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Review

Socioeconomic inequalities and mental health problems in children and adolescents: A systematic review

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ABSTRACT

Socioeconomic inequalities in health are an important topic in social sciences and public health research. However, little is known about socioeconomic disparities and mental health problems in childhood and adolescence. This study systematically reviews publications on the relationships between various commonly used indicators of socioeconomic status (SES) and mental health outcomes for children and adolescents aged four to 18 years. Studies published in English or German between 1990 and 2011 were included if they reported at least one marker of socioeconomic status (an index or indicators, e.g., household income, poverty, parental education, parental occupation status, or family affluence) and identified mental health problems using validated instruments. In total, 55 published studies met the inclusion criteria, and 52 studies indicated an inverse relationship between socioeconomic status and mental health problems in children and adolescents. Socioeconomically disadvantaged children and adolescents were two to three times more likely to develop mental health problems. Low socioeconomic status that persisted over time was strongly related to higher rates of mental health problems. A decrease in socioeconomic status was associated with increasing mental health problems. The strength of the correlation varied with age and with different indicators of socioeconomic status, whereas heterogeneous findings were reported for gender and types of mental health problems. The included studies indicated that the theoretical approaches of social causation and classical selection are not mutually exclusive across generations and specific mental health problems; these processes create a cycle of deprivation and mental health problems. The review draws attention to the diversity of measures used to evaluate socioeconomic status, which might have influenced the comparability of international epidemiological studies. Furthermore, the review highlights the need for individual-level early childhood interventions as well as a reduction in socioeconomic inequalities at a societal level to improve mental health in childhood and adolescence.

Introduction

Social inequality has become one of the most commonly discussed topics in Europe and societies worldwide (Marmot & Bell, 2012; Wilkinson & Pickett, 2010). The increasing gap observed between socioeconomically advantaged and disadvantaged people has caused intensive debates in the social sciences and in politics. These discussions have noted the reproduction of social disparities across generations, which decreases the opportunities for social mobility within different population groups throughout the life course (Blackburn & Prandy, 1997). Poverty and low socioeconomic status (SES) affect different areas of social life, including access to education, the distribution of income, health status, and health care utilization. Dimensions of social inequalities in health are commonly measured by calculated SES indexes or various indicators defined by individuals' position in the labor market, education status, income, or material wealth (Currie et al., 2012). A social gradient in physical and mental health status has been widely reported (Fryers, Melzer, & Jenkins, 2003; Marmot & Bell, 2012). The World Health Organization has declared that mental health problems are a challenging public health issue worldwide, as 20–25% of individuals develop at least one mental disorder in their lifetime (World Health Organization, 2001).

Although the impact of social determinants on adult health dominates the research, examining this topic in early life has become more common. Children and adolescents suffer particularly from increasing poverty rates (UNICEF, 2005), and the consequences of socioeconomic disparities on health (Currie, Gabhainn

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et al., 2008; Holstein et al., 2009; World Health Organization, 2001, 2002). Children with low SES are not only more likely than other children to have worse health status and more injuries, but also to have significantly less access to routine medical care (Newacheck, Hughes, & Stoddard, 1996). Reviews on the prevalence of mental health problems estimated that approximately one in five children and adolescents suffer from psychiatric disorders (World Health Organization, 2012). Higher incidences of behavioral problems were found among pre-school children from low-income families (Qi & Kaiser, 2003), and adolescents living in poverty (Dashiff, DiMicco, Myers, & Sheppard, 2009). Several theoretical approaches were established to explain the differences in the rates of mental health problems. The social selection hypothesis (Eaton, 1980) assumes that people with mental health problems drift down in socioeconomic position because of their psychopathology and inability to fulfill expected role obligations. The social causation hypothesis (Dohrenwend & Dohrenwend, 1969) posits that mental health problems are a result of socioeconomic deprivation. Kessler et al. (2005) reported that half of all lifetime cases of mental disorders start by the age of 14, and low childhood SES was found to be associated with disadvantages in health and economic position in adulthood (Case & Paxson, 2006; Cohen, Janicki-Deverts, Chen, & Matthews, 2010; Poulton et al., 2002). These facts indicate the importance of mental health in youth. However, little systematic research has been conducted on the relationship between socioeconomic inequalities and mental health in childhood and adolescence.

The goals of this paper were (a) to investigate the definition and operationalization of SES and mental health, (b) to determine the association between low SES and mental health problems in children and adolescents, and (c) to discuss possible explanations for the associations found. In this review, a range of specific mental health problems were categorized as internalizing (emotional) or externalizing (behavioral) disorders (Angold & Costello, 1995). The term internalizing disorder is commonly used for children with introversive mood problems (e.g., depressive and anxiety disorders), whereas externalizing disorders affect children with social adaption problems (e.g., attention deficit hyperactivity disorder and conduct disorder). It was hypothesized that low SES is related to higher rates of mental health problems in childhood and adolescence.

Method

Study selection

Between November 2011 and January 2012, a systematic literature search was performed to identify relevant studies. Articles were collected from an electronic database and through a manual search. The manual search was predominantly based on reference articles. The following databases were included in the search process: PubMed, The Social Science Citation Index, MEDLINE, Embase, PsycINFO, and PSYNDEX. The database search was focused on screening titles and abstracts for the following keywords: “child/ren” or “adolescent/s” and “mental health” or “mental disorder” and “socioeconomic” or “poverty” or “social inequality” or “income”. The initial database and manual searches resulted in 152 titles without double-listed publications.

Inclusion of studies

Inclusion and exclusion criteria were applied to identify appropriate studies and reports that provided information on the relationship between SES and mental health problems in children and adolescents. There were six criteria for the inclusion of publications in the review. First, only published articles were considered in the analysis. Second, articles had to be published in English or German. Third, the publication date had to be from 1990 to 2011. The comparability of older studies was considered to be limited because of the use of non-standardized mental health instruments. Fourth, studies had to investigate the relationship between at least one individual-level marker of SES and one or more mental health problems. Fifth, validated instruments had to be used to identify mental health problems (i.e., the included articles reported the psychometric properties of their measurement tools). Sixth, the age of the study population had to range from four to 18 years. Studies with homogeneous sample groups (e.g., only children from low-income families) were excluded because they did not allow for comparison between different SES groups. Positive mental health outcomes and health-related quality of life were neglected in this review. Moreover, studies with non-individual markers of SES, such as neighborhood or national wealth, were excluded from the analysis. Finally, qualitative studies were excluded from the review process.

Data extraction

The assessment of study quality was an important aspect of reviewing the publications identified in the search process. The study quality was defined as the fit between the goals of the study, its design, and implementation (Valentine, 2009). Various criteria were considered in judging the quality of the studies in the following categories: description of the study population, sampling method, study design, measurement of SES and mental health outcomes, data analysis, and interpretation of the results. These quality categories were essential for conducting the review and ensuring transparency and replicability. A systematic coding scheme was developed a priori and revised after pilot testing. Ultimately, the scheme contained all relevant information for further analysis and was applied to each article.

In total, 152 publications were identified in the database and manual searches, and 79 publications fulfilled the inclusion criteria (covering a total of 55 studies). Information on data and references of each included study can be found online [Insert Link To Online Files]. Publications were excluded for the following reasons: no validated mental health instrument was applied ($N = 8$), participants’ ages exceeded the four- to 18-year range ($N = 9$), a homogenous sample of low-income families was observed ($N = 17$), no marker of (individual) SES was reported ($N = 6$), the work was published before 1990 ($N = 9$), and other reasons (e.g., the article was not available) ($N = 10$). An additional 14 publications had to be omitted because they met multiple exclusion criteria, such as including positive mental health outcomes.

A random selection of 86 studies was assessed by a second independent rater with substantial inter-rater agreement (Kappa = 0.70) (Landis & Koch, 1977). Several exceptions to the age inclusion criterion were made for studies that observed children’s SES from birth (Spady, Schopflocher, Svenson, & Thompson, 2001) or longitudinal studies that extended beyond the age of 18 years (Miech, Caspi, Moffitt, Wright, & Silva, 1999; Najman, Clavarino et al., 2010; Wadsworth & Achenbach, 2005) because they provided particular information about causal relationships.

Results

Characteristics of included studies

In total, 55 studies met the inclusion criteria for the review. An overall correlation between at least one marker of SES and mental health problems was proven in 52 studies from a total of 23

countries. The majority of the studies were conducted in North America, Europe, and Australia. The number of publications increased between 1990 and 2011, especially between 2006 and 2011, which indicates a growing interest in socioeconomic determinants of children's mental health. A descriptive summary of the studies' characteristics is shown in Table 1. The sample sizes of the included studies and reports ranged from 88 to 40,592 participants ($M = 3974$). The participants' ages were grouped heterogeneously, but the majority of children were school-aged. In total, 30 cross-sectional studies and 25 longitudinal surveys or cohort studies were included in the review. A community-based or school-based sampling strategy was used in the majority of studies, and information was predominantly provided by proxy- and self-reports. A total of three studies observed no significant relationship between SES and children's mental health. These studies were conducted in Greece (Giannakopoulos, Mihas, Dimitrakaki, & Tountas, 2009), Russia (R. Goodman, Slobodskaya, & Knyazev, 2005), and India (Pathak et al., 2011).

Measurement of SES and mental health problems

Socioeconomic inequalities were identified in multiple components of SES. The majority of the included studies analyzed the independent impacts of household income, parental educational level, or parental occupation status on children's mental health (e.g., Davis, Sawyer, Lo, Priest, & Wake, 2010; Green, 2005; Leve, Kim, & Pears, 2005; Sawyer et al., 2001; Tracy, Zimmerman, Galea, McCauley, & Stoep, 2008; Vicente, de la Barra, Saldivia, Rioseco, & Melipillan, 2010). Relative poverty, which describes disadvantaged children who grew up with a family income below the average household income level of a country, was commonly used as an indicator of socioeconomic inequality (Costello, Keeler, & Angold, 2001). The receipt of welfare benefits was another indicator of low SES (McMunn, Nazroo, Marmot, Boreham, & Goodman, 2001; Spady et al., 2001). Approximately a quarter of the included studies used a calculated index to measure the SES (e.g., Counts, Nigg, Stawicki, Rappley, & von Eye, 2005; Hoelling, Kurth, Rothenberger, Becker, & Schlack, 2008; Ravens-Sieberer, Erhart, Wille, & Gosch, 2008; Vollebergh et al., 2006; Woerner et al., 2002). The SES index was predominantly defined by indicators of household income, parental education, and parental occupation status (e.g., Winkler-Index) or measurements of family wealth, such as the Family Affluence Scale.

Information about the SES of the families was mostly provided by the parents. Self-reported SES was given by adolescents aged 15 years or older and included the adolescents' perceptions of financial difficulties, social position in their peer group, changes in economic conditions, and material assets of the family (Aslund, Leppert, Starrin, & Nilsson, 2009; Fröjd, Marttunen, Pelkonen, von der Pahlen, & Kaltiala-Heino, 2006; Tartakovsky, 2010; Vollebergh et al., 2006). One study measured the SES of the adolescents by their educational attainment and combined self- and proxy-reported information about SES (Miech et al., 1999). Furthermore, educational level was measured in different ways (e.g., years of education completed, highest educational level completed). SES vocabulary was not used consistently. For instance, Williams, Anderson, McGee & Silva (1990) defined SES solely by parental occupational status. Because of the general improvement in socioeconomic conditions, measurements such as the Family Affluence Scale have changed the indicators of SES, removing and replacing items that no longer differentiate wealth in line with changes in consumer patterns (Currie, Molcho et al., 2008).

The Child Behaviour Checklist (Achenbach & Edelbrock, 1991) and the Strengths and Difficulties Questionnaire (Goodman, 1997) were the most commonly used instruments for mental health problems. Miech et al. (1999) reported that the association between mental health problems and SES was more robust when continuous symptom scales were used rather than categorical diagnostic classifications of mental disorders. This difference seems to be more attributable to methodological reasons than to substantive reasons (Miech et al., 1999).

Results by SES indicators

A total of 11 cross-sectional studies showed a negative impact of low financial status on children's mental health (e.g., Assis, Avanci, & Oliveira Rde, 2009; Nguyen, Huang, Arganza, & Liao, 2007; Perna, Bolte, Mayrhofer, Spies, & Mielck, 2010; Roberts, Roberts, & Xing, 2007). Similar results were reported in longitudinal studies (Carter et al., 2010; Davis et al., 2010; Green, 2005; Lipman, Offord, & Boyle, 1994; Strohschein, 2005). The household income and low parental education had a stronger impact on children's and adolescents' mental health problems than parental unemployment or low occupational status (Davis et al., 2010; Green, 2005; McLaughlin et al., 2011; Perna et al., 2010). Spady et al. (2001) reported from an evaluation of more than 40,500 health care records that children receiving welfare were two times more likely to have mental health problems than the rest of the population.

Table 1
Research characteristics of the 55 studies included in the review.

Characteristic	All studies ($N = 55$)	
	N	Valid %
Study design		
Longitudinal	12	21.8
Cohort	13	23.6
Cross-Sectional	30	54.5
Sample size		
1–100	1	1.8
101–500	7	12.7
501–1000	14	25.5
1001–5000	19	34.5
5001+	14	25.5
Age of participants (a)		
Preschool (approx. 4–5 years)	18	–
School-aged (approx. 6–12 years)	47	–
Adolescents (approx. 13–18 years)	41	–
Sample characteristics		
Community-based	17	30.9
Population-based	6	10.9
School-based	13	23.6
Representative	18	32.7
Clinical	1	1.8
Source of information		
Self	7	12.7
Proxy	16	29.1
Proxy and self	32	58.2
Socioeconomic status (a)		
SES Index	13	–
Household income/poverty	29	–
Social class	3	–
Parental education	21	–
Parental occupation status	17	–
Other (e.g., receipt of welfare benefits)	9	–
Mental health (a)		
SDQ	16	–
CBCL	16	–
YSR	8	–
DISC-IV	9	–
Other	30	–
Publication date ($N = 79$)		
1990–1995	8	–
1996–2000	9	–
2001–2005	23	–
2006–2011	39	–

(a) Included studies belonging to more than one category.

The impact of childhood SES on the onset, severity and course of mental health problems varied across indicators of SES. McLaughlin et al. (2011) found that material childhood deprivation (financial hardship) was more strongly associated with the onset of mental health problems but had no impact on their course or severity; however, parental education predicted the persistence and severity of mental health problems without any significant impact on the onset of mental health problems. Study findings suggested that high parental education may be associated with better access to resources such as mental health treatment (McLaughlin et al., 2011). The limited access to mental health services for children from a low SES background was also reported in other longitudinal studies (Goosby, 2007; Wadsworth & Achenbach, 2005).

Results by age and gender

The association between SES indicators and mental health problems was found in all age groups and exists even in early childhood (Davis et al., 2010). Socioeconomic disadvantage was more strongly associated with mental health problems in younger children than in children aged 12 years or older (Esser, Schmidt, & Woerner, 1990; Lipman, Offord, & Boyle, 1996; McGee, Feehan, Williams, & Anderson, 1992; McLaughlin et al., 2011). Gender differences in the relationship between SES and mental health problems in childhood and adolescence were reported in only a few studies. No evidence for gender differences in the relationship between SES and mental health problems was found in a multinational study (Ravens-Sieberer et al., 2008) and two cohort studies from the Netherlands and the U.S. (Amone-P'Olak et al., 2009; Mendelson, Kubzansky, Datta, & Buka, 2008). A community-based cohort study showed that girls from low-income families had significantly more mental health problems over time compared to boys (Leve et al., 2005). In contrast, Due et al. (2003) reported increased odds of multiple mental health problems for disadvantaged boys in comparison to disadvantaged girls, whereas Lipman et al. (1996) reported significant sex differences only for emotional disorders, with higher morbidity rates for boys than for girls. Therefore, no consistent gender patterns were derived from these study findings.

Effect size of SES on mental health problems

The strength of the association between SES and mental health problems differed between the studies. Children and adolescents from families with low SES were up to three times more likely to have mental health problems than their peers from families with a high SES (Costello et al., 2001; Due et al., 2003; Heiervang et al., 2007; McLaughlin et al., 2011; McMunn et al., 2001; Perna et al., 2010; Spady et al., 2001). The odds ratios (OR) ranged from 1.18 (Roberts et al., 2007) to 3.34 (Amone-P'Olak et al., 2009). The prevalence rates for children from low SES groups and children from high SES groups ranged from 13.2% to 8.9%, respectively (Ravens-Sieberer, Wille, Bettge, & Erhart, 2007), to 33.4% and 15.9%, respectively (Costello et al., 1996). A total of 18 studies reported results for nationally representative samples. In a multinational study of 12 European countries, Ravens-Sieberer et al. (2008) reported that low SES was associated with a greater chance (OR = 1.41) of developing mental health problems, and there were significantly higher odds ratios for Spain (OR = 2.64) and the UK (OR = 3.91). Representative studies from the U.S. reported a significantly higher risk of becoming mentally ill for socioeconomically disadvantaged children than socioeconomically advantaged children, with odds varying from 1.9 to 3.2 (Carter et al., 2010; Costello et al., 1996; McLaughlin et al., 2011). Similar results were reported by Davis et al. (2010) for a representative Australian sample (OR = 2.4).

Longitudinal studies showed that children who lived under persistently low socioeconomic conditions were more vulnerable to mental health problems than their peers who lived under better socioeconomic conditions (McLeod & Shanahan, 1996; Melchior et al., 2010). The more frequently a child was exposed to poverty, the greater was the risk of mental health problems, with odds ratios ranging from 2.0 to 3.2 (Najman, Clavarino et al., 2010; Najman, Hayatbakhsh et al., 2010). An improvement in SES not only resulted in a significant reduction of mental health problems but also in the subsequent remission of mental health problems (Costello, Compton, Keeler & Angold, 2003; Esser et al., 1990; Goodman & Huang, 2001; Strohschein, 2005). This association was more robust for externalizing disorders than internalizing disorders, which were less affected by increasing SES (Costello et al., 2003; Kerr, 2004; Strohschein, 2005).

Moreover, socioeconomic disparities were associated with the presence of one or more disorders (comorbidities). Results indicated that children and adolescents with low SES were more likely to develop comorbidities than their peers with high SES (Costello et al., 1996; Spady et al., 2001). Furthermore, social risk factors affected the association between SES and mental health problems; poverty was related to an increase in the mean number of risk factors (Costello et al., 2001). Family history of mental illness (e.g., parental psychopathology, such as maternal depression) was observed as a powerful predictor of children's mental health problems (Bor et al., 1997; Costello et al., 2001; Counts et al., 2005; Fitzgerald & Jeffers, 1994; Goosby, 2007; Leve et al., 2005). In one study, parental psychopathology and SES were determined to be independent factors predicting adolescent mental health problems among offspring (Amone-P'Olak, Burger, Huisman, Oldehinkel, & Ormel, 2011). Other risk factors that mediate the association between SES and children's mental health problems are poor parenting abilities (Costello et al., 2001; Fitzgerald & Jeffers, 1994) and single parenthood (McMunn et al., 2001). The accumulation of several social risk factors was associated with an increase in mental health problems in children and adolescents (Assis et al., 2009).

In further analyses, the differences between internalizing and externalizing disorders were examined. A number of longitudinal studies reported a stronger association between low SES and externalizing disorders than between low SES and internalizing disorders (Amone-P'Olak et al., 2009; Boyle & Lipman, 2002; Costello et al., 1996; Davis et al., 2010; Rodriguez, da Silva, Bettiol, Barbieri, & Rona, 2011). This pattern was observed for different age groups and occurred from pre-school (Davis et al., 2010) until early adolescence (Amone-P'Olak et al., 2009; Boyle & Lipman, 2002). On the contrary, representative studies from the U.S. (Wight, Botticello, & Aneshensel, 2006) and the Netherlands (Vollebergh et al., 2006) found a stronger relationship of low SES with internalizing disorders than with externalizing disorders. In contrast, no SES differences were reported in internalizing or externalizing disorders in two other studies (Bor et al., 1997; Tonge, Hughes, Pullen, Beaufoy, & Gold, 2008). Heterogeneous results were also reported for specific types of mental health problems. For instance, a number of studies reported an inverse association between low SES and depression in childhood (Tracy et al., 2008) and adolescence (Aslund et al., 2009; Demir, Karacetin, Demir, & Uysal, 2011; Goodman & Huang, 2001; Goodman, Huang, Wade, & Kahn, 2003), whereas a longitudinal study from New Zealand showed a significant association between family SES and anxiety but not depression (Miech et al., 1999). A significant association with family SES was found for antisocial behavior (Tuvblad, Grann, & Lichtenstein, 2006) as well as attention deficit disorder (Counts et al., 2005). One study reported that the correlation with SES was more robust for hyperactivity than for conduct disorders (Miech et al., 1999).

In conclusion, the study findings indicated a tendency towards a stronger impact of low SES on externalizing disorders than on internalizing disorders, but overall, the study results were not homogenous.

Discussion

The review findings showed a clear relationship between socioeconomic deprivation and mental health problems in childhood and adolescence. In total, 52 of the 55 international studies included in the review reported an inverse association between at least one marker of SES and mental health problems. Children from socioeconomically disadvantaged families were approximately two to three times more likely to develop mental health problems than their peers from socioeconomically advantaged families. The findings were consistent with similar studies that reported a higher incidence of behavior problems among pre-school children from low-income families (Qi & Kaiser, 2003) and direct effects of poverty on adolescent mental health (Dashiff et al., 2009). Therefore, the correlation between socioeconomic inequality and common mental health problems occurs not only in adulthood (Fryers et al., 2003) but also in childhood and adolescence. Nevertheless, these review findings demonstrated that the association between SES and mental health problems is more complex than single studies have shown. The examination of various indicators of SES revealed that a low household income and low parental education were the strongest predictors of mental health problems among children and adolescents. Persistently low SES was significantly related to the onset of mental health problems, whereas the improvement of socioeconomic conditions led to a reduction in mental health problems. The results indicated that even though socioeconomic disparities in mental health occurred in all age groups, the impact of low SES on mental health was stronger in early childhood than in adolescence. The combination of various risk factors was associated with an increase in mental health problems. No consistent pattern of gender differences was found, and heterogeneous results were reported for the correlation between low SES and internalizing versus externalizing disorders. Nevertheless, the study results showed that low SES tended to be more strongly associated with externalizing disorders than with internalizing disorders. Possible explanations for this association suggested that even for young children, internalizing disorders are more endogenous than externalizing disorders, and thus, proxy-reports by parents or teachers are relatively poor measures of endogenous traits in young children (Davis et al., 2010).

There are two major theoretical approaches to explaining the underlying association between SES and mental health problems. The social causation hypothesis implies that the stress associated with a low social position contributes to the development of mental disorders, whereas the social selection hypothesis suggests that genetically predisposed individuals drift down to such a position (Murali & Oyebode, 2004). Study findings have indicated that the selection and causation hypotheses are not mutually exclusive and that there is a cycle of deprivation and mental health problems across generations. A number of studies included in this review found support for the social causation hypothesis by demonstrating that factors associated with low SES contribute to variations in levels of mental health problems in childhood and adolescence (Costello et al., 2003; Johnson, Cohen, Dohrenwend, Link, & Brook, 1999; McLaughlin et al., 2011; Miech et al., 1999; Wadsworth & Achenbach, 2005). Additionally, one study found low childhood SES to be a significant predictor for the onset of mental disorders in different stages of the life course (McLaughlin et al., 2011). Such findings support the social causation hypothesis mainly to the extent that they control for parental mental health, which contributes (over selection) to variations in levels of SES. In this context, parental psychopathology (e.g., maternal depression) was found to be a risk factor mediating the association between SES and mental health problems in childhood and adolescence. Parents who suffer from mental health problems might drift down in their SES, which causally affects their children's mental health. Moreover, recent research has shown that the intergenerational transmission of mental health problems was strongest in families of low SES (Melchior et al., 2012). In conclusion, the circular connections between parental mental health, family SES and children's mental health problems supported aspects of both the social selection and the social causation hypotheses. These findings are limited to the fact that not all of the included studies controlled for parental mental disorders, which is one of the major confounders of parental SES and children's mental health problems. Future research in this field should examine this association in depth and consider other selection effects. With regard to the social selection hypothesis, two studies included in this review reported selection effects, which Miech et al. (1999) defined as the "extent to which adolescents with mental disorders 'select' themselves into the lower social strata through curtailed education" (p. 1120). These selection effects differed across specific mental health outcomes: Externalizing problems had a significant impact on the educational attainment of young adults, whereas internalizing problems had no impact on educational attainment (Johnson et al., 1999; Miech et al., 1999). In both studies, educational attainment was used as an indicator for SES because income and occupational prestige have limited explanatory power in young adulthood. Though this is an important issue, the impact of mental health problems on educational attainment did not exactly address the issue of socioeconomic downward drift as it was usually framed (e.g., Eaton, 1980). Drift refers to an individual's SES decline as a result of disorder onset. Therefore, failure to achieve a certain level of SES is not strictly an issue of drift. In addition, children might be unlikely to be informative, because of the difficulty to observe their own downward socioeconomic mobility following onset of a psychiatric disorder.

Moreover, children from low SES families, especially with parents with a low education level, had limited access to structural resources, such as mental health care. The results suggested a close link between social causation and selection effects, whereby low SES contributes significantly to the initial appearance of mental health problems, and the failure to recover from these problems leads to a downward drift in SES in adulthood (Wadsworth & Achenbach, 2005). For future research, investigating the complex pathways through which SES influences child and adolescent mental health problems seems to be promising. Recent research draws attention to the multiple interacting levels of adverse social and physical environments that affect family characteristics and child health (Schreier & Chen, 2013). Socioeconomic disadvantage in early life has extensive consequences on children's development, chances for social mobility and contributes to lower levels of school achievement and socio-emotional functioning (McLoyd, 1998). The resulting consequences may include worse chances in the labor market, lower occupational status, and earning power, which are major issues related to social inequalities in society.

Finally, the SES of children was assessed inconsistently and predominantly referred to the socioeconomic conditions of the families. Self-reported SES was not appraised for youth under the age of 15 years, which demonstrates the lack of adequate measurements for children and youth as well as the challenge in exploring children's SES. As other authors have noted, a wide spectrum of SES measurement tools exists (Shavers, 2007), and instruments should be selected with respect to the health outcome (Geyer, Hemstroem, Peter, & Vageroe, 2006). For children and youth, family wealth (Currie, Molcho et al., 2008), educational

attainment (Miech et al., 1999), and social position in the peer group (Aslund et al., 2009) seem to be promising individual SES measures.

Limitations

The results of this study may be affected by several limitations. First, the findings are vulnerable to different sources of bias. Publication or reporting bias is a major issue in literature reviews. Results can be biased because negative results (indicating no significant association between SES and mental health outcomes) may not be published, which can lead to an under- or overestimation of effects (Higgins & Green, 2008). Bias of attrition is a common problem in longitudinal studies. Higher rates of attrition were reported for children with low SES or mental health problems, which could lead to an underestimation of the impact of SES on mental health outcomes in follow-up studies (Najman, Clavarino et al., 2010). Second, there are limitations involved in researching age groups from four to 18 years. The exclusion of longitudinal studies with participants aged 18 years or older restricted the study's ability to observe causal associations over the life course. Third, the study included articles published only in English or German, incorporating data from a diverse set of countries but excluding studies published in other languages. Consequently, the cross-cultural generalizability of the presented findings may be limited. Fourth, the database search concentrated on screening titles and abstracts for keywords and thus, epidemiological studies on mental health outcomes that controlled for SES might have been excluded. With respect to the goals of this review, the focus was placed on studies examining SES related to mental health outcomes rather than epidemiological studies of prevalence. Fifth, it is important to recognize that the variation in study findings might be due to variations in the characteristics of the samples and the types of measurements. For instance, studies with samples under representing families below the poverty level found weaker associations between SES and mental health problems (Roberts et al., 2007). The sixth limitation refers to the diversity of measurements for SES and mental health outcomes. Except for relative poverty, which comprises a poverty line calculated for each country, the studies covered a spectrum of SES indicators and indexes, such as educational level, occupational status, or family wealth. The diversity of mental health instruments and SES measurements might impede the comparability of studies.

Despite these considerations, the present study provides an important contribution to public health research. The review offers a systematic investigation of socioeconomic inequalities and their effects on mental health problems in children and adolescents that includes international cross-sectional and longitudinal studies.

Conclusion

Socioeconomic inequalities are associated with mental health problems in childhood and adolescence. In particular, persistently low SES and a decrease in SES are major predictors of the onset of mental health problems in children and adolescents. These results are particularly relevant for understanding the restricted social mobility of socioeconomically disadvantaged people and the transmission of poverty across generations. Future generations are not only affected by the socioeconomic deprivation of their parents but also by associated mental health issues. Future research should include regular follow-up investigations because longitudinal studies provide the best information about causal relationships between socioeconomic disparities and mental health outcomes over the life course. Furthermore, differences in the relationships between SES and various mental health problems indicate the need for disorder-specific analysis to explain the impact of SES on children's and adolescents' mental health. Further research needs to be performed on the assessment of socioeconomic inequalities and mental health care utilization in childhood and adolescence; this issue was beyond the scope of this review. Moreover, because of the limitations of self-reported SES measures, future research on the assessment of children's SES seems to be promising. Even though this review shows the difficulties in capturing various dimensions of SES, the implementation of a standardized SES measurement tool would be helpful for improving the research on socioeconomic inequality worldwide. Based on the differences in sampling procedures and characteristics, guidelines for standardizing studies would be helpful for improving international comparability of study results in epidemiology and public health research.

The analysis emphasizes the important impact of SES on mental health in children and adolescents. Therefore, societal discussions about social inequalities should consider not only the effects of poverty on adult health but also on mental health problems in childhood and adolescence. The findings stress the need for early childhood interventions to reduce mental health problems as well as intervention programs in adolescence, especially for children who experienced chronic poverty. Finally, the observed relationship between socioeconomic disparities and mental health problems in children and adolescents indicates that socioeconomic health disparities are not only the responsibility of individuals but of society as a whole.

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Appendix A. Supplementary data

Supplementary data related to this article can be found at http://dx.doi.org/10.1016/j.socscimed.2013.04.026.

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