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Mental Health of Parents and Primary Caregivers by Sex and Associated Child Health Indicators

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Abstract

Poor mental health among parents or primary caregivers is associated with poor mental and physical health in children; however, research often excludes the mental health of male caregivers including fathers. This analysis examines associations between caregiver mental health by caregiver sex and child health indicators (i.e., child's general health; child's history of diagnosed mental, behavioral, or developmental disorders (MBDDs)). Using parent-reported data on 97,728 US children aged 0–17 years from the National Survey of Children's Health (2016–2018), we estimated nationally representative, weighted proportions of children with parents or primary caregivers with poor mental health by caregiver sex, prevalence ratios (PR), and 95% confidence intervals (CI) for child health indicators by caregiver mental health and sex. Nationally, *7.2%* of children had at least one caregiver with poor mental health; 2.8% had any male caregiver; and 5.1% had any female caregiver with poor mental health. Compared to children with all male caregivers with good mental health, children with any male caregiver with poor mental health were more likely to have poor general health (PR: 4.9, CI: 3.0–8.0) and have ≥1 diagnosed MBDDs (PR: 1.9, CI: 1.7–2.1); this remained significant when controlling for caregiver and household

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Disclaimer The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

Availability of Data and Material Data is publicly available at US Census Bureau's National Survey of Children's Health (NSCH) https://www.census.gov/programs-surveys/nsch/data.html.

Code Availability We conducted weighted analyses in SAS-callable SUDAAN® version 9.4 (RTI International; Cary, NC). Please contact Sara Beth Wolicki (klx6@cdc.gov), lead analyst, with any questions.

characteristics. Findings were similar when comparing children with any female caregiver with poor mental health to children with all female caregivers with good mental health. Our findings support previously published recommendations that promoting mental health among all types of caregivers by addressing gaps in research on fathers and male caregivers may further promote child health and wellness.

Keywords

Child mental disorders; Family health; Fathers; Men's health; Parent-child relations; Women's health

Introduction

Poor mental health among parents, including depression and anxiety, is associated with poor mental and physical health among their children (Leijdesdorff et al., 2017; Pierce et al., 2020; Slomian et al., 2019; Wickersham et al., 2020). Almost one in five adults (19.1%) living in the United States (US) in 2018 reported at least one or more mental disorders (Substance Abuse and Mental Health Services Administration, 2019). Similarly, in 2008–2014, 18.2% of US parents with children aged less than 18 years were reported to have any mental disorder in the past year (Stambaugh et al., 2017). When examining parent mental health by sex, 22.8% of female parents and 12.4% of male parents had one or more mental disorders in the past year (Stambaugh et al., 2017).

Parent mental and physical health can impact child development through genetic, neurobiological, social, and environmental pathways (National Academies of Sciences, 2016, 2019; National Research Council & Institute of Medicine, 2009a; Ramchandani & Psychogiou, 2009). Social ecological models suggest that a child develops within nested, transacting social contexts (National Academies of Sciences, 2019). The most proximal influences begin with the biological and social characteristics of the child, expanding outward to family characteristics (e.g., family structure, parent mental health) and other relationships (e.g., family economics and adversity), community (e.g., access to healthcare and resources), society, and culture (e.g., the social and cultural impact of race and racial discrimination) (e.g., Bronfenbrenner, 1977, 1980; Krug et al. 2002; National Research Council & Institute of Medicine, 2009b; National Academies of Sciences, Engineering, and Medicine 2019; Malawa et al., 2021). Positive relationships and interactions in and across these various contexts lead to a greater likelihood of optimal child health and development (e.g., Belsky, 1984; Bronfenbrenner, 1977, 1980; Fitzgerald et al., 2020; National Research Council & Institute of Medicine, 2009b; Krug et al., 2002; Malawa et al., 2021; National Academies of Sciences, Engineering, and Medicine, 2019). Both mothers and fathers play important, complementary but potentially different roles in these interacting social and family systems (Fitzgerald et al., 2020). For example, Cabrera and colleagues' dynamic ecological model of father-child interactions posits reciprocal and dynamic personality, parenting, family system, and contextual factors indirectly and directly impact child health and wellbeing (Cabrera et al., 2014). As a first step in using national data to characterize the relationship of both maternal and paternal mental health with child development, we

aim to describe family sociodemographic, adversity, and child healthcare factors associated with the relationship between parent mental health and child health that may provide opportunities for support and intervention within the healthcare context.

Current literature on parent mental health and child health is limited in its applicability to comprehensive, population-based approaches for promoting child health and wellbeing. Many studies on the association between parent or other primary caregiver mental health and child health indicators consider only the mental health of the mother (Johnston et al., 2013; Leijdesdorff et al., 2017; Paulson & Bazemore, 2010; Pierce et al., 2020; Ramchandani & Psychogiou, 2009; Webb et al., 2018). In a 2020 meta-analysis of associations between parent mental health and child physical health, all studies included measures for mothers' mental health, yet less than 20% of studies included measures for the mental health of fathers (Pierce et al., 2020). Initial research on father's mental health and child health indicates an affirmative association (National Academies of Sciences, 2016, 2019). Fathers and other male primary caregivers are caring for their children more often than in previous decades; the Pew Research Center's analysis of the "American Time Use Survey" found the average number of hours spent per week on child care among fathers increased from 2.5 hours in 1965 to 8 hours in 2016 (Livingston & Parker, 2019). Along with fathers spending more time with their children, changes to family structure highlight the importance of considering the influence of all caregivers on child health and wellbeing. From 1960 to 2014, while the prevalence of children living in a home with two parents in their first marriage decreased (Pew Research Center, 2015), there was an increase of single female caregiver homes, blended families including stepparents and other relatives as primary caregivers, including grandparents (National Academies of Sciences, 2016; Pew Research Center, 2015; Rapoport et al., 2020). Furthermore, the Williams Institute on Sexual Orientation and Gender Identity Law and Public Policy analyzed pooled data from the 2008 and 2010 "General Social Survey," reporting that of adults who identified as lesbian, gay, or bisexual, 38% have had at least one child (Gates, 2012). In a 2019 report, the National Academies of Sciences called attention to these changes in family structure, stating the term "parent" has evolved to include all primary caregivers regardless of their sex, gender identity, sexual orientation, and biological or nonbiological relationship with their child (National Academies of Sciences, 2019). The role of all primary caregivers cannot be understated when it comes to their child's health and development; research examining the association between parent mental health and child health must involve all types of primary caregivers, including fathers and other male primary caregivers (National Academies of Sciences, 2019).

Although some studies have examined the association between the mental health of fathers and child health indicators, they have mainly focused on paternal depression (Gentile & Fusco, 2017; Sweeney & MacBeth, 2016). In a systematic review by Sweeney and MacBeth (2016), depression among male caregivers was associated with internalizing and externalizing problems among children aged less than 21 years; these associations were stronger and more common in early childhood and still present even when controlling for maternal depression (Sweeney & MacBeth, 2016). Another systematic review identified associations between paternal depression and children with behavioral and developmental problems, poor school performance, and risk of developing psychiatric disorders (Gentile

& Fusco, 2017). These findings documented the association between male caregiver mental health and child health indicators but are still limited by the primary focus on depression. Specific to researching mental health among male caregivers, focusing on depression alone imposes challenges (Oliffe & Phillips, 2008). In a representative sample of over 78,000 adults in six European countries, men reported fewer depression symptoms than women and less often met the diagnostic threshold for depression (Angst et al., 2002). Other research suggests that depression is often underreported among males due to gender and social norms about depression symptoms and diagnostic criteria (American Psychological Association & Boys and Men Guidelines Group, 2018; Angst et al., 2002; Fisher, 2017).

The generalizability of current literature on parent and caregiver mental health and child health indicators may also be limited. Most studies have small sample sizes that are not nationally representative (Azuine & Singh, 2019) and may not reflect the diversity among US parents and their children (i.e., racial and ethnic, socioeconomic status, parent sex, biological and nonbiological parents, parent sexual orientation, language spoken in the home) (Cabrera & Volling, 2019; Darwin & Greenfield, 2019; Kingston et al., 2012; Sweeney & MacBeth, 2016). Collectively these constraints may lead to inaccurate characterization of the association between parent mental health and child health indicators.

Using data from the National Survey of Children's Health (NSCH), a primary caregiver-report survey that is nationally representative of children living in the US, we sought to (1) describe the prevalence of children with at least one parent or primary caregiver with poor mental health overall and by caregiver sex and (2) define child, caregiver, and household characteristics that are associated with caregiver poor mental health in general and stratified by the sex of the caregiver with poor mental health. Our study expands current research by focusing on mental health in general, rather than limited to a single mental disorder, and presenting associations between child health indicators by both male and female primary caregivers with poor mental health. Furthermore, our sample consists of all types of male and female primary caregivers (e.g., biological parents, stepparents, grandparents, adoptive and foster parents, and other relatives/nonrelative parents), hereinafter referred to as "caregivers." Finally, the NSCH is conducted in both English and Spanish languages, expanding the US families represented in the study. This study deepens our current understanding of the magnitude of the association between caregiver mental health, by caregiver sex, and child health indicators.

Methods

We analyzed pooled data from the 2016, 2017, and 2018 NSCH. The NSCH is a nationally representative, cross-sectional survey that examines key indicators of physical and emotional health among non-institutionalized US children aged 0–17 years, based on caregiver report (US Census Bureau, 2020). Since 2016, the NSCH has been conducted annually by the US Census Bureau and sponsored by the Health Resources and Services Administration's Maternal and Child Health Bureau within the US Department of Health and Human Services (US Census Bureau, 2020). The NSCH invites US households to complete a short screening questionnaire, and if eligible, the entire NSCH survey, via mail or online, with the option to request a telephone interview (US Census Bureau, 2020). The overall weighted response

rates for the NSCH 2016, 2017, and 2018 were 40.7%, 37.4%, and 43.1%, respectively (US Census Bureau, 2020). The NSCH is completed by a primary caregiver, referred to as "Caregiver 1," regarding the health and wellbeing of one randomly selected child in the household. While NSCH focuses on the health and wellbeing of children, the NSCH also asks a limited number of questions about up to two caregivers for each child. In addition to answering all questions for the child, Caregiver 1 also answered all caregiver questions for themselves and for a second primary caregiver (i.e., proxy reporting), "Caregiver 2," when applicable.

Child Health Indicators

Our analysis focused on two child health indicators: (1) child general health (poor vs. good) and (2) history of diagnosed mental, behavioral, or developmental disorders (MBDDs; absence of any MBDDs vs. ever diagnosed with ≥1 MBDDs). Table 1 contains the survey questions and response options and summarizes the derived indicators used in our analyses.

Child and Healthcare Characteristics

Our analysis included children's demographic information for child's sex, age (0–11 years vs. 12–17 years), and race/ethnicity. The NSCH used hot-deck imputation to account for missing values for child sex and race/ethnicity (US Census Bureau, 2020). We also included children's health insurance status at the time of the survey (insured vs. uninsured) and if the child had a preventive check-up in the past year with a doctor, nurse, or other healthcare professional (yes vs. no). We derived a summary indicator representing Caregiver 1's report of the child's history of Adverse Childhood Experiences (ACEs) by combining eight NSCH questions regarding specific experiences reflective of the original ACEs study (Felitti et al., 1998). See Table 1 for survey questions included in the ACEs-derived indicator, which we used to determine if children experienced 0–1 ACEs vs. ≥2 ACEs.

Caregiver and Household Characteristics

Because the child is the subject of the NSCH, when a child had two primary caregivers, we collapsed information for Caregiver 1 and Caregiver 2 to generate a single-derived indicator per child. We categorized the number of caregivers per child as one caregiver if Caregiver 1 selected "There is only one primary adult caregiver for the child" to the question "How is Adult 2 [Caregiver 2] related to this child?" The NSCH did not allow for more than two caregivers to be identified per child. The NSCH does not ask about the quality of Caregivers 1 and 2's relationship with their child or with each other. Derived indicators represent a single, collapsed response for both Caregivers 1 and 2 when a child had two caregivers. Table 2 outlines caregiver indicators, survey questions and response options, collapsed groupings, and indicators derived for our analysis. If only one caregiver was identified for the child, all caregiver characteristics are reflective of Caregiver 1.

Mental health status was collected for each caregiver individually with the question, "In general, how is [your or Caregiver 2's] mental or emotional health?" with the collapsed response options of poor vs. good mental health; see Table 2. Caregiver mental health status was reported by Caregiver 1 on behalf of themselves and for Caregiver 2 via proxy reporting.

Other information collected about primary caregivers included caregiver sex, age, number of caregivers for the child (one or two), caregiver marital status, caregiver relation to the child, caregiver physical health, highest level of education achieved by either caregiver, and federal poverty level for the household; see Table 2. The NSCH does not ask the race or ethnicity for caregivers, only for the child. The NSCH does not ask about how Caregiver 1 and Caregiver 2 relate to each other, only how each caregiver relates to the child.

Federal poverty level for the household was calculated using the number of people in the household and total household income; regression imputation methods were used to correct for errors or missing information necessary to calculate federal poverty level. Sequential regression imputation methods were used to estimate either indicator (i.e., number of people in the household and total household income) when not provided by Caregiver 1; 15% of the analytical sample (unweighted) was imputed for the variables used to calculate federal poverty level, which is in line with the ~15% of annual NSCH sample requiring imputed values (US Census Bureau, 2020).

Analysis

We combined the 2016–2018 NSCH samples (total N=102,341; US Census Bureau, 2020). We restricted the analytic sample to children with valid responses for sex and mental health status of all reported primary caregivers (n=97,728), excluding 4.5% of the total sample (unweighted). Within the analytic sample, we examined whether caregiver mental health was associated with child health indicators (i.e., child general health and child history of diagnosed MBDDs). We also analyzed child, primary caregiver, and household characteristics comparing children with any caregiver with poor mental health to children with all caregivers with good mental health (reference category). Similar to previous studies (Cree et al., 2018; Chiu et al., 2017; Leeb et al., 2020), we dichotomized caregiver mental health status, child health indicators, and child, caregiver, and household characteristics. A methods analysis of self-rated health by dichotomous and categorical responses yielded similar findings for both analytical approaches (Manor et al., 2000), and self-reported health has been found to be a useful measure for monitoring mental health at a population level (Mawani & Gilmour, 2010).

Next, we examined the prevalence of primary caregiver poor mental health by caregiver sex (male and female). To do this, we created two independent variables, one for male caregiver mental health status and one for female caregiver mental health status. The lull analytical sample of children, n=97,728, was included in each independent primary caregiver mental health status variable. For the male primary caregiver mental health status variable, we created three groups of children: (1) children with any male caregiver with poor mental health, n=2,859; (2) children with all male caregivers with good mental health, n=81,433; and (3) children without a male caregiver (i.e., single female caregiver or two female caregivers; n=13,436). We created a corresponding variable for female primary caregiver mental health status: (1) children with any female caregiver with poor mental health, n=4,652; (2) children with all female caregivers with good mental health, n=90,413; and (3) children without a female caregiver (i.e., single male caregiver or two male caregivers, n=2,663). Creating three-level variables allowed us to compare the prevalence ratios and

the magnitude of the effects among caregiver mental health status by caregiver sex while maintaining a consistent denominator for the two sets of analyses.

For the male caregiver mental health status variable, we present the point estimates and prevalence ratios comparing children with any male caregiver with poor mental health to children with all male caregivers with good mental health, regardless of whether there is a female caregiver or the mental health status of the female caregiver. Children without a male caregiver (i.e., single female caregiver or two female caregivers) are included in the model calculations, but those comparisons are outside the scope of this analysis and are not shown. We present the same comparison for female caregiver mental health status: children with any female caregiver with poor mental health compared to children with all female caregivers with good mental health. Again, children without a female caregiver (i.e., single male caregiver or two male caregivers) are included in the model calculations but are not shown. We also provide point estimates for self and proxy reported caregiver poor mental health (i.e., percent of children with any male caregiver with self-reported poor mental health, percent of children with any male caregiver with proxy-reported poor mental health, and the same for children with any female caregiver with poor mental health via self or proxy report).

Lastly, we ran two sets of adjusted models using a logistic regression analysis to calculate adjusted prevalence ratios using predicted marginal proportions. These models predicted child health indicators (i.e., child general health and child history of diagnosed MBDDs) using the same independent male and female caregiver mental health status variables. To better understand the unique contributions of male or female primary caregiver mental health on children's health, we ran two models for both male and female caregiver mental health controlling for (1) the mental health status of a caregiver of another sex, if applicable, and (2) the mental health status of a caregiver of another sex, as well as the number of caregivers, physical health status of all caregivers, and household federal poverty level. We selected variables to control for by running a correlation analysis in SAS and reviewing-related research (Azuine & Singh, 2019; Pierce et al., 2020; Ramchandani & Psychogiou, 2009).

We conducted weighted, descriptive analyses to account for complex survey design and estimated nationally representative proportions and 95% confidence intervals (CI) along with unadjusted and adjusted prevalence ratios (PR/aPR) and 95% CL All CI are provided in the tables, and findings were considered significant if the CI around the PR/aPR did not contain the value of 1. All prevalence estimates were considered stable, based on having a relative standard error less than 30%. We followed all analytical guidance in the NSCH methods reports for combining multiple years of survey data and analyzing multiply imputed data (US Census Bureau, 2020). Any responses of "don't know" or refusal to answer the question were excluded throughout our analysis. In the 2016–2018 NSCH sample, responses to the analyzed indicators were missing for less than 5% of children and less than 1% of children when limited to our analytical sample (n=97,728), which required children to have valid responses for sex and mental health status of their primary caregivers. We conducted weighted analyses in SAS-callable SUDAAN® version 9.4 (RTT International; Cary, NC).

Results

Overall, the prevalence of US children, aged 0–17 years, with any caregiver with poor mental health was 7.2% (CI: 6.8%–7.6%, see Table 3). Children with any caregiver with poor mental health were 4.0 times as likely to have poor general health and 2.0 times as likely to have a history of one or more MBDDs than children with all caregivers with good mental health (reference group; all PR/aPR reported in the "Results" section were statistically significant unless noted). Compared to children with all caregivers with good mental health, children with any caregiver with poor mental health were 1.3 times as likely to be non-Hispanic Black, 2.9 times as likely to have a history of two or more ACEs, 1.3 times as likely to have a single caregiver, 7.8 times as likely to have one or more caregivers with poor physical health, and 1.5 times as likely to live in a household at less than 200% of the federal poverty level. Children with any caregiver with poor mental health were less likely to have both a male and a female caregiver (PR: 0.9), married caregivers (PR: 0.7), have all biological or adoptive caregivers (PR: 0.9), or any caregiver with a college degree (PR: 0.8) compared to children with all caregivers with good mental health. When comparing children with any caregiver with poor mental health to children with all caregivers with good mental health, children did not differ by child sex, age, insurance status, having a preventive check-up in the past year, or caregiver age.

When examining the combination of caregiver mental health and caregiver sex, 2.8% of children had any male caregiver with poor mental health and 5.1 % had any female caregiver with poor mental health (these values are not mutually exclusive, meaning a child could have both a male and female caregiver with poor mental health, see Table 4). Regarding self and proxy reporting (i.e., having Caregiver 1 report for Caregiver 2), 0.7% of children had any male caregiver with self-reported poor mental health, and 2.1 % of children had any male caregiver with poor mental health via proxy report. For children with any female caregiver with poor mental health, 4.0% of children had a female caregiver with self-reported poor mental health, and 1.2% of children had any female caregiver with poor mental health via proxy report (not shown in tables).

Children with any male caregiver with poor mental health were more likely to have poor general health (PR: 4.9) and have a history of one or more diagnosed MBDDs (PR: 1.9) compared to children with all male caregivers with good mental health; findings were of a similar magnitude for children by female caregivers mental health status; see Table 4. Children with any female caregiver with poor mental health were less likely to be non-Hispanic White (PR: 0.9) and more likely to be non-Hispanic Black (PR: 1.5) when compared to children with all female caregivers with good mental health. Children with any male or female caregiver with poor mental health were significantly less likely to have both a male and female primary caregiver and more likely to have a single caregiver when compared to children with all male or female caregivers with good mental health. The prevalence of two or more ACEs among children with any male caregiver with poor mental health was 3.6 times that of children with all male caregivers with good mental health and of a similar magnitude for children by female caregiver mental health status (PR: 3.0).

Children with any male caregiver with poor mental health were less likely to have married caregivers (PR: 0.8), less likely to have all biological or adoptive caregivers (PR: 0.9), and less likely to have any caregiver with a college degree (PR: 0.8) when compared to children with all male caregivers with good mental health. Findings for children by female caregiver mental health status followed a similar pattern (see Table 4). Children with any male caregiver with poor mental health were 8.0 times as likely to have one or more caregivers with poor physical health and 1.6 times as likely to be living at less than 200% of the federal poverty level when compared to children with all male caregivers with good mental health; findings are similar in magnitude for children by female caregiver mental health status; see Table 4. Regardless of the sex of the caregiver(s) with poor mental health, no significant differences were found by caregiver mental health status for child sex, health insurance status, or having had a preventive check-up in the past year.

Table 5 presents unadjusted and adjusted prevalence ratios comparing child general health and child history of diagnosed MBDDs by caregiver mental health status and caregiver sex. After controlling for the mental health status of a female caregiver, findings reflect that children with any male caregiver with poor mental health were 3.3 times as likely to have poor general health and 1.7 times as likely to have a history of one or more MBDDs compared to children with all male caregivers with good mental health. Findings are of a similar magnitude when controlling for male caregiver mental health status in the model for female caregiver mental health status. In addition, when controlling for the mental health status of a female caregiver, all caregivers' physical health, number of caregivers for the child (one or two caregivers), and household federal poverty level, children with any male caregiver with poor mental health were 1.7 times as likely to have poor general health and 1.4 times as likely to have one or more MBDDs compared to children with all male caregivers with good mental health. Again, findings of a similar magnitude were observed for the association between child health indicators and female caregiver mental health status when controlling for the same indicators (see Table 5).

Conclusion

Our findings are consistent with previous research documenting the association between poor mental health among caregivers and indicators of poor child health (Leijdesdorff et al., 2017; Pierce et al., 2020; Slomian et al., 2019; Wickersham et al., 2020). Our analysis extends previous research, in that it is nationally representative of children living in the US and includes an indicator for both male and female caregivers' mental health status. Overall, 7.2% of children living in the US had one or more caregivers with poor mental health. The unadjusted results showed that children with one or more caregivers with poor mental health were four times as likely to have poor general health and twice as likely to have ever had one or more MBDDs when compared to children with all caregivers with good mental health. When stratified by caregiver sex, these associations remained significant for children with male caregivers with poor mental health and children with female caregivers with poor mental health; children were almost five times as likely to have poor general health and about twice as likely to have ever had one or more diagnosed MBDDs when compared to children with all male/female caregivers with good mental health. Further, after adjusting for the mental health status of a caregiver of another sex, as well as the number of primary

caregivers (one or two), caregiver physical health, and household federal poverty level, the results were similar, although reduced in magnitude. Results suggest the associations between caregiver mental health and child health were independent of these factors and were observed among both male and female caregivers highlighting the unique contributions of male and female primary caregivers to child health outcomes.

Mental disorders among caregivers have been associated with an increased risk of mental and emotional difficulties among their children (Ramchandani & Psychogiou, 2009). Genetic and environmental factors may influence the association between caregiver poor mental health and poor health among children. For children, mental disorders in biological caregivers can be associated with increased risk potentially due to genetic endowment (i.e., inheritance) and the influence of the caregivers' mental disorder on the child's environment, including parent-child interactions (National Academies of Sciences, 2019; Ramchandani & Psychogiou, 2009). Economic costs associated with intergenerational mental disorders may iurther perpetuate poor health outcomes among children of parents with poor mental health (Johnston et al., 2013). Furthermore, ACEs and social determinants of health such as structural racism and inequities, implicit bias, and socioeconomic status, among others, may also influence children's health and development (Centers for Disease Control and Prevention, 2019; National Academies of Sciences, 2019; Malawa et al., 2021).

Multiple reports by the National Academies of Sciences highlight opportunities to support children's healthy development by promoting a family-centered approach to health, which incorporates caregivers' health and wellbeing (National Academies of Sciences, 2016, 2019). One intervention to help promote caregiver mental health and child health is screening for mental disorders among pregnant women and new mothers to identify female caregiver mental health needs and connect mothers to needed services. The US Preventive Services Task Force along with several professional organizations (e.g., American Academy of Pediatrics, American College of Nurse-Midwives, American College of Obstetricians and Gynecologists, American Psychological Association) recommend that clinicians screen women for depression during the prenatal and postpartum period (also see Ko and Haight (2020) for a summary of select screening guidelines for perinatal depression). Unfortunately, these professional recommendations focus on biological mothers, excluding male caregivers and nonbiological caregivers, which may result in missed opportunities to promote the health and wellbeing of the entire family. In 2019, the American Academy of Pediatrics (AAP) updated their recommendation to address the importance of mental health screening for all primary caregivers, specifically mentioning lathers (Earls et al., 2019).

Extending caregiver mental health screening to child preventive check-up visits could provide a unique opportunity for male caregivers to interact with the healthcare system. When compared to women, men are less likely to seek routine, preventive healthcare from a medical doctor (Susukida et al., 2015). Specific to mental health, a 2020 report by the National Center for Health Statistics found that only 13.4% of US men received any mental health treatment in the past year compared to 24.7% of US women (Terlizzi & Zablotsky, 2020). Our study findings indicate that poor mental health among both male and female caregivers is associated with poor health indicators among children. Also, children were similarly as likely to have health insurance coverage and one or more preventive check-up

in the past year, regardless of caregiver sex and mental health status. The child's preventive check-up visits may provide an opportunity to connect with male primary caregivers. While more research on father involvement in their child's pediatric care is needed (Davison et al., 2019), two small studies have shown that 50% of fathers attended one or more preventive check-up with their child (Moore & Kotelchuck, 2004; Garfield & Isacco, 2006), and another study with a sample size of over 9,500 clinic visits for children under 15 months old found that 30% of visits were attended by fathers (Cheng et al., 2018). AAP provides practical tips for pediatricians to engage male caregivers when accompanying their child at a doctor's appointment including techniques for brief screening of health concerns among male caregivers (Yogman et al.,2016).

Another screening method for mental disorders among caregivers could include using proxy reporting (i.e., having one caregiver complete a screening questionnaire on behalf of another caregiver). Proxy reporting provides a practical alternative when all caregivers are not physically present at the preventive check-up for their child and has been found reliable when compared to self-report for both maternal and paternal depression (Fisher et al., 2012; Moran & O'Hara, 2006). One constraint of proxy reporting is that some studies have found a high percent of false positives when compared to self-report (Fisher et al., 2012; Lapin et al., 2019), suggesting a first means of follow-up may be contacting the other caregiver to perform a self-assessment, and then when necessary, a referral for a clinical diagnostic assessment (Fisher & Garfield, 2016; Fisher et al,, 2012).

The American Psychological Association states that depression is often underreported and underdiagnosed among males due to gender and social norms around depression symptoms and diagnostic criteria (American Psychological Association & Boys and Men Guidelines Group, 2018). This specific concern may bias the representativeness and generalizability of the association between depression among male caregivers and child health indicators. Children with any caregivers with poor mental health were almost eight times as likely to have one or more caregivers with poor physical health when compared to children with all caregivers with good mental health; this finding was similar in magnitude regardless of the sex of the caregiver with poor mental health. Therefore, healthcare providers have an important role to play in addressing the mental health of both mothers and lathers, specifically treating lathers and other male caregivers as equal to mothers and who also have needs for mental health and parenting support (Skjøthaug, 2020). Previous research has also found that mental disorders are associated with physical health disorders (Razzano et al., 2015). Expanding the focus of caregiver health screening to include questions about physical and mental health may further promote identification of caregiver health concerns. One such screening instrument with both physical and mental health indicators is the National Institutes of Health's Patient-Reported Outcomes Measurement Information System (PROMIS; National Institutes of Health, 2019). In a diverse sample of over 20,000 participants, the PROMIS Global Health (PROMIS GH), a brief (10-question), free health screening instrument, demonstrated good reliability and construct validity (Celia et al., 2010) and has been tested using proxy report (Lapin et al., 2019).

Finally, screening caregivers to assess their health is only a first step to promoting family health and wellness (National Academies of Sciences, 2016). As stated in the

AAP's recommendation, follow-up and referral to additional mental health and parenting support services, if indicated, is essential to improve child health outcomes and promote a family-centered approach to health (Earls et al., 2019). Parenting support services could include home visitation, high-quality childcare, and childhood early education with family engagement; US Centers for Disease Control and Prevention listed these types of programs along with others as best available evidence on preventing ACEs and promoting child health and wellbeing (Centers for Disease Control and Prevention, 2019). The follow-up and referral to additional services may be particularly important with male caregivers due to research suggesting men are less likely to seek preventive health services (Susukida et al., 2015) and less likely to receive any mental health treatment compared to women (Terlizzi & Zablotsky, 2020). In 2018, the American Psychological Association released guidelines to enhance gender- and culture-sensitive psychological practices with boys and men and a report regarding health disparities specific to boys and men in racial, ethnic, and sexual minorities (American Psychological Association & APA Working Group on Health Disparities in Boys and Men, 2018; American Psychological Association & Boys and Men Guidelines Group, 2018). Referrals to providers who have inclusive environments and who are sensitive to the unique health needs of men may result in better outcomes for male caregivers and their children (American Psychological Association & APA Working Group on Health Disparities in Boys and Men, 2018; American Psychological Association & Boys and Men Guidelines Group, 2018). Additionally, our findings support previous recommendations to treat the entire family as the unit of care to promote the health of all caregivers and their children (Brundage & Shearer, 2019; Skjøthaug, 2020). Integrated family care approaches also incorporate efforts to integrate mental and physical healthcare, addressing the common co-occurrence of mental and physical health concerns (Brundage & Shearer, 2019; de Voursney & Huang, 2016; Foy et al., 2019; Hodgkinson et al., 2017; Leslie et al., 2016).

Along with our study's strengths including the use of nationally representative data, inclusion of mental health status for male and female and biological and nonbiological caregivers, use of a broad question to measure caregiver mental health, and a survey conducted in both English and Spanish languages, our study also has the following limitations. The NSCH is a cross-sectional survey, and thus, directionality and causality cannot be inferred from the associations between caregiver mental health status and child health. While we recognize that child health has genetic and environmental influences, our study was unable to disentangle these influences on child health. Also, while we are examining the association between caregiver mental health and child health outcomes, this association may be bidirectional (i.e., the caregiver's mental health could influence the child's health and vice versa), but that cannot be determined with these data. All indicators on the NSCH are according to the report of Caregiver 1; Caregiver 1 reported for themselves (i.e., self-report) and for their child and Caregiver 2 (i.e., proxy report). With regard to caregivers reporting for their child's health indicators, a study by Pauli-Pott et al. (2000) of associations between maternal depression and their infant's difficult behaviors supported the accuracy of caregiver report when compared to multiple independent, observational assessments. Also, Zablotsky et al. (2015) found that caregiver-reported severity of their child's autism spectrum disorder was predictive of caregiver-reported impact of the disorder

on the family and less predictive of their child's specific disorder symptoms; suggesting the caregiver's interpretation of their child's disorder was not independent of their experience of their child's disorder. With regard to proxy reporting, research has found a higher percent of false positives for proxy reporting when compared to self-report (Fisher et al., 2012; Lapin et al., 2019), and this may have inflated the estimates of poor mental health among caregivers. However, the estimates we found are lower than previous estimates of parent mental disorders (Stambaugh et al., 2017). The NSCH asked questions about up to two primary caregivers for each child, which may not encompass all primary caregivers for the child. The information collected by the NSCH is not validated by medical records or a clinical assessment; all indicators may be subject to recall, social desirability, and interpretation bias. Our analysis found the prevalence of children with any caregiver with poor mental health was 7.2%, which is lower than other national estimates (i.e., 18.2% of parents had one or more mental disorders in the past year, Stambaugh et al., 2017). Another nationwide analysis found that 7.2% of adults without disabilities self-reported 14 or more mentally unhealthy days in the past 30 days (Cree et al., 2020), which could be more representative of the question about caregiver mental health asked on the NSCH. The NSCH question, "In general, how is [your or Caregiver 2's] mental or emotional health?" presents both a strength and a limitation. The phrasing of this question could present opportunities to identify caregivers, especially male caregivers, with poor mental health that have no history of a diagnosed mental disorder, which is important because males are less likely than females to be diagnosed with mental disorders (American Psychological Association & Boys and Men Guidelines Group, 2018; Angst et al., 2002; Fisher, 2017). Furthermore, the mere diagnosis of a mental disorder does not equate to poor mental health (Keyes, 2002; Payton, 2009). A scoping review of a single question for mental health status found that this question was moderately correlated with the Patient Health Questionnaire and Kessler Psychological Distress Scale (Ahmad et al., 2014). Other potential factors that may be related to both parent mental health and child outcomes, such as child maltreatment or parent-child interactions or engagement, were not asked about on the NSCH and therefore could not be included in these analyses. The NSCH does not ask about Caregivers 1 and 2's relationship to each other; thus, the full family context is not captured. We excluded 4.5% of the total NSCH sample for 2016–2018 due to the inclusion criteria requiring all caregivers to have valid responses for caregiver sex and mental health status. Like other national surveys, the NSCH is subject to participation, nonresponse, and response bias. However, the NSCH provided an incentive to participants with the intention of minimizing participation and nonresponse biases and provided imputed values to account for general missingness throughout the survey and resulting nonresponse bias (US Census Bureau, 2020). We also performed weighted survey analysis to help account for these different biases.

Our findings support and expand on previous research into the association between caregiver mental health and child health indicators using a large (n=97,728), nationally representative sample of children living in the US with mental health indicators for male and female caregivers. Poor mental health among caregivers, both male and female, is associated with poor health indicators in children when compared to caregivers, male or female, with all good mental health. Considerations for expanding and scaling up primary caregiver mental health screening and referral to appropriate interventions to be more inclusive of male

caregivers and other types of primary caregivers (Fisher & Garfield, 2016) as well as addressing mental disorders more broadly (Ko & Haight, 2020) may result in improved health and wellbeing among the whole family.

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Table 1

Summary of derived child indicators from selected survey questions included in the 2016–2018 National Survey of Children's Health (NSCH)

Child Indicators	NSCH Survey Questions	Survey Question Response Options	Derived Child Indicators Analyzed
Child General Health	In general, how would you describe this child's health?	"Poor" or "Fair"	Poor general health
		"Good" or "Very Good" or "Excellent"	Good general health
Child History of Diagnosed Mental, Behavioral, or Developmental Disorders (MBDDs)	Has a doctor or other health care provider EVER told you that this child has: Anxiety problems? Attention Deficit Disorder or Attention-Deficit/Hyperactivity Disorder, that is, ADD or ADHD? Autism or autism spectrum disorder (ASD)? Behavioral or conduct problems?[a] Depression? Developmental delay?[a] Intellectual disability?[a] Learning disability?[a] Speech or other language disorder? [a] Tourette syndrome?	"No" to all questions	Absence of any diagnosed MBDDs [b]
		"Yes" to ≥1 questions	Ever diagnosed with ≥1 MBDDs
Child History of Adverse Childhood Experiences (ACEs)[c]	Since this child was born, how often has it been very hard to get by on your family's income — hard to cover the basics like food or housing? [d] To the best of your knowledge, has this child EVER experienced any of the following: Lived with anyone who had a problem with alcohol or drugs? Parent or guardian died? Parent or guardian divorced or separated? Parent or guardian served time in jail? Saw or heard parents or adults slap, hit, kick, punch one another in the home? Treated or judged unfairly because of his or her race or ethnic group? Was a victim of violence or witnessed violence in his or her neighborhood?	"Yes" to ≤1 question	History of 0–1 ACEs [b]
		'Yes" to ≥2 questions	History of ≥2 ACEs

All survey questions are from the 2016–2018 National Survey of Children's Health (NSCH) and are caregiver reported

[a] The following five disorders: behavioral or conduct problems, developmental delay, intellectual disability, learning disability, and speech or other language disorder included "educators" in the question stem: "Has a doctor, other healthcare provider, or educator EVER told you that this child has [specified disorder]?"

[b] Observations were only classified as missing if they were missing answers to all questions used to create this derived summaiy indicator

[c] Due to the analysis focus on primary caregiver mental health status, we excluded the following question in the ACEs derived indicator, 'To the best of your [Caregiver 1] knowledge, has this child EVER lived with anyone who was mentally ill, suicidal, or severely depressed?"

[d] Question response options were collapsed to "no" reflecting answers of "never" or "rarely" and "yes" reflecting answers of "somewhat often" and "very often"

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Table 2

Summary of derived caregiver indicators from selected survey questions included in the 2016–2018 National Survey of Children's Health (NSCH)

Primary Caregiver Indicators	NSCH Survey Questions	Survey Questions Response Options	Collapsed Groupings	Derived Caregiver Indicators Analyzed for Children with 2 Caregivers [a]
Caregiver mental health	In general, how is [your or Caregiver 2's] mental or emotional health?	"Poor" or "Fair"	Poor mental health	Any caregiver with poor mental health
		"Good" or "Very Good" or "Excellent"	Good mental health	
Caregiver sex	What is [your or Caregiver 2's] sex?	"Male" or "Female" [b]	Child does not have both a male and female caregiver [c]	Child does not have both a male and female caregiver
			Child has both a male and female caregiver	
Caregiver age	What is [your or Caregiver 2's] age?	Continuous ranging from 18–7 5 years or older [d]	18—40 years	Mean age of Caregiver 1 and 2
			41–75 years	
Caregiver marital status	What is [your or Caregiver 2's] marital status?	"Married"	Married	Both Caregiver 1 and 2 were identified as married [e]
		"Not married, but living with a partner" or "Never Married" or "Divorced" or "Separated" or "Widowed"	Not married	
Caregiver relation to child	How are [you or Caregiver 2] related to this child?	"Biological or Adoptive Parent" [f]	Biological or adoptive parent	Both Caregiver 1 and 2 were identified as biological or adoptive parents
		"Step-parent" or "Grandparent" or "Foster Parent" or "Other: Relative" [g] or "Other: Non-Relative"	Not biological or adoptive parent	
Caregiver physical health	In general, how is [your or Caregiver 2's] physical health?	"Poor" or "Fair"	Poor physical health	Any caregiver with poor physical health
		"Good" or "Very Good" or "Excellent"	Good physical health	
Highest level of education achieved by either caregiver	What is the highest grade or level of school [you have or Caregiver 2 has] completed?	"8th grade or less" or "9th–12th grade; No diploma" or "High School Graduate or GED completed" or "Completed a vocational, trade, or business school program" or "Some College Credit, but No Degree"	Up to some college, no degree	Any caregiver has an associate degree or more
		"Associate Degree" or "Bachelor's Degree" or "Master's Degree" or "Doctorate or Professional Degree"	Associate degree or another college degree	

All survey questions are from the 2016–2018 National Survey of Children's Health (NSCH). All child and Caregiver 2 (when applicable) data are reported by Caregiver 1; all data for Caregiver 1 are self-reported

[a] Derived caregiver indicators analyzed among children with one caregiver simply reflect the attributes of Caregiver 1

[b] The NSCH did not allow non-binary options for sex

[c] Children could have both a male and female caregiver, one male caregiver, one female caregiver, or two caregivers of the same sex. N SCH did not allow for more than two caregivers to be identified per child

[d] The NSCH public use data file top-coded the maximum caregiver age as "75 [years of age] or older"; less than 1.5% (unweighted) of children in the analytical sample had one or more caregiver aged ≥75 years. For children with two caregivers, we used "75 years" in the mean calculation for all caregivers aged ≥75 years

[e] While both Caregivers 1 and 2 could have been identified as "married," they were not necessarily married to each other. The NSCH asked all questions in relation to the child including all questions about up to two caregivers. There is no way to know the relationship between Caregivers 1 and 2. For example, it is possible that Caregivers 1 and 2 were divorced from each other, co-parenting the child, and remarried to different partners. In this case, they would still meet the inclusion criteria for being identified as "married" in our analysis. Furthermore, unmarried couples living together would be considered "not married"

[f] Biological and adoptive parents were combined into a single category in the NSCH public use file

[g] The NSCH 2016 and 2017 included a category for "aunt or uncle" which was collapsed with "other relative" in the NSCH 2018; therefore, we collapsed all responses of "aunt and uncle" with "other; relative" for our analysis

Table 3

Primary caregiver mental health, associated child health indicators, child, caregiver, and household characteristics among children aged 0–17 years in the US, 2016–2018 National Survey of Children's Health (NSCH, *n*=97,728)

	Children with any primary caregiver with poor mental health n=6,776		Children with all primary caregivers with good mental health n=90,952		Prevalence ratios [a] (unadjusted)
	n	% (95% CI)	n	% (95% CI)	PR (95% CI)
Overall weighted prevalence	6,776	7.2 (6.8–7.6)	90,952	92.8 (92.4–93.2)	–
Child Health Indicators					
Child general health (poor)	282	5.1 (3.9–6.6)	852	1.3 (1.1–1.5)	**4.0 (2.9–5.5)**
Child history of diagnosed MBDDs (≥1 MBDDs) [b]	2,981	41.8 (39.2–44.5)	21,317	21.0 (20.4–21.6)	**2.0 (1.9–2.1)**
Child and Healthcare Characteristics					
Child sex (male)	3,544	51.0 (48.4–53.7)	46,828	51.1 (50.3–51.8)	1.0 (0.9–1.1)
Child age (0–11 years)	3,801	63.9 (61.3–66.3)	53,783	66.4 (65.7–67.1)	1.0 (0.9–1.0)
Child race/ethnicity					
Non-Hispanic White	4,659	49.9 (47.2–52.6)	63,988	52.3 (51.5–53.0)	1.0 (0.9–1.0)
Non-Hispanic Black	464	15.8 (13.6–18.3)	5,190	12.4 (11.9–13.0)	**1.3 (1.1–1.5)**
Hispanic	817	22.1 (19.5–25.1)	10,082	24.7 (23.9–25.5)	0.9 (0.8–1.0)
Non-Hispanic another race or ethnicity	836	12.1 (10.6–13.9)	11,692	10.7 (10.3–11.1)	1.1 (1.0–1.3)
Child health insurance status (currently insured)	6,422	93.5 (92.2–94.6)	87,405	94.0 (93.5–94.4)	1.0 (1.0–1.0)
Child had preventive check-up in past year (yes) [c]	5,498	77.7 (75.1–80.1)	74,767	79.1 (78.4–79.8)	1.0 (1.0–1.0)
Child history of ACEs (≥2 ACEs) [d]	2,713	45.4 (42.7–48.1)	12,991	15.9 (15.4–16.4)	**2.9 (2.7–3.1)**
Primary Caregiver and Household Characteristics					
Caregiver sex (both male and female caregiver for child)	5,292	71.7 (69.2–74.0)	76,337	80.2 (79.6–80.8)	**0.9 (0.9–0.9)**
Caregiver age (mean age, 18–40 years) [e]	2,953	49.8 (47.1–52.5)	38,473	48.5 (47.8–49.3)	1.0 (1.0–1.1)
Number of caregivers (single caregiver for child) [f]	964	18.0 (16.0–20.2)	10,672	13.7 (13.2–14.2)	**1.3 (1.2–1.5)**
Caregiver marital status (both Caregiver 1 and 2 were identified as married)	4,211	55.0 (52.3–57.7)	71,325	73.7 (73.0–74.4)	**0.7 (0.7–0.8)**
Caregiver relation to child (both Caregiver 1 and 2 were identified as biological or adoptive parents) [g]	5,324	73.3 (70.7–75.7)	77,782	82.7 (82.1–83.3)	**0.9 (0.9–0.9)**

	Children with any primary caregiver with poor mental health n=6,776		Children with all primary caregivers with good mental health n=90,952		Prevalence ratios [a] (unadjusted)
	n	% (95% CI)	n	% (95% CI)	PR (95% CI)
Caregiver physical health (Any caregiver with poor physical health)	3,468	54.3 (51.6–57.0)	5,080	6.9 (6.5–74)	**7.8 (7.2–8.5)**
Highest level of education achieved by either caregiver (Any caregiver has an associate degree or higher)	4,070	46.9 (44.2–49.6)	66,952	60.2 (59.4–61.0)	**0.8 (0.7–0.8)**
Household Federal Poverty Level (FPL; <200% FPL) [h]	–	59.1 (56.4–61.6)	–	40.0 (39.1–40.8)	**1.5 (1.4–1.6)**

Data are from the 2016–2018 National Survey of Children's Health (NSCH). All child and Caregiver 2 (when applicable) data are reported by Caregiver 1; all data for Caregiver 1 are self-reported

All analyses are weighted to be nationally representative following the guidance from survey developers (U.S. Census Bureau, 2020)

CI confidence intervals, *PR* unadjusted prevalence ratio; PR and CI in bold are significant (i.e., CI around the PR did not contain the value of 1)

[a] Reference group for the prevalence ratios is "children with all caregivers with good mental health"

[b] *MBDDs* Mental, behavioral, or developmental disorders including anxiety problems; attention-deficit/hyperactivity disorder; autism spectrum disorder; behavioral or conduct problems; depression; developmental delay; intellectual disability; learning disability; speech or other language disorder; Tourette syndrome. For additional information, see Table 1

[c] The NSCH defines a preventive check-up as when a child visits with a doctor, nurse, or other healthcare professional to receive preventive care, such as an annual or sports physical or well-child visit

[d] *ACEs* Adverse childhood experiences; the following 8 questions were included in this derived indicator; (1) "Since this child was born, how often has it been very hard to get by on your family's income—hard to cover the basics like food or housing?"; 'To the best of your knowledge, has this child EVER experienced any of the following; (2) Lived with anyone who had a problem with alcohol or drugs?"; (3) "Parent or guardian died?"; (4) "Parent or guardian divorced or separated?"; (5) "Parent or guardian served time in jail?"; (6) "Saw or heard parents or adults slap, hit, kick, punch one another in the home?"; (7) 'Treated or judged unfairly because of his or her race or ethnic group?"; (8) "Was a victim of violence or witnessed violence in his or her neighborhood?" Due to the focus on caregiver mental health status, we excluded this question from our analysis, 'To the best of your knowledge, has this child EVER lived with anyone who was mentally ill, suicidal, or severely depressed?" For additional information, see Table 1

[e] The NSCH public use data file top-coded the maximum caregiver age as "75 [years of age] or older"; less than 1.5% (unweighted) of children in the analytical sample (n=97,728) had one or more caregivers aged ≥75 years. For caregivers aged ≥75 years, we used "75 years" as the single caregiver age or in the mean caregiver age calculation

[f] The number of caregivers per child was one, if Caregiver 1 (survey respondent) selected "There is only one primary adult caregiver for the child" to the question "How is adult 2 [Caregiver 2] related to this child?"

[g] Primary caregivers that are not biological or adoptive parents include stepparents, grandparents, foster parents, other relatives, and other nonrelative caregivers

[h] Federal poverty level was calculated by the survey developers using the number of people and total income for the family. Missing values were estimated using multiple imputation (U.S. Census Bureau, 2020); 15% of the analytical sample (unweighted) required multiple imputation to estimate values for fideral poverty level

Table 4

Primary caregiver mental health, associated child health indicators, child, caregiver, and household characteristics by caregiver sex and mental health status among children aged 0–17 years in the US, 2016–2018 National Survey of Children's Health (NSCH)

	Children with ≥1 Male Primary Caregiver [a,b]			Children with ≥1 Female Primary Caregiver [a,c]		
	Any Male Caregiver with Poor Mental Health n=2,859	All Male Caregivers with Good Mental Health n=81,433	Prevalence Ratios [d] (unadjusted)	Any Female Caregiver with Poor Mental Health n=4,652	All Female Caregivers with Good Mental Health n=90,413	Prevalence Ratios [e] (unadjusted)
	% (95% CI)	% (95% CI)	PR (95% CI)	% (95% CI)	% (95% CI)	PR (95% CI)
Overall weighted prevalence	2.8 (2.6–3.1)	79.6 (79.0–80.2)	–	5.1 (4.8–5.5)	92.0 (91.6–92.4)	–
Child Health Indicators						
Child general health (poor)	5.0 (3.1–7.9)	1.0 (0.9–1.2)	**4.9 (3.0–8.0)**	6.0 (4.5–8.0)	1.3 (1.1–1.5)	**4.7 (3.3–6.5)**
Child history of diagnosed MBDDs (≥1 MBDDs) [f]	38.4 (34.3–42.6)	20.0 (19.4–20.6)	**1.9 (1.7–2.1)**	44.1 (41.0–47.2)	21.3 (20.8–21.9)	**2.1 (1.9–2.2)**
Child and Healthcare Characteristics						
Child sex (male)	49.6 (45.4–53.8)	51.4 (50.6–52.2)	1.0 (0.9–1.1)	51.7 (48.5–54.9)	50.8 (50.1–51.6)	1.0 (1.0–1.1)
Child age (0–11 years)	63.1 (59.2–66.9)	67.4 (66.7–68.1)	**0.9 (0.9–1.0)**	64.2 (61.2–67.2)	66.7 (66.0–67.4)	1.0 (0.9–1.0)
Child race/ethnicity						
Non-Hispanic White	52.9 (48.6–57.2)	56.0 (55.2–56.8)	0.9 (0.9–1.0)	48.9 (45.8–52.1)	52.4 (51.6–53.1)	**0.9 (0.9–1.0)**
Non-Hispanic Black	10.0 (7.6–13.0)	8.7 (8.2–9.2)	1.2 (0.9–1.5)	18.4 (15.6–21.6)	12.2 (11.7–12.8)	**1.5 (1.3–1.8)**
Hispanic	23.3 (18.9–28.4)	24.2 (23.3–25.1)	1.0 (0.8–1.2)	21.5 (18.6–24.7)	24.7 (23.9–25.5)	0.9 (0.8–1.0)
Non-Hispanic another race or ethnicity	13.8 (11.2–16.9)	11.1 (10.7–11.6)	**1.2 (1.0–1.5)**	11.2 (9.5–13.1)	10.7 (10.3–11.1)	1.0 (0.9–1.2)
Child health insurance status (currently insured)	92.9 (90.6–94.7)	94.1 (93.6–94.6)	1.0 (1.0–1.0)	93.1 (91.5–94.4)	94.1 (93.6–94.5)	1.0 (1.0–1.0)
Child had preventive check-up in past year (yes) [g]	75.9 (71.1–80.1)	80.0 (79.2–80.7)	0.9 (0.9–1.0)	78.7 (76.0–81.2)	79.4 (78.7–80 .0)	1.0 (1.0–1.0)
Child history of ACEs (≥2 ACEs) [h]	41.7 (37.5–46.0)	11.6 (11.1–12.1)	**3.6 (3.3–4.0)**	47.9 (44.8–51.1)	15.8 (15.3–16.4)	**3.0 (2.8–3.3)**
Primary Caregiver and Household Characteristics						
Caregiver sex (both male and female caregiver for child)	94.5 (92.8–95.9)	96.7 (96.3–96.9)	**1.0 (1.0–1.0)**	63.4 (60.2–66.4)	83.0 (82.4–83.5)	**0.8 (0.7–0.8)**
Caregiver age (mean age, 18–40 years)	46.4 (42.2–50.6)	49.2 (48.4–50.0)	0.9 (0.9–1.0)	52.2 (49.0–55.3)	48.9 (48.2–49.7)	**1.1 (1.0–1.1)**

	Children with ≥1 Male Primary Caregiver [a,b]			Children with ≥1 Female Primary Caregiver [a,c]		
	Any Male Caregiver with Poor Mental Health n=2,859	All Male Caregivers with Good Mental Health n=81,433	Prevalence Ratios [d] (unadjusted)	Any Female Caregiver with Poor Mental Health n=4,652	All Female Caregivers with Good Mental Health n=90,413	Prevalence Ratios [e] (unadjusted)
	% (95% CI)	% (95% CI)	PR (95% CI)	% (95% CI)	% (95% CI)	PR (95% CI)
Number of caregivers (single caregiver for child) [i]	3.4 (2.5–4.7)	2.4 (2.2–2.7)	**1.4 (1.0–2.0)**	23.1 (20.5–26.0)	11.8 (11.3–12.2)	**2.0 (1.7–2.2)**
Caregiver marital status (both Caregiver 1 and 2 were identified as married)	69.5 (65.6–73.1)	85.4 (84.7–86.0)	**0.8 (0.8–0.9)**	48.2 (45.0–51.4)	74.9 (74.2–75.6)	**0.6 (0.6–0.7)**
Caregiver relation to child (both Caregiver 1 and 2 were identified as biological or adoptive parents) [j]	77.2 (73.3–80.6)	85.3 (84.7–85.9)	**0.9 (0.9–0.9)**	71.8 (68.6–74.7)	82.7 (82.1–83.3)	**0.9 (0.8–0.9)**
Caregiver physical health (Any caregiver with poor physical health)	58.6 (54.4–62.7)	7.3 (0.9–7.8)	**8.0 (7.3–8.8)**	55.3 (52.1–58.4)	7.9 (7.5–8.4)	**7.0 (6.4–7.6)**
Highest level of education achieved by either caregiver (Any caregiver has an associate degree or higher)	53.8 (49.5–58.1)	64.0 (63.2–64.9)	**0.8 (0.8–0.9)**	42.5 (39.5–45.6)	60.7 (59.9–61.5)	**0.7 (0.7–0.8)**
Household Federal Poverty Level (FPL; <200% FPL) [k]	55.7 (51.6–59.6)	34.9 (33.9–35.8)	**1.6 (1.5–1.7)**	61.6 (58.4–64.6)	40.2 (39.3–41.0)	**1.5 (1.5–1.6)**

Data are from the 2016–2018 National Survey of Children's Health (NSCH). All child and Caregiver 2 (when applicable) data are reported by Caregiver 1; all data for Caregiver 1 are self-reported

All analyses are weighted to be nationally representative following the guidance from survey developers (US Census Bureau, 2020)

CI confidence intervals, *PR* unadjusted prevalence ratio; PR and CI in bold are significant (i.e., CI around the PR did not contain the value of 1)

[a] Two independent variables, one for male caregiver mental health status and one for female caregiver mental health status were created. For each sex-specific (i.e., male or female) caregiver mental health status variables, we categorized children into three groups; (1) children with any male/female caregiver with poor mental health; (2) children with all male/female caregivers with good mental health; and (3) children without a male/female caregiver. All three levels of each independent variable are included in the model calculations for the male and female caregiver mental health status estimates. Any estimates of children without a male caregiver (i.e., single female caregiver or two female caregivers, *n*=13,436) or without a female caregiver (i.e., single male caregiver or two male caregivers, *n*=2,663) are outside of the scope of this analysis and are not shown. The full analytical sample of children (*n*=97,728) is included in each caregiver mental health status variable

[b] Among all children in our analytical sample, 0.7% had any male caregiver with poor mental health via self-report, 2.1 % had at least one male caregiver with poor mental health via proxy report (i.e., reported by another primary caregiver for the child), 79.6% of children had all male caregivers with good mental health according to self or proxy report, and 17.6% of children did not have a male caregiver

[c] Among all children in our analytical sample, 4.0% had a female caregiver with poor mental health via self-report, 1.2% had at least one female caregiver with poor mental health via proxy report (i.e., reported by another primary caregiver for the child), 92.0% of children had all female caregivers with good mental health according to self or proxy report, and 2.8% of children did not have a female caregiver

[d] Reference group for the prevalence ratios is "children with all male caregivers with good mental health"

[e] Reference group for the prevalence ratios is “children with all female caregivers with good mental health”

[f] *MBDDs* Mental, behavioral, or developmental disorders including anxiety problems; attention-deficit/hyperactivity disorder; autism spectrum disorder; behavioral or conduct problems; depression; developmental delay; intellectual disability; learning disability; speech or other language disorder; Tourette syndrome. For additional information, see Table 1

[g] The NSCH defines a preventive check-up as when a child visits with a doctor, nurse, or other healthcare professional to receive preventive care, such as an annual or sports physical or well-child visit

[h] *ACEs* Adverse childhood experiences; the following 8 questions were included in this derived indicator; (1) “Since this child was born, how often has it been very hard to get by on your family’s income—hard to cover the basics like food or housing?”; ‘To the best of your knowledge, has this child EVER experienced any of the following; (2) Lived with anyone who had a problem with alcohol or drugs?”; (3) “Parent or guardian died?”; (4) “Parent or guardian divorced or separated?”; (5) “Parent or guardian served time in jail?”; (6) “Saw or heard parents or adults slap, hit, kick, punch one another in the home?”; (7) ‘Treated or judged unfairly because of his or her race or ethnic group?”; (8) “Was a victim of violence or witnessed violence in his or her neighborhood?” Due to the focus on caregiver mental health status, we excluded this question from our analysis, ‘To the best of your knowledge, has this child EVER lived with anyone who was mentally ill, suicidal, or severely depressed?” For additional information, see Table 1

[i] The number of caregivers per child was one, if Caregiver 1 (survey respondent) selected ‘There is only one primary adult caregiver for the child” to the question “How is Adult 2 [Caregiver 2] related to this child?”

[j] Primary caregivers that are not biological or adoptive parents include stepparents, grandparents, foster parents, other relatives, and other nonrelative caregivers

[k] Federal poverty level was calculated by the survey developers using the number of people and total income for the family. Missing values were estimated using multiple imputation (US Census Bureau, 2020); 15% of the children in our analytical sample (unweighted) required multiple imputation to estimate values for federal poverty level

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Table 5

Primary caregiver mental health and associated child health indicators; unadjusted and adjusted prevalence ratios comparing caregiver mental health status by caregiver sex among children aged 0–17 years in the United States, 2016–2018 National Survey of Children's Health (NSCH)

	Children with ≥1 Male Primary Caregiver[a] Child with any male caregiver with poor mental health compared to children with all male caregivers with good mental health			Children with ≥1 Female Primary Caregiver[a] Child with any female caregiver with poor mental health compared to children with all female caregivers with good mental health		
	PR (95% CI)	aPR[b] (95% CI)	aPR[c] (95% CI)	PR (95% CI)	aPR[b] (95% CI)	aPR[c] (95% CI)
Child Health Indicators						
Child general health (poor)	**4.9 (3.0–8.0)**	**3.3 (2.0–5.5)**	**1.7 (1.0–2.9)**	**4.7 (3.3–6.5)**	**3.2 (2.2–4.5)**	**1.7 (1.1–2.4)**
Child history of diagnosed MBDDs (≥1 MBDDs)[d]	**1.9 (1.7–2.1)**	**1.7 (1.4–1.9)**	**1.4 (1.2–1.6)**	**2.1 (1.9–2.2)**	**1.8 (1.7–2.0)**	**1.6 (1.5–1.8)**

Data are from the 2016–2018 National Survey of Children's Health (NSCH). All child and Caregiver 2 (when applicable) data are reported by Caregiver 1; all data for Caregiver 1 are self-reported

All analyses are weighted to be nationally representative following the guidance from survey developers (US Census Bureau, 2020)

PR Unadjusted prevalence ratio; *aPR* adjusted prevalence ratio; *CI* confidence intervals; PR/aPR and CI in bold are significant (i.e., CI around the PR/aPR did not contain the value of 1)

[a] Two independent variables, one for male caregiver mental health status and one for female caregiver mental health status were created. For each sex-specific (i.e., male or female) caregiver mental health status variables, we categorized children into three groups; (1) children with any male/female caregiver with poor mental health; (2) children with all male/female caregivers with good mental health; and (3) children without a male/female caregiver. All three levels of each independent variable are included in the model calculations for the male and female caregiver mental health status estimates. Any estimates of children without a male caregiver (i.e., single female caregiver or two female caregivers) or without a female caregiver (i.e., single male caregiver or two male caregivers) are outside of the scope of this analysis and are not shown

[b] This model adjusted for the mental health status of a caregiver of another sex, when applicable. Analytical sample for child general health, *n*=97,479, and child history of diagnosed MBDDs, *n*=97,712

[c] This model adjusted for the mental health status of a caregiver of another sex, the number of caregivers, physical health status of all caregivers, and household federal poverty level. Analytical sample for child general health, *n*=96,357, and child history of diagnosed MBDDs, *n*=96,584

[d] *MBDDs* Mental, behavioral, or developmental disorders including anxiety problems; attention-deficit/hyperactivity disorder; autism spectrum disorder; behavioral or conduct problems; depression; developmental delay; intellectual disability; learning disability; speech or other language disorder; Tourette syndrome. For additional information, see Table 1