



## Review

# The impact of physical pain on suicidal thoughts and behaviors: Meta-analyses



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## ABSTRACT

Although the relationship between physical pain and suicidal thoughts and behaviors has been explored in multiple epidemiologic and clinical studies, it is still far from being well understood. Consequently, we conducted a meta-analysis of studies comparing rates of suicidal thoughts and behaviors in individuals with and without physical pain.

We searched MEDLINE and PsycINFO (May 2015) for studies comparing rates of current and lifetime suicidal thoughts and behaviors (death wish, suicide ideation, plan, attempt and death: DW, SI, SP, SA, SD) in individuals with any type of physical pain (headache, back, neck, chest, musculoskeletal, abdominal and pelvic pains, arthritis, fibromyalgia, medically unexplained pain, and other not specified pain) versus those without it. Data were analyzed with Cochrane Collaboration Review Manager Software (RevMan, version 5.3). We assessed the methodological quality of the studies with the STROBE statement.

Of the 31 included studies, three focused on lifetime DW, twelve focused on current SI (six lifetime), six focused on current SP (two lifetime), nine focused on current SA (11 lifetime) and eight on SD. Individuals with physical pain were more likely to report lifetime DW ( $p = 0.0005$ ), both current and lifetime SI (both  $p < 0.00001$ ), SP (current:  $p = 0.0008$ ; lifetime:  $p < 0.00001$ ), and SA (current:  $p < 0.0001$ ; lifetime:  $p < 0.00001$ ). Moreover, they were more likely to report SD ( $p = 0.02$ ). In all analyses, the between study heterogeneity was high. Moreover, the presence of publication bias has been detected in the main outcomes.

Physical pain is a consistent risk factor for suicidal thoughts and behaviors. Further research is required to investigate the specific impact of: 1) chronic versus acute pain, 2) different types of pain (e.g., medically unexplained pain), and 3) risk factors for suicide in chronic pain patients.

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## 1. Introduction

Among risk factors of suicidal thoughts and behavior, the experience of physical pain, in particular chronic pain, has received a good deal of recent attention (Hassett et al., 2014; Newton-John and 2014; Hooley et al., 2014). However, although there is urgent need to identify important predictors of suicidal behaviors that could help focus on vulnerable individuals and prevent further deaths, the relationship between pain and suicidal thoughts and behaviors is far from being deeply understood.

A recent narrative review has been published on the pain-suicidality association (Fishbain et al., 2014). Authors evaluated studies focused on suicide ideation (SI), attempt (SA), and death (SD) in both chronic and acute pain patients. For both SI and SA the association with pain was found to be consistent in chronic pain participants; however, the association between pain and SD seemed to be less consistent. One major problem raised by the authors was the paucity of studies comparing patients with pain to controls without pain on the different forms of suicidal thoughts and behavior.

To more closely investigate the nature of the relationship between physical pain and suicide, we performed the first meta-analysis on this topic. We assessed the different aspects of suicidal thoughts and behaviors (SI, SA, SD) and we further consider death wish (DW) and suicidal plan (SP), to better cover the full spectrum of suicidality. Moreover, we were able to perform separate analyses for both current and lifetime SI, SP, and SA. Concerning physical pain, we considered any type of physical pain (headache, back, neck, chest, musculoskeletal, abdominal and pelvic pains, arthritis, fibromyalgia, medically unexplained pain, and other not specified pain). Furthermore, we added in the analyses unpublished data from a French multicenter study by our team of research (for a description see: (Ritchie et al., 2004)) concerning the association between headache and current SI and SP, and lifetime SA. Secondarily, we performed a number of sensitivity analyses to account for the hypothesized between-study heterogeneity.

## 2. Methods

### 2.1. Search strategy

We based our search strategy on MEDLINE, incorporating results of further searches of PsycINFO (until May 2015). We used the following search terms: (pain OR physical pain OR chronic pain OR acute pain OR headache OR back pain OR neck pain OR musculoskeletal pain OR arthritis OR fibromyalgia) alone AND in combination with (suicid\* OR self-harm). In addition, reference lists from identified studies, reviews and meta-analyses were examined for further articles.

### 2.2. Inclusion/exclusion criteria

Studies were included if: they reported rates of any form of suicidal thoughts or behavior (DW, SI, SP, SA and SD) both for participants suffering from physical pain and for participants not reporting pain. Any reported form of physical pain was included: chronic pain, acute pain, headache/migraine, back, neck, chest, musculoskeletal, abdominal and pelvic pains, arthritis, fibromyalgia, neuropathic pain, psychogenic pain, medically unexplained pain, injury-associated pain, and other not specified pain. In the case of studies focusing on a number of physical conditions, we included only conditions that were clearly linked to pain.

Furthermore, we decided to include in the analyses unpublished data from a French multicenter study by our team of research (for a description see: (Ritchie et al., 2004)).

Studies were excluded if: they were case studies; they focused on suicidal behavior in pain related conditions but without a control group with no pain; they were performed on overlapping samples; self-harm was not precisely defined (Tsai et al., 2011); they considered SI together with homicidal ideation (Fishbain et al., 2011); they considered pain related to different conditions (e.g., pain of survivors of major burns (Edwards et al., 2007), pain of survivors of childhood cancer (Recklitis et al., 2006), or HIV-related pain (Dafoe and Stewart, 2004)).

### 2.3. Outcomes

The key outcomes were the rates of any form of suicidal thoughts or behavior (death wish, DW, suicide ideation, SI, suicidal plan, SP, suicide attempt, SA, and suicide death, SD) in participants with a pain related physical condition versus participants without it. Among suicide-related thoughts we considered DW, SI and SP. DW corresponds to wanting to die. SI corresponds to thinking of committing suicide. SP is the presence of a specific program of action leading to a self-injurious outcome. Among suicide-related behaviors we considered SA and SD. SA is a self-inflicted potentially injurious behavior with a nonfatal outcome while SD corresponds to self-inflicted death. For SI, SP, and SA we separately considered current and lifetime suicidal thoughts or behavior. In two studies (Woolley et al., 2008; Theodoulou et al., 2005), rates of current SI and SA were grouped together, so we included them in the analysis of current SA. In another study (Luntamo et al., 2014), rates of severe SA and SD were indicated together, so we included them in the analysis of SD.

When more than one level of pain was reported, we included any level of pain as the “event” in a first analysis (very mild, mild, moderate, severe, very severe), moderate, severe, and very severe in a second analysis and severe and very severe in a third one (Ilgen et al., 2010; Kikuchi et al., 2009; Juurlink et al., 2004). When more

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