Protocol for systematic review

Title: Mood & Anxiety Disorders in first vs second generation immigrants:

systematic-review & meta-analysis

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Protocol Template: Systematic Review

Review title: Background

I. Important characteristics

What are the important population and/or disease characteristics (diagnostic criteria, epidemiology, aetiology, prognosis)?

First and second generation immigrants with any mood or anxiety disorder.

II. Relevance

Does the review topic have important implications for health (individual and/or public), as well as health care, policy and research?

The review topic has important implications for immigrant mental health

III. Rationale

Does the evidence (including existing systematic reviews) fail to answer the review question, and why?

There are no previous systematic reviews on this topic that looks individually at first vs second generation immigrants. While there are consistent reports of a high psychosis rate among certain groups of migrants, there is little information on their risk for mood or anxiety disorders in regards to generation.

A previous meta-analysis on mood disorders and immigration found no conclusive evidence for a large increase in the risk of mood disorders associated with migration, but it did not look at FGIs vs SGIs.

IV. Justification

Is the need for the review justified in the light of the potential health implications and current limitations of the evidence base?

This systematic review would help overcome limitations of previous studies.

V. Specification

What are the PICO components of the review question / objective?

P: immigrants

I: N/A

C: 1st vs 2nd generation

O: mood or anxiety disorders

2. Methods

I. Search strategy

Which electronic databases will you search?

PubMed, Embase, PsycInfo

What are your key search terms?

Immigration

Anxiety disorders

Mood disorders

What other sources will you search?

References in relevant articles

II. Selection criteria

What are the inclusion / exclusion criteria?

Adults

Differentiate by 1st or 2nd generation

Published

Original data

Exclusion: All other psychiatric diagnoses or mood/anxiety disorders secondary other illnesses or conditions

Will you impose any additional limits, e.g. language, publication type, study design?

Languages included: English, Spanish, Portuguese

Peer reviewed

Population-based incidence study design

Age-adjusted

How will study selection be performed?

Uncertainty over inclusion at each stage of screening will be discussed between authors.

III. Quality assessment

What criteria will be used to assess methodological quality?

Newcastle-Ottawa Scale (NOS) will be followed to assess quality.

How will quality assessment be performed?
As outlined in the NOS guidelines.

IV. Data extraction

What are the key data to be extracted?
Relative risks for natives, first, and second generation immigrants, with confidence intervals.

How will data extraction be performed, and how will extracted data be presented?
Data extraction will be conducted using a standardized collection forms and presented in tables.

V. Data synthesis

How will data be combined (statistical or narrative), and why?
Both statistically and narratively (quantitative & qualitative analysis), the qualitative analysis will allow to report any studies that cannot be included in the quantitative analysis due to limitations in their data reporting.

What are the potential sources of effect heterogeneity and how will they be assessed?
Differences in diagnostic methods: separate analysis to be done for studies that did not follow DSM/ICD criteria.

Refugees will be analysed separately

Sex specific analysis to be done where possible

Region of origin analysis to be done separately where possible

Diagnoses to be broken up by major categories

3. Process

I. What resources are required to conduct the review, and are they available?

Relevant expertise: *Yes*

Computing facilities: *Yes*

Research databases: *PubMed, Embase, PsycInfo*

Bibliographic software: *RefWorks*

Statistical software: *SAS & Stata*

II. How will the findings of the review be disseminated?

Target audience: *Scientific community*

Publication type: *Peer reviewed Journal*

4. Timetable

Completion date

Draft protocol for internal review   11/28/14

Protocol for external review   12/01/14

Pilot   12/06/2014

Searching and study selection   2/18/2015

Data extraction   3/31/2015

Quality assessment   4/15/2015

Draft report for peer review   6/15/2015

Submit for publication   8/01/2015

Fig. DS1

PRISMA Flow Diagram of literature search
Mood Disorders in first vs second generation immigrants:
systematic-review & meta-analysis

Identification

Records identified through database searching
1103 from PubMed
46 from EMBASE
12 from PsycInfo
(n = 1161)

Additional records identified through other sources
(n = 25)

Records after duplicates removed
(n = 1186)

Screening

Abstracts screened
(n = 1186)

Records excluded because they did not meet our inclusion criteria = 951
- *Non population-based incidence study*
- *Non adults*
- *Other psychiatric disorders*
- *Does not differentiate between immigrant generations*
- *Secondary mood disorder*

Eligibility

Full-text articles assessed for eligibility
(n = 235)

Full-text articles excluded, with reasons = 216

Included

Studies included in qualitative synthesis
(n = 20)

- 1 article excluded due to overlapping data
- 1 study excluded due to not reporting needed estimates

Studies included in quantitative synthesis (meta-analysis)
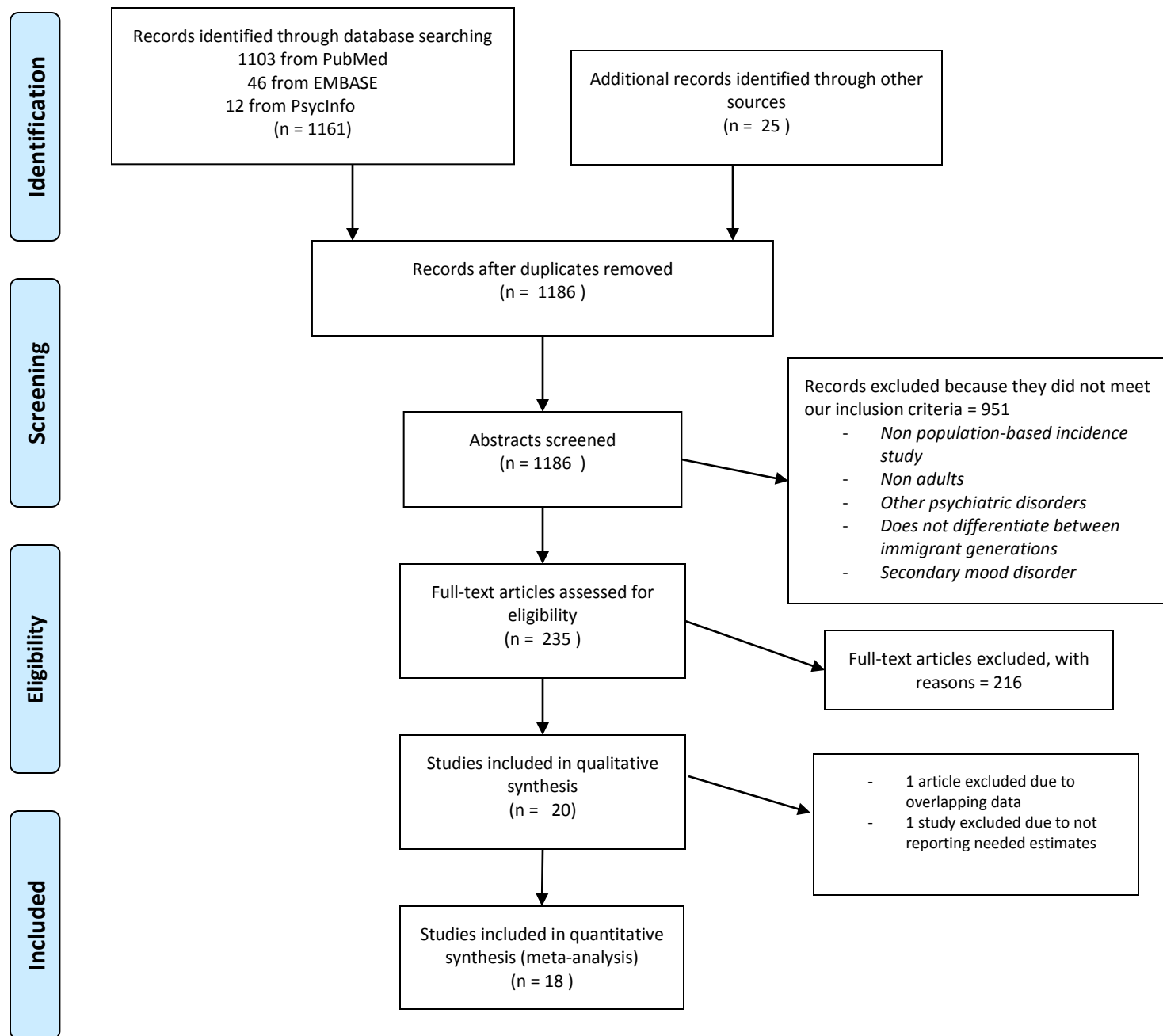(n = 18)

Table DS1

Design of population based cohort studies on mood disorders in first and second generation immigrants

First author and year	Country	Exposure	Time period	Relative risk (95% CI)
Hollander 2013	Sweden	FGI	2000-2006	1.33 (1.25-1.41)
Norredam 2010	Denmark	FGI	1994-2003	1.00 (0.86-1.15)
Sundquist 2004	Sweden	FGI	1997-1999	1.21 (1.15-1.27)
Saraiva Leao 2005	Sweden	SGI	1995-1998	1.28 (1.18-1.39)
Cantor-Graae 2013	Denmark	FGI	1995-2010	0.82 (0.75-0.9)
		SGI		1.05 (1.02-1.09)
Norredam 2009	Denmark	FGI	1994-2003	1.96 (1.7-2.25)
Leff 1976	UK	FGI	1965-1974	6.46 (2.21-18.89)
Selten 2003	Netherlands	FGI	1990-1996	1.25 (1.17-1.33)
Gershon 1975	Israel	FGI	1969-1972	1.72 (1.02-2.9)
Thomas 1993	UK	SGI	1984-1987	1.41 (0.19-10.55)
Mortensen 1997	Denmark	FGI	1980-1992	0.94 (0.88-1.01)
Rwegellera 1977	UK	FGI	1965-1968	3.03 (2.18-4.22)
Hemsi 1967	UK	FGI	1961	3.65 (2.19-6.11)
Hitch 1980	UK	FGI	1968-1970	0.9 (0.69-1.17)
Weyerer 1992	Germany	FGI	1974-1980	0.97 (0.69-1.38)
Krupinski 1980	Australia	FGI	1970-1972	0.96 (0.74-1.26)
Malzberg 1936	USA	FGI	1928-1931	1.09 (1.03-1.16)
McGovern 1987	UK	FGI	1980-1983	0.51 (0.23-1.16)

			Selection				Selection score	Comparability	Comparability score	Outcome			Outcome score	Total score
Study ID	Author	Year	Representativeness of the exposed cohort	Selection of non exposed cohort	Ascertainment of exposure	Demonstration that outcome was not present at baseline	Selection score	Comparability of cohorts on the basis of the design or analysis	Comparability score	Assessment of outcome	Was follow-up long enough for the outcome to occur	Adequacy of follow up of cohorts	Outcome score	Total score
1	Hollander	2013	High	High	High	High	4	High	2	High	High	High	3	9
2	Norredam	2010	High	High	High	No	3	High	2	High	High	High	3	8
3	Sundquist	2004	High	High	High	High	4	High	2	High	High	High	3	9
4	Saraiva Leao	2005	High	High	High	No	3	High	2	High	High	High	3	8
5	Cantor-Graae	2013	High	High	High	High	4	High	2	High	High	High	3	9
6	Norredam	2009	High	High	High	No	3	High	2	High	High	High	3	8
7	Leff	1976	High	High	High	No	3	High	2	High	High	No	2	7
8	Selten	2003	High	High	High	High	4	High	2	High	High	High	3	9
9	Gershon	1975	High	High	High	No	3	No	0	High	High	No	2	5
10	Thomas	1993	High	High	High	High	4	Medium	1	High	High	No	2	7
11	Mortensen	1997	High	High	High	High	4	High	2	High	High	High	3	9
12	Rwegellera	1977	High	High	High	High	4	No	0	High	High	High	3	7
13	Hemsi	1967	High	High	High	High	4	Medium	1	High	High	No	2	7
14	Hitch	1980	High	High	High	High	4	High	2	High	High	No	2	8
15	Weyerer	1992	High	High	No	No	2	Medium	1	High	High	No	2	5
16	Krupinski	1965	High	High	High	High	4	High	2	High	High	High	3	9
17	Krupinski	1980	High	High	High	High	4	High	2	High	High	No	2	8
18	Malzberg	1936	High	High	No	High	3	High	2	No	High	No	1	6
19	McGovern	1987	High	High	High	High	4	High	2	High	High	No	2	8

Table DS2 Quality assessment Mood & Anxiety Disorders in first vs second generation immigrants: a systematic-review

Table DS3 Results of the meta-analysis					
Analysis	Number of studies	RR	95 % CI	P value for heterogeneity	I ^2
FGI	17	1.25	1.11 - 1.41	<0.001	93.7%
SGI	3	1.16	0.96 - 1.4	<0.001	89.7%
FGI men	9	1.29	1.06 - 1.56	<0.001	90.4%
FGI women	8	1.05	0.85 - 1.31	<0.001	94.9%
FGI Bipolar disorder	6	1.09	0.89 - 1.34	<0.001	92.2%
FGI excluding refugees	11	1.22	1.07 - 1.39	<0.001	84.9%
FGI excluding low weight	13	1.11	0.99 - 1.25	<0.001	93.8%
FGI Subsaharan Africa	3	1.03	0.11 - 9.45	<0.001	96.3%
FGI Asia	3	0.68	0.28 - 1.64	0.019	74.9%
FGI Europe	3	1.29	0.72 - 2.31	<0.001	94.4%
FGI Americas	6	1.84	1.07 - 3.17	<0.001	85.5%
FGI using DSM or ICD criteria	12	1.19	1.04 - 1.37	<0.001	94.3%
FGI not following DSM or ICD criteria	5	1.46	0.88 - 2.41	<0.001	93.6%
FGI excluding quality score <7	14	1.28	1.11 - 1.48	<0.001	94.8%
FGI Derived by authors	7	1.17	1.00 - 1.36	<0.001	96.6%

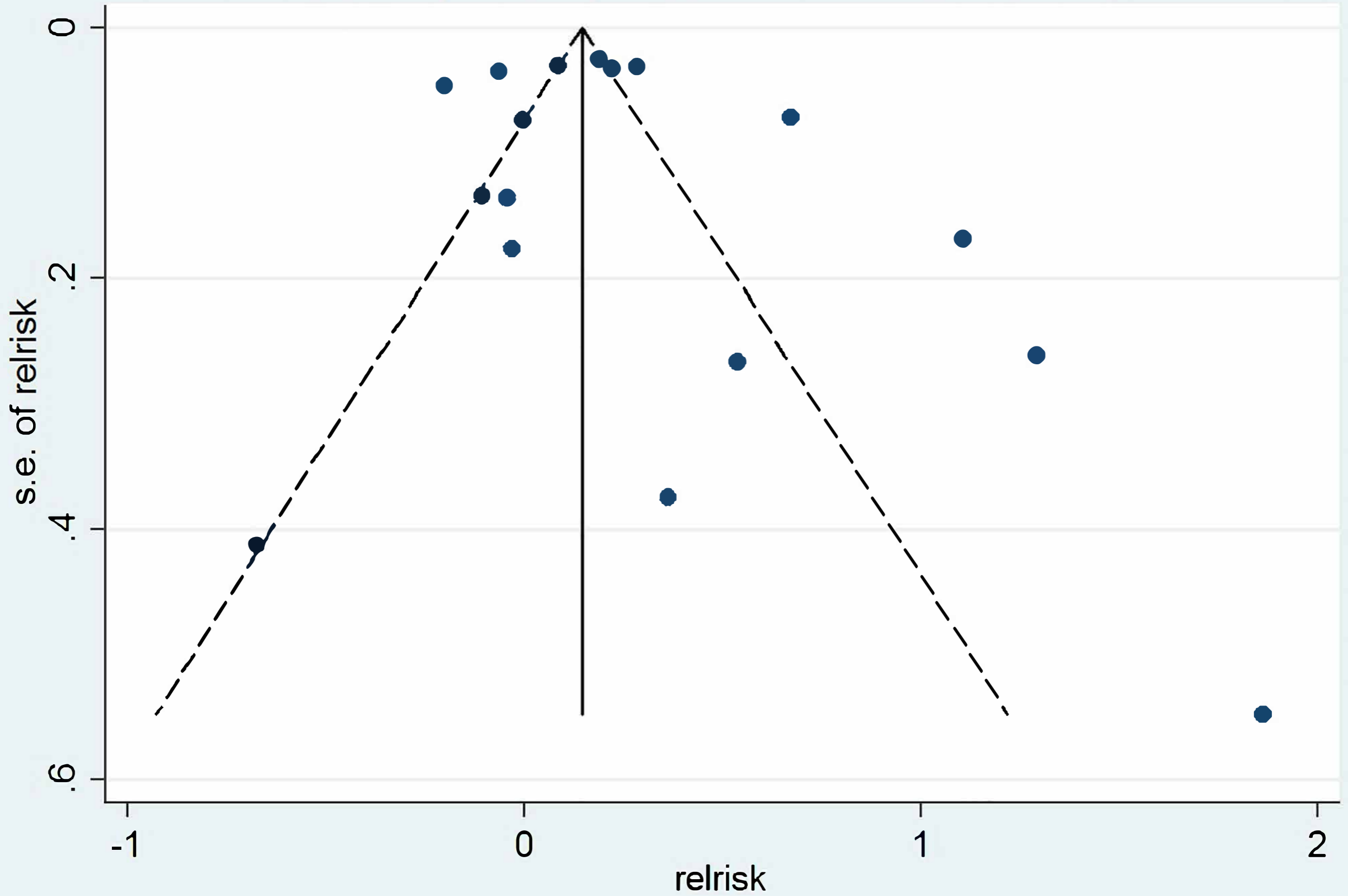Fig. DS2 Funnel plot with pseudo 95% confidence limits

Fig. DS3 Begg's funnel plot with pseudo 95% confidence limits