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Harsh Physical Punishment in Childhood and Adult Physical Health

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WHAT'S KNOWN ON THIS SUBJECT: Physical punishment is associated with a range of Axis I and II mental disorders in adulthood. More research is needed on the possible long-term relationship between physical punishment and physical health.

WHAT THIS STUDY ADDS: To our knowledge, this is the first nationally representative examination of harsh physical punishment and physical health. Harsh physical punishment in the absence of child maltreatment is associated with higher odds of cardiovascular disease (borderline significance), arthritis, and obesity.

abstract

BACKGROUND: The use of physical punishment is controversial. No studies have comprehensively examined the relationship between physical punishment and several physical health conditions in a nationally representative sample. The current study investigated possible associations between harsh physical punishment (ie, pushing, grabbing, shoving, slapping, and hitting) in the absence of more severe child maltreatment (ie, physical abuse, sexual abuse, emotional abuse, physical neglect, emotional neglect, and exposure to intimate partner violence) and several physical health conditions.

METHODS: Data were from the National Epidemiologic Survey on Alcohol and Related Conditions collected in 2004 and 2005 ($n = 34\,226$ in the current analysis). The survey was conducted with a representative US adult population sample (20 years or older). Eight past year physical health condition categories were assessed. Models were adjusted for sociodemographic variables, family history of dysfunction, and Axis I and II mental disorders.

RESULTS: Harsh physical punishment was associated with higher odds of cardiovascular disease (borderline significance), arthritis, and obesity after adjusting for sociodemographic variables, family history of dysfunction, and Axis I and II mental disorders (adjusted odds ratios ranged from 1.20 to 1.30).

CONCLUSIONS: Harsh physical punishment in the absence of child maltreatment is associated with some physical health conditions in a general population sample. These findings inform the ongoing debate around the use of physical punishment and provide evidence that harsh physical punishment independent of child maltreatment is associated with a higher likelihood of physical health conditions. *Pediatrics* 2013;132:e333–e340

Substantial controversy exists around the use of physical punishment (ie, minor acts of physical force used against children as a means of discipline). Although physical punishment of children is prohibited in 33 countries,[1] it is permitted in Canada and the United States. A contentious debate is ongoing regarding the use of physical punishment.[2] Past research indicates that physical punishment is associated with aggression, delinquency, and physical injury.[3–5] Also, several studies have demonstrated a consistent relationship between physical punishment and the higher likelihood of mental disorders including mood, anxiety, substance, and personality disorders.[6–9] However, little is known about the potential link between physical punishment and physical health conditions.

It is known that child maltreatment (ie, physical abuse, sexual abuse, neglect, emotional abuse, and exposure to intimate partner violence [IPV]) is associated with reduced physical health–related quality of life.[10,11] Child maltreatment has also been linked to physical symptoms such as pain, physical health conditions including disability, poor or fair self-rated health, and frequent emergency department visits.[11–24] Infants experiencing frequent physical punishment have been shown to have high hormonal reactivity to stress.[25] It could be that children experience cumulative exposure to physical punishment as psychologically and physically stressful, which is the case for child maltreatment.[26] As outlined by Shonkoff and colleagues,[26] chronic adult illness associated with cumulative exposure to adversity is thought to activate stress management systems in the brain that result in a broad range of responses, including secretion of stress hormones and higher heart rate and blood pressure. It is possible that over time, stress related to physical punishment in childhood may lead to physical symptoms in

adulthood, including those of chronic illnesses such as cardiac and pulmonary disease.

Despite greater attention over the past decade on the potential effects of child maltreatment on physical health,[27] there has been little emphasis on the relationship between exposure to physical punishment and physical health conditions. Physical punishment and child physical abuse share etiological characteristics such as hitting and physical pain. Given the similarities between exposure to child physical abuse and harsh physical punishment in their associations with adverse psychological, social, and cognitive functioning in adulthood, it is possible that there are similarities in physical health outcomes. Particularly in the case of harsh physical punishment, which involves what is typically considered a lesser form of physical force compared with physical abuse, it is possible that there are similar pathways that lead to problems in physical health. When studying physical punishment and physical health conditions, it is necessary to adjust for several factors known to be related to physical punishment that may likewise affect physical health. These factors include sociodemographic variables (eg, age, gender, income), a history of family dysfunction that may contribute to childhood stress, and mental disorders. Additionally, it is important that the relationship between physical punishment and physical health is not confounded by experiences of more severe acts of child maltreatment.

Therefore, the main objectives for the current study were to determine whether adults from a nationally representative US sample with a history of harsh physical punishment in childhood would be more likely to experience physical health conditions in adulthood than adults without a history of harsh physical punishment. It was hypothesized that adults with a history of harsh

physical punishment in the absence of maltreatment would have a greater likelihood of physical health conditions in adulthood independent of sociodemographic factors, family history of dysfunction, and mental health disorders.

METHODS

Survey

Data were collected from the second wave of the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) collected between 2004 and 2005. The NESARC is a nationally representative sample of the civilian population of the United States (ages 20 years and over), including the District of Columbia and the states of Alaska and Hawaii. Respondents residing in households and various noninstitutional dwellings such as college dormitories, group homes, shelters, and boarding houses were included. A total of 34 653 respondents participated, with a response rate of 86.7%, and excluding those who were deceased since the first wave, deported, or on active military duty. The sample size in the current analysis was 34 226. Face-to-face survey interviews were conducted by trained lay interviewers from the US Census Bureau. A more detailed description of the methods, sampling, and weighting procedures has been published elsewhere.[28,29]

Measures

Harsh Physical Punishment and Child Maltreatment

The assessment of harsh physical punishment and childhood maltreatment (severe physical abuse, sexual abuse, emotional abuse, neglect, and IPV exposure) before the age of 18 years was included in the NESARC by using items adapted from the Adverse Childhood Experiences Study.[30,31] These items consisted of select questions

from the Conflict Tactics Scale[32,33] and the Childhood Trauma Questionnaire.[34] The range of responses to the majority of questions was a 5-point Likert scale of never, almost never, sometimes, fairly often, and very often.

Respondents who reported an answer of "sometimes" or greater to "How often did a parent or other adult living in your home push, grab, shove, slap, or hit you?" before they were 18 years of age were classified as having experienced physical punishment (response of "never" or "almost never" were categorized as no physical punishment). Because this assessment included behaviors beyond slapping, which some may consider more severe than "customary physical punishment," the term harsh physical punishment is used in the current study. Moreover, some respondents endorsed more severe forms of maltreatment in childhood in addition to harsh physical punishment, including severe physical abuse, sexual abuse, physical neglect, emotional neglect, and exposure to IPV.

Respondents were considered as having experienced physical abuse if they responded "sometimes" or greater to having been hit so hard it left marks or bruises or caused an injury. Emotional abuse was defined as a response of "fairly often" or "very often" to items inquiring about how often a parent or other adult residing in the household threatened to hit or throw something at the respondent, swore at, insulted, or did any other act that made the respondent feel afraid of being hurt or injured. Sexual abuse was defined as any response other than "never" to the occurrence of unwanted sexual touching or fondling, attempted intercourse, or actual intercourse by any adult or other person that was unwanted or occurred when the respondent was too young to understand what was happening. Physical neglect was defined as any response other than "never" to

being left unsupervised when too young to care for themselves or going without needed clothing, food, school supplies, or medical treatment. Emotional neglect was defined as not feeling part of a close-knit family or not having a family member who made the respondent feel special, believed in the respondent, provided strength and support, or wanted the respondent to succeed. Exposure to IPV was defined as having a mother who was physically abused (pushed, hit, slapped, repeatedly hit for several minutes, or threatened with a knife or gun). Three increasing severity categories were computed for comparison: (1) no harsh physical punishment or child maltreatment, (2) harsh physical punishment only without child maltreatment, and (3) any child maltreatment (with or without harsh physical punishment).

Physical Health Conditions

Eight past year physical health condition categories were created based on a number of individual conditions inquired about in the NESARC: (1) arteriosclerosis or hypertension; (2) hepatic disease, which included cirrhosis of the liver and any other forms of liver disease; (3) diabetes; (4) cardiovascular disease, defined as chest pain or angina pectoris, heart attack or myocardial infarction, rapid heartbeat or tachycardia, and any other form of heart disease; (5) gastrointestinal disease, which included stomach ulcer and gastritis; (6) arthritis; (7) obesity; and (8) any of the aforementioned physical conditions. For categories 1 through 6, respondents must have endorsed at least one of the physical conditions and must have also reported that the diagnosis had been made by a physician or other health professional. Obesity was defined based on respondents' self-reported height and weight, which was used to calculate their BMI. BMI was calculated by dividing mass (in pounds) by height (in inches, squared) and multiplying by 703.

Obesity was defined as a BMI of 30 or more. Physical health conditions were grouped into categories based on a previous study in the NESARC.[35]

Covariates

Sociodemographic Covariates

A number of sociodemographic covariates were included in statistical analyses, such as gender (male, female), age, past year household income, and years of education, which were all continuous variables; marital status (married or common law; separated, divorced, or widowed; and never married or single); and ethnicity (Hispanic, non-Hispanic white, non-Hispanic black, non-Hispanic American Indian or Alaska Native, non-Hispanic Hawaiian or Pacific Islander).

Family History of Dysfunction

The occurrence of general household dysfunction was also included as a covariate in statistical analyses and was defined with items adapted from the Adverse Childhood Experiences Study.[30,31] To characterize general household dysfunction variables, respondents were asked to answer with either "yes" or "no" to whether a parent or other adult in the household (1) went to jail or prison, (2) had a problem with alcohol or drugs, (3) was treated or hospitalized for a mental illness, (4) attempted suicide, or (5) died by suicide. A response of "yes" to at least 1 question defined the corresponding family history of dysfunction variable.

Axis I and Axis II Disorders

Diagnoses of Axis I and Axis II disorders were made with a structured interview known as the Alcohol Use Disorder and Associated Disabilities Interview Schedule—*Diagnostic and Statistical Manual of Mental Disorders,* Fourth Edition (AUDADIS-IV).[28,36] The validity and reliability of this tool have been

demonstrated in previous work.[37,38] In the current study, a single summary variable of "any Axis I or II mental disorder" was created that included lifetime Axis I disorders (major depression, dysthymia, mania, hypomania, social phobia, generalized anxiety disorder, panic disorder with or without agoraphobia, specific phobia, agoraphobia, posttraumatic stress disorder, alcohol abuse or dependence, any drug abuse or dependence, and nicotine dependence) and Axis II disorders (antisocial, avoidant, dependent, borderline, histrionic, paranoid, schizoid, schizotypal, narcissistic, and obsessive–compulsive personality disorder).

Statistical Analyses

Weights were applied to the analyses conducted to render the survey data representative of the US population. Furthermore, a variance estimation technique called Taylor series linearization was also used to account for the complex sampling design of the NESARC survey, and this was accomplished through the use of SUDAAN software.[39] Relationships between harsh physical punishment in childhood and physical health conditions were studied by using multiple logistic regression analyses. A preliminary statistical model included only sociodemographic variables as covariates. A second model additionally included any family history of dysfunction and a summary variable of any Axis I or II disorder. Next, a third model with gender by harsh physical punishment or child maltreatment interactions, adjusting for all covariates, was computed for each outcome to test whether there were possible differences between men and women with respect to the associations between physical punishment, child maltreatment, and physical conditions.

RESULTS

In Table 1, all models examining the relationships between harsh physical punishment, child maltreatment, and physical conditions are shown. In both statistical models, reports of experiencing harsh physical punishment in childhood were associated with a higher likelihood of cardiovascular disease (borderline significance), arthritis, obesity, and any physical condition (adjusted odds ratio [aOR] range 1.20–1.38). Child maltreatment compared with no harsh physical punishment or child maltreatment was associated with higher odds of all physical health outcomes. Notably, when harsh physical punishment and child maltreatment categories were compared, no statistically significant differences were found for any of the 8 physical conditions. The gender by physical punishment or child maltreatment interaction terms were statistically significant for obesity and any physical health condition. These findings indicated that for women, the prevalence of obesity and any physical health condition was greatest among those who experienced child maltreatment, whereas for men, the prevalence was the greatest among those who experienced harsh physical punishment.

DISCUSSION

The findings from the current study are novel and support the hypothesis that harsh physical punishment in the absence of child maltreatment is associated with higher odds of several adult physical health conditions. Effects were lower but remained significant after adjusting for family history of dysfunction and mental disorders, indicating that these factors explain some of the variance in the link between physical punishment and physical health conditions. These findings are consistent with the literature showing an association between child maltreatment and physical health conditions including cardiovascular disease, arthritis, and obesity.[12,14,15,20,21,24]

The prevalence of harsh physical punishment in our study was lower (n = 1258; 3.6%) than the prevalence of child maltreatment (n = 13 619; 38.1%). This finding can be explained by the inclusion of only harsh physical punishment occurring sometimes or more often in the absence of more severe child maltreatment and not including milder forms of physical punishment. Also, our measure of child maltreatment, which consisted of 5 types of abuse or neglect, including emotional abuse, was more comprehensive than in most studies.

Several potential mechanisms that link child maltreatment and physical health conditions include physiologic, emotional, behavioral, and cognitive pathways.[20,40]

The same pathways that potentially mediate the relationship between child maltreatment and physical health are also plausible for the relationship between physical punishment and physical health conditions. With regard to physiologic pathways, there is evidence from animal and human studies that child maltreatment is associated with dysregulation of the hypothalamus–pituitary adrenal axis, a biological stress response system that regulates the stress hormone cortisol.[20,40–42] Likewise, neuroimaging studies have found evidence of altered brain structure and function among patients exposed to child maltreatment.[42–44] An additional physiologic pathway proposed to explain how exposure to child maltreatment may influence physical symptoms is through alterations in sleep, which may worsen physiologic symptoms such as pain or a lower pain threshold.[20] As a third pathway from trauma, the relation between emotional and physical health is well recognized.[40] Proponents of behavioral pathways hypothesize that child maltreatment may lead to high-risk behaviors such as substance use, risky sexual

TABLE 1 Associations Between Harsh Physical Punishment and Physical Conditions

Physical Condition	No Harsh Physical Punishment, n = 19 349, 58.2% (57.3–59.1)	Harsh Physical Punishment (Ref: No Physical Punishment), n = 1258, 3.6% (3.4–3.9)	Child Maltreatment With or Without Harsh Physical Punishment (Ref: No Harsh Physical Punishment), n =13 619, 38.1% (37.2–29.1)	Gender by Harsh Physical Punishment Interactions
Arteriosclerosis or hypertension				
n (%)	5175 (24.7)	367 (26.9)	3855 (26.7)	
aOR-1 (95% CI)	1.00	1.17 (0.99–1.39)	1.21 (1.13–1.30)***	
aOR-2 (95% CI)	1.00	1.12 (0.95–1.33)	1.12 (1.04–1.20)**	0.94 (0.88–1.01)
Hepatic disease				
n (%)	120 (0.6)	14 (1.2)	178 (1.2)	
aOR-1 (95% CI)	1.00	1.84 (0.93–3.63)	1.85 (1.37–2.49)***	
aOR-2 (95% CI)	1.00	1.66 (0.85–3.26)	1.48 (1.09–2.00)*	0.89 (0.67–1.19)
Diabetes				
n (%)	1654 (7.6)	120 (7.5)	1389 (9.0)	
aOR-1 (95% CI)	1.00	1.05 (0.84–1.32)	1.24 (1.12–1.37)***	
aOR-2 (95% CI)	1.00	1.02 (0.81–1.29)	1.18 (1.06–1.31)**	1.05 (0.94–1.18)
Cardiovascular disease				
n (%)	1576 (7.3)	116 (8.9)	1476 (10.3)	
aOR-1 (95% CI)	1.00	1.38 (1.08–1.76)*	1.58 (1.08–1.76)***	
aOR-2 (95% CI)	1.00	1.28 (1.00–1.64)‡	1.38 (1.24–1.52)***	1.06 (0.97–1.17)
Gastrointestinal disease				
n (%)	1110 (5.2)	78 (5.6)	1200 (8.3)	0.98 (0.87–1.11)
aOR-1 (95% CI)	1.00	1.20 (0.87–1.65)	1.64 (1.46–1.83)***	
aOR-2 (96% CI)	1.00	1.09 (0.80–1.50)	1.41 (1.25–1.59)***	1.40 (0.71–2.74)
Arthritis				
n (%)	4079 (20.0)	293 (22.5)	3375 (24.1)	
aOR-1 (95% CI)	1.00	1.35 (1.10–1.66)**	1.46 (1.36–1.57)***	
aOR-2 (95% CI)	1.00	1.25 (1.01–1.54)*	1.27 (1.17–1.37)***	1.18 (0.81–1.71)
Obesity				
n (%)	5257 (25.7)	398 (30.6)	4245 (30.2)	
aOR-1 (95% CI)	1.00	1.24 (1.05–1.47)*	1.20 (1.13–1.28)***	
aOR-2 (95% CI)	1.00	1.20 (1.02–1.42)*	1.13 (1.07–1.20)***	1.12 (1.06–1.19)***
Any physical condition				
n (%)	10 499 (52.2)	753 (59.4)	8112 (58.4)	
aOR-1 (95% CI)	1.00	1.36 (1.17–1.58)***	1.33 (1.25–1.41)***	
aOR-2 (95% CI)	1.00	1.30 (1.12–1.51)***	1.23 (1.15–1.31)***	1.09 (1.02–1.16)**

All ns were unweighted. All percentages were weighted. aOR-1, adjusted for gender, age, marital status, race or ethnicity, education, and household income. aOR-2, adjusted for age, marital status, race or ethnicity, education, household income, any general household dysfunction, and any Axis I or Axis II disorder.
* $P \leq .05$; **$P \leq .01$; ***$P \leq .001$; ‡$P = 0.052$.

behavior, and overeating as a result of mental health problems, which can have a negative impact on physical health, for example, in the case of cardiac disease.[20] This is also postulated as the case for cognitive pathways; how children exposed to child maltreatment view themselves or the world (eg, shame or hostility) may alter the immune system or increase systemic inflammation.[40] These same pathways may be linking exposure to harsh physical punishment to physical outcomes, given the potential overlap in how children experience such exposure.

Identifying mechanisms that may explain the relationship between physical punishment and physical health conditions, namely cardiovascular disease, arthritis, and obesity, is not possible with the NESARC data. Future research must elucidate the underlying mechanisms in these links. Such knowledge is important in developing approaches to reduce the risk of physical health conditions among those exposed to physical punishment. Given the widespread use of physical punishment in North America, such information may have implications in preventing physical health conditions in the general population.

It is important to discuss the limitations of this study. First, the cross-sectional design does not allow inferences about causation in the relationship between harsh physical punishment and physical health conditions. Clearly, not everyone who experiences harsh physical punishment will go on to develop these physical health outcomes, but harsh physical punishment is associated with higher odds of having a physical health condition. Second, only past year physical health conditions were included in the survey. The effects would probably be larger if measures of lifetime physical health conditions were available. Additionally, physical health conditions were based on self-report of a physician diagnosis. Confirmation of self-reports

through record data would have improved the study design. However, the reporting bias is probably minimal because previous research has shown high agreement between self-reported and physician-diagnosed physical conditions.[45] Similarly, BMI was computed by using self-reported weight and height, which may introduce some measurement error. However, mean self-reported weight and height have been shown to be generally accurate estimates of true mean weight and height.[46] Third, the retrospective data collection of exposure to harsh physical punishment and child maltreatment may introduce some sampling error caused by recall and reporting bias. However, there is support for the validity of accurate recall of adverse childhood events.[47] Furthermore, psychopathology has not been found to be linked to less reliable or less valid self-reported data on adverse childhood experiences.[48] Fourth, the measure of parental psychopathology relied on the respondent's retrospective recall of parental mental health problems. Confirmation of mental health problems using records or based on information collected from the parents would have been useful. Finally, assessment of parental physical health conditions was not available in the data set. Although family history of medical conditions is often not available in health studies, this would have been an interesting covariate to examine. Future primary data longitudinal and prospective collection would be useful to address these limitations.

These research findings have important clinical and policy implications. First, from a clinical perspective, it is important that clinicians and other professionals working with children and families be aware that harsh physical punishment is associated with some physical health conditions in adulthood, particularly cardiovascular disease, arthritis, and obesity. Eliminating the use of harsh physical punishment may result in better health outcomes for some individuals. Just as it is important for clinicians to be aware of the link between harsh physical punishment and mental disorders,[9] it is recommended that physicians and other professionals working with parents consider the current findings when advising parents about discipline. Based on the current findings, which add to the mounting research of potential harms associated with physical punishment,[6–9] it is recommended that physical punishment not be used with children of any age.

Wide dissemination of the message may be important from a public health perspective; the extent to which such health promotion influences parental approaches to discipline is unclear. It would be useful to assess the effectiveness of such education provided through a variety of accessible settings such as health professionals' offices and waiting rooms, child care facilities, and schools. This is important because not all parents solicit advice about the use of physical punishment from health care professionals. Dissemination of the message may encourage some parents to seek information on how to access parenting resources. As a substitute for physical punishment, positive parenting approaches must be made available to parents as a safe and effective alternative. Additionally, it is important to communicate that the recommendation against physical punishment does not imply avoidance of discipline. Positive parenting programs offer many strategies to reduce problem behaviors and raise well-adjusted children by using developmentally appropriate nonphysical methods of discipline.[49–51] These parenting programs must be rigorously evaluated for their effectiveness, generalizability, and accessibility. Positive parenting approaches and nonphysical means of discipline are fundamental to promote healthy child development and protect children from potentially harmful forms of discipline.

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