

Evidence Compass



Technical Report

What strategies are effective for reducing the stigma associated with mental health disorder?

A Rapid Evidence Assessment

September 2013



Australian Government
Department of Veterans' Affairs

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Acknowledgements

This project was funded by the Department of Veterans Affairs. We acknowledge the valuable guidance and enthusiastic contribution of our steering committee for this project, which comprised senior personnel from the Department of Veterans Affairs, the Australian Defence Force, and the scientific community.

We acknowledge the work of staff members from the Australian Centre for Posttraumatic Mental Health who were responsible for conducting this project and preparing this report. These individuals include: Dr Lisa Dell, Associate Professor Meaghan O'Donnell, and Dr Ashley Di Battista.

For citation:

Australian Centre for Posttraumatic Mental Health (2013). *What strategies are effective for reducing the stigma associated with mental health disorder? Report prepared for the Department of Veterans Affairs*. Australian Centre for Posttraumatic Mental Health

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Executive Summary

- Stigma towards mental health illnesses represents an important challenge to overcome and occurs at both the public (negative prejudice towards others) and self (applying the prejudice from others to oneself) level.
- Interventions designed to reduce public and self-stigma of mental illness can target large groups (e.g. society-wide) or smaller groups (e.g. persons with particular mental illnesses), but information as to what works best, for which group, and under what conditions remains elusive.
- Educational interventions focus on informing individuals about the stigmatised condition; Contact-based interventions emphasise interpersonal contact between the stigmatised individual and others; Imagined exposure interventions involve an individual imagining a hypothetical contact event with the stigmatised individual; therapeutic interventions focus on psychoeducation or psychotherapy; multi-model interventions incorporate a variety of elements.
- This aim of this rapid evidence assessment (REA) was to examine the efficacy of interventions designed to reduce the stigma associated with mental health disorders. As part of the REA methodology, a search was conducted for high quality treatment guidelines, meta-analyses and systematic reviews of interventions targeting stigma reduction.
- The search identified a meta-analysis addressing public stigma and a systematic review addressing self-stigma reduction interventions. Studies identified since the publication of both the meta-analysis and systematic review (2010 and 2011 respectively) were then assessed for quality and risk of bias, and consistency, applicability and generalisability to the population of interest.
- These assessments were used to determine an overall ranking of the level of support for the effectiveness of public and self-stigma interventions. The ranking categories were 'Supported' –clear, consistent evidence of beneficial effect; 'Promising' – evidence suggestive of beneficial effect but further research required; 'Unknown' – insufficient evidence of beneficial effect; 'Not supported' – Clear, consistent evidence of no effect or negative/harmful effect.
- The search identified 24 papers meeting the inclusion criteria, including the meta-analysis on public stigma, and the systematic review on self-stigma. Of the 22 empirical

studies, 21 examined public stigma interventions, and one examined a self-stigma intervention.

- For the interventions targeting public stigma, eight studies utilised education-based interventions, three utilised contact-based interventions, two utilised imagined exposure interventions, and eight utilised multi-modal interventions. The single study on self-stigma adopted a group therapy intervention.
- The evidence for education-based interventions for public stigma received a 'Promising' ranking. This should be interpreted with the caveat that the effect of education-based interventions appears only to be small.
- Contact interventions also received a 'Promising' ranking with the caveat that the effect again seems to be small (although larger than education-based interventions).
- The evidence for imagined exposure and multi-modal interventions received an 'Unknown' ranking.
- Interventions to target self-stigma suffered from significant methodological limitations. In this report the quality of studies were assessed but not ranked because of these limitations.
- Overall the evidence reflects the highly variable and often poorly defined interventions to reduce stigma. In order to move forward, efforts should be made to engage experts in the field to reach an appropriate consensus-based definition of stigma, and to provide a testable, meaningful theoretical framework on which to build an intervention.

Introduction

Stigma, or a mark of shame associated with a particular circumstance, quality, or person is a broadly damaging process. At a global level, it serves to polarize, alienate and segregate 'different' individuals within a society, while maintaining the negative beliefs, prejudices and social distances about these persons. At an individual level, the person experiencing the stigma can internalise the prejudice they experience from the outside world and become fearful of disclosing and engaging with others – including fear of seeking appropriate health or mental health services. These global and individual levels of stigma refer to two recognised constructs of stigma: public and self-stigma.

Public stigma affects the general population and reflects the prejudice and discrimination endorsed by the group¹. Broadly, public stigma is a means of maintaining a negative prejudice towards 'others', which can influence behavior, attitudes, and belief systems. For instance, public stigma towards an individual with a mental illness has the ability to affect willingness to hire the person, influence the way the person is treated in a hospital context, or increase fear or social distancing from the person.

Self-stigma represents an individual's awareness, agreement and application of the stereotype endorsed by others to themselves². Self-stigma can influence how an individual with a mental illness engages in the community, in relationships, whether or not they seek care or adhere to treatment recommendations³. While barriers to care and treatment adherence are components of self-stigma, they are not synonymous with the entire construct.

Stigma represents an important challenge to overcome, at both the public (e.g. fairness of treatment) and individual (e.g. willingness to seek care) level. Efforts to reduce the stigma associated with mental health has been ongoing since the 1950s¹. Large government funded campaigns to reduce the public stigma of mental health have been rolled out around the world, with campaigns like the National Alliance on Mental Illness (NAMI) in the USA, and the *beyondblue* initiative in Australia. The partnerships between Government and advocate groups in most Western countries showcase the initiatives designed to reduce the stigma of mental illness, but these initiatives have been criticised for implementing programs before there is a substantial research body available by which to assess the strategic impact of these interventions⁴. In light of this, researchers have begun to partner with advocates to examine the impact of anti-stigma campaigns to approach the question of what is and is not an effective strategy to reduce stigma⁴. A recent systematic review on self-stigma³ and a meta-analysis on public stigma¹, which provided the framework for this review, have begun to document the effective approaches to changing stigma at the individual, and public level.

According to the meta-analysis on effective interventions for public stigma they generally use one or a combination of the following three approaches to reduce public stigma: education (increasing the knowledge about a mental health conditions), contact (engaging in interpersonal or filmed contact with a person with a mental illness) and protest (social activism)⁴. With regard to self-stigma interventions, a recent systematic review found that the majority of these interventions have focused on physical illnesses, such as HIV/AIDS and epilepsy, and not mental health⁵. The interventions targeting physical illnesses have incorporated counseling, cognitive-behavioural therapy (CBT), support groups, self-help and empowerment⁵. Self-stigma reduction interventions targeting mental health are a relatively new line of research³, and less is known about their methods or overall efficacy.

This aim of this review was to examine the current standing of public and self-anti-stigma interventions and to investigate what has been shown to be an effective intervention to reduce stigma at the public and individual level.

Method

This project utilised a rapid evidence assessment (REA) methodology. The REA is a research methodology which uses similar methods and principles to a systematic review but makes concessions to the breadth and depth of the process, in order to suit a shorter timeframe. The advantage of an REA is that it utilises rigorous methods for locating, appraising and synthesising the evidence related to a specific topic of enquiry. To make a REA rapid, however, the methodology places a number of limitations in the search criteria and in how the evidence is assessed. For example, REA's often limit the selection of studies to a specific time frame (e.g., last 10 years), and limit selection of studies to peer-reviewed published, English studies (therefore not including unpublished pilot studies, difficult-to-obtain material and/or non-English language studies). Also, while the strength of the evidence is assessed in a rigorous and defensible way, it is not necessarily as exhaustive as a well-constructed systematic review. A major strength, however, is that an REA can inform policy and decision makers more efficiently by ranking and synthesising the evidence in a particular area within a relatively short space of time and at less cost than a systematic review.

Defining the research question

The components of the question were precisely defined in terms of the population, the interventions, and the outcomes (refer to Appendix 1). Operational definitions were established for key concepts for each question, and from this specific inclusion and

exclusion criteria were defined for screening studies for this REA. As part of this operational definition, the population of interest was defined as adults, the intervention was defined as a stigma intervention, and the outcome was defined as a change in attitudes and beliefs in relation to mental health illness, on measures included in the study.

Search strategy

To identify the relevant literature, systematic bibliographic searches were performed to find relevant trials from the following databases: EMBASE, MEDLINE (PubMed), PsychINFO, Cochrane, Clinical Guidelines Portal (Australia), National Guideline Clearinghouse (USA)

Note: The methodology underpinning this REA sought to identify guidelines, meta-analyses or systematic reviews for this particular topic. In searching for guidelines, systematic reviews or meta-analyses, the following procedures were taken in regards to the processing of data sources:

- I. Order of precedence: guidelines > meta-analyses > systematic reviews.
- II. The most recent guideline, meta-analysis or systematic review was subject to an assessment of quality. If the guideline, meta-analysis or systematic review **did not** satisfy the quality assessment (i.e. a rating of poor), then the next most recent source was assessed in reverse sequential order (e.g. most recent to oldest) until the quality assessment criteria were met.
- III. The guideline, meta-analysis or systematic review that satisfied the quality assessment determined what the cutoff year would be for the primary research articles (e.g., if a meta-analysis was published in 2009, then primary research studies from 2008 and earlier would not be assessed).

Search terms

The search terms specific to stigma that were included in searching the Title/s, Abstract/s, MeSH terms, Keywords lists and Chemical were: *Stigma*, *Social Stigma*, *Stigmatization*, *Prejudice*, *Negative Stereotype*. An example of the search strategy appears in Appendix 2.

Paper selection

Papers were included in the review of the evidence if they met all of the following inclusion criteria.

Include:

1. Internationally and locally published peer-reviewed research studies
2. Research papers that were published from end date of systematic review, meta-analysis or guideline search (if applicable); if no systematic review, meta-analysis or guideline available, then primary sources published prior to **1st January 2003** until the time that the rapid evidence assessment is conducted (**26th April 2013**)
3. Human Adults (i.e. ≥ 18 years of age)
4. Outcome data reporting on stigma
5. Mental health disorder (i.e. Axis 1: depression, anxiety, PTSD, schizophrenia, psychotic disorders only)

Papers were excluded if they met any of the following exclusion criteria

Exclude:

1. Non-English papers
2. Published prior to end date of systematic review, meta-analysis or guideline search (if applicable); if no systematic review, meta-analysis or guideline available, then primary sources published prior to 2003
3. Papers where a full-text version is not readily available
4. Validation study
5. Animal studies
6. Qualitative studies
7. Grey literature (e.g. media: websites, newspapers, magazines, television, conference abstracts, theses)
8. Children (≤ 17 years of age)
9. No outcome data reported
10. Qualitative outcome data
11. No intervention targeting reduction of stigma
12. Sample diagnosed with a medical condition (e.g. chronic health condition, AIDS, HIV, diabetes, cancer, etc.)

Information management

A screening process was adopted to code the eligibility of papers acquired through the search strategy. The content of screening at the title and abstract screening stage is

presented in Appendix 3. Papers were directly imported into EPPI-Reviewer 4 software. All records that were identified using the search strategy were screened for relevance against the inclusion criteria. Initial screening for inclusion was performed by one reviewer, and was based on the information contained in the title and abstract. Full text versions of all studies which satisfied this initial screening were obtained.

In screening the full-text paper, the reviewer made the decision on whether the paper should be included or excluded, based on criteria for the specific question. If the paper met the criteria for inclusion, then it was subject to data abstraction. At this stage in the information management process, 10% of the articles being processed were randomly selected and checked by two independent reviewers. In the case of discrepancies regarding inclusion/exclusion, discussions were held and the discrepancies reconciled. The following information was extracted from studies that met the inclusion criteria: (i) study description; (ii) stigma properties; (iii) intervention description; (iv) participant characteristics; (v) main findings; (vi) bias; and (vii) quality assessment.

Evaluation of the evidence

There were four key components that contributed to the overall evaluation of the evidence. These components were:

- The **strength of the evidence base**, in terms of the quality and risk of bias, quantity of evidence, and level of evidence (study design)
- The **consistency** of the study results
- The **generalisability** of the body of evidence to the target population (e.g. veterans)
- The **applicability** of the body of the evidence to the Australian context

The first two components provided a gauge of the internal validity of the study data in support of efficacy (for an intervention). The last two components considered the external factors that may influence effectiveness, in terms of the generalisability of study results to the intended target population, and applicability to the Australian context.

Strength of the evidence base

The strength of the evidence base was assessed in terms of the a) quality and risk of bias, b) quantity of evidence, and c) level of evidence.

- a) **Quality and risk of bias** reflected how well the studies were conducted, including how the participants were selected, allocated to groups, managed and followed-up, and how the study outcomes were defined, measured, analysed and reported. The process for

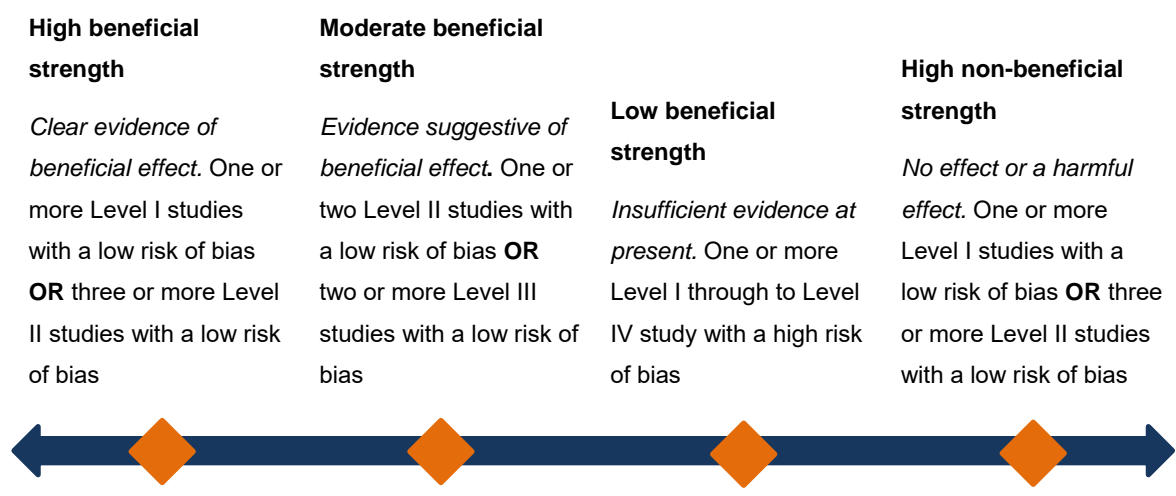
assessing quality and bias in individual studies and meta-analyses /systematic reviews is presented below.

- Individual Studies - an assessment was conducted for each individual study with regard to the quality and risk of bias criteria utilising a modified version of the Chalmers Checklist for appraising the quality of studies of interventions⁶ (see Appendix 5). Three independent raters rated each study according to these criteria, and together a consensus agreement was reached as to an overall rating of 'Good', 'Fair', or 'Poor'.
 - Meta-Analyses and Systematic Reviews - in the instance that either a meta-analysis or systematic review was included in the review they were rated according to an adapted version of the NHMRC quality criteria ⁷ (see Appendix 6). Three independent raters rated each study according to these criteria, and together a consensus agreement was reached as to an overall rating of 'Good', 'Fair', or 'Poor'.
- b) **Quantity** of evidence reflected the number of studies that were included as the evidence base for each ranking. The quantity assessment also took into account the number of participants in relation to the frequency of the outcomes measures (i.e. the statistical power of the studies). Small underpowered studies that were otherwise sound may have been included in the evidence base if their findings were generally similar- but at least some of the studies cited as evidence must have been large enough to detect the size and direction of any effect.
- c) **Level of evidence** reflected the study design. The details of the study designs which are covered by each level of evidence are as follows:
- Level I: A systematic review of RCTs
 - Level II: An RCT
 - Level III-1: A pseudo-randomised controlled trial (i.e. a trial where a pseudo-random method of allocation is utilised, such as alternate allocation).
 - Level III-2: A comparative study with concurrent controls. This can be any one of the following:
 - Non-randomised experimental trial [this includes controlled before-and-after (pre-test/post-test) studies, as well as adjusted indirect comparisons (i.e. utilise A vs B and B vs C to determine A vs C with statistical adjustment for B)]
 - Cohort study

- Case-control study
- Interrupted time series with a control group
- Level III-3: A comparative study without concurrent controls. This can be any one of the following:
 - Historical control study
 - Two or more single arm study [case series from two studies. This would include indirect comparisons utilise (i.e. A vs B and B vs C to determine A vs C where there is no statistical adjustment for B)]
 - Interrupted time series without a parallel control group.
- Level IV: Case series with either post-test or pre-test/post-test outcomes

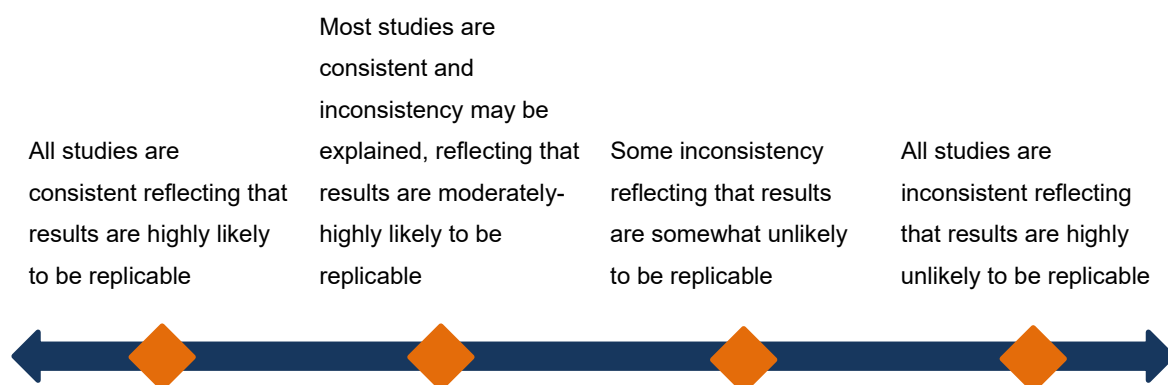
Overall strength

A judgement was made about the strength of the evidence base, taking into account the quality and risk of bias, quantity of evidence and level of evidence. Agreement was sought between three independent raters and consensus about the strength of the evidence based was obtained according to the categories below:



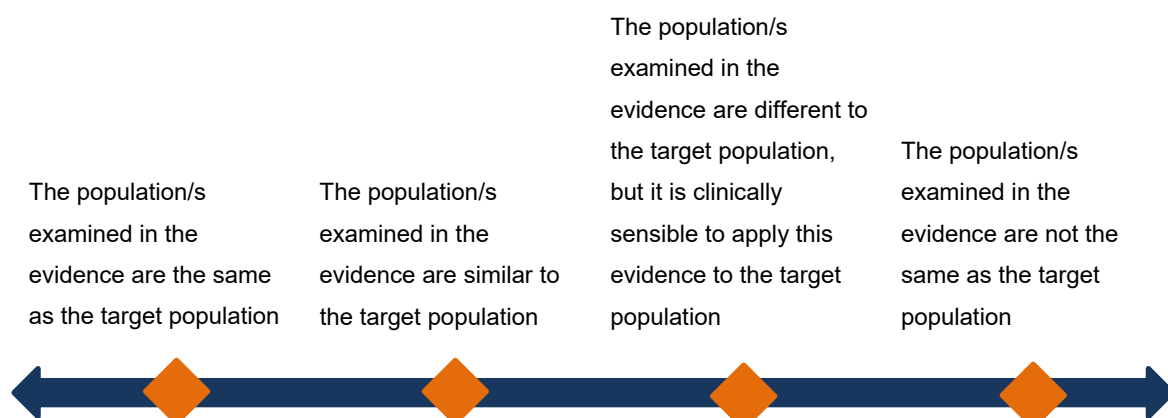
Consistency

The consistency component of the ranking system of the body of the evidence assessed whether the findings were consistent across the included studies (including across a range of study populations and study designs). It was important to determine whether study results were consistent to ensure that the results were likely to be replicable or only likely to occur under certain conditions.



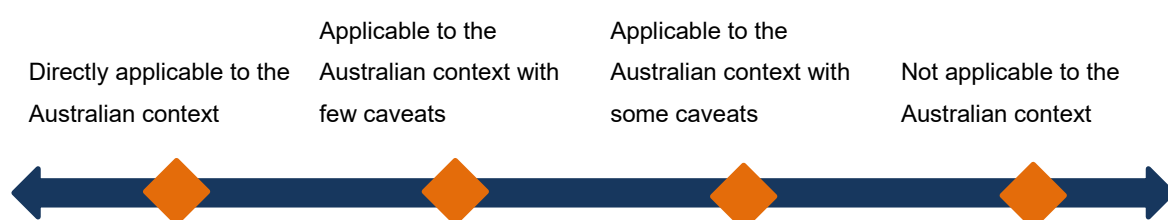
Generalisability

This component covered how well the participants and settings of the included studies could be generalised to the target population. Population issues that might influence this component included gender, age or ethnicity, or level of care (e.g. community or hospital).



Applicability

This component addressed whether the evidence base was relevant to the Australian context, or to specific local settings (such as rural areas or cities). Factors that may reduce the direct application of study findings to the Australian context or specific local settings include organisational factors (e.g. availability of trained staff) and cultural factors (e.g. attitudes to health issues, including those that may affect compliance).



Ranking the evidence

On balance, taking into account the considerations of the strength of the evidence (quality and risk of bias, quantity of evidence and level of evidence), consistency, generalisability and applicability, the total body of the evidence was then ranked into one of four categories: ‘Supported’; ‘Promising’; ‘Unknown’; or ‘Not Supported’ (see Figure 1 below). Agreement was sought between three independent raters. A brief overview of the ranking results is presented in Appendix 6. **NOTE:** If the strength of the evidence was considered to be low, the next steps of rating consistency, generalizability and applicability were not conducted and the evidence was rated as “Unknown”.

SUPPORTED	PROMISING	UNKNOWN	NOT SUPPORTED
Clear, consistent evidence of beneficial effect	Evidence suggestive of beneficial effect but further research required	Insufficient evidence of beneficial effect – further research required	Clear, consistent evidence of no effect or negative / harmful effect

Figure 1: Categories within the intervention ranking system

Results

The following section presents figures pertaining to the volume of records identified at each stage of the REA (Figure 2), the source of the records and the year of publication to indicate the scope and extent of the literature that the evidence base was extracted from. The inclusion of a meta-analysis for public stigma (with a data cut off of 2010) and a systematic review for self-stigma (with a data cut off of 2011) resulted in the search period being refined to 2010-2013 for public and 2011-2013 for self-stigma. In total, from all sources searched, 24 papers met the inclusion criteria (this final figure included the systematic review and meta-analysis). Of the 22 individual studies, 27% (n=6) did not report the country of origin of the data (refer to Figure 3). Six studies (27%) data were sourced from the UK, one (5%) from the USA and five (23%) from Australia. A diverse range of other countries made up the remaining 18% of the studies, with the final four studies coming from Germany (9%; n=2), n=1), Greece (5%; n=1) and Korea (5%; n=1). Note that the systematic review and meta-analysis are not included in this chart. The year of publication of the included studies suggests is presented in Figure 4. The publication dates must be considered in the context of the search limitations (i.e. publications from 2010 and up), the end date of the search (April, 2013) and the inclusion criteria of the review

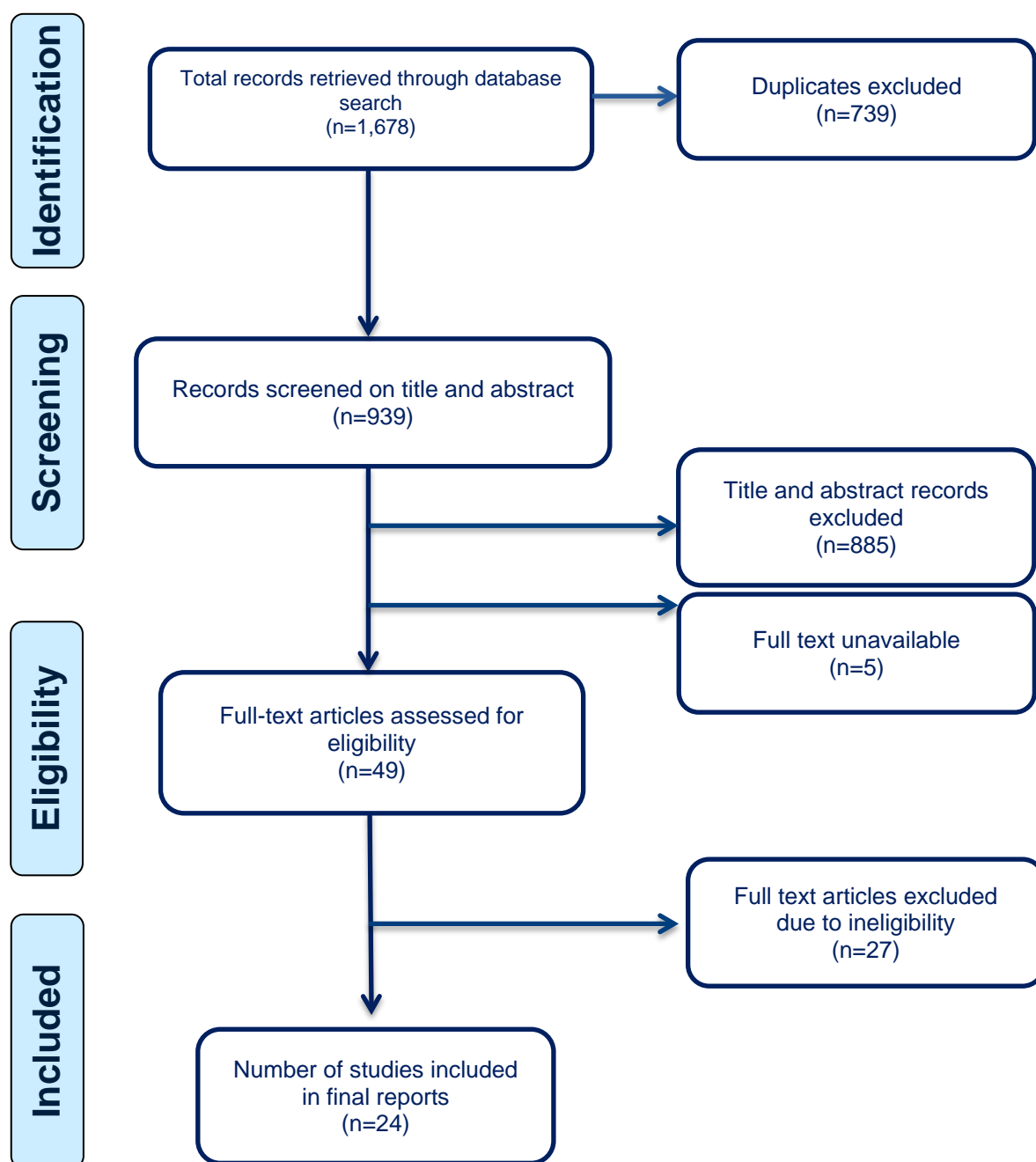


Figure 2. Flowchart representing the number of records retrieved at each stage of the rapid evidence assessment

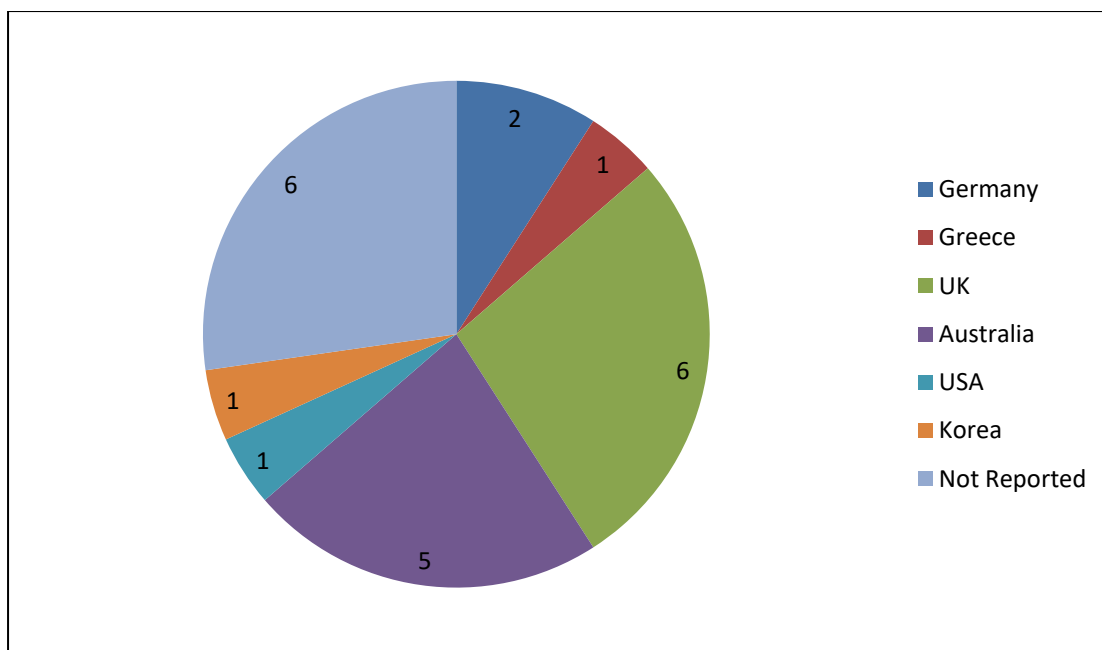


Figure 3. Origin of the studies included in the rapid evidence assessment

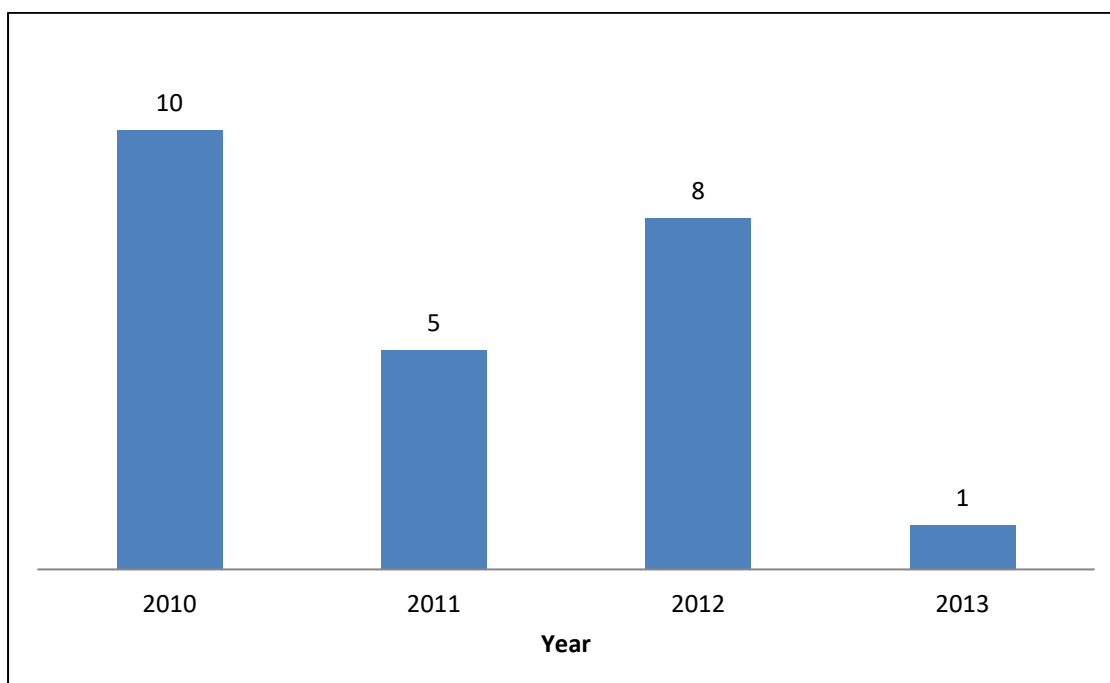


Figure 4. Year of publication of studies included in the rapid evidence assessment

Summary of the evidence

Of the 22 studies published since the meta-analysis and systematic review, there was significant variability in regards to the conceptualisation, measurement and evaluation of stigma and the type of interventions conducted. This variability posed a challenge for this

REA, rendering it difficult to synthesise and evaluate the evidence as a group. Despite this challenge, an attempt was made to categorise the numerous interventions to provide some structure within which the evidence could be evaluated. The interventions for stigma have therefore been categorised as follows: (each defined below): education, contact, imagined exposure, therapy and multi-modal interventions (interventions that included multiple components, for example, education, contact, and role play). Details of all 22 studies appear in Appendix 7.

Types of interventions

Education

An educational intervention is an initiative that focuses on informing individuals about the stigmatised condition. For example, if an intervention was targeting a reduction in public stigma of persons with schizophrenia using an educational component, it would include information about prevalence rates, causes, presentation, dangerousness, and typical treatment for schizophrenia. Educational interventions rest on the notion that the more an individual/society knows about a marginalised group, the less likely they are to fear, discriminate or stigmatise persons belonging to that group. Educational components may include public service announcements, books, videos, webpages, movies, flyers, and other media-based aids¹. Educational intervention benefits include low cost and a broad reach audience^{1,8,9}.

Contact

Contact refers to interpersonal contact between the stigmatised individual and others¹. Contact provides individuals with the opportunity to engage in discussion and the opportunity to learn about similar interests and goals. These interactions have been shown to reduce stereotypes in the broader social-psychological literature¹⁰ and have the greatest effect in reducing the prejudice of the general public^{1,11}. Contact can be face-to-face or via film, such as documentaries or interviews of persons with mental illness.

Imagined Exposure

Imagined exposure is a form of mental simulation, where an individual imagines a hypothetical contact event with the stigmatised individual^{12,13}. Imagined exposure interventions are useful for providing the benefits of a 'contact' intervention, without the limitations, such as cost and time associated with actual contact¹³.

Multi-Modal

Multi-modal interventions represent those studies that used a variety of components in the intervention. For example, multi-modal interventions may combine education and contact activities. Often they can include additional components such as role-play, case studies or group activities. Multi-modal interventions are by nature multi-factorial, and therefore cannot be separated into component parts in order to determine effect of each component on the outcome reported.

Therapy

More often used in self-stigma reduction interventions than public stigma, therapeutic interventions consist of a wide variety of approaches, targets and methods of implementation. Therapies can be simple or complex, encompassing the full trajectory from psychoeducation to cognitive behavioural therapy, cognitive restructuring, or more advanced multimodal therapies³. Therapies tend to target the areas considered important to the overall conceptualisation of self-stigma and vary widely in the literature. Therapeutic interventions that aim to reduce self-stigma have included attempts to reduce the negative beliefs and attitudes of the individual while other interventions provide skill enhancement training, targeting areas like empowerment, help-seeking behaviour and self-esteem³.

Public Stigma Interventions

The literature search in this REA yielded 21 individual studies that examined the effectiveness of anti-stigma interventions targeting mental health in adults since the publication of the meta-analysis on public stigma by Corrigan et al.,¹. This meta-analysis included 72 papers and represented 38,364 research participants from 14 countries. The paper highlighted two approaches that had positive effects on reducing stigma - education and contact-based interventions. They noted that for adults, contact interventions were more effective than educational interventions, particularly if they were face-to-face interventions. Due to the variability in the studies included in the meta-analysis the authors were forced to collapse the 22 outcome measures identified in their 72 papers into three anti-stigma outcomes order to allow them to analyse effect sizes (attitudes, affect, and behavioural intention). This process highlights the challenge with evaluating the efficacy of stigma interventions – namely the significant differences between studies.

Of the 21 individual studies identified since the meta-analysis, 38% (n = 8) used an educational approach to the intervention. Fourteen per cent examined contact interventions

(n=3), with an additional 10% examining imagined exposure (n=2). The remaining eight studies (38%) used a multi-modal intervention approach.

Educational Interventions

Of the eight studies that utilised an educational approach to targeting public stigma, four examined mass societal campaigns¹⁴⁻¹⁷ (50%), 3 examined informational websites¹⁸⁻²⁰ (40%) and one study examined a mental health awareness workshop²¹ (10%). Three of the four studies examining mass societal campaigns focussed on the 'Time to Change' (TTC) campaign run in the UK. TTC was designed as a national social marketing campaign aiming to reduce stigma and discrimination against people with mental health problems. The studies examining the impact of the TTC campaign on stigma utilised three different methodologies to examine change in knowledge, attitudes and/or behaviours: (1) self-report questionnaire (n=196) to assess whether campaign promotional materials had any effect on public attitudes towards mental illness¹⁴; (2) face-to-face interviews (pre-intervention n=92, during intervention n=198, post-intervention n=120; independent samples) to assess whether a short term mass social campaign could positively influence stigma and discrimination and what types of change could be possible over the short term¹⁶, and (3) telephone interviews (pre-intervention n=537, post-intervention n=1,047; independent samples) to determine whether progress towards a reduction in mental-health related stigma and discrimination had been achieved¹⁷.

Abraham and colleagues¹⁴ investigation into the effectiveness of the TTC campaign reported that a single exposure to campaign materials (postcards, leaflets and bookmarks) was ineffective, with less than 25% of participants recognising the logo or campaign materials (despite the fact that the materials had been posted to participants 14 days prior to assessment). In another study¹⁷ that also investigated outcomes from TTC campaign, mental health service users were interviewed to identify changes in perceived discrimination since the initiation of the campaign. Whilst the authors reported some changes in the frequency of discriminatory experiences (experience of discrimination dropped from 91% to 87%) actual awareness of the TTC campaign had no effect on the outcomes of this study. A third study investigated brief exposure to the TTC campaign¹⁶. The authors reported some improvement in mental health-related knowledge, but this improvement in knowledge did not result in a reduction of stigmatising attitudes or behaviours. The authors also found that at two weeks post-campaign, campaign awareness dropped back to pre-intervention levels.

The remaining mass societal campaign study examined the impact of the community-based intervention 'Nuremberg Alliance Against Depression' (NAD) in Germany¹⁵. The authors examining the NAD aimed to assess whether awareness of depression, beliefs about causes

and attitudes towards depression and treatment had changed as a result of the campaign. They utilised a self-report questionnaire across three independent samples – pre-intervention n=1,426, one year post-intervention n=1,507, and two years post-intervention n=1,423. The NAD campaign was successful in creating awareness of depression and of the campaign however, most of the changes in the general population decreased in the second year of assessment when campaign activities were implemented with less intensity¹⁵. The authors reported clearer campaign effects for people who had experienced a family member or friend with depression (for example, increased knowledge about the treatability of depression), but no effects for participants aged over 60.

Overall, the mass societal campaigns investigated in these four papers had low success rates in changing beliefs, attitudes and behaviours associated with stigma, but did find some positive impact on increasing knowledge of mental health illnesses. Short-duration or one-off campaigns do not appear to sustain changes found during or after campaigns.

Aside from the studies investigating mass societal campaigns, three educational interventions assessed the effectiveness of informational websites, and similar to the studies presented above, they varied in their methodology. Kim and Stout¹⁸ examined the effectiveness of using an interactive website on information processing and attitude change, on a sample of 113 undergraduate students who completed a battery of non-standardised self-report questionnaires. The study reported positive effects on three attitudinal dimensions – perceptions of dangerousness, social distance, and perception of severity after using the website. Seo and Kim¹⁹ developed an eight session online educational program, based on cognitive behavioural therapy, to reduce negative attitudes towards persons with mental illness. The program was tested in 143 students, and no statistically significant changes in self-reported social distance, knowledge, authoritarianism, community mental health ideology, social restriction, or benevolence were found. The final paper to investigate the effects of a website on stigma was a study²⁰ which examined an internet-based multilingual depression-specific information resource in a sample of 110 Greek- and Italian-born immigrants. The authors reported an increase in depression literacy and trend towards a decrease in feelings of stigma towards others. However, post-intervention participants also reported that they felt that others in the community would believe worse things about depression (perception of others' stigma worsened).

The three papers investigating informational websites to reduce public stigma had mixed outcomes. Due to the significant variability in the design of the three papers highlighted above it is challenging to draw any general conclusions about the effectiveness of websites. One study reported successful changes in attitudes assessed through self-report¹⁸, one reported no significant changes in any dimensions assessed¹⁹, and the final paper reported

some success in increased literacy but also a worsening of the perception of others' stigma²⁰. It is unclear from the evidence presented whether websites alone are an effective tool to reduce public stigma.

The final paper to examine an educational intervention for public stigma was a study by Knifton et al.²¹ which assessed a 90-minute mental health awareness workshop in 257 members of the minority ethnic communities in Scotland. The authors reported findings from a self-report questionnaire that showed some positive changes to stigmatised attitudes, such as decreased scores for feeling that people with a mental health problem are to blame for their problem, decreased scores in beliefs that talking to someone with a mental health problem is difficult and that people with mental health problems cannot recover. There was, however, worsened stigma in regards to willingness to work with someone with a mental health problem, with scores on this item increasing significantly. As noted in the paper, there may be some evidence to suggest that community approaches to reducing stigma may be effective for particular stigmatised attitudes and could form the basis for future national initiatives.

In evaluating the body of evidence for educational interventions it was apparent that there were significant differences in definitions of stigma, measures, interventions, and outcomes across all papers, resulting in difficulties in synthesising them as a collective body of work. The meta-analysis by Corrigan et al.¹ identified a similar challenge with the large variance and quantity of outcome measures but through collapsing outcome measures they reported that education had positive effects in reducing stigma in adults, but that the effect sizes were generally small. The authors noted that educational interventions yielded improvements in affect (represented by proxies of fear and anger) and behavioural intentions (often represented by measures of avoidance). These improvements were also noted when analysing the most rigorously designed studies (randomised controlled trials), however, the effect size was again very small.

In the time period since the meta-analysis, the eight papers included in this REA examining education-based interventions (n=5 pre-post design; n=1 randomised controlled trial, n=2 prospective experimental design) encompassed mass societal campaigns, informational websites and a mental health awareness workshop were evaluated as fair/poor quality with high risk of bias (refer to Appendix 5 for the quality checklist). The evaluation of the strength of the evidence for these papers therefore resulted in a rating of low beneficial strength. Despite the significant difficulties with assessing such a disparate body of evidence, the overall rating for educational interventions to reduce public stigma received a 'Promising' ranking (refer to Appendix 8 for a list of citations by ranking). This is primarily due to the findings of the meta-analysis, and in particular the significant (but small) effect size reported

when examining only randomised controlled trials in the meta-analysis. The ranking of 'Promising' should be interpreted with a degree of caution as the studies identified by this REA published since the meta-analysis were generally low quality and therefore did not contribute to the 'Promising' ranking.

Contact Interventions

Three studies utilised a contact-based approach to reducing public stigma²²⁻²⁴. Nguyen and colleagues²² evaluated the impact of direct (face-to-face) and indirect (film based) contact with mental health consumers on the mental health stigma of pharmacy students (n=198 and 278 respectively). The authors reported that both direct and indirect contact positively impacted mental health stigma, with direct contact slightly more effective. Evans-Lacko et al.²³ also investigated the effect of contact on mental health stigma but with a different design to the previous study. These authors assessed two mass participation social contact programs within the "Time to Change" campaign in the UK. The social contact events were face-to-face and aimed to facilitate positive intergroup contact and disclosure of mental health problems. A survey of 403 participants (representing an estimated 6-10% of all event participants) suggested that the events may have facilitated inter-group contact between people with and without mental-health problems in a meaningful way but that positive social contact was not associated with a future willingness to disclose mental health problems. In a similar study to Evans-Lacko et al., Anderson and Austin investigated the impact of a social contact event, but via a filmed documentary about people with mental illness. The documentary was screened at a genetic counsellors conference for students (post-film n=87, one month post-film n=39) and the authors reported increased comfort post-film with asking about mental illness and decreased stigma attitudes, but the latter was not maintained at one-month follow up.

The 2012 meta-analysis by Corrigan et al.¹ reported that contact interventions were effective in reducing public stigma in adults, with greater effectiveness than educational interventions, although both had small effect sizes. In addition, the meta-analysis also found evidence to support that while both direct (e.g. person to person) contact and indirect (e.g. video) were effective, that direct contact was more effective and had a greater effect size than indirect methods. The data from the additional three studies included in this REA were consistent with the findings of this meta-analysis. However, the three studies which examined contact interventions (all pre-post design) were evaluated as being of poor quality and therefore had a high risk of bias. All studies reported a significant loss of participants between intervention and assessment (for example Evans-Lacko et al.²³ reported a loss of almost 80% of participants post-intervention) and all had issues with the representativeness of their

population. Taken together these three studies received a ranking of low beneficial effect with regards to the strength of the evidence.

Similar to the education-based interventions, the contact-based intervention rating was based in large part on Corrigan et al.'s¹ meta-analysis and therefore contact interventions for public stigma were rated as 'Promising'. Once again, this ranking needs to be understood in the context of the lack of a high-quality evidence published in the time period since the meta-analysis. Furthermore, it needs to be recognised that the effect sizes associated with contact interventions were small.

Imagined Exposure Interventions

There were two papers that met the inclusion criteria for this REA that examined the effect of imagined exposure interventions on public stigma^{13,25}. Birtel and Crisp (2012) adapted psychotherapeutic principles of exposure therapy to examine whether imagining a positive encounter with a member of a stigmatised group would be more likely to promote positive perceptions when it was preceded by an imagined negative encounter. This online study (n=29 students) appeared to be effective at reducing self-reported anxiety towards those with a mental illness, particularly when the individual imagined a negative encounter followed by a positive encounter. Similarly, Stathi and colleagues (2012) examined whether imagining a positive interaction with a person with schizophrenia could combat stigma against people with mental illness. In a sample of 59 students these authors reported that their imagined exposure intervention resulted in decreased stereotyping and increased intention to engage those with schizophrenia due to reduced feelings of anxiety about future interactions.

Both of the studies which examined imagined exposure interventions (both of pre-post design) were evaluated as being of poor quality with high risk of bias, particularly around the process of randomisation and sample size. The strength of the evidence was therefore rated as having a low beneficial effect. The use of imagined exposure was not included in the meta-analysis by Corrigan et al.¹, however imagined exposure could be reasonably conceptualised as a sub-set of contact-based interventions. In light of this, the data from the Corrigan meta-analysis (which supported the use of contact-based interventions) combined with the two papers presented above (which whilst finding positive effects for the use of imagined exposure had a high susceptibility to bias) resulted in a ranking of 'Unknown' for the use of imagined exposure based interventions for the reduction of public stigma. Further high-quality trials on the use of imagined exposure are warranted to investigate the potential efficacy of this intervention in reducing public stigma.

Multi-Modal Intervention

Of the eight studies that utilised a multi-modal approach to targeting public stigma, five examined education-plus-contact (either face-to-face or via film)²⁶⁻³⁰ (64%), one examined education-plus-contact via film, plus simulated auditory hallucinations³¹ (12%), one examined education-plus-contact via face-to-face, plus role play³² (12%), and the final study examined education-plus-contact via film, plus case-studies, plus group activities³³ (12%).

Of the five studies that examined education-plus-contact, two examined contact via both film and face-to-face^{26,28}, two examined contact via face-to-face only^{29,30}, and one examined contact via film only²⁷. Quinn and colleagues²⁸ evaluated the impact of a nation-wide mental health arts festival in a sample of 415 members of the public. The festival included exhibitions, debates, films, concerts, plays and workshops. Despite the difficulties with identifying which components contributed to self-reported change, the authors reported that the events increased positive attitudes towards mental health but that they did not decrease negative attitudes. There was little effect of intended behaviour change and an increase in the perception that people with mental illness are dangerous.

In a more straightforward study design, Clement and colleagues²⁶ compared the effectiveness of a DVD, a live intervention, and a lecture control in reducing stigma. A sample of 216 student nurses was randomly allocated to one of the conditions. The authors reported that the DVD group reported higher knowledge scores than the other groups and that the both the DVD and live groups reported better attitudes and emotional reactions than those who were in the lecture group. The authors also noted that whilst the DVD was the most cost-effective of the interventions, the live intervention was the most popular.

The two studies that examined education plus face-to-face contact employed a similar design^{29,30}. Both utilised a sample of students (n=158 and n=225 respectively) who attended lectures and had contact with mental health consumers (psychiatric ward and community pharmacy setting, respectively). Economou and colleagues (2012) reported a worsening of stigmatised views on almost all measures. For example, level of social distance desired increased, and reported belief that people with schizophrenia cannot recover, have no insight into their condition, cannot make decisions and are dangerous to the public also increased. In contrast, O'Reilly and colleagues (2010) reported a decrease in stigma amongst their students, perhaps due to the circumstances in which the contact took place (community pharmacy) in comparison to the previous study.

Finally, Corrigan and colleagues²⁷ compared the effectiveness of film to education in changing stigmatised perceptions about mental illness. The film was an anti-stigma program

that comprised face-to-face stories of the lifecycle of mental illness. Utilising a sample of 200 students the authors reported that the contact component was more effective than the education component at impacting on the perception and recollection of persons with mental illness, and that the education group tended to remember more negative statements than the film group.

The final three studies examined as multi-modal interventions were variable and unique in their design. Galletly and Burton³¹ evaluated an intervention for medical students to reduce stigma against people with schizophrenia through education, contact and simulated hallucinations. Kassam and colleagues³² examined the impact of mental illness-related stigma training on medical students through an educative presentation, personal testimonies, and role play. Lastly, O'Reilly and colleagues³³ assessed the impact of delivering mental health first aid training (workshop, film, case studies and group activities) for pharmacy students on their mental health stigma. All three papers reported some positive change, although the effects were small, with the greatest change reported by O'Reilly et al. with their students reporting a significant decrease in social distance after the training course, indicating less stigmatised attitudes.

Overall, each of the multi-modal studies reported some success with reducing stigma however, three of the eight studies also showed negative effects. The difficulty with evaluating the evidence for multi-modal interventions was the extreme inconsistency with regards to design, sample, methodology and outcome measures across the studies. In looking at the individual studies the majority were of poor quality, incorporating issues such as containing a small sample, having significant loss of participants between intervention and follow-up, use of non-standardised measures, lack of randomisation, all of which indicated a high susceptibility to bias. Taken together the strength of the evidence was rated as low beneficial effect. Given that the meta-analysis¹ did not analyse multi-modal interventions, and that the evidence evaluated in this review is not clear or consistent, the effectiveness of multi-modal interventions was rated as 'Unknown'.

Discussion: Public Stigma

The evaluation of the evidence in this REA built upon the outcomes of the meta-analysis on public stigma¹. The papers presented above add very limited support to the use of both education and contact based interventions as a mechanism for reducing public stigma, primarily due to poor quality and high susceptibility to bias. Despite the concerns with quality, the three papers examining contact interventions²²⁻²⁴ each reported some positive findings through face-to-face and/or film-based contact. In determining which medium of contact was more effective, it was suggested by Nguyen and colleagues that whilst the strength of stigma

change may be heightened by face-to-face contact, indirect contact (via film) has also shown positive effects and therefore the medium of contact may be less important than the message delivered by the consumers facilitating the contact²².

A third medium of contact evaluated in this REA was imagined exposure. The two studies that examined imagined exposure^{13,25} both reported an effective impact on public stigma (decreased anxiety and stereotyping). These studies are particularly interesting as their designs are relatively low in cost and time compared to the other contact interventions (i.e., face-to-face or film). However, caution should be exercised in terms of the broader applicability of these results due to the small number of studies and the risk of bias identified in both papers.

The meta-analysis¹ supported the use of education-based interventions for public stigma and whilst the eight papers examined in this REA demonstrated some positive effects of these interventions, the results were extremely variable and as such the level of support for these interventions was based primarily on the outcomes of the meta-analysis. One of the difficulties in evaluating the effectiveness of education-based interventions was that despite the broad themes of mass societal campaigns, informational workshops and websites, each study was significantly different in their design, definitions of stigma, outcomes targeted and how outcomes were measured. Overall, results suggest that mass societal campaigns have limited impact, often resulting in an increase in knowledge but no changes in behaviour or attitudes¹⁴⁻¹⁷.

Knifton and colleagues²¹ reported a similar outcome from their mental health awareness workshop – a change in knowledge – but they also reported positive intent to change attitudes and behaviour. The authors noted that community-based events may be more effective than mass societal campaigns as they're more able to focus on diverse cultural understandings of mental health. In contrast to the mass education campaigns, two papers examined individuals accessing informational websites. Both papers reported both positive and negative outcomes¹⁸⁻²⁰ and it was noted by Seo and Kim that future work on informational websites should ensure a greater degree of interaction between educators and participants, specifically by adding in a contact-based element.

The greatest challenge in this REA was evaluating the effectiveness of the multi-modal interventions, attributable to their multiple elements that were often unique to the individual paper. Within the eight studies examining a multi-modal approach to targeting public stigma, those that employed a contact element showed some success in reducing stigma^{26-28,30,32}, with the exception of the contact-based component in the study by Economou and colleagues²⁹. In this study, the participants had contact with individuals with schizophrenia in

a psychiatric hospital, which, as noted by the authors, did not give them the opportunity to extend their experience in a rehabilitation or community setting. Therefore, it is important for contact-based interventions to consider where the contact should occur (physically) and in what stage in the lifecycle of mental illness it should occur (acute symptoms or during recovery).

Overall, in evaluating the effectiveness of interventions to reduce public stigma it was apparent that there is an extreme degree of variability between- and within-studies. The definition of stigma, the measurement systems used, and the intervention themselves added to the discontinuity between studies. However, in collating the general findings together, the results show that interventions that emphasised “otherness” were less effective in reducing stigma, such as educational campaigns that highlight the difference between those with and without mental illness. This finding is theoretically grounded, as stigma is borne from a sense of difference between “others” and the self. In support of this, the results indicate that interventions emphasising “sameness” are more effective. Specifically, contact interventions provide an opportunity to find “sameness” between the self and others, such as shared goals, desires, and interests, which then decreases stigma. Furthermore, these findings are in line with the meta-analysis¹, which showed that the most successful interventions incorporate one-to-one contact elements.

Future research should firstly focus on a consensus-based definition of stigma (encompassing measurement and assessment) and then the identification of appropriate interventions to trial, which is likely to be contact-based. Recent forums such as the *Forum on Health and National Security: Stigma and Barriers to Care Caring for Those Exposed to War, Disaster and Terrorism* through the Center for the Study of Traumatic Stress³⁴ are a positive first step towards the development of a consensus regarding stigma.

Self-Stigma Interventions

The REA identified a systematic review³ on self-stigma reduction interventions, which noted that the development of interventions to reduce self-stigma related to mental illness is a relatively new area of research with previous work targeting a reduction of self-stigma for physical illnesses, such as HIV/AIDS and epilepsy. The systematic review highlighted in detail the challenges faced in synthesising the literature on self-stigma. Firstly the authors noted significant variability in the description of a stigma definition and framework, with almost half of their included papers not describing either clearly. Less than half of the papers developed an intervention that was based on a conceptual model and the content of interventions varied widely. In their discussion, the authors of the systematic review reported

that in the fourteen papers they examined, there were six different strategies for interventions to reduce self-stigma. They further noted that almost all of the studies were exploratory or pilot in nature and suffered from significant limitations (small sample, lack of randomisation, no control group) and almost all did not measure any follow-up outcomes to assess sustainability. Finally, the authors highlighted that most of the studies were unique, not directly comparable and have not been replicated.

Despite these limitations, the systematic review did identify two emerging trends within the literature: (1) interventions that aim to alter the stigmatising beliefs and attitudes of the individual; and (2) interventions that are designed to enhance coping skills through improvements in help-seeking behaviour, empowerment and or self-esteem. The authors noted that the second approach appears to be gaining traction amongst experts in the field.

Restricting the search for this REA to after the search time period conducted by the systematic review³ identified only one study that examined the effectiveness of self-stigma reduction interventions³⁵. The study explored the impact of a recovery-oriented day clinic treatment program on self-stigma. The program was a complex, intensive, multidimensional, recovery-oriented design and was implemented in 40 patients with schizophrenia.

Components of the program included the full spectrum of therapeutic interventions in both group (e.g. psychoeducation, daily living skills, social skills training, physiotherapy, cognitive training and occupational therapy) and individual therapy settings. This study contained a number of limitations and methodological concerns including a lack of well-described randomisation procedures, lack of blinding to group assignment when carrying out assessments, and as noted by the authors, individuals with a relatively low level of self-stigma at baseline were included in the study which may have contributed to the small effect sizes reported. With regards to outcomes, the authors reported that the program, focussing on empowerment, recovery and stigma reduction, positively contributed to a reduction in self-stigma but conceded that while the results were encouraging, they required further confirmation in a randomised controlled trial.

Overall, the systematic review provided an important snapshot of the literature to date on interventions to reduce self-stigma, namely that the area is fraught with inconsistency, variability, and methodological challenges. These significant limitations combined with the emergence of only one further, poorly conducted study since the systematic review resulted in a decision that the evidence for self-stigma reduction interventions was not considered to be well-developed enough to rank using this REA's ranking metric.

Discussion: Self-Stigma

Despite the limited evidence evaluated for the reduction of self-stigma, the single study³⁵ built upon the trend identified in the systematic review on self-stigma³. Specifically, there was some support for the use of interventions to reduce self-stigma that enhance coping skills through improvements in self-esteem, empowerment and help-seeking behaviour.

As noted by the systematic review³, efforts to reduce the self-stigma associated with mental illness is a relatively new area of research. Similar to public stigma, there appears to be a degree of variability in definition and assessment of self-stigma which further supports the recommendation that research in this field should work towards a consensus-based of definition, measurement and assessment of stigma.

Implications

There is a clear need to target public and self-stigma interventions towards the military. Recent Australian Defense Force (ADF) findings reported that 22% of the ADF population, or one in five members, experienced a mental disorder in the preceding 12 months³⁶. An investigation into mental health problems and barriers to care in US military personnel involved in combat operations in Iraq and Afghanistan reported that for those personnel whose responses were positive for a mental disorder, only 23 to 40 percent sought mental health care³⁷. Taken together, these data suggest that efforts to reduce stigmas related to mental health are an important area of investigation.

However, despite the importance of overcoming stigma in the military, there is currently no consistent evidence supporting implementing an intervention to reduce stigma. In order to move forward, efforts should be made to engage experts in the field to reach an appropriate consensus-based definition of stigma, and to provide a testable, meaningful theoretical framework on which to build an intervention. A clear decision as to which type of stigma to target (i.e., public or self-stigma) is imperative, as is a clear idea of what/who the target will be (e.g., decreasing stigma towards veterans seeking care for PTSD). It is important to understand that an intervention that is designed to reduce public stigma may not reduce self-stigma at the same time, and vice versa. Interventions to reduce stigma must have a directed target and focus; a one-size fits all strategy to stigma does not appear to work. A clear and rigorous method, paired with outcome assessment that makes sense of the available data is essential.

Once these fundamental components are established, efforts to begin developing and then assessing an intervention are warranted. Efforts should be directed at pilot studies, in order

to identify and monitor variable success. Use of informed processes will clarify what elements are and are not effective, allowing for redesign and retesting processes. The end product of this rigorous process is a strong and effective intervention. This process provides a unique opportunity to advance the current knowledge in relationship to the reduction of mental health stigma.

Limitations of the rapid evidence assessment

The findings from this REA should be considered alongside its limitations. In order to make this review 'rapid', some restrictions on our methodology were necessary. These limitations included: the omission of potentially relevant papers that were published prior to or after the defined search period; the omission of non-English language papers; and reference lists of included papers not hand-searched to find other relevant studies. Furthermore, although we did evaluate the evidence in terms of its strength, consistency, generalisability and applicability, these evaluations were not as exhaustive as a systematic review methodology. Finally, this REA utilised a meta-analysis and systematic review and therefore only a search from the time not included in these review papers was conducted. Thus, if the meta-analysis or systematic review missed any important papers, our review would also not have included these papers. The information presented in this REA is a summary of information presented in available papers. We recommend reader's source the original papers if they would like to know more about a particular area.

Conclusion

The findings of this REA built upon the findings of both a meta-analysis (for public stigma) and a systematic review (for self-stigma). The evidence for effective interventions to reduce public stigma were similar to the meta-analysis with contact-based interventions emerging as the most likely to be effective. There were some components of education-based interventions that were effective but these were not as uniformly effective as the contact-based interventions. The body of evidence for reducing self-stigma was significantly smaller, however consistent with the systematic review, there appears to be some evidence that interventions are designed to enhance coping skills through improvements in help-seeking behaviour, empowerment and/or self-esteem are likely to show some positive change. The overwhelming challenge in evaluating interventions that seek to reduce stigma was the lack of consistency in terms of the definition, design, sample, methodology, and outcome measures across studies. Future research should focus on a consensus-based definition of each of these elements prior to conducting further studies.

References

1. Corrigan PW, Morris, S.B., Michaels, P.J., Rafacz, J.D., Rusch, N. . Challenging the public stigma of mental illness: A meta-analysis of outcome studies. *Psychiatric Services*. 2012;63(10):963-973.
2. Corrigan PW, Watson, A.C. Understanding the impact of stigma on people with mental illness. *World Psychiatry*. 2002;1(1):16-20.
3. Mittal D, Sullivan, G., Chekuri, L., Allee, E., Corrigan, P.W. . Empirical studies of self-stigma reduction strategies: A critical review of the literature. *Psychiatric Services*. 2012;63(10):974-981.
4. Corrigan PW. Research and the elimination of the stigma of mental illness. *British Journal of Psychiatry*. 2012;201(10):7-8.
5. Hejinders M, Van Der Meij, S. The fight against stigma: an overview of stigma reduction strategies and interventions. *Psychology Health and Medicine*. 2006;11:353-363.
6. NHMRC. How to review the evidence: systematic identification and review of the scientific literature. Handbook series on preparing clinical practice guidelines. In: Council NHaMR, ed. Canberra: Biotext; 1999.
7. NHMRC. How to use the evidence: assessment and application of scientific evidence. In: (NHMRC) NHaMRC, ed. Canberra: Biotext; 2000.
8. Finkelstein J, Lapshin, O., Wasserman, E. Randomized study of different antistigma media. *Patient Education and Counseling*. 2008;71:204-214.
9. SDAMHSA SAaMHSA. Mental illness: What a difference a friend makes. 2011. www.whatadifference.samhsa.gov.
10. Oskamp S, Mahwah, N.J., ed *Does intergroup contact reduce prejudice: recent meta-analytic findings*. Erlbaum; 2000. Reducing Prejudice and Discrimination.
11. Corrigan PW. *On the stigma of mental illness: Practical strategies for research and social change*. Washington DC: American Psychological Association; 2005.
12. Crisp RJ, Turner, R.N. Can imagined interactions produce positive perceptions? Reducing prejudice through simulated social contact. *American Psychologist*. 2009;64:231-240.
13. Stathi S, Tsantila, k., Crips, R.J. Imagining intergroup contact can combat mental health stigma by reducing anxiety, avoidance and negative stereotyping. *The Journal of Social Psychology*. 2012;152(6):746-757.
14. Abraham A, Easow JM, Ravichandren P, Mushtaq S, Butterworth L, Luty J. Effectiveness and confusion of the time to change anti-stigma campaign. *Psychiatrist* 2010; 6:230-233. Available at: <http://pb.rcpsych.org/cgi/reprint/34/6/230>
<http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed9&NEWS=N&AN=2010333328>, 34.
15. Dietrich S, Mergl R, Freudenberg P, Althaus D, Hegerl U. Impact of a campaign on the public's attitudes towards depression. *Health education research*. 2010;25:135-150.
16. Evans-Lacko S, London J, Little K, Henderson C, Thornicroft G. Evaluation of a brief anti-stigma campaign in Cambridge: do short-term campaigns work? *BMC public health*. 2010;10:339.
17. Henderson C, Corker E, Lewis-Holmes E, et al. England's time to change antistigma campaign: One-year outcomes of service user-rated experiences of discrimination. *Psychiatric Services* 2012; 5:451-457. Available at: http://ps.psychiatryonline.org/data/Journals/PSS/22624/pss6305_451.pdf
<http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed10&NEWS=N&AN=2012263940>, 63.
18. Kim H, Stout Patricia A. The effects of interactivity on information processing and attitude change: implications for mental health stigma. *Health communication*. 2010;25:142-154.

19. Seo M, Kim HL. Effectiveness of an education program to reduce negative attitudes toward persons with mental illness using online media. *Asian Nursing Research* 2010; 2:90-101. Available at: <http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed9&NEWS=N&AN=2010367273>, 4.
20. Kiropoulos LA, Griffiths KM, Blashki G. Effects of a multilingual information website intervention on the levels of depression literacy and depression-related stigma in Greek-born and Italian-born immigrants living in Australia: a randomized controlled trial. *Journal of medical Internet research*. 2011;13:e34.
21. Knifton L, Gervais M, Newbigging K, et al. Community conversation: addressing mental health stigma with ethnic minority communities. *Social psychiatry and psychiatric epidemiology*. 2010;45:497-504.
22. Nguyen E, Chen Timothy F, O'Reilly Claire L. Evaluating the impact of direct and indirect contact on the mental health stigma of pharmacy students. *Social psychiatry and psychiatric epidemiology*. 2012;47:1087-1098.
23. Evans-Lacko S, London J, Japhet S, et al. Mass social contact interventions and their effect on mental health related stigma and intended discrimination. *BMC public health*. 2012;12:489.
24. Anderson K, Austin Jehannine C. Effects of a documentary film on public stigma related to mental illness among genetic counselors. *Journal of genetic counseling*. 2012;21:573-581.
25. Birtel MD, Crisp RJ. "Treating" prejudice: An exposure-therapy approach to reducing negative reactions toward stigmatized groups. *Psychological Science*. 2012;23(11):1379-1386.
26. Clement S, van N, Adrienne, et al. Filmed v. live social contact interventions to reduce stigma: randomised controlled trial. *The British journal of psychiatry : the journal of mental science*. 2012;201:57-64.
27. Corrigan PW, Rafacz JD, Hautamaki J, et al. Changing stigmatizing perceptions and recollections about mental illness: the effects of NAMI's in Our Own Voice. *Community mental health journal*. 2010;46:517-522.
28. Quinn N, Shulman A, Knifton L, Byrne P. The impact of a national mental health arts and film festival on stigma and recovery. *Acta psychiatrica Scandinavica*. 2011;123:71-81.
29. Economou M, Peppou Lily E, Louki E, Stefanis Costas N. Medical students' beliefs and attitudes towards schizophrenia before and after undergraduate psychiatric training in Greece. *Psychiatry and clinical neurosciences*. 2012;66:17-25.
30. O'Reilly CL, Bell JS, Chen TF. Consumer-led mental health education for pharmacy students. *American journal of pharmaceutical education*. 2010;74:167.
31. Galletly C, Burton C. Improving medical student attitudes towards people with schizophrenia. *The Australian and New Zealand journal of psychiatry*. 2011;45:473-476.
32. Kassam A, Glozier N, Leese M, Loughran J, Thornicroft G. A controlled trial of mental illness related stigma training for medical students. *BMC medical education*. 2011;11:51.
33. O'Reilly CL, Bell JS, Kelly PJ, Chen TF. Impact of mental health first aid training on pharmacy students' knowledge, attitudes and self-reported behaviour: A controlled trial. *Australian and New Zealand Journal of Psychiatry* 2011; 7:549-557. Available at: <http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed10&NEWS=N&AN=2011364133>, 45.
34. recomendations Esa. Stigma and barriers to care caring for those exposed to war, disaster and terrorism. Paper presented at: Forum on health and national security2011.

35. Sibitz I, Provaznikova K, Lipp M, Lakeman R, Amering M. The impact of recovery-oriented day clinic treatment on internalized stigma: Preliminary report. *Psychiatry Research*. 2013.
36. Hodson SE, McFarlane, A.C., Van Hooff, M., Davies, C. . Mental health in the Australian Defence Force - 2010 ADF mental health prevalence and wellbeing study: Executive Report. In: Defence Do, ed. Canberra2011.
37. Hoge CW, Castro, C.A., Messer, S.C., McGurk, D., Cotting, D.I., Koffman, R.L. Combat duty in Iraq and Afghanistan, mental health problems, and barriers to care. *The New England Journal of Medicine*. 2004;351:13-22.

Appendix 1

PICO

This question was formulated within a Population Intervention Comparison Outcome (PICO) framework. Application of a PICO framework helps to structure, contain and set the scope for the research question. Inclusion of intervention and comparison components is dependent on the question asked, and may not be appropriate for all question types.

When the PICO formula was applied, this question was defined in the following terms:

What strategies are effective for reducing the stigma associated with diagnosed PTSD, mood disorders, anxiety disorders, schizophrenia and other psychotic disorder (as defined by the DSM-IV)?

P Patient, Problem, Population	I Intervention	C Comparison (optional)	O Outcome <i>when defining "more effective" is not acceptable unless it describes how the intervention is more effective</i>
AGE ≥ 18years GENDER no restrictions	Specific intervention strategies (e.g. educational campaign raising organisational awareness) targeting stigma associated with mental health disorder	None	Change in attitudes and beliefs in relation to mental health, on measures included in the study

Appendix 2

Information retrieval/management

The following is an example of the search strategy:

Step	Search Terms	No of records
S1	(stigma or social stigma or stigmatization or prejudice or negative stereotype).mp. [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword]	17621
S2	(mental health or mental illness or psychopathy or mental disorder or mental disease).mp. . [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword]	316293
S3	(post*traumatic stress disorder or PTSD or stress disorders post*traumatic or stress disorders traumatic acute or combat disorders or stress disorders traumatic).mp . [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword]	32062
S4	(mood disorder or depression or MDE or Depressive Disorder Major or dysthymic disorder or bipolar disorder or cyclothymic disorder).p . [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword]	453767
S5	(anxiety or generalized anxiety disorder or GAD or phobia or social phobia or agoraphobia or panic disorder).mp . [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword]	220351
S6	(schizophrenia or psychosis or schizophreniform disorder or schizoaffective disorder or delusional disorder or brief psychotic disorder).mp. [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword]	221788
S7	2 or 3 or 4 or 5 or 6	973919
S8	1 and 7	5957
S9	HIV or human immunodeficiency virus OR AIDS or acquired immune deficiency syndrome	418471
S10	8 NOT 9	5447

Appendix 3

Screening form

The screening form was designed to be used to code the eligibility of references acquired through search paradigms. The content of the screening form at the title and abstract screening stage was as follows:

Screen on title & abstract

1. EXCLUDE Language: *Exclude if non-English*
2. EXCLUDE Date: *Exclude if published prior to 2003*
3. EXCLUDE Study Type: *validation study, animal study, systematic review or meta-analysis, stand-alone methods paper, qualitative study*
4. EXCLUDE Publication Type: *Exclude if it is not a peer-reviewed article, e.g. media, newspapers, magazines, television, conference abstracts, theses, editorial, book chapter, book review, book chapter review*
5. EXCLUDE Intervention: *Exclude if the study does not report on an intervention*
6. EXCLUDE Qualitative Data
7. EXCLUDE: stigma associated with: sexual identity, HIV/AIDS, chronic health conditions
8. EXCLUDE Age: *Exclude if mean age of participants < 18*
9. EXCLUDE Diagnosis: *Exclude if sample participants do not have a diagnosed Axis 1 condition, specific to: depression, anxiety, PTSD, schizophrenia, psychotic disorder*
10. EXCLUDE Unavailable: *Exclude if full-text version is not readily available*
11. INCLUDE based on title & abstract: *Cannot be excluded so is marked as INCLUDE. Will require retrieval of full paper*

Appendix 4

Quality and bias checklist

Checklist for appraising the quality of studies of interventions

Completed		
Yes	No	
		1. Method of treatment assignment
		<ul style="list-style-type: none"> • Correct, blinded randomisation method described OR randomised, double-blind method stated AND group similarity documented
		<ul style="list-style-type: none"> • Blinding and randomisation stated but method not described OR suspect technique (eg allocation by drawing from an envelope)
		<ul style="list-style-type: none"> • Randomisation claimed but not described and investigator not blinded
		<ul style="list-style-type: none"> • Randomisation not mentioned
		2. Control of selection bias after treatment assignment
		<ul style="list-style-type: none"> • Intention to treat analysis AND full follow-up
		<ul style="list-style-type: none"> • Intention to treat analysis AND <25% loss to follow-up
		<ul style="list-style-type: none"> • Analysis by treatment received only OR no mention of withdrawals
		<ul style="list-style-type: none"> • Analysis by treatment received AND no mention of withdrawals OR more than 25% withdrawals/loss-to-follow-up/post-randomisation exclusions
		3. Blinding
		<ul style="list-style-type: none"> • Blinding of outcome assessor AND patient and care giver (where relevant)
		<ul style="list-style-type: none"> • Blinding of outcome assessor OR patient and care giver (where relevant)
		<ul style="list-style-type: none"> • Blinding not done
		<ul style="list-style-type: none"> • Blinding not applicable
		4. Outcome assessment (if blinding was not possible)
		<ul style="list-style-type: none"> • All patients had standardised assessment
		<ul style="list-style-type: none"> • No standardised assessment OR not mentioned
		5. Additional Notes
		<ul style="list-style-type: none"> • Any factors that may impact upon study quality or generalisability

Appendix 5

Meta-analyses and systematic reviews checklist

Study Type				Systematic review	Error Categories
Citation:					
Y	N	NR	NA	Quality Criteria	
				A. Was an adequate search strategy used?	
				• Was a systematic search strategy reported?	I
				• Were the databases searched reported?	III
				• Was more than one database searched?	III
				• Were search terms reported?	IV
				• Did the literature search include hand searching?	IV
				B. Were the inclusion criteria appropriate and applied in an unbiased way?	
				• Were inclusion/exclusion criteria reported?	II
				• Was the inclusion criteria applied in an unbiased way?	III
				• Was only level II evidence included?	I=IV
				C. Was a quality assessment of included studies undertaken?	
				• Was the quality of the studies reported?	III
				• Was a clear, pre-determined strategy used to assess study quality?	IV
				D. Were the characteristics and results of the individual studies appropriately summarised?	
				• Were the characteristics of the individual studies reported?	III
				• Were baseline demographic and clinical characteristics reported for patients in the individual studies?	IV
				• Were the results of the individual studies reported?	III
				E. Were the methods for pooling the data appropriate?	
				• If appropriate, was a meta-analysis conducted?	III-IV
				F. Were the sources of heterogeneity explored?	
				• Was a test for heterogeneity applied?	III-IV
				• If there was heterogeneity, was this discussed or the reasons explored?	III-IV
Comments					

What strategies are effective for reducing the stigma associated with mental health disorder?

Quality rating: [Good/Fair/Poor]				Systematic review:	
				Included studies:	

Note: Quality criteria adapted from NHMRC (2000) How to use the evidence: assessment and application of scientific evidence. HNMRC, Canberra.

^a Assess criterion using Y (yes), N(no), NR (not reported) or NA (not applicable).

^b Error categories as follows: (I) leads to exclusion of the study; (II) automatically leads to a poor rating; (III) leads to a one grade reduction in quality rating (eg, good to fair, or fair to poor); and (IV) errors that may or may not be sufficient to lead to a decrease in rating.

^c Where applicable provide clarification for any of the criteria, particularly where it may results in downgrading of the study quality. For quality assessment of systematic reviews, this should include a statement regarding the methodological quality of the studies included in the systematic review.

^d Quality ratings are good, fair, or poor.

Appendix 6 Evidence Map

High ←————— Strength of study design —————→ Low											
Interventions	n	Guidelines*/ Systematic review/ Meta- analysis	RCT	Pseudo- RCT	Cohort studies	Case- controlled	Pre – Post	Case series	Cross- sectional	Case study	Other
Public Stigma											
Educational	8	1 ¹	1				5		2		
Contact (direct or indirect)	2	1 ²					2				
Multi-Modal	9		2				7				
Imagined Exposure	2						2				

¹ Intervention included in 2012 meta-analysis by Corrigan et al. (2012)

² Intervention included in 2012 meta-analysis by Corrigan et al. (2012)

Appendix 7 Evidence Profile

Authors & year	Design	Intervention (I), Comparison (C), & Group (G)	Intervention Delivery methods, frequency, duration	Country	Population delivered to	Primary Outcome domain (Measure(s))	Characteristics of sample	Participants	
								I/G	C
STIGMA TYPE: Public stigma (Intervention Directed at Reducing Public Stigma)									
Education Based Interventions									
Abraham, Easow, Ravichandren, Mushtaq, Butterworth, & Luty, 2010	Pre-post	I: Educational campaign C: N/A	"Time to Change" campaign delivered via mail to households (postcard, leaflet and bookmark) Frequency: 1 Duration: NR	UK	Society (general public)	-Change in attitude -Change in knowledge (AMIQ)	n=196 78% completion rate) Mean age: 50 SD: NR 32% Male	n= 196	N/A
<p>Summary Author Reported Main Findings: Single exposure to No stat. sig. difference from AMIQ scores from 3 years previously. Campaign logo was recognised by 23% of participants. 17% stated that they had ever heard of the Time to Change campaign. 20% correctly reported key message when presented with five alternative responses. 24% correctly identified 'discrimination against mental illness' as aim of cause. 57% endorsed 'Don't know/None of the above,' and 20% endorsed 'The Liberal Party'. 42% had contact with a mentally ill person but familiarity with mental illness had no significant effect on the AMIQ stigma scores or familiarity with the campaign. The 45 participants who recognised the campaign logo had a significantly increased chance of correctly identifying the objective of the campaign but they had a reduced chance of identifying the '1 in 4' catchphrase</p>									
Dietrich, Mergl, Freudenberg, Althaus, & Hegerl, 2010	Prospective experimental, follow-up (10 & 22 months)	I: Educational campaign with 3 independent samples measured at different years G1; C1: 2000 G2; C2: 2001 G3; C3: 2002 C: N/A	Information regarding depression, how to get help for depression and ways to help those with depression, delivered via a range of mediums (pamphlets, leaflets, posters, online) Duration: 2 years Frequency: N/A	Germany	Society (general public)	-Change in attitude - Change in knowledge - Change in behaviour (non-validated measures) -Awareness of campaign	Mean age: NR SD: NR	G1: n=1,426 mean age: 48 SD: 18.7 G2: n= 1,507 mean age: 49 SD: 18.2 G3: n= 1,423 mean age: 49 SD: 18.8	C1: n = 710 mean age: 48 SD: 19.4 C2: n = 750 mean age: 49 SD: 19.3 C3: n = 707 mean age: 49 SD: 19.2
<p>Summary Author Reported Main Findings: Successful in creating awareness of campaign (NAD) after implementation. Not successful at any time with those greater than or equal to 60 years of age. Successful at 1 year, lost at 2 years except in those who had experience with depression (loved one or friend with depression) or were aware of the campaign For persons who reported experience</p>									

What strategies are effective for reducing the stigma associated with mental health disorder?

Authors & year	Design	Intervention (I), Comparison (C), & Group (G)	Intervention Delivery methods, frequency, duration	Country	Population delivered to	Primary Outcome domain (Measure(s))	Characteristics of sample	Participants	
								I/G	C
with depression and persons aware of the NAD: more awareness of depression and the NAD, more positive attitudes towards medication treatment and antidepressants developed and also 'lack of self-discipline' declined as causal explanation as did the notion 'pull yourself together' as treatment option. The campaign induced relevant changes mainly in persons aware of the NAD and persons who reported having experience with depression.									
Evans-Lacko, London, Little, Henderson, Thornicroft, 2010	Pre-post, assessment during and post-test	I: Educational campaign G1: Tested at T1 G2: Tested at T2 G3: Tested at T3 (Note: independent sample) C: N/A	A range of mediums (radio, newspaper, street art) Frequency: N/A Duration: 4 weeks	UK	Society (general public)	-Change in attitude -Change in knowledge -Change in behaviour (RIBS; MAKs; CAMI)	G1: n= 92 47% male G2: n= 198 52% male G3: n= 120 55% male Mean age: NR SD: NR	G1: n= 92 47% male G2: n= 198 52% male G3: n= 120 55% male Mean age: NR SD: NR	N/A
Summary Author Reported Main Findings: Low to moderate awareness; peak week 1 at 23%; week 2 dropped to 6% - same as pre-campaign level (5%). Knowledge : 2/6 shifts significant for knowledge; not evident on MAKs. Shifts: increased: friend with MI problems know how to advise to get professional help increased 24% (from 58% pre to 82% post); Medication effective treatment increased 10% (74% to 84%); maintained when social contact controlled for. No effect on the MAKs, CAMI or RIBS measurements									
Henderson et al., 2012	Prospective experimental	I: Educational campaign G1: sampled in 2008 G2: sampled in 2009 (note: independent samples) C: N/A	Public campaign "Time to Change" aimed to reduce public stigma delivered via the Internet and print media Duration: NR Frequency: NR	UK	Society (individuals with anxiety, depression, bipolar disorder, schizophrenic disorders, personality disorders, eating disorders, SUDs, multiple diagnoses)	-Self stigma -Frequency of experienced discrimination (DISC) -Awareness of campaign	n= 1,584 Mean age: NR SD: NR	G1: n= 537 Mean age: 46 SD: 11 35% male G2: n= 1,047 Mean age: 46 SD: 11 37% male	N/A
Summary Author Reported Main Findings: Decrease frequency of experience of discrimination; decreased number of areas in life where discrimination experienced; median negative discrimination score decreased; being shunned by those aware of diagnosis decreased; decreased discrimination from friends and family; decrease not pursuing a close personal relationship; increase in friends made out of service. Not successful in decreasing the proportion of respondents reporting discrimination in life domains; no change in being treated unfairly by mental health staff; no change discrimination from GP; awareness of TTC campaign had no effect on discrimination score; no change in concealing mental health illness from others (independent samples assessed in 2008 and 2009)									
Kim & Stout (2010)	Pre-post, control	I: Educational campaign with high interactivity	Delivered online via website consisting of a life story of a sufferer of schizophrenia, I1: able to	NR	Targeted group (undergraduate students)	-Change in attitude -Change in knowledge -Social distance	n= 113 Mean age: 20 SD: NR	Mean age: 20 SD: NR	N/A

What strategies are effective for reducing the stigma associated with mental health disorder?

Authors & year	Design	Intervention (I), Comparison (C), & Group (G)	Intervention Delivery methods, frequency, duration	Country	Population delivered to	Primary Outcome domain (Measure(s))	Characteristics of sample	Participants	
								I/G	C
		C: Educational campaign with low interactivity	manipulate website and decide on topics to view Duration: NR Frequency: 1 I2: not able to choose topics and viewed website in random order Duration: NR Frequency: 1			(non-validated measures)	38% male		
Summary Author Reported Main Findings: Interactivity led to significant desirable effects for all 3 attitude dimensions: perception of dangerousness, social distance, perception of severity. Not successful in moderating effect of interactivity on perception of danger or perception of severity.									
Kiropoulos, Griffiths, & Blashki, 2011	RCT (1 week)	I: Educational campaign C: Control	I: Delivered via website with 30 minutes explanation/interview time Duration: 1.5 hour Frequency: 1 C: Depression interview Duration: 1.5 hour Frequency: 1	Australia	Targeted group (non-English speaking background)	-Change in attitude -Change in knowledge -Change in beliefs (non-validated measures)	n= 202 Mean age: 65 SD: 8.6	n= 110 Mean age: 66 SD: 8.1 46% male	n= 92 Mean age: 65 SD: 9.0 54% male
Summary Author Reported Main Findings: Made stigma worse in regard to "perceived stigma", operationally defined as what the individual believes others in the community believe about mental illness, worse beliefs endorsed. Success maintained at follow up. Increased depression literacy; significantly larger decrease in mean personal stigma scores vs. those in control. Not successful with perceived stigma or level of depression									
Knifton et al., 2010	Pre-post	I: Educational campaign G1: Chinese G2: Indian G3: Pakistani	Delivered via community workshop Frequency: 1 Duration: 90 min	NR	Targeted group (ethnic minorities)	-Change in attitude -Change in knowledge -Change in behaviour (non-validated measures)	n= 246 96% completion rate Mean age: NR SD: NR 27% male	G1: n= 103 33% male G2: n= 75 32% male G3: n= 68 12% male No age reported	N/A
Summary Author Reported Main Findings: Less stigma post-workshop overall (significant improvement on 6/11 questions). Intervention not successful on 4/11 questions, older age. Stigma worsened on 1/11 questions. Younger age and Chinese viewed change more positively. Chinese community showed less positive change on protection. Females showed more positive change regarding marry. Chinese community and males showed less positive change on questions of contribution. Pakistani and Islamic community showed less positive change regarding recovery. Younger age responded less positively to questions surrounding disclosure									

What strategies are effective for reducing the stigma associated with mental health disorder?

Authors & year	Design	Intervention (I), Comparison (C), & Group (G)	Intervention Delivery methods, frequency, duration	Country	Population delivered to	Primary Outcome domain (Measure(s))	Characteristics of sample	Participants	
								I/G	C
Seo & Kim, 2010	Pre-post with follow-up (2 months)	I: Educational campaign + Video C: Control	Online video, 1 topic per session (e.g. topic: understanding of anxiety and mood disorders) Frequency: 8 Duration 15-20 mins	Korea	Targeted group (undergraduate students)	-Change in attitude -Change in knowledge -Social distance (SDS; CAMI; non-validated measures)	n= 143 90% completion rate Mean age: NR SD: NR 13% male	n= 69 Mean age: NR SD: NR 16% male	n= 74 Mean age: NR SD: NR 11% male
Summary Author Reported Main Findings: No change: social distance, knowledge, authoritarianism, community mental health ideology, social restriction. Increased benevolence in experimental group									
Contact Based Intervention									
Evans-Lacko et al., 2012	Pre-post follow-up (4-6 weeks)	I: Educational campaign with contact intervention G1: Had mental health problems G2: Had no mental health problems C: N/A	"Time to Change" delivered via various electronic and print mediums and in-person via a roadshow in major locations staffed by individuals with direct MI experience Duration: 21 Sept- 17 Oct, 2009 Frequency: N12 events	UK	Society and group (general public)	-Change in behaviour -Willingness to disclose mental health problem (RIBS; non-validated measures) -Awareness of campaign	T1: n= 403 T2: n= 83 Mean age: 38 SD: NR	G1: n= 53 Mean age: 38 SD: 13 G2: n= 30 Mean age: 37 SD: 14	N/A
Summary Author Reported Main Findings: Campaign events facilitated meaningful intergroup social contact between individuals with and without mental health problems. Presence of facilitating conditions predicted improved stigma-related behavioural intentions and subsequent campaign engagement 4–6 weeks following social contact. Contact, however, was not predictive of future willingness to disclose mental health problems. Success not maintained at follow-up									
Nguyen , Chen, & O'Reilly, 2012	Pre-post	I: Educational campaign with direct contact intervention (C): Educational campaign with indirect contact intervention	I: Delivered via workshop with mental health consumer/educated Frequency: 4 Duration: 2 hours C: Delivered via film of mental health consumer/educated Frequency: 4 Duration: during 90 minutes	Australia	Targeted group (pharmacy students)	-Change in attitude -Social distance (experimental use of validated measures SDS; AQ)	n= 349 76% completion rate Mean age: NR SD: NR	I: n=136 Mean age: 21 SD: 0.2 38.5% male	C: n= 213 Mean age: 22 SD: 0.2 36.9% male

What strategies are effective for reducing the stigma associated with mental health disorder?

Authors & year	Design	Intervention (I), Comparison (C), & Group (G)	Intervention Delivery methods, frequency, duration	Country	Population delivered to	Primary Outcome domain (Measure(s))	Characteristics of sample	Participants	
								I/G	C
<p>Summary Author Reported Main Findings: Direct: significant improvement on 37/39 stigma questions. Indirect: significant improvement on 27/39 stigma questions. Both resulted in a significant decreased mean SDS individual item and total scores; but not difference by intervention type (equivalent success). Direct: stronger improvement on reducing negative attitudes for 5 questions; no difference between interventions for 6 negative attitude questions. No effect: 2 questions in the Direct intervention no effect 12 questions in the Indirect intervention</p>									
<p>Multi-Modal Interventions</p>									
Anderson & Jehannine, 2012	Pre-post, follow-up (1 month)	I: Educational campaign + Film C: N/A	Delivered via film (documentary "Cracking Up" on sufferers of MI learning stand-up comedy) Frequency: 1 Duration:45 minutes	NR	Targeted group (genetic counsellors and students)	-Social distance (Social distance scale) - Stereo-typing (Stereotype endorsement scale)	T1: n= 87 T2: n= 57 (66% completion rate) Mean age: NR SD: NR 7% male	n= 87	N/A
<p>Summary Author Reported Main Findings: At T2, 34.5%felt more comfortable to ask about a family history of mental illness with their patients. Those who were uncomfortable/ambivalent at T1 (n = 31, 36.9%) were significantly more likely to report rarely or never asking patients about family history of mental illness in clinical practice, significantly more likely to report increased comfort to ask about a family history mental illness as a result of watching the film at T2. Significant decrease in the degree to which genetic counsellors and students endorsed negative stereotype about individuals with mental illness; rated as more healthy, reasonable and less bedraggled. No sig diff mean stereotype endorsement for those with personal experience w/ mental illness and those without. No sig diff btw groups on stereotype endorsement. Significant decrease social distance; More willing to introduce someone w mental illness for a job and introduce to a friend as a relationship partner. No difference social distance for those w/ personal experience of mental illness. Those who were uncomfortable at T1 sig decrease in social distance at T2; No change in those who were comfortable w/ mental illness.</p>									
Clement et al., 2012	RCT, follow-up (4 months)	I: Educational campaign delivered via film (DVD) C: Educational campaign delivered in person C: Controls (Lecture only)	I: Film "Combating Stigma", duration 60 minutes followed by discussion Duration (total): 71 minutes Frequency: 1 C ₁ : Presentation of "Social Contract" model covering similar topics to I1, followed by discussion Duration (total): 85 minutes; Frequency: 1 C ₂ : Lecture presented by individual with no knowledge of stigma Duration (total): 60 minute	NR	Targeted group (nursing students)	-Change in attitude -Change in knowledge -Change in behaviour -Social distance (MICA; RIBS) - Emotional Reactions to Mental Illness Scale (ERMIS)	T1: n= 216 T2: n= 193 89% follow-up rate	I: Mean age:24 SD: 6.9 13% male	C ₁ Mean age:24 SD:6.2 11% male C ₂ : Mean age: 25 SD: 7.7 15% male

What strategies are effective for reducing the stigma associated with mental health disorder?

Authors & year	Design	Intervention (I), Comparison (C), & Group (G)	Intervention Delivery methods, frequency, duration	Country	Population delivered to	Primary Outcome domain (Measure(s))	Characteristics of sample	Participants	
								I/G	C
<p>Summary Author Reported Main Findings: There were no differences between the DVD and live groups on MICA, ERMIS or RIBS scores. The DVD group had higher SCILO (knowledge) scores. The combined social contact group (DVD/live) had better MICA and RIBS scores than the lecture group, the latter difference maintained at 4 months. The DVD was the most cost effective of the interventions, and the live session the most popular.</p>									
Corrigan et al., 2010	Pre-post	I: Educational campaign with facilitator (short version) C ₁ : Educational film with facilitator (long version) C ₂ : Educational campaign (live presentation)	I: "In Our Own Voice", program facilitated by one individual recovering from serious MI, including film, with discussion Duration 30 minutes Frequency: 1 C ₁ : "In Our Own Voice", program facilitated by two individuals recovering from serious MI, including film, with discussion Duration 90 minutes Frequency: 1 C ₂ : Live presentation on the misunderstanding of MI and facts with discussion Duration 30 minutes Frequency: 1	USA	Targeted group (undergraduate students)	-Memory for positive or negative facts (non-validated measures)	n= 200 Mean age: 20 SD: 2.9 33% male	I: n= 67 Mean age:20 SD: 2.5 40% male	C ₁ : n= 66 Mean age: 20 SD: 2.2 29% male C ₂ n= 67 Mean age: 20 SD: 3.4 30% male
<p>Summary Author Reported Main Findings: Both IOOV conditions had significantly better ratios than education. These findings suggest the 30 min version of IOOV is as effective as the 90 min standard.</p>									
Economou, Peppou, Louki & Stefanis, 2012	Pre-post	I: Educational campaign with contact intervention C: N/A	Lecture and psychiatry placements (observations & clinical cases) Duration: 4 weeks Frequency: NR	Greece	Targeted group (medical students)	-Change in attitude -Change in beliefs -Social distance (non-validated measures)	n = 155 97% response rate Mean age: 22 SD: NR 50% male	n = 155	N/A
<p>Summary Author Reported Main Findings: Decreased beliefs regarding poor parenting as the cause of MHI, split personality and unpredictability. Increased belief in treatment in community. Not successful in changing belief that people with schizophrenia are seen in public talking to themselves, that they are a public nuisance or to social distance. Worsened stigma regarding inability to recover, have no insight, cannot make reasonable decisions, cannot work in regular jobs and are dangerous to the public</p>									
Galletly & Burton, 2011	Pre-post	I: Educational, Contact,	Delivered via film, followed by simulated auditory	Australia	Targeted group (medical students)	-Change in attitude -Change in	n= 87	n= 87	N/A

What strategies are effective for reducing the stigma associated with mental health disorder?

Authors & year	Design	Intervention (I), Comparison (C), & Group (G)	Intervention Delivery methods, frequency, duration	Country	Population delivered to	Primary Outcome domain (Measure(s))	Characteristics of sample	Participants	
								I/G	C
		Experiential + Film	hallucinations Duration: 85 minutes Frequency: 1			behaviour (AMIQ)	Mean age: NR SD: NR 34% male		
Summary Author Reported Main Findings: There was a significant improvement in mean AMIQ scores after participating in the workshop. Students with more negative attitudes before the workshop showed the most significant improvement, whilst there was little change for students who held more positive attitudes									
Kassam, Glozier, Leese, Loughran, & Thornicroft, 2011	Cluster RCT	I: Educational campaign with contact intervention C ₁ : Educational campaign with contact intervention and role-play with feedback C ₂ : Control	I: Presentation to groups of 8-10 on MI-related stigma and personal testimonies from sufferers and carers, Duration: 1 hour Frequency: 1 C ₁ : Same as I1, with addition of role-playing session and feedback Duration: 1.5 hour Frequency: 1	UK	Targeted group (medical students)	-Change in attitude -Change in knowledge -Change in behaviour (MICA; non-validated measures)	n= 110 Mean age: NR SD: NR	I: n= 87 Mean age: 22 SD: 2.5 27% male C: n= 87 Mean age: 23 SD: 4.4 8% male	n= 87 Mean age: 23 SD: 3.3 36% male
Summary Author Reported Main Findings: Improved knowledge. No change in attitudes or behaviour									
O'Reilly, Bell, & Chen, 2010	Pre-post with follow-up (T1: 6 weeks; T2: 12 months)	I: Educational campaign with contact intervention C: N/A	Delivered via lectures, weekly placements and tutorials with mental health educators in classes with approximately 25 students Duration: 1 week Frequency: 10	Australia	Targeted group (pharmacy students)	-Change in attitude -Change in knowledge -Change in beliefs (non-validated measures)	n = 258 total n= 225 baseline 87% participation rate Mean age: 21 SD: NR 33% male	T1: n= 230 T2: n= 228	N/A
Summary Author Reported Main Findings: Significant decrease in stigma on 75% of items (depression & schizophrenia); significant improvement service delivery all items except options regarding change (no effect). Not successful in changing opinions regarding change; schizophrenia consistently rated as more unpredictable and less likely to recover vs. depression. 25% of items no change for ratings of schizophrenia or depression. Made stigma worse: belief that people with depression had themselves to blame at baseline and 12 months. Successes maintained at follow up									
O'Reilly, Bell, Kelly, & Chen, 2011	Pre-post (post-assessment at 6 weeks)	I: Educational campaign + Film C: Control	I: Program to teach skills to recognise signs of MI and how to provide help, delivered via workshop and film	Australia	Targeted group (pharmacy students)	-Change in attitude -Change in knowledge -Change in behaviour	n= 272 Mean age: 21 SD: 1.9	n= 60 Mean age: 21 SD: 2.4	n= 212 Mean age: 21 SD: 1.9

What strategies are effective for reducing the stigma associated with mental health disorder?

Authors & year	Design	Intervention (I), Comparison (C), & Group (G)	Intervention Delivery methods, frequency, duration	Country	Population delivered to	Primary Outcome domain (Measure(s))	Characteristics of sample	Participants	
								I/G	C
			Duration: 12 hours Frequency: 1 C: Standard education program Duration: 1 hour lecture and 2 hour tutorial on MI Frequency: 7			-Social distance (non-validated measures)	36% male	23% male	40% male
<p>Summary Author Reported Main Findings : Significant decreases in social distance and knowledge: able to correctly identify mental illness; improved ability to recognize helpful interventions; significant increased agreement with health professional consensus about helpfulness of interventions in depression; increased knowledge about worsening without treatment, increased confidence providing medication counselling and identifying drug-related problems. Not successful in improving agreement with health professional consensus for helpfulness of intervention for schizophrenia; ability to recognize specific mental illness (e.g. depression, schizophrenia); greater confidence and comfort behaviour providing medication, counselling and identifying drug related problems in those with cardiovascular disease vs. mental illness.</p>									
Quinn, Shulman, Knifton & Byrne, 2011	Pre-post	I: Other ³ C: N/A	Film festival focusing on mental health including exhibitions, debates, feature films, documentaries, community events, concerts, plays, workshops Duration: 2 weeks Frequency: N/A	Scotland	Society (general public)	-Change in attitude -Change in behaviour -Change in beliefs (non-validated measures)	n= 196 Mean age: NR SD: NR	n= 196 Mean age: NR SD: NR	N/A
<p>Summary Author Reported Main Findings: Significant decrease in stigma regarding return to work. Not successful in changing attitude and behaviour on 6/8 questions. Made stigma regarding dangerousness worse</p>									
Imagined Exposure/Imagined Contact Based Interventions									
Birtel & Crisp, 2012	Pre-post (randomized)	I: Imagined exposure imagining two successive positive encounters C: Imagined exposure imagining first a negative encounter	Delivered online, imagining an interaction with an adult with schizophrenia followed by a free recall period directly after to write-down the imagined encounter Frequency: 1 Duration NR	NR	Targeted group (undergraduate psychology students)	- Intergroup anxiety (Intergroup anxiety scale)	n= 29 (n per group NR) Mean age: 21 SD: 4.96 14% male	NR	NR

What strategies are effective for reducing the stigma associated with mental health disorder?

Authors & year	Design	Intervention (I), Comparison (C), & Group (G)	Intervention Delivery methods, frequency, duration	Country	Population delivered to	Primary Outcome domain (Measure(s))	Characteristics of sample	Participants	
								I/G	C
		followed by a positive encounter							
<p>Summary Author Reported Main Findings: Anxiety w significantly lower at Time 2 than Time 1. Imagining a negative encounter at T1 produced higher anxiety compared with imagining a positive encounter. Time 2, despite participants in both conditions imagining a positive encounter, subsequent anxiety was lower after first imagining a negative encounter at Time 1 compared with first imagining a positive encounter at T1. Imagining a positive encounter after imagining a negative encounter resulted in lower anxiety compared with imagining a single positive encounter at T1.</p>									
Stathi, Tsantila, & Crisp, 2012	Pre-post	I: Imagined exposure C: Control	Imagined exposure of an interaction with a sufferer of schizophrenia that was relaxed, positive and comfortable Duration: 1 min Frequency: 1 C: Imagined walking outside Duration: 1 min Frequency: 1	UK	Targeted group (undergraduate students)	-Stereotyping -Inter-group anxiety (non-validated measures)	n= 57 Mean age: 23 SD: 4.9 37% male	n= NR Mean age: NR SD: NR	n= NR Mean age: NR SD: NR
<p>Summary Author Reported Main Findings: Participants who imagined a positive encounter with a schizophrenic person reported weakened stereotypes and formed stronger intentions to engage in future social interactions with persons with schizophrenia in general. Reduced feelings of anxiety about future interactions.</p>									
<p>Meta-Analysis</p>									
Corrigan, Morris, Michaels, Ranfacz, Rusch (2012)	Meta-analysis	--	Public Stigma	14 countries represented in data set	--	Public Stigma	72 articles Search terms: stigma, mental illness (such as schizophrenia and depression) and change program (including contact and education) Search limited to October 2010	n = 38, 364 total all studies combined	--
<p>Summary Author Reported Main Findings: Education and contact had positive effects on reducing stigma for adults and adolescents with mental illness. Contact is better than education at reducing stigma for adults. Overall, face-to-face contact is more effective than contact by video</p>									

What strategies are effective for reducing the stigma associated with mental health disorder?

Authors & year	Design	Intervention (I), Comparison (C), & Group (G)	Intervention Delivery methods, frequency, duration	Country	Population delivered to	Primary Outcome domain (Measure(s))	Characteristics of sample	Participants	
								I/G	C
STIGMA TYPE: Self stigma									
Therapy Based Interventions									
Sibitz, Provaznikova, Lipp, Lakeman, & Amering, 2013	Pre-post (randomization)	I: Therapy C: Control	Group therapy emphasising empowerment and recovery, 9 people per group Duration: 2 months Frequency: 5 days a week Control: waitlist Duration: NA Frequency: NA	Germany	Targeted group (individuals with schizophrenia)	-Self stigma (ISMI)	n= 97 57% completion rate Mean age: NR SD: NR	n= 40 Mean age: 32 SD:11.3 55% male	n= 40 Mean age: 32 SD:9.6 60% male
Summary Author Reported Main Findings: Intervention successful in reducing stigma, decreased stigma especially subscale assessing alienation at 5 weeks post-intervention.									
SYSTEMATIC REVIEW SELF-STIGMA REDUCTION									
Mittal, Sullivan, Chekuri, Allee, Corrigan (2012)	Systematic Review / Critical Review	--	--	Half the studies conducted in the united states	n = 8 studies persons with schizophrenia or serious mental illness n = 3 studies persons with substance use disorders n = 2 groups at risk to develop a mental disorder (college students with symptoms of depression or anxiety and veterans in post deployment transition)	Self-Stigma Reduction	n = 14 studies met inclusion criteria Search between January 2000 and August 2011 n = 12 studies conducted in outpatient clinical settings	In general studies sample size were small; n = 6 studies sample size n = 50 or smaller; n = 4 had sample size between 50-100 and n = 4 studies with an n >100	
Summary Author Reported Main Findings: Predominantly samples with either schizophrenia or depression. Two major approaches to self-stigma reduction: (1) alter stigmatizing beliefs and attitudes in the individual (2) enhance skills for coping with self-stigma through improvements in self-esteem, empowerment and help-seeking behaviour. Six self-stigma reduction strategies identified. Psychoeducation most frequently tested intervention. High degree of variability between self-stigma definitions, measurements and conceptual frameworks, with some studies lacking a theoretical framework. Six different scales used across studies to measure self-stigma									

Appendix 8

Citation list by ranking

Public stigma

Type of Intervention	Included Studies
Supported	
NA	NA
Promising	
Contact Based Interventions	<ul style="list-style-type: none"> • Nguyen , Chen, & O'Reilly, 2012 • Evans-Lacko et al., 2012 • Anderson & Jehannine, 2012
Education Based Interventions	<ul style="list-style-type: none"> • Abraham, Easow, Ravichandren, Mushtaq, Butterworth, & Luty, 2010 • Dietrich, Mergl, Freudenberg, Althaus, & Hegerl, 2010 • Evans-Lacko, London, Little, Henderson, Thornicroft, 2010 • Henderson et al., 2012 • Kim & Stout 2010 • Kiropoulos, Griffiths, & Blashki, 2011 • Knifton et al. , 2010 • Seo & Kim, 2010
Unknown	
Imagined Exposure Based Interventions	<ul style="list-style-type: none"> • Birtel & Crisp, 2012 • Stathi, Tsantila, & Crisp, 2012
Multi-Modal Interventions	<ul style="list-style-type: none"> • Clement et al., 2012 • Corrigan et al., 2010 • Economou, Peppou, Louki & Stefanis, 2012 • Galletly & Burton, 2011 • O'Reilly, Bell, & Chen, 2010 • O'Reilly, Bell, Kelly, & Chen, 2011 • Quinn, Shulman, Knifton & Byrne, 2011
Not Supported	
NA	NA