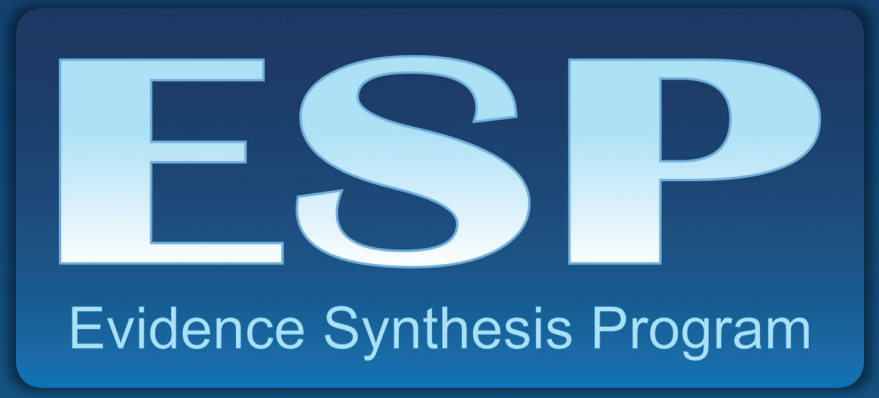

Population and Community-Based Interventions to Prevent Suicide

Eric Linskens, Shahnaz Sultan, Timothy Wilt
for our Suicide Prevention Team

Minneapolis ESP Center
Minneapolis VA

May 25, 2021

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Operational partners are system-level stakeholders who have requested the report to inform decision-making. They recommend TEP members; assure VA relevance; help develop and approve final project scope and timeframe for completion; provide feedback on draft report; and provide consultation on strategies for report dissemination.

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Disclosure

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VA Evidence Synthesis Program overview

ESP
Evidence Synthesis Program

- Established in 2007
- Provides tailored, timely, and accurate evidence syntheses of VA-relevant, Veteran-focused healthcare topics. These reports help:
  - Develop clinical policies informed by evidence;
  - Implement effective services and support VA clinical practice guidelines and performance measures; and
  - Set the direction for future research to address gaps in clinical knowledge.
- Three ESP Centers across the US:
  - Directors are VA clinicians, recognized leaders in the field of evidence synthesis, and have close ties to the AHRQ Evidence-based Practice Center Program and Cochrane Collaboration
- ESP Coordinating Center in Portland:
  - Manages national program operations and interfaces with stakeholders
  - Produces rapid products to inform more urgent policy and program decisions

To ensure responsiveness to the needs of decision-makers, the program is governed by a Steering Committee comprised of health system leadership and researchers.

The program solicits nominations for review topics several times a year via the program website.

ESP Center locations

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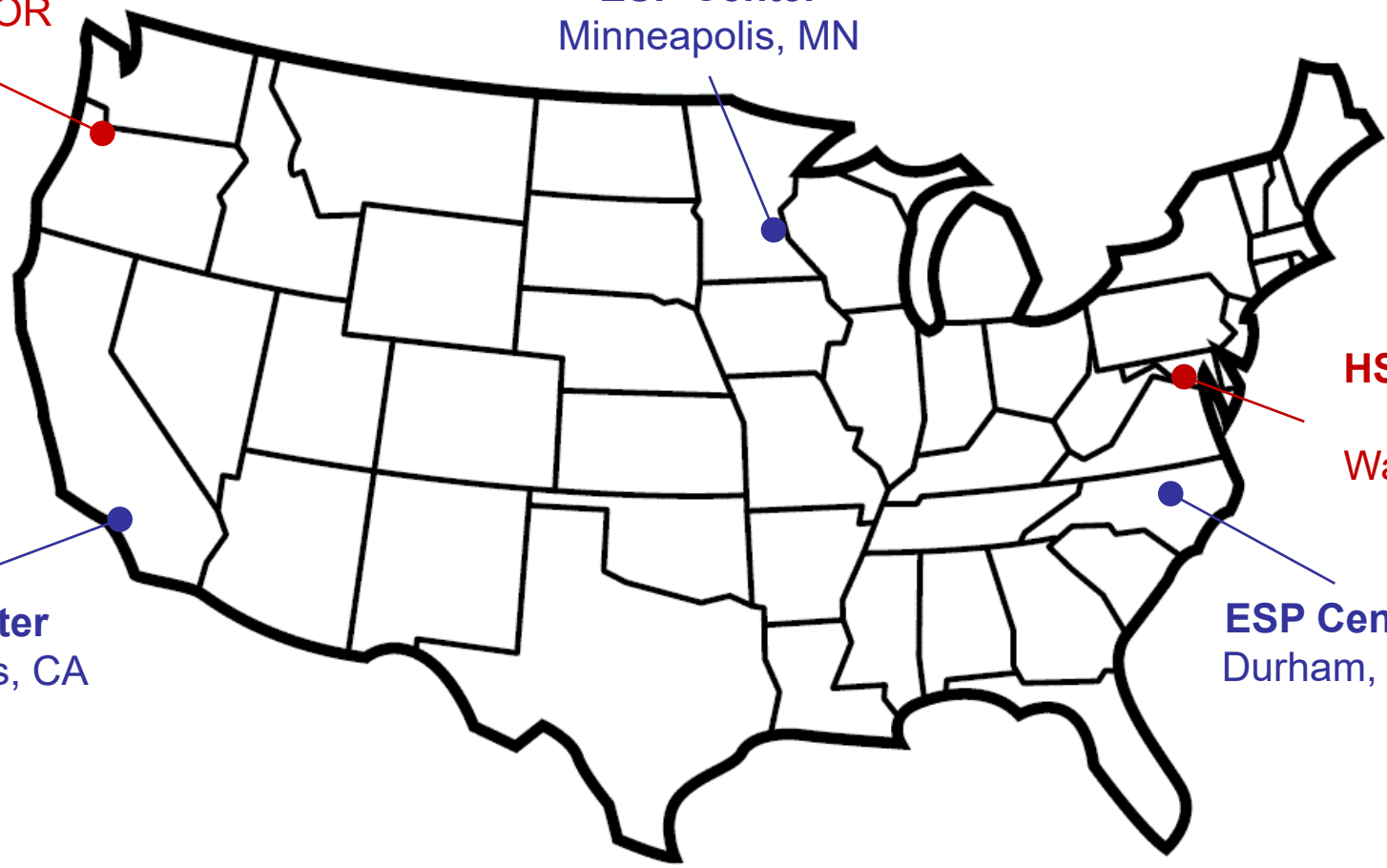

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Population and Community-Based Interventions to Prevent Suicide

May 2021

Full-length report will be available on ESP website:
http://www.hsrd.research.va.gov/publications/esp/reports.cfm

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Background

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- Preventing suicide is an important priority
  - In 2018:
    - Suicide 10th leading cause of death in US
    - 48,344 suicides
    - Veterans comprised 8% US adults; accounted for 14% of suicide deaths
- Multiple efforts by multiple offices have generated initiatives calling for a public health approach to prevent suicide
  - WHO
  - US Office of Surgeon General
  - VA

Key questions

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- **KQ #1**: What are the effects of population and community-based prevention interventions on suicide attempts and suicide deaths?
  - What are the key/common components of the most effective interventions?
  - What strategies have been used to deliver, sustain, and improve the quality of the most effective interventions?
  - How do the effects vary by differences in community/setting and characteristics of individuals targeted?

- **KQ #2**: What are the potential unintended consequences of population and community-based prevention interventions?

Methods

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- Literature search: 2010 to November 2020
- Identify studies meeting eligibility criteria
  - Focused on community-based interventions so excluded health care settings and clinical interventions (*eg*, psychotherapy)
  - Primary outcome: suicide deaths
- Assess risk of bias, did not analyze high risk of bias
- Rated overall certainty of evidence using GRADE

Inclusion Criteria

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PICOTS
Population
Intervention
Comparison
Outcomes
Timing
Setting
Study Design

Inclusion Criteria

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PICOTS	Inclusion Criteria
Population	Veteran and non-Veteran populations of high school age or older
Intervention	Population and community-based interventions to prevent suicide
Comparison	1) Pre-intervention 2) Concurrent control group
Outcomes	Primary outcomes: 1) suicide attempts 2) suicide deaths Possible unintended consequences: 1) stigma towards suicide 2) caregiver burden 3) switching suicide means
Timing	Any
Setting	1) Community-based settings (*ie*, schools, workplace, military settings, prisons, suicide hotspots, general community) 2) Countries with very high Human Development Index
Study Design	1) RCTs 2) Observational study with pre-post data and/or concurrent control

Literature Flow Diagram

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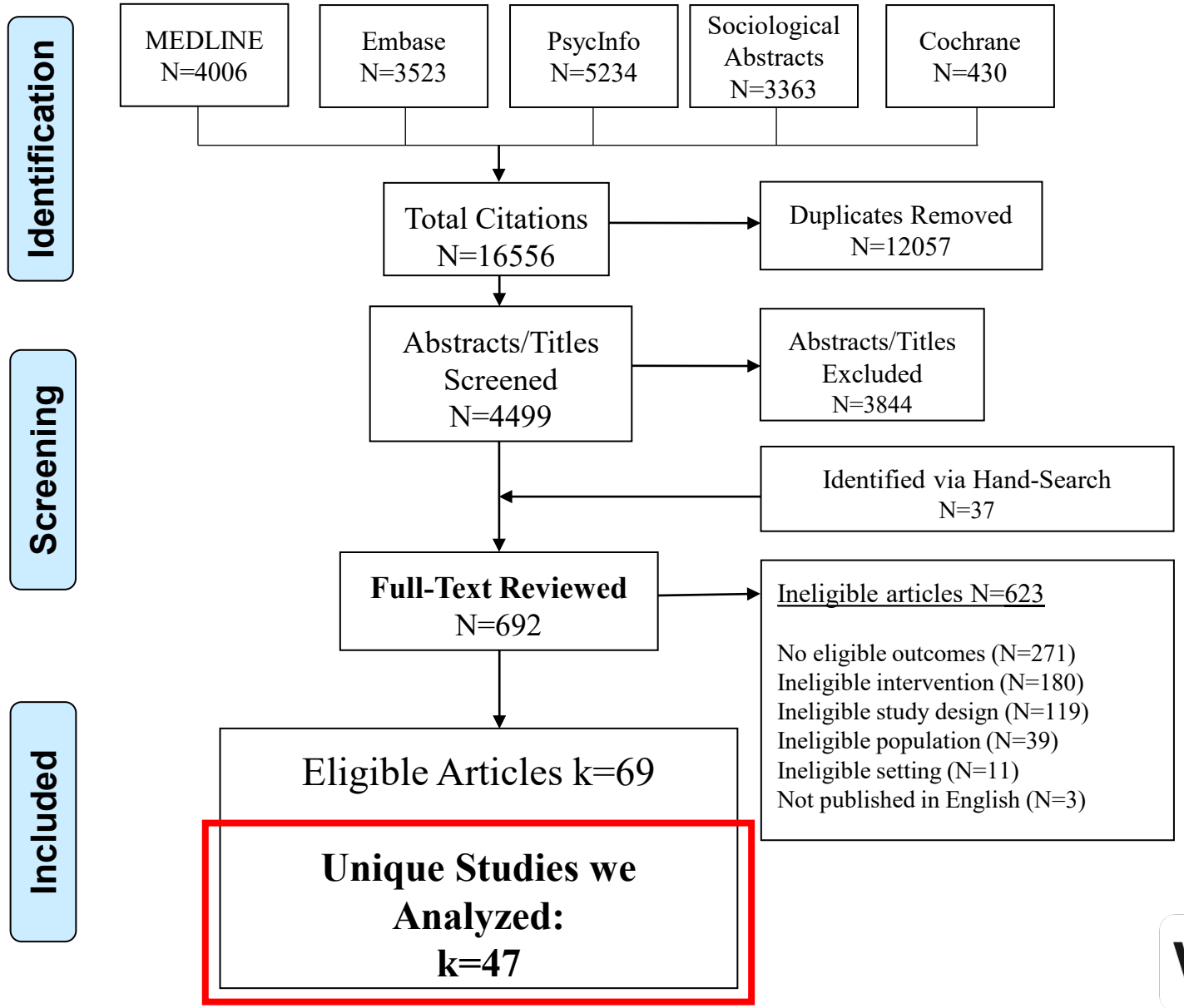

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Grouping Studies

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Modified version of CDC framework

Adapted from: CDC's guidebook Preventing Suicide: A Technical Package of Policy, Programs, and Practices authored by Stone and colleagues in 2017

Example studies

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RESEARCH AND PRACTICE

Installation of a Bridge Barrier as a Suicide Prevention Strategy in Montréal, Québec, Canada

Grouped as “reducing access to means”

Stéphane Perron, MD, MSc, Stephanie Burrows, PhD, Michel Fournier, MA, Paul-André Perron, PhD, and Frédéric Ouellet, PhD

Physical availability and sociocultural acceptability are important considerations in the choice of method of suicide.[1] Restricting access to commonly used methods of suicide is widely recognized as a suicide prevention strategy. Several studies have indicated that detoxification of domestic gas; mandatory use of catalytic converters in motor vehicles; restrictions on pesticides, barbiturates, and analgesics; use of lower toxicity antidepressants; firearm control legislation; and construction of barriers at jumping sites have been effective in reducing suicides by those methods.[1] However, evidence for the success of some of these strategies remains equivocal (e.g., use of catalytic converters in Australia,[2] reduction of paracetamol pack size in the United Kingdom[3,4]). Furthermore, restricting one method can result in substitution with another, although substitution may depend on the popularity of the method

Objectives. We investigated whether the installation of a suicide prevention barrier on Jacques-Cartier Bridge led to displacement of suicides to other jumping sites on Montréal Island and Montérégie, Québec, the 2 regions it connects.

Methods. Suicides on Montréal Island and Montérégie were extracted from chief coroners' records. We used Poisson regression to assess changes in annual suicide rates by jumping from Jacques-Cartier Bridge and from other bridges and other sites and by other methods before (1990–June 2004) and after (2005–2009) installation of the barrier.

Results. Suicide rates by jumping from Jacques-Cartier Bridge decreased after installation of the barrier (incidence rate ratio [IRR] = 0.24; 95% confidence interval [CI] = 0.13, 0.43), which persisted when all bridges (IRR = 0.39; 95% CI = 0.27, 0.55) and all jumping sites (IRR = 0.66; 95% CI = 0.54, 0.80) in the regions were considered.

Conclusions. Little or no displacement to other jumping sites may occur after installation of a barrier at an iconic site such as Jacques-Cartier Bridge. A barrier's design is important to its effectiveness and should be considered for new bridges with the potential to become symbolic suicide sites. (*Am J Public Health.* 2013;103:1235–1239. doi:10.2105/AJPH.2012.301089)

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Example studies

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Reasons to Love Life

Effects of a Suicide-Awareness Campaign on the Utilization of a Telephone Emergency Line in Austria

Benedikt Till[1], Gernot Sonneck[2], Gerhard Baldauf[3], Elise Steiner[4], and Thomas Niederkrotenthaler[1]

[1]Suicide Research Unit, Department of General Practice and Family Medicine, Center for Public Health, Medical University of Vienna, Austria, [2]Crisis Intervention Center and Ludwig Boltzmann Institute for Social Psychiatry, Vienna, Austria, [3]Telephone Emergency Service, Graz, Austria
[4]Foundation WEIL (Weiter im Leben), Graz, Austria

Abstract. *Background:* A suicide awareness campaign was initiated in the Austrian federal state of Styria to increase help-seeking behavior in the population. Billboards were shown throughout Styria depicting joyful everyday-life situations with a focus on social and family connectedness, and promoting the Telephone Emergency Service, a crisis hotline. *Aims:* The present study investigated the impact of this campaign on the utilization of the crisis hotline and on suicide rates. *Method:* Phone calls and suicide rates in the study region 3 months before the campaign were compared with rates 3 months after the campaign. The changes were contrasted with the characteristics of phone calls and the suicide rate in a comparable control region. *Results:* There were significantly more phone calls in the study region after the awareness campaign compared to the control region, which was similar to seasonal trends in nonintervention years, and there was no increase of suicide-related phone calls. The proportion of suicide-related phone calls referring to family problems decreased after the initiation of the campaign. Suicide rates did not change. *Conclusion:* The campaign may have had some minor immediate impact on the utilization of the Telephone Emergency Service, but it did not seem to motivate suicidal individuals, especially those with family problems, to call.

Keywords: awareness campaign, crisis hotline, telephonic utilization, suicide, Austria

Introduction

Media awareness campaigns are increasingly used to draw attention to suicidality and distribute information on how to cope with mental health problems (Wright, McGorry, Harris, Jorm, & Pennell, 2006). Developing and implementing suicide awareness campaigns is one of the main tasks of suicide prevention and is recommended in national and international suicide prevention plans such as the National Suicide Prevention Strategy (U.S. Department of Health and Human Services, 2001) in the United States or the WHO Health Report (World Health Organization, 2001). Intervention studies analyzing the impact of awareness campaigns are important because they allow for a

phasizing help-seeking behavior, providing information on finding help, reinforcing the fact that suicide is preventable, listing warning signs as well as risk and protective factors of suicide, and highlighting effective treatments for mental health problems are recommended characteristics of safe and effective messages in public awareness campaigns (Suicide Prevention Resource Center, 2006). However, detailed information on how to implement these guidelines in the design of the message contents and on the selection of the media formats to distribute the messages adequately is not available (Klimes-Dougan & Lee, 2010).

In recent years, an increasing number of suicide awareness campaigns have been initiated to improve awareness of suicidality and to promote help-seeking behavior. Evidence for the effectiveness of such intervention strategies

Grouped as “public awareness and education campaign”

What studies we found

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Primary CDC Strategy	Approach	Settings and Outcomes													
		Hot spots		General Community		Workplace		High School		Military or Veteran		Indigenous Community		Prisons	
		S	SA	S	SA	S	SA	S	SA	S	SA	S	SA	S	SA
Strengthen economic supports	*Household financial security*														
	Housing stabilization														
Create protective environments	*Reduce access to lethal means*														
	Organizational policies and culture														
	Community-based policies to reduce alcohol use														
Promote connectedness	*Peer norm programs*														
	Community engagement														
Teach coping and problem-solving skills	*Social-emotional learning*														
	Parenting skills and family relationship approaches														

◊=randomized controlled trial
○=observational study with pre-post design; no concurrent control
□=observational study with concurrent control
_=reported both suicide deaths and suicide attempts

What studies we found (cont.)

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Primary CDC Strategy	Approach	Settings and Outcomes													
		Hot spots		General Community		Workplace		High School		Military or Veteran		Indigenous Community		Prisons	
		S	SA	S	SA	S	SA	S	SA	S	SA	S	SA	S	SA
Strengthen economic supports	*Household financial security*														
	Housing stabilization									□	□				
Create protective environments	*Reduce access to lethal means*	□□□ □□□ ○○	□□	□□ ○											
	Organizational policies and culture					□ ○				○○					
	Community-based policies to reduce alcohol use														
Promote connectedness	*Peer norm programs*														
	Community engagement														
Teach coping and problem-solving skills	*Social-emotional learning*						◊	◊	◊◊						
	Parenting skills and family relationship approaches														

◊=randomized controlled trial
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What studies we found (cont.)

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Primary CDC Strategy	Approach	Settings and Outcomes													
		Hot spots		General Community		Workplace		High School		Military or Veteran		Indigenous Community		Prisons	
		S	SA	S	SA	S	SA	S	SA	S	SA	S	SA	S	SA
Identify and Support At-Risk Individuals	*Gatekeeper training*			□	□			◊	◊			◊	◊		
	Crisis intervention	○													
	Public awareness and education campaigns			□ ○											
	Screening for at-risk (not in clinic setting)			□□				◊	◊					□	

◊=randomized controlled trial
○=observational study with pre-post design; no concurrent control
□=observational study with concurrent control
_=reported both suicide deaths and suicide attempts

Single-strategies that may work

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- Reducing access to lethal means
  - Barriers at bridges and railway stations
  - Reducing access to purchasing charcoal in Asian countries
- Organizational policies and culture in police workplace settings
  - "Together for Life" program in Montreal police
- Screening for depression in the community
  - Based on 2 studies in Japan

Single-strategies with unclear evidence

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- Housing stabilization programs
  - ❖1 observational study in US Veterans
- Blue LED lights on railway platforms
  - ❖1 unique observational study in Japan
- Organizational policies & culture in construction workplace & military settings
  - ❖1 observational study in Australian construction workers (“Mates in Construction”)
  - ❖2 observational studies in military settings (US Air Force and Israeli Defense Forces)
- Social-emotional learning programs
  - ❖1 cluster RCT (SEYLE) in European high schools
- Crisis intervention (crisis phone)
  - ❖1 observational study on a US non-pedestrian bridge

Single-strategies with unclear evidence

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- Gatekeeper training
  - ❖1 cluster RCT (SEYLE) in European high schools
  - ❖1 RCT in Indigenous community in Canada
  - ❖1 unique observational study (Garrett Lee Smith) in US for youths and young adults
- Public awareness & education campaigns
  - ❖2 observational studies (one in Austria and one in Japan)
- Screening in high schools & prisons
  - ❖1 cluster RCT (SEYLE) in European high schools
  - ❖1 observational study in a German prison

Rated very low certainty usually due to:

- study limitations
- imprecise results (no events or non-significant)

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Multi-strategy

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15 studies

- Components varied
- Examples:
  - National prevention programs
  - Services provided by suicide prevention centers
  - An “Alliance Against Depression”
  - Comprehensive intervention at a suicide hotspot

We stratified results by the region they were implemented

Multi-strategy examples

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PLOS ONE

Open access Research

BMJ Open

Changing trends in suicide rates in South Korea from 1993 to 2016: a descriptive study

Sang-Uk Lee,[1,2] Jong-Ik Park,[3] Soojung Lee,[4] In-Hwan Oh,[2] Joong-Myung Choi,[2] Chang-Mo Oh[2]

To cite: Lee S-U, Park J-I, Lee S, *et al*. Changing trends in suicide rates in South Korea from 1993 to 2016: a descriptive study. *BMJ Open* 2018;**8**:e023144. doi:10.1136/bmjopen-2018-023144

► Prepublication history for this paper is available online. To view these files please visit the journal online (http://dx.doi.org/10.1136/bmjopen-2018-023144).

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ABSTRACT

Objectives The South Korean government has recently implemented policies to prevent suicide. However, there were few studies examining the recent changing trends in suicide rates. This study aims to examine the changing trends in suicide rates by time and age group.

Design A descriptive study using nationwide mortality rates.

Setting Data on the nationwide cause of death from 1993 to 2016 were obtained from Statistics Korea.

Participants People living in South Korea

Interventions Implementation of national suicide prevention policies (first: year 2004, second: year 2009).

Primary outcome measures Suicide was defined as 'X60-X84' code according to the ICD-10 code. Age-standardised suicide rates were estimated, and a Joinpoint regression model was applied to describe the trends in suicide rate.

Results From 2010 to 2016, the suicide rates in South Korea have been decreasing by 5.5% (95% CI −10.3% to −0.5%) annually. In terms of sex, the suicide rate for men had increased by 5.0% (95% CI 3.6% to 6.4%) annually from 1993 to 2010. However, there has been no statistically significant change from 2010 to 2016. For

Strengths and limitations of this study

- Our findings show that efforts to reduce suicide at the national level may lead to a decline in suicide rates especially among elderly people through natural experiment.
- Another finding of our study is that suicide rates in men in their 30s and 40s are continuing to increase, suggesting that a different suicide prevention strategy may be necessary in South Korea.
- Because this study is a descriptive epidemiological study, it is difficult to know exactly which policies have reduced suicide rates in which age group.
- Improved accuracy of statistics on the causes of death may affect to changes in suicide rates.

suicide rates of each country by 10% until 2020.[2] Especially, the developed countries in East Asia have relatively high mortality rates due to suicide.[3] Among these countries, suicide in South Korea is a serious health

Check for updates

OPEN ACCESS

Citation: Hegerl U, Maxwell M, Harris F, Koburger N, Mergl R, Székely A, et al. (2019) Prevention of suicidal behaviour: Results of a controlled community-based intervention study in four European countries. PLoS ONE 14(11): e0224602. https://doi.org/10.1371/journal.pone.0224602

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Multi-strategy findings

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Region	Studies	Components	Certainty	What happens
Europe	4 observational studies	European Alliance Against Depression: 1) Education for physicians 2) Public relations campaign 3) Training of community facilitators 4) Support for high-risk 5) Restrict access to means	⊕⊕◯◯ LOW	May decrease suicides
New Zealand	1 cluster RCT	1) Gatekeeper training 2) Work w/media to report suicide using best practices 3) Distribution of resources 4) Workshops 5) Other community events	⊕⊕◯◯ LOW	May increase suicides

- multi-strategy in Australia and Asia: unclear evidence, often related to study limitations and imprecision

Limitations

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- Challenging literature to synthesize
  - Suicide outcome reported in different ways
  - Some interventions were poorly described
  - Mostly non-randomized studies
  - A lot of potential confounding variables so hard to isolate effect of intervention
  - Some not adequately powered and/or short follow-up

- Certainty of evidence mostly very low or low

Conclusions

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- Select community-based interventions may reduce suicides (low COE):
  - Reducing access to lethal means
  - Implementing organizational policies in workplace settings
  - Screening for depression in the community

- It is uncertain if other single strategy interventions are effective
- Evidence was inconsistent for multi-strategy interventions

- Future studies using randomized designs or observational studies with controls and appropriate adjustment are needed

Comments and questions

1) Discussant comments
2) General Q & A

If you have further questions, please feel free to contact:

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Full-length report and cyberseminar will be available on ESP website:

http://www.hsrd.research.va.gov/publications/esp/