-injurious behaviors, as well as specific risk and protective factors, in patients with depression. Male gender, type of joint family, literate education, employment status, smoking, and physical comorbidities were all substantially linked with all types of suicidal behavior.

Al-Sharqi et al.\(^{28}\) conducted a cross-sectional study on 736 patients diagnosed with alcohol or drug abuse and an NSSI prevalence of 6.9%. Their preliminary findings suggest that socioclinical variables correspond to suicide ideation, suicidal and self-injurious behavior, and protection from risky behavior, but which of these contributes significantly to the risk and protective dimensions remains to be determined in wider and more diverse community-based studies.

AbuMadini et al.\(^{29}\) conducted a prospective study on 362 subjects, followed up for six years, and recorded the highest NSSI prevalence (10.2%). Self-poisoning by overdose followed by self-cutting were the prevalent methods of self-harm in this study. Nearly half of the participants had family conflicts, followed by self and personal conflicts. The authors concluded that DSH is not uncommon, and as it is widespread, serious, and recurring, it warrants psychotherapy and social interventions.

Discussion
This review presents the current evidence concerning the characteristics of NSSI or DSH in Saudi Arabia. Findings in this overview highlight the increasing proportion of NSSI between 1988 to 2013. Previous history of self-harm, psychiatric comorbidities, sociodemographic characteristics (e.g., women or young age), and family, interpersonal, and self-conflicts were more strongly associated with self-harm incidence.

The lowest NSSI prevalence (0.47%) was recorded by Mahgoub et al.\(^{25}\) while the highest (10.2%) was reported by AbuMadini et al.\(^{29}\), both in Al-Khobar city among cases who carried out DSH. This was lower than the international prevalence of NSSI (18%, SD = 7.3) in a systematic review conducted between 2005 and 2011.\(^{20}\) One probable explanation is that the majority of people in Saudi Arabia follow the Islamic faith, which forbids deliberate self-destruction and offers eternal benefits in the afterlife to those who patienty suffer life's difficulties. Commitment to
religious religion and belief in afterlife has been shown to alleviate human suffering and be adversely associated with suicide or self-harm.31 Another possible explanation is that there is no well-established reporting system that facilitates case identification.

Mahgoub et al. found that most participants were single and nearly half were under 20 years, they also reported that women were four times greater than men in committing self-harm25; this was also consistent with Daradkeh et al.26 These results were also similar to international trends.16,17

It is suggested that there is evidence of a bidirectional association between psychiatric issues and self-harm in women, in the sense that they act as mutual risk factors.32 This is consistent with the hypothesis that mental health and self-harm may enter a self-generating “vicious cycle” among women/girls, in the form of a dynamic system with feedback mechanisms that lead to the emergence and stabilization of pathological patterns involving both self-harm and other psychological problems.33 The lack of evidence of a mutual association between psychological concerns and self-harm in men/boys may imply that self-harm is not an equally significant problem. While self-harm is a clinical manifestation of psychological problems in boys, it may not have equally grave consequences on the future development of boys’ mental health. This would indicate that “problem gravitation” involving self-harm would be less prevalent among men.32,33

This review found that self-poisoning and overdose, concerning psychotropic, analgesics, and other medications, are the most prevalent method of self-harm in the Saudi population.25,26,29 One cause for this might be the increased availability of medicine as a result of comorbid illnesses that necessitate the use of prescription drugs. In the UK, almost 17% of the adult population are prescribed antidepressants, providing them wider access to overdose pills.34 According to data from the UK’s Office for National Statistics, antidepressant overdose accounted for more than one-third of self-poisoning deaths in 2014.35 Interpersonal difficulties, marital problems, academic failure, and family and self-conflicts were the most common motivating factors of NSSI.

In the studies included in this review, reactive depression and stress reaction were the diagnoses of most subjects who commit NSSI. It is suggested that reactive depression is a growing environment for NSSI. Depression may mediate self-harm acts. However, this remains an issue of some doubt, complicated by the psychiatric terminology standards that do not identify the cause of the illness itself.36

Strengths and limitations
This is the first review to synthesize and evaluate data on NSSI in the general population of Saudi Arabia from quantitative studies. We believe that quantitative publishing findings are critical for academics and practitioners in the area, since it further explains self-harm in older individuals. The results of this review are limited to data shown in the included studies, which were mainly based on NSSI presentations to hospital settings in Saudi Arabia (n = 5).

Further research efforts are needed to address NSSI comprehensively to provide better visualization in regard to its associated factors and overall impact on the Saudi population.

Conclusion
This review demonstrated a relatively low prevalence of NSSI in Saudi Arabia. It also demonstrated that NSSI was more common among the female population and young subjects. Self-poisoning, including drug overdose, was the most prevalent method of self-harm. Interpersonal difficulties, marital problems, academic failure, and family and self-conflicts were common motivating factors of NSSI.

Data availability
Underlying data
No data is associated with this article.

Reporting guidelines

Data are available under the terms of the Creative Commons Zero “No rights reserved” data waiver (CC0 1.0 Public domain dedication).
References

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