Journal of Affective Disorders 151 (2013) 7–22

Contents lists available at ScienceDirect

Journal of Affective Disorders

journal homepage: www.elsevier.com/locate/jad

Review

Subthreshold depression in children and adolescents – a systematic review

Rikke Wesselhoeft [a,*], Merete J. Sørensen [b], Einar R. Heiervang [c], Niels Bilenberg [a]

[a] Department of Child and Adolescent Mental Health Odense, Research Unit (University Function), Mental Health Services in the Region of Southern Denmark, University of Southern Denmark, Odense, Denmark
[b] Regional Center for Child and Adolescent Psychiatry, Aarhus University Hospital, Risskov
[c] Institute of Clinical Medicine, University of Oslo, Oslo University Hospital, Oslo, Norway

ARTICLE INFO

Article history:
Received 3 December 2012
Received in revised form
12 June 2013
Accepted 13 June 2013
Available online 13 July 2013

Keywords:
Depression
Depressive disorders
Subthreshold
Minor
Risk factors
Outcome

ABSTRACT

Background: Depressive disorders are disabling conditions striking at all ages. In adults, subthreshold depression (SD) is viewed as being on a continuum with major depressive disorder (MDD). Whether this holds for children and adolescents, is still unclear. We performed the first systematic review of SD in subjects below 18 years, in order to explore if childhood SD and MDD share causal pathways, phenomenology and outcomes, supporting a dimensional view.
Methods: A critical systematic review in accordance with preferred reporting items for systematic reviews and meta-analyses (PRISMA) statement. A review protocol was developed a priori, and all reports were assessed by two reviewers.
Results: The literature search generated 941 eligible references and 24 studies were included. Although diagnostic criteria for SD showed great variability, similarities for SD and MDD were striking. Both were common conditions with similar risk factor patterns. Clinical characteristics in both groups were depressed mood, suicidal ideation and high comorbidity. Outcomes were almost equally poor, with increased psychiatric morbidity and health service use. SD intervention studies showed promising results.
Limitations: Reports with data on SD not reported in keywords or abstract may have been missed by the search strategy.
Conclusion: A dimensional view of depressive disorders is also supported in children and adolescents, suggesting SD to be a precursor to MDD. Although SD is a somewhat milder condition than MDD, it has severe outcomes with psychopathology and impairment. There is a need of identifying cost-efficient and longlasting interventions in order to prevent development of early SD into MDD

Contents

* Corresponding author. Tel.: +45 99448684; fax: +45 99448607.
E-mail addresses: rikke.wesselhoeft@rsyd.dk, rwesselhoeft@hotmail.com (R. Wesselhoeft).

0165-0327/$ - see front matter © 2013 Elsevier B.V. All rights reserved.
http://dx.doi.org/10.1016/j.jad.2013.06.010

1. Introduction

Major depressive disorder (MDD) affects all age groups, and is considered the 4th or 5th leading cause of disability in Europe and North America based on life years lost and years lived with disability (World Health Organization, 2008; Murray et al., 2012). The classification of depressive disorders is categorical (World Health, 2004; American Psychiatric Association, 2000). However, researchers have argued for a dimensional approach, considering depressive disorders along a continuum of increasing severity (Angst and Merikangas, 1997; Judd et al., 2000; Rapaport et al., 2002; Lewinsohn et al., 2000; Angst et al., 2000; Ayuso-Mateos et al., 2010). From a dimensional view, it is relevant to study depression below the diagnostic threshold for MDD, often called subthreshold depression (SD).

Studies in adults suggest that SD is associated with functional impairment, although to a lesser extent than MDD (Cuijpers, 2004; Judd et al., 2000; Rapaport et al., 2002). Health service use and health status are also affected; either at the same level as in MDD (Ayuso-Mateos et al., 2010), or somewhat less (Cuijpers, 2004; Judd et al., 1997; Lewinsohn et al., 2000). Adult SD holds a risk for progression into MDD (Cuijpers, 2004; Angst and Merikangas, 1997), and a meta-analysis found mortality rates equally increased for both threshold and subthreshold depression (Cuijpers et al., 2013). Another meta-analysis finds that psychotherapy reduces depressive symptoms and the risk of future MDD in adults with SD (Cuijpers et al., 2007b). However, there is no support for the use of medication in adult SD (Barbui et al., 2011). The added medical and non-medical costs for SD at the population level is found to be considerable, approaching costs for MDD (Cuijpers et al., 2007a).

Despite robust findings in adults of severe consequences of SD, the condition is far less investigated in children and adolescents. Still, studies of late adolescence (Klein et al., 2009; Fergusson et al., 2005; Shankman et al., 2009; Lewinsohn et al., 2000) produce results similar to the adult studies, and population-based taxometric analyses suggest that depression may be viewed dimensionally also in children and adolescents (Hankin et al., 2005). Recent studies suggest that childhood and adolescent SD is associated with severe impairment (Keenan et al., 2008; Gonzalez-Tejera et al., 2005), and with future risk of developing MDD (Rohde et al., 2009; Johnson et al., 2009) similar to findings in adult populations. Hence, if SD in children and adolescents is a precursor to MDD, it would be an obvious target for indicated preventive intervention (aimed at individuals with subthreshold symptoms) (Munoz et al., 2010). Prevention of childhood depression is important, since it is reported to be more severe than later onset depression (more and longer depressive episodes, increased suicidality and hospitalization) (Korczak and Goldstein, 2009; Van Noorden et al., 2011). Also, MDD once established tends to follow a relapsing and often treatment-resistant course (Munoz et al., 2010; Garber et al., 2009). A review of intervention studies aiming to prevent the development of MDD in children and adolescents, reports encouraging evidence of efficacy and suggests that the efforts are now directed at comparing intervention programs (universal vs. targeted) (Merry et al., 2011).

Although juvenile SD might be a condition associated with poor outcome, no systematic review of the literature has so far been conducted; previous reviews have either focused on adolescence or adulthood only (Cuijpers and Smit, 2004; Judd et al., 2002; Meeks et al., 2011; Rodriguez et al., 2012), or have not been systematic (Kovacs and Lopez-Duran, 2010; Kessler et al., 2001). Important clinical differences have been reported between depression in children and adolescents, and depression in adults, both regarding phenotypic characteristics and treatment response (Cole et al., 2012; Gaffrey et al., 2011; American Psychiatric Association, 2000; Weissman et al., 1999). We therefore conducted the first critical systematic review of SD in children and adolescents below 18 years, focusing on prevalence, risk factors, clinical characteristics, outcomes and intervention. The aim was to review if the literature displays shared causal pathways, phenomenology and outcomes for SD and MDD in children and adolescents, supporting a dimensional view. If a dimensional view is supported, SD can be considered a developmental precursor to MDD also in children and adolescents, warranting indicated preventive intervention (Munoz et al., 2010).

2. Methods

2.1. Review process

A protocol describing the search strategy, inclusion criteria and intended outcome measures was developed a priori in accordance with Cochrane recommendations (Higgins and Green, 2008) and the preferred reporting items for systematic reviews and meta-analyses (PRISMA) statement (Moher et al., 2009; Liberati et al., 2009). We developed a Data Extraction Sheet (DES) for recording of the main results. The full protocol and DES are available from the authors on request. Inclusion criteria are listed below. The literature search was conducted on October 6th 2011 (Table 1). Supplementary manual searches were performed on reference lists from included papers.

The review process consisted of three phases (Fig. 1): a first screening of titles and abstracts; a second screening of full-text papers, and a third data extraction phase in which results from included reports were entered into the DES. Screening was preceded by assessment of agreement between the four reviewers (authors RW, MJS, ERH, NB), and screening and data extraction exercises were performed prior to the second and third phases.

All abstracts and papers were assessed by pairs of randomly allocated reviewers. Disagreement on inclusion was discussed and decided upon within pairs or in consensus by all four reviewers. The reviewer group discussed all studies included in the data extraction phase.

The risk of bias was assessed in the DES phase, using the bias definitions of Szklo and Nieto (2012). Selection bias was defined as 'when individuals have different probabilities of being included in the study sample according to relevant study characteristics–namely the exposure and outcome of interest'. Hence, bias