



## The effectiveness of suicide prevention delivered by GPs: A systematic review and meta-analysis



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### ABSTRACT

**Background:** The aim of this review was to assess whether suicide prevention provided in the primary health care setting and delivered by GPs results in fewer suicide deaths, episodes of self-harm, attempts and lower frequency of thoughts about suicide.

**Methods:** We conducted a systematic review and meta-analysis using PRISMA guidelines. Eligible studies: 1) evaluated an intervention provided by GPs; 2) assessed suicide, self-harm, attempted suicide or suicide ideation as outcomes, and; 3) used a quasi-experimental observational or trial design. Study specific effect sizes were combined using the random effects meta-analysis, with effects transformed into relative risk (RR).

**Results:** We extracted data from 14 studies for quantitative meta-analysis. The RR for suicide death in quasi-experimental observational studies comparing an intervention region against another region acting as a “control” was 1.26 (95% CI 0.58, 2.74). When suicide in the intervention region was compared before and after the GP program, the RR was 0.78 (95% CI 0.62, 0.97). There was no evidence of a treatment effect for GP training on rates of suicide death in one cRCT (RR 1.07, 95% CI 0.79, 1.45). There was no evidence of effect for the most other outcomes studied.

**Limitations:** All of the studies included in this review are likely to have a high level of bias. It is also possible that we excluded or missed relevant studies in our review process

**Conclusions:** Interventions have produced equivocal results, which varied by study design and outcome. Given these results, we cannot recommend the roll out of GP suicide prevention initiatives.

### 1. Introduction

Suicide and self-harm (including intentional self-injury or self-poisoning irrespective of type of motivation and/or degree of suicidal intent) represents a serious public health burden. There is now good evidence that psychotherapeutic treatments (e.g., cognitive behaviour therapy or dialectical behavioural therapy) are effective at reducing the repetition of self-harm (Hawton et al., 2016). Results also suggest a non-significant reduction in suicide when using cognitive behavioural therapy and case management (Hawton et al., 2016).

However, a large number of individuals who are at risk of suicide may never come into contact with the specialist mental health services

that offer these treatments (Appleby et al., 1999; Cavanagh et al., 2003; Law et al., 2010; Schaffer et al., 2016). In contrast, many people have contact with general practitioner (GP) services prior to suicide (Andersen et al., 2000; Leavey et al., 2016; Luoma et al., 2002; Pearson et al., 2009; Power et al., 1997; Stark et al., 2012). A review of over 40 studies (Luoma et al., 2002) found that up to three of four suicide victims had contact with primary care providers in the year of their suicide. More recently, a study from Northern Ireland found that as many as 85% of people who died by suicide were in contact with general practice services in the 12 months before their death (Leavey et al., 2016). In Scotland, 18.6% of those who died by suicide during the period 2001–2004 had contact with mental health services,

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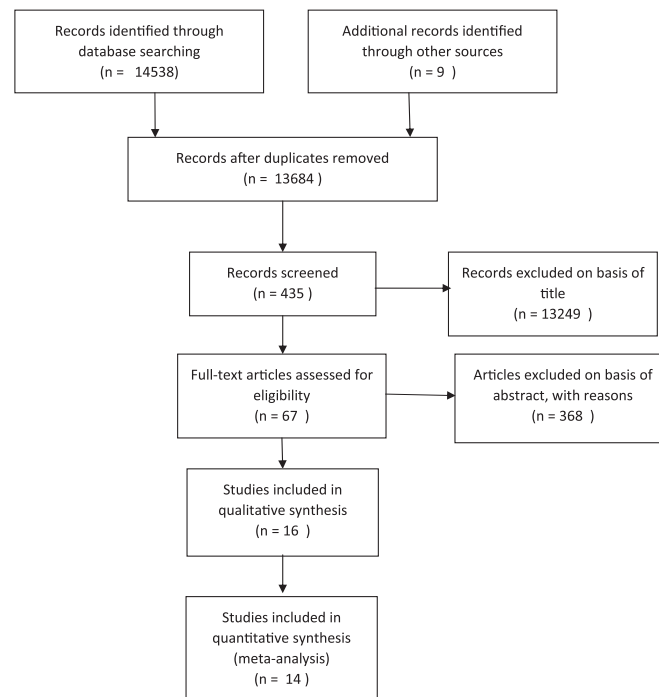


Fig. 1. PRISMA flow chart for study selection.

compared to 46.4% who had contact with general practice (Stark et al., 2012).

Given this evidence, it is unsurprising the involvement of GPs in providing suicide prevention services has been of considerable interest to researchers (Feltz-Cornelis et al., 2011; Leitner et al., 2008). There have also been several large-scale studies that feature GP training as a central component of suicide prevention initiatives (Hegerl et al., 2006, 2008; Roskar et al., 2010; Rutz et al., 1995, 1989a, 1992, 1990, 1989b, 1997). However, there has been limited assessment of the effectiveness of suicide prevention interventions that involve GPs. The aim of this review was to assess whether suicide prevention provided in the primary health care setting and delivered by GPs result in fewer suicide deaths, episodes of self-harm, attempts and thoughts about suicide.

## 2. Methods

The review was based on the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) (Liberati et al., 2009).

### 2.1. Search strategy and keywords

We conducted a systematic search of seven electronic databases that index literature from a wide range of disciplines including intervention research (CENTRAL-Trials Register), medical science (EMBASE; PubMed), public health (Global Health), psychology (PsycINFO), and social science (ProQuest; SCOPUS). We also searched for ongoing trials in the Australian and New Zealand Clinical Trials Register and the EU Clinical Trials Register. All databases were searched for eligible studies from their start date until 30 April 2016.

We used a three-tier search strategy to identify eligible studies. At the first stage, keywords related to general practitioners and general practice were combined (e.g., “general prac\*” OR “Primary Health Care”). At the second stage, these were combined with keywords inclusive of self-harm or suicide (e.g., self\$harm OR suicid\* OR attempted suicid\* OR parasuicid\* OR “intentional\$self\$harm” OR “drug overdos\*” OR auto\$mutilat\* OR self\$cutt OR self\$destructive

behavio\* OR self\$poison\* OR self\$mutilat\* OR self\$injur\*). At the third stage, these were combined with keywords relating to suicide prevention or intervention (e.g., prevent\* OR interven\*). We originally also included keywords relating to psychoeducation (e.g., “health education” OR “health promotion” OR “medical education”) in third-tier searches but removed these after finding that the search produced a large number of non-relevant search results.

Keywords were adapted for the specific requirements of each electronic database. Truncation and wildcards were introduced where necessary to increase the sensitivity of the search. No restrictions were placed on publication status or language, but if we were unable to obtain adequate details for data extraction these studies were later excluded from meta-analyses.

Reference lists of identified studies, as well as prior relevant reviews in the field (Hawton et al., 2016; Lapierre et al., 2011; Mann et al., 2005; Roscoät and Beck, 2013; Roškar, 2012; Tait and Michail, 2014; van der Feltz-Cornelis et al., 2011; Zalsman et al., 2016) were hand screened to identify further relevant studies. Experts in the field were also contacted to assist with the identification of ongoing evaluations. Where necessary, corresponding authors were also contacted to clarify aspects of study design or methodology.

### 2.2. Inclusion and Exclusion Criteria

Studies were eligible for inclusion if: (1) they evaluated an intervention provided by GPs in primary care settings (i.e., the primary care provider was involved either solely or in combination with another support person in the delivery of the intervention), either as a standalone intervention or as part of a larger multicomponent intervention; (2) suicide, suicide attempt, self-harm or suicide ideation were assessed outcomes (whether primary or secondary), and; (3) they used a quasi-experimental observational (e.g., ecological before-after study, or an ecological study comparing a region that received the intervention against one that did not receive the intervention) or trial design, including cluster randomised controlled trials (cRCTs).

Studies were excluded if: (1) the intervention was not delivered, at least in part, by a GP (Unutzer et al., 2006 was excluded because the intervention was delivered by a Depression Care Manager rather than

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