Preventive Medicine 67 (2014) 182–188

Contents lists available at ScienceDirect

Preventive Medicine

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

The health consequences of child mental health problems and parenting styles: Unintentional injuries among European schoolchildren☆,☆☆

Katherine M. Keyes [a], Ezra Susser [a,b], Daniel J. Pilowsky [a,b], Ava Hamilton [a], Adina Bitfoi [c], Dietmar Goelitz [d], Rowella C.W.M. Kuijpers [e], Sigita Lesinskiene [f], Zlatka Mihova [g], Roy Otten [e], Viviane Kovess [h,*]

[a] Mailman School of Public Health, Columbia University, Department of Epidemiology, New York, United States
[b] New York State Psychiatric Institute, New York, United States
[c] The Romanian League for Mental Health, Bucharest, Romania
[d] Center for Applied Sciences of Health, Leuphana University of Luneburg, Luneburg, Germany
[e] Behavioural Science Institute, Radboud University Nijmegen, Nijmegen, The Netherlands
[f] Clinic of Psychiatry, Faculty of Medicine, University of Vilnius, Vilnius, Lithuania
[g] New Bulgarian University, Sofia, Bulgaria
[h] École des Hautes Études en Santé Publique, Department of Epidemiology and Biostatistics, Paris, France

ARTICLE INFO

Available online 26 July 2014

Keywords:
Unintentional injury
ADHD
Conduct
Oppositional disorder
Parenting style
Caring

ABSTRACT

Objective. Unintentional injury is the leading cause of death for schoolchildren. We assessed the association between externalizing psychopathology, parenting style, and unintentional injury in European children in the community.

Methods. Data were drawn from the School Children Mental Health in Europe project and included 4517 schoolchildren across seven diverse European regions. Past-year injuries serious enough to seek medical attention were reported by mothers. Child mental health problems were assessed using validated measures and reported by the mothers, teachers, and children. Parenting styles were based on The Parenting Scale and the Parent Behaviors and Attitudes Questionnaire.

Results. Children with attention-deficit/hyperactivity symptoms and oppositional defiant symptoms had a higher risk of injury compared to other children whether based on parent report (OR = 1.47, 95% C.I. 1.2–1.9), teacher report (OR = 1.36, 95% C.I. 1.1–1.7), or parent and teacher report combined (OR = 1.53, 95% C.I. 1.1–2.1). Children who self-reported oppositional symptoms also had higher risk of injury (OR = 1.6, 95% C.I. 1.1–2.4). Low-caring behavior of parents increased the risk of injury (OR = 1.4, 95% C.I. 1.1–1.9).

Conclusion. Unintentional injury is a potential adverse health consequence of child externalizing problems. Interventions to improve parent–child relationships and prevention as well as focused treatment for externalizing problems may reduce the burden of injury.

Introduction

The leading cause of death among elementary school children is unintentional injury (Danseco et al., 2000; Deal et al., 2000; Organization and Dept, 2002). In high-income countries, unintentional injuries account for more child deaths than any other cause (Lalloo et al., 2003; Organization, 2005; Rowe et al., 2004, 2007). Identification of at-risk groups based on the characteristics of children and their families may allow for refinement in intervention and prevention strategies. Two factors potentially important for injury prevention include child behavior and parenting style.

Epidemiological research indicates that children who are hyperactive, aggressive, and oppositional are more likely to experience unintentional injuries (Bijur et al., 1986; Brehaut et al., 2003; Davidson et al., 1992; Garzon et al., 2008; Lam, 2002; Rowe et al., 2004, 2007; Spinks et al., 2008; Swensen et al., 2004), and among injured children, those with attention-deficit/hyperactive (ADHD) symptoms have more severe injuries (DiScala et al., 1998) though findings are inconsistent (Bijur et al., 1988; Davidson et al., 1992). ADHD is characterized by inattention, impulsivity, and high levels of motor activity, which may directly impact injury risk (e.g., falls, burns); further, these children may be less able to appraise injury risk in dangerous situations, perceive fewer consequences of dangerous activities (Farmer and Peterson, 1995), and be more exposed to injury-producing activities (e.g., sports participation).

☆ Funding: This project had been financed by the European Union, grant number 2006336. The funders had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript.
☆☆ Conflict of interests: The authors declare that there are no conflicts of interests.
* Corresponding author at: EHESP—Ecole des hautes études en santé publique, Hopital Broussais, Batiment Leriche, 96 rue Didot, 75014 Paris, France.
E-mail address: Viviane.Kovess@ehesp.fr (V. Kovess).

http://dx.doi.org/10.1016/j.ypmed.2014.07.030
0091-7435/

Three limitations of previous literature, however, preclude firm assessment of the role of childhood psychiatric disorders in childhood injury. First, there is substantial comorbidity among these disorders which has not been extensively evaluated. For example, a recent study of US 5th graders indicated that conduct disorder was not associated with injury once ADHD was taken into consideration (Schwebel et al., 2011). Second, previous studies have relied primarily on mother report of child mental health (Bijur et al., 1986; Danseco et al., 2000; Davidson et al., 1992; Rowe et al., 2004, 2007) which has known limitations. Thus multi-informant studies within the same sample are critical. Third, a limited literature has also found associations between internalizing problems such as anxiety and depression and childhood injury (Lalloo et al., 2003; Rowe et al., 2004; Sherrard et al., 2002), though more robust empirical evidence from diverse contexts is needed.

Child mental health problems and injury risk exist within a context of parenting styles, which substantial research has demonstrated to be associated with injury risk behavior. Offspring of parents and caregivers who regularly monitor their children, set appropriate boundaries, model positive behavior, and rate the quality of their relationship with children as positive are less likely to engage in risky behaviors in adolescence (Clark and Shields, 1997; Dishion et al., 2004; Ryan et al., 2011; Taris et al., 1998; Tulloch et al., 1997; Wills and Cleary, 1996). However, hyperactive, oppositional and conduct-related behavior, including anger and aggression, often emerge prior to adolescence (Nock et al., 2007), indicating that research on parenting styles across the full range of childhood is warranted. Existing research demonstrates that parental supervision and a positive parent–child relationship are associated with reduced risk of injury (Morrongiello and House, 2004; Morrongiello et al., 2004, 2006; Saluja et al., 2004), and that this association is stronger for boys compared with girls (Schwebel and Brezausek, 2010). However, while parenting beliefs and styles are hypothesized to be important determinants of injury risk, empirical evidence is scarce (Morrongiello et al., 2006). Greater understanding of how parenting style is associated with childhood injury may be a potentially important avenue for the development of risk-reducing interventions and educational programming.

To date, research on child mental health, parenting style, and unintentional injury has been conducted predominantly among samples recruited from the US, United Kingdom, and Australia. Rates of child mental health problems, norms about parenting and supervision of children, and exposure to situations that may increase risk for injury vary substantially cross-nationally (Bornstein, 2013). Thus, examination of the association between mental health problems, parenting style, and injury across countries with diverse norms may provide a fuller understanding of these interrelationships.

The present study utilizes data on >4500 children recruited from seven regions in east and west Europe to examine three aims. First, we examine the diversity of childhood unintentional injuries across European regions, including burden of injury, type, and setting. Second, we examine associations between childhood mental health problems and unintentional injury based on mother, teacher, and child report, as well as associations with comorbid mental health symptoms. Finally, we examine the diversity of parenting styles across regions and associations between parenting style and injury risk.

Methods

Sample

School Children Mental Health Europe (SCHME) was a cross-sectional survey conducted in 2010 of school children aged 6–11 years and one of their parents, typically the mother (86.5%). Data for the present study were drawn from: East Germany ($N = 220$), West Germany ($N = 216$), Netherlands ($N = 661$), Lithuania ($N = 1{,}032$), Romania ($N = 1{,}006$), Bulgaria ($N = 985$) and Turkey ($N = 491$). Details on the sampling by country are provided elsewhere (Kovess et al., submitted for publication; Pez et al., 2011). Briefly, primary schools were randomly selected in each participating country. Approximately 45–50 schools were approached per country (a greater number of schools were approached in Germany and the Netherlands), with varying participation rates from 6.5% (Netherlands) and 95.6% (Romania). Classes were randomly selected in each participating school, and approximately 48 children were randomly selected in each class. The exception was the Netherlands, where a lesser number of schools participated, and complete classes were included. Parents received an informational letter and consent form to return to school; children were included if present at school unless the parent actively refused. Among participating schools, between 50.5% (Turkey) and 90.5% (Netherlands) selected children participated as did between 45.5% (Netherlands) and 90.9% (Lithuania) of the parent and teacher informants. To reduce heterogeneity, we restricted these analyses to children for whom there was a mother's report (90% of respondents). The total sample size was 4207 for teacher-reported outcomes, and 4517 for mother-reported outcomes.

Measures

Data were collected from three informants: child, teacher, and parent. Parents completed a demographic questionnaire concerning household composition (age, gender, and familial link for each member), parental education (highest level completed), marital status, occupational level, and rural/urban residence. In the Netherlands the same questions were completed electronically using a secured website, although paper questionnaires were made available upon request.

Unintentional injuries

Parents were queried whether their child had been injured in the previous 12-months. If the child had been injured, follow-up questions queried characteristics of injuries that "were serious enough to require medical attention by a doctor, nurse, or dentist," the number of injuries, and, for the worst injury, the type, cause, and place where the injury occurred.

Parenting style

Five dimensions of parenting style were queried: caring (hugging, complimenting, and enjoying the child), overreactivity (responding in an emotionally charged, harsh manner), verbosity (using verbal means to respond to misbehavior), and autonomy (allowing child to choose clothes and friends, travel alone). Scales of overreactivity and verbosity were drawn from the 30-item Parenting Scale (Arnold et al., 1993), which has well-documented reliability and validity in samples with diverse characteristics (Arnold et al., 1993; Reitman et al., 2001), including those selected to assess parenting behavior among families with a child with ADHD (Arnold et al., 1997; Harvey et al., 2001). Each item was rated on a 7-point scale. Autonomy and caring scales were drawn from the Parent Behaviors and Attitudes Questionnaire (Bergeron et al., 1992), and included 7 and 8 items, respectively. These scales also have well-documented reliability and validity (Bergeron et al., 2000, 2007; Henry et al., 2014). Three-levels of response were allowed (all of the time, some of the time, and never). For all scales, items were summed and cut-points were created based on being more than one standard deviation above the mean.

Child mental health problems

Child mental health problems were assessed using parent- and teacher-report versions of the Strengths and Difficulties Questionnaire (SDQ) (Goodman, 1997). The SDQ has been extensively utilized in studies of child mental health, with studies documenting its reliability and validity in international samples (Goodman and Goodman, 2009, 2011; Richter et al., 2011; Van Roy et al., 2008). In our data, SDQ measures were reliable (α's ranged from 0.59 for parent-reported conduct problems to 0.84 for teacher-reported hyperactivity). Further, a validation study among a subset of respondents comparing SDQ scores against the Development and Well-Being Assessment indicated adequate agreement (kappa = 0.46 for any disorder) and strong validity (Pez et al., 2011). In the present study, we included three SDQ subscales: emotional problems, hyperactivity and inattention, and conduct problems. Each scale was based on 5 items, rated from 0 to 2. Internalizing mental health problems were defined as those with a score greater than 5, and ADHD and conduct problems were as those with a score greater than 4 and 7, respectively, based on established cut-points (Goodman, 1997).

Children reported on their mental health problems using the Dominic Interactive, a computerized program following an imaginary character through