

Research Review: Grandparental care and child mental health – a systematic review and meta-analysis

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Background: The number of children residing in grandfamilies is growing worldwide, leading to more research attention on grandparental care over the past decades. Grandparental care can influence child well-being in various forms and the effects vary across contexts. In this systematic review and meta-analysis, we synthesize the evidence on the relation between grandparental care and children's mental health status. **Methods:** We identified 5,745 records from seven databases, among which 38 articles were included for review. Random effects meta-analyses were used to synthesize evidence from eligible studies. We also examined the variability across study and participant characteristics, including study design, recruitment method, child age, child gender, study region, family type, comparison group, and outcome rater. **Results:** The meta-analysis consisted of 344,860 children from the included studies, whose average age was 10.29, and of which 51.39% were female. Compared with their counterparts, children being cared for by their grandparents had worse mental health status, including more internalizing problems ($d = -0.20$, 95% CI $[-0.31, -0.09]$, $p = .001$), externalizing problems ($d = -0.11$, 95% CI $[-0.21, -0.01]$, $p = .03$), overall mental problems ($d = -0.37$, 95% CI $[-0.70, -0.04]$, $p = .03$), and poorer socioemotional well-being ($d = -0.26$, 95% CI $[-0.49, -0.03]$, $p = .03$). The effects varied by study design and child gender. **Conclusions:** The findings highlight that grandparental care is negatively associated with child mental health outcomes with trivial-to-small effect sizes. More supportive programs and interventions should be delivered to grandfamilies, especially in disadvantaged communities. **Keywords:** Mental health; socioemotional well-being; children; grandparental care; meta-analysis.

Introduction

Population aging and increasing female labor participation have led to increasing multigenerational bonds and longer “shared lives” between grandparents and grandchildren (Attar-Schwartz, Tan, Buchanan, Flouri, & Griggs, 2009; Tan, Buchanan, Flouri, Attar-Schwartz, & Griggs, 2010). The number of children residing in grandfamilies is growing worldwide (Buchanan & Rotkirch, 2018), leading to more research attention on grandparental care over the past decades (Roe & Minkler, 1998; Settles et al., 2009). Grandparents may help with childcare activities and support maternal employment, which is especially important to low-income families (Statham, 2011). With the growing phenomenon of grandparental care, family systems theory has shifted its focus from the parent-child dyad to the family as a social system (Kerr & Bowen, 1988, p. 107; Parke et al., 2006). In this system, caregiving interactions in the grandparent-grandchild subsystem influence other subsystems and co-impact child development (Hayslip, Fruhauf, & Dolbin-MacNab, 2019; Whitchurch & Constantine, 1993).

Children's mental health is a key childhood developmental indicator with lasting effects on their

life chances. Child mental health can be broadly defined as the presence or absence of internalizing and externalizing problems (Stevens & Vollebergh, 2008). Internalizing problems concern the own self (e.g., withdrawal, anxiety, depression, emotional problems), and externalizing problems occur in interactions with the social environment (e.g., hyperactivity and conduct problem) (Donolato, Cardillo, Mammarella, & Melby-Lervåg, 2022). Child socioemotional well-being is another mental health domain that indicates the absence of internalizing or externalizing problems (McAnally et al., 2021). On average, people who show better mental health status in childhood are more likely to become adaptable and functioning adults (Nowinski et al., 2021). Poor childhood mental health is linked to higher mortality rates and wider social inequalities, which are causing growing public health burdens (Besnier et al., 2019).

Child mental health often depends on the family system's functioning and well-being (Zajicek-Farber, Mayer, & Daughtery, 2012). Studies have demonstrated the centrality of parental characteristics and their impact on children's mental outcomes (Umberston & Thomeer, 2020). For example, attachment to parents, parenting styles, and relationships with parents have long been recognized as important contributing factors to child development (Steinberg

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& Morris, 2001). Nevertheless, with the growing number of children residing in extended families, child and family studies begin to move their focus beyond the nuclear family and investigate the role of grandparents in family life (e.g., Attar-Schwartz et al., 2009).

The growing evidence has shown the significant impact of grandparental care on children's developmental outcomes, but the results are mixed. For example, studies showed significant mental and general health problems among grandchildren being cared for by their grandparents, such as more externalizing problems (Griggs, Tan, Buchanan, Attar-Schwartz, & Flouri, 2010; Kelley, Whitley, & Campos, 2011; Pittman, 2007). One explanation is that compared with being raised by both biological parents, grandparental care is associated with loose monitoring and supervision, leading to more child behavioral problems (Edwards, 2009; Tenkorang & Adjei, 2015). In contrast, a Chinese study with rural children found that being primarily cared for by two grandparents did not lead to more child delinquency behaviors than conventional two-parent caretaking, and children under grandparental care performed better than single-mother caretaking (Chen & Jiang, 2019).

The relationship between grandparental care and child mental health may differ by various factors, including study characteristics such as research design (whether the study is cross-sectional or longitudinal), recruitment setting (whether the sample comes from high-risk settings), outcome rater (who report the child outcomes), and the composition of the comparison groups (whether grandfamilies are compared with both-parents' families or single-parent families). For example, a study conducted in Taiwan discovered that children in single-father families benefited the most from coresiding with their grandparents, compared with children living in both-parents families and single-mother families (Chen, 2016). In terms of outcome rater, a US study found that children in grandfamilies reported themselves to have fewer internalizing problems than did their counterparts in nongrandfamilies. However, teachers and primary caregivers reported more internalizing problems in these children compared with their counterparts in families without grandparents (Pilkauskas & Dunifon, 2016).

The effects of grandparental care may also vary by child characteristics such as their gender, age, and living area (e.g., rural vs. urban). Previous research showed that participants' age was a crucial variable when assessing child mental health outcomes, as the associations between predictors and outcomes may depend on the themes of their respective developmental stage (Lansford, 2009). For example, the associations between family characteristics and child externalizing problems were more likely to appear in middle school age and onwards (Zeratsion et al., 2015). In terms

of living areas, a Chinese study of children receiving grandparental care showed that urban children reported better mental health status than their rural counterparts (Hong & Zeng, 2022).

Additionally, regional and cultural contexts are important determinants for grandparental care. In countries characterized by individualistic cultures, grandparents are often engaged in caregiving responsibilities due to circumstances such as parental death, imprisonment, substance abuse, child maltreatment, or adolescent pregnancies (Hayslip et al., 2019). But in Asian societies characterized by collectivist and familism culture, the provision of grandparental care is considered "culturally normative and expected" (Burnette, Sun, & Sun, 2013, p. 47). In these societies, grandparents serve to assist the working middle generation and optimize the whole family's well-being (Wang, Hayslip, Sun, & Zhu, 2019).

Grandparental care can play significant roles in child development in skipped-generational households (where grandparents are the primary caregivers in the absence of parents) and multigenerational households (where grandparents live with their adult children and grandchildren, Mutchler & Baker, 2004). In skipped-generational households, the custodial grandparents serve as primary caregivers when the parents can no longer provide full-time childcare amidst family crises such as poverty, disease epidemics, and migration (Coall & Hertwig, 2010; Dolbin-MacNab & Yancura, 2018). A study found that children who were primarily cared for by single-grandparent in skipped-generational households were the most disadvantaged among all family types, because the grandparent was relatively old, did not have a spouse to share the caretaking responsibilities, and was thus physically and emotionally overwhelmed (Chan et al., 2019). In addition, noncustodial grandparents are joint or secondary caregivers who provide regular or occasional care (Kirby & Sanders, 2012). These variations in family contexts lead to different approaches and extent of grandparental care, yielding mixed outcomes across family types (Sadrudin et al., 2019).

Previous reviews and meta-analyses have investigated the influence of grandparental care on children's physical health (Pulgaron, Marchante, Agosto, Lebron, & Delamater, 2016), nutrition and obesity (An, Xiang, Xu, & Shen, 2020; Kanmiki, Fatima, & Mamun, 2022; Young, Duncanson, & Burrows, 2018), education (Anderson, Sheppard, & Monden, 2018), and resilience (Ellemdeen, 2012). Through a qualitative synthesis, a recent systematic review summarized grandparents' roles in children's health and development, highlighting aspects such as grandparental contact, behavior, and support. It also identified substantial variations in coresidence status, caregiving roles, resources invested, and child outcomes (Sadrudin et al., 2019). Moreover,

most reviews have focused on child mental problems, such as internalizing and externalizing problems (e.g., Dunifon, 2013), but rarely examined positive mental health indicators such as socio-emotional well-being. To date, there is no quantitative meta-analysis synthesizing the evidence for the relationship between grandparental care and child mental health in terms of both mental problems and well-being. It also remains unclear to what extent grandparental care is associated with child mental health outcomes.

The current study

Given the lack of synthesis of grandparental care in children's mental health and the mixed evidence in existing literature, the purpose of this meta-analysis was (1) to review the available evidence of grandparental care and children's mental health; (2) to estimate a pooled effect of grandparental care on children's mental health outcomes, including internalizing problems, externalizing problems, overall mental problems, and socioemotional well-being; and (3) to identify moderating factors in the effects of grandparental care across characteristics of the studies, participants, and contexts.

Method

The search strategy and inclusion criteria for this systematic review and meta-analysis were previously registered with the Open Science Framework (DOI: 10.17605/OSF.IO/9FZWC). The study adhered to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 guidelines (Page et al., 2021).

Search strategy

We conducted an initial search in November 2021 and a second-round search in June 2023. Seven databases were searched, including Social Sciences Citation Index in Web of Science (from 1990), Medline (from 1946), APA PsycArticles (from 1894), CINAHL (from 1961), Embase (from 1947), PubMed (from 1997), and China National Knowledge Infrastructure (from 1915). The Chinese database was included because China has the largest population of children living with grandparents (Zhang, Emery, & Dykstra, 2020).

Four sets of keywords were used in combination and adapted for each database, including (1) grandparental care (grandparent* OR grandmother OR grandfather OR extended family OR multi\$generation* OR inter\$generation* OR skipped\$generation* OR grand\$famil*), (2) children (child* OR adolescen* OR teen* OR juvenile OR boy OR girl OR youth OR infant*), (3) mental health (mental health OR internalizing OR externalizing OR anxiety OR anxious OR depressi* OR withdraw* OR emotion* OR well?being OR behav* OR conduct problem OR hyperactivity OR socio \$emotion* OR social emotion*), and (4) study design (observational stud* OR cohort stud* OR survey* OR case-control stud* OR cross-sectional stud* OR longitudinal stud*). We also hand-searched reference lists of relevant systematic reviews from Cochrane library and gray literature published by key international organizations (e.g., UNICEF). The reference lists of the studies included in this review were also hand-searched.

Inclusion and exclusion criteria

The inclusion criteria were: (1) the language of the study is English or Chinese, (2) the mean age of the participants is 18 or below, (3) the study focuses on grandparental care, (4) the study reports at least one mental health outcome for grandchildren, (5) the study includes one or more comparison groups of children with comparable backgrounds (e.g., age, gender, socioeconomic status, race) who are not cared for by their grandparents, (6) the study has information on family type (e.g., skipped-generational and multigenerational households), (7) the study is published in a peer-reviewed journal, and (8) the study has quantitative data for effect size calculation.

The exclusion criteria were: (1) the study is a duplicate of another study or has duplicate data with another study, (2) the language of the study is not English nor Chinese, (3) the study did not involve children (or mean age of the sample is above 18), (4) grandparents' role is not the main focus of the study, (5) grandchildren are in formal institutional care, (6) the study is a review, (7) the study is a research protocol, (8) the study does not report any quantitative data, (9) the study does not report any child mental health outcomes, (10) there is no comparison group of children not cared for by their grandparents (e.g., children whose primary caregivers are their parents), (11) the study does not provide sufficient data for effect size calculation, and (12) the study does not have enough information about family types.

The Covidence systematic review platform (Veritas Health Innovation, Melbourne, VIC, Australia) was used to manage and screen references. Studies were first screened by reviewing titles and abstracts, followed by a full-text review. Each screening stage involved three independent reviewers (AU1, AU2, or AU3) and each study was independently screened by two of them. The Cohen's Kappa (McHugh, 2012) showed substantial to high inter-rater reliability for title screening ($\kappa=0.89$) and full-text screening ($\kappa=0.78$). Disagreement and discrepancies were resolved through discussion among the three reviewers or by discussing with the corresponding author. For six included studies that did not report sufficient data for calculating effect sizes, we contacted study authors to request the data for this meta-analysis and received two responses. According to the definition of mental health adopted in our study, we grouped the outcomes into four categories: internalizing problems, externalizing problems, overall mental problems (e.g., "total difficulties" in Strength and Difficulties Questionnaire), and socioemotional well-being. Table S1 describes the detailed outcome categories and measurements.

Data extraction

Data were extracted by two of the three authors (Y.W., X.C., or A.W.) independently. We extracted data on study characteristics, participant characteristics, main research questions and results, and key variables using a predesigned data extraction form (see Table S2).

Quality assessment

Two authors completed quality assessment independently. Any disagreements between the raters were resolved by discussion. We referred to Fellmeth et al. (2018)'s 9-item risk of bias assessment, using an adapted version of the Newcastle Ottawa Scale combined with the National Institute for Clinical Excellence Quality Appraisal (see Table S3). Examples of the domains include having given a clear definition of grandparental care, addressed selection bias, and reported outcome measures' reliability. Studies with a high or unclear risk of bias

across five or more domains were defined as being at high risk of bias.

Data processing and analyses

All statistical analyses were performed using R Statistical Software (v4.2.2; R Core Team, 2022) with the {meta} R package (Balduzzi, Rücker, & Schwarzer, 2019), using a random effects model. For studies that reported mean and standard deviations, we estimated standardized mean differences (SMDs, or Cohen's d) with 95% confidential interval using. Correlation coefficients (r) and Odds Ratios (OR) reported in the included studies were converted to Cohen's d according to the following formulas (Borenstein, Hedges, Higgins, & Rothstein, 2009, p. 47):

$$d = \frac{2r}{\sqrt{1-r^2}} \quad (1)$$

$$d = \frac{\sqrt{3} \cdot \log(\text{OR})}{\pi} \quad (2)$$

We adopted the cutoff values of $d = 0.2, 0.5,$ and 0.8 as small, medium, and large effect sizes, respectively (Cohen, 1988). Positive effect sizes indicate that grandparental care is beneficial to child mental health, that is, children with grandparental care had better mental health and fewer mental problems compared with children without grandparental care.

For studies with multiple outcomes in the same mental health category, we computed the mean of the outcomes for each study and used this synthetic value as the unit of analysis (Borenstein et al., 2009, p. 227). For studies with multiple comparison groups, we combined the outcomes across comparison groups using a weighted mean of the effects (Borenstein et al., 2009, p. 240), and coded the variable "predominant comparison group" based on the number of children in each subgroup. For example, we defined the predominant comparison group as "single-parent family" when children in single-parent families represented more than 50% of the children without grandparental care. In most cases, the predominant comparison group was children being cared for by their parents.

We conducted a series of moderator analyses to further explore the variation in effect sizes across studies. The moderators included study design (i.e., cross-sectional or longitudinal), recruitment setting (i.e., community-based, school-based, or from juvenile justice system), participants' age (i.e., early childhood, middle childhood, adolescence, or mixed age range), gender (i.e., the majority of the participants were male or female), region of the study (i.e., the United States, China, or European countries including the United Kingdom), cultural context of the study country (i.e., whether the country's mainstream culture is characterized by individualistic or collectivistic values, with classification suggested by Fatehi, Priestley, & Taasobshirazi, 2020), living area (i.e., urban or rural areas), family type (i.e., multigeneration or skipped-generation families), predominant comparison group (i.e., children without grandparental care in two-parent families or single-parent families), and outcome rater (i.e., child self-report, parent/caregiver, teacher, professional, or multiple raters). We also assessed heterogeneity among the included studies using the prediction interval, which is an index of dispersion that indicates how widely the true effect size varies (Borenstein, 2019).

Publication bias was assessed by funnel plot (Borenstein et al., 2009), Egger's linear regression test (Egger, Smith, Schneider, & Minder, 1997), and the rank correlation test (Begg & Mazumdar, 1994). We also conducted sensitivity analyses by removing outliers and high risk-of-bias studies

as well as using an alternative estimation model (i.e., fixed-effect model).

Results

Study selection

A total of 5,745 studies were yielded from the database search, and our hand search identified 25 additional records. After removing 785 duplicates, 4,985 articles were screened by title and abstract. The full texts of 192 studies were then assessed for eligibility, and 38 studies were included for meta-analyses. Figure 1 describes the identification and screening process based on PRISMA guidelines.

Study characteristics

Table 1 presents the study characteristics. The reviewed studies included 27 cross-sectional studies and 11 longitudinal studies published from 1977 to 2023. Most of the research was conducted in China ($k = 19$), followed by the United States ($k = 14$), European countries and the United Kingdom ($k = 3$), South Africa ($k = 1$), and South Korea ($k = 1$). The review included 344,860 children; final sample size ranged from 60 to 99,890 across studies. Most studies recruited participants from schools ($k = 26$), followed by community settings ($k = 10$) and one from the juvenile justice system. Among 27 studies that reported child gender, there was a generally balanced gender representation, with 51.39% female participants on average. Children's mean age in the included studies was 10.29. Fifteen studies were conducted in urban areas, 11 in rural areas, and 12 did not report their areas.

In terms of participant characteristics, multigenerational household was the most prevalent family type ($k = 21$), while the other 17 studies focused on skipped-generational households. Among the 16 studies that reported the comparison group's parental information, 14 studies mainly compared grandfamilies with two-parent families, while only two studies mainly compared with single-parent families. The included studies examined various dimensions of mental health. Most of the studies focused on internalizing problems ($k = 18$), followed by externalizing problems ($k = 14$), overall mental problems ($k = 10$), and socioemotional well-being ($k = 7$). Eleven studies reported more than one dimension of outcomes. For the outcomes, most of the studies utilized child self-report outcomes ($k = 17$), followed by parent or caregiver (mostly grandparents) report ($k = 11$), mental health professional report ($k = 3$), and teacher report ($k = 3$). Three studies employed multiple raters to measure child mental health outcomes, and one study did not report the outcome raters.

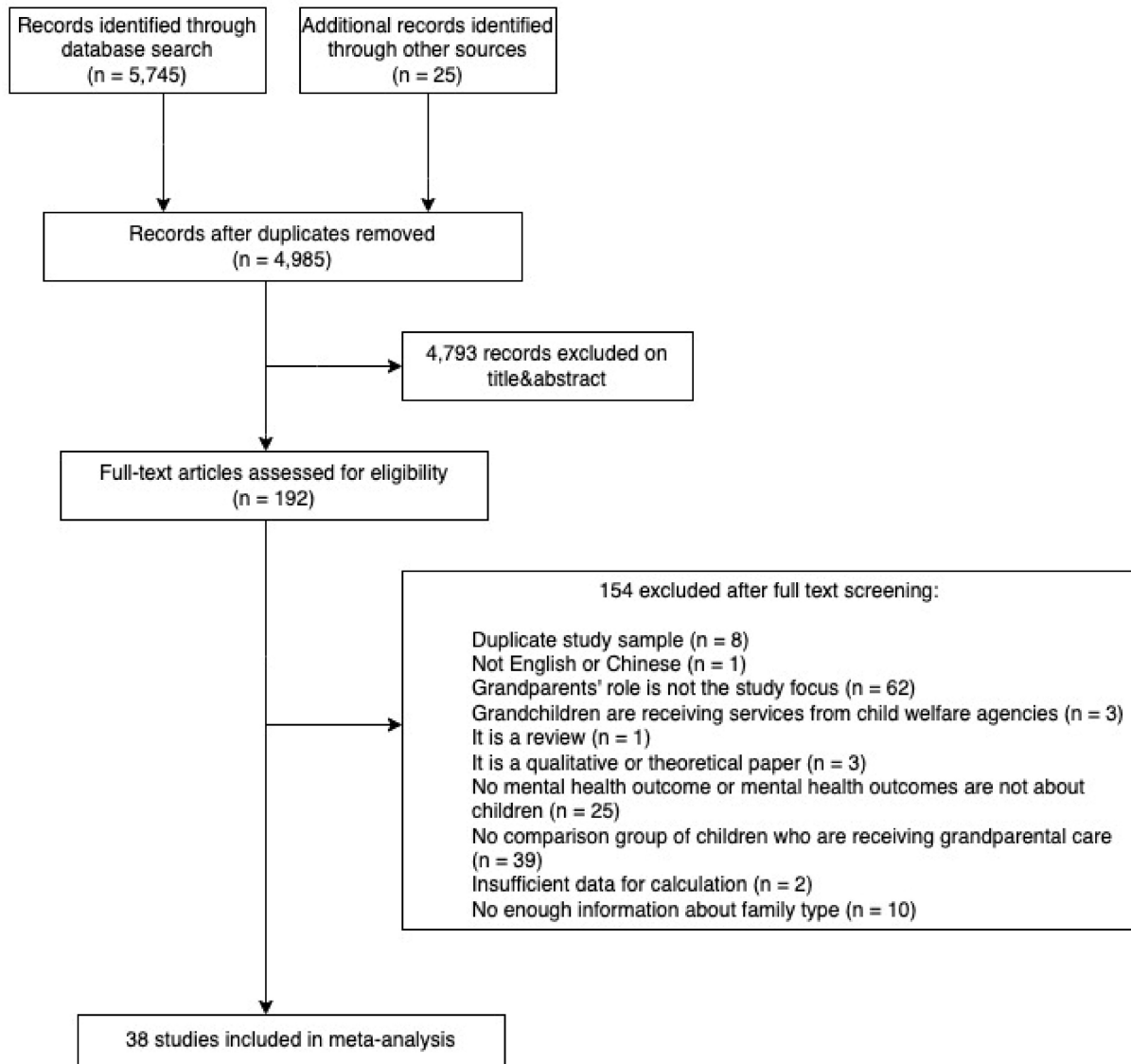


Figure 1 Screening process for eligible studies

Risk of bias

Three assessors worked in pairs and rated each study as low, high, or unclear risk of bias for each of the domains, demonstrating high inter-rater agreement (Cohen's $\kappa=0.89$). Any disagreements were resolved by consensus among the three authors. Study quality varied by the domains assessed. Seven studies (18.42%) had high or unclear risk of bias across five or more domains. Figure 2 shows the quality assessment results.

Meta-analyses

Our main meta-analysis showed that compared with children without grandparental care, children who were cared for by their grandparents had worse mental health status, including more internalizing problems ($d=-0.20$, 95% CI $[-0.31, -0.09]$, $p=.001$), more externalizing problems ($d=-0.11$,

95% CI $[-0.21, -0.01]$, $p=.03$), more overall mental problems ($d=-0.37$, 95% CI $[-0.70, -0.04]$, $p=.03$), and poorer socioemotional well-being ($d=-0.26$, 95% CI $[-0.49, -0.03]$, $p=.03$). Figure 3 shows the results of meta-analyses by the four domains of mental health.

We used prediction intervals to capture the heterogeneity of the included studies (Borenstein, 2019). The prediction intervals present the heterogeneity on the same scale as the original outcomes, in contrast to τ , τ^2 or I^2 (IntHout, Ioannidis, Rovers, & Goeman, 2016). A 95% prediction interval provides an estimate of where the true effects are to be expected for 95% of similar studies that might be conducted in the field (Higgins, Thompson, & Spiegelhalter, 2009). Table 2 shows the values of Q , τ^2 , I^2 , 95% CI of the SMD, and 95% prediction intervals for the four outcome domains. I^2 for all the four outcome domains ranged from 95% to 97%, indicating that 95% to 97% of the observed

Table 1 Study characteristics

Authors (Year)	Study design	Recruit setting	Region	N	Age	% of girl	Family type	Area	Grand-parent info
Bramlett and Blumberg (2007)	CS	Community	United States	99,890	Middle childhood	51.1	Multi-G	NR	NR
Campbell, Hu, and Oberle (2006)	CS	Juvenile justice	United States	66	Adolescence	69.7	Skipped-G	Urban	NR
Chen and Jiang (2019)	CS	School	China	599	Adolescence	51	Skipped-G	Rural	NR
Chen and Sun (2020)	CS	School	China	1,077	Adolescence	NR	Skipped-G	NR	NR
Deng et al. (2017)	CS	School	China	1,431	Middle childhood	NR	Skipped-G	Rural	NR
Edwards (2009)	CS	School	United States	108	Middle childhood	44.4	Skipped-G	Urban	NR
Fan (2011)	CS	School	China	1,039	Mixed age range	49.1	Skipped-G	Rural	NR
Gao (2009)	CS	School	China	1,379	Mixed age range	NR	Skipped-G	Rural	NR
Goulette, Evans, and King (2016)	L	School	United States	7,844	Adolescence	51	Skipped-G	NR	Grand-mothers only
Hamilton (2005)	L	School	United States	17,105	Adolescence	49	Multi-G	NR	88% grand-mothers
Han and Guo (2016)	CS	School	China	618	Adolescence	48.5	Multi-G	Rural	NR
Han, Whetung, and Mao (2020)	L	School	China	1,763	Middle childhood	47.5	Multi-G	Urban	Majority: both grand-parents
He and Wang (2021) Children do not live with grandparents	L Overall	Community mental problems	United Child	Mental	Kingdom problems: children in three-generation		4,969		Adolescence households > children never in three-generation households
Hong and Zeng (2022)	CS	School	China	8,481	Adolescence	50.8	Skipped-G	Rural	69.8% paternal
Hu and Guo (2018)	CS	Community	China	1,391	Middle childhood	47.5	Skipped-G	Rural	NR
Hu et al. (2021)	CS	School	China	499	Early childhood	48.9	Multi-G	Urban	NR
Hu, You, and Chen (2022)	CS	School	China	415	Early childhood	50.1	Multi-G	Urban	NR
Huang et al. (2023)	CS	School	China	4,576	Adolescence	49.2	Multi-G	Urban	NR
Hwang and St James-Roberts (1998)	L	School	Korea	417	Mixed age range	49	Multi-G	NR	NR
Jiang, Cao, Cao, and Fan (2021)	CS	School	China	173	Early childhood	53.8	Multi-G	Urban	NR
Ju and Zhang (2022)	CS	School	China	380	Middle childhood	NR	Multi-G	Rural	NR

Comparison group	Outcome category	Outcome rater	Key mental health findings
Family structure type: two parent (61.9%)	Overall mental problems	Caregiver	Children in grandparent-only families had poorest mental health among all types of family structure
Children cared by biological parent(s)	Overall mental problems	Professional	Mental health problems: grandparent-cared children > their counterparts
Children cared by both parents (62%), father only (4%), mother only (19%)	Externalizing problems	Child	Delinquent behavior: single-parent cared children > grandparental care > both parents care
Children cared by biological parent(s)	Overall mental problems	Child	Mental problems: grandparental care children > parental care children
Children with single parent caring (34%), other adult caring (3%), and parents caring (39%)	Internalizing problems	Child	Anxiety scale: mixed results in each domain
Children cared by biological parent(s)	Overall mental problems	Teacher	Mental health problems: custodial grandchildren > parent-cared children
Children with single mother caring (28%) and parents caring (49%)	Internalizing problems	Child	Depression: grandparent-cared children > single-mother and both parents care
Children cared by single parent (37%), other adult (6%), sibling (7%)	Internalizing problems	Child	Mental problems: children of other adult care > grandparental care > single-mother and sibling care
Children cared by biological mother (95%) and other females (3%)	Externalizing problems	Child	Caregiver type was not significantly related to delinquent behavior
Children do not live with grandparents	Internalizing problems, externalizing problems	Child	Living with grandparents was associated with fewer delinquent behaviors and depressive symptoms among Blacks
Children cared by biological parent(s)	Internalizing problems	Child	Anxiety: skipped-G care children > parent care and joint parent–grandparent care
Children do not live with grandparents	Internalizing problems, externalizing problems	Caregiver and teacher	Internalizing and externalizing problems: children living with grandparents > children without coliving grandparents
NR	Multi-G	NR	NR
Children cared by biological parent(s)	Internalizing problems	Child	Mental health problems: grandparental care children > parental care children
Childcare types: other than grandparental care	Externalizing problems	Child	No significant correlation between childcare arrangements and the number and types of behavioral problems
Children living with parents (44%), single parent (14%), and stepparents (6%)	Internalizing problems	Caregiver	Anxiety: children from skipped-G families > children in other family structures
Children cared by biological parent(s)	Externalizing problems	Caregiver	Behavioral problems: joint care children > grandparental care > parental care
Children living with parents in nuclear families	Internalizing problems	Child	Internalizing problems: living in parent–child households > living in multigenerational households
Children living with parents in nuclear families	Overall mental problems	Teacher	Internalizing problems and externalizing problems: children in parent–child households > multigenerational households
Children cared by biological parent(s)	Socioemotional well-being	Professional	Prosocial behavior: parental care children > grandparent–parent joint care
Children cared by biological parent(s)	Socioemotional well-being	Child	Social development: children in three-generational families and in parental care better than children in skipped-G families

Table 1 (Continued)

Authors (Year)	Study design	Recruit setting	Region	N	Age	% of girl	Family type	Area	Grand-parent info
Kellam (1977)	L	Community	United States	1,387	Early childhood	NR	Multi-G	NR	NR
Levetan and Wild (2016)	CS	School	South Africa	384	Adolescence	58.3	Multi-G	NR	Maternal only
Li, Hiilamo, Zhu, and Lin (2022)	CS	Community	China	5,173	Mixed age range	48	Skipped-G	Rural	NR
Liu et al. (2012)	CS	School	China	440	Adolescence	49	Skipped-G	Rural	NR
Masfety et al. (2019)	CS	School	Europe	3,692	Middle childhood	49	Multi-G	Rural	92.3% grand-mothers
Mollborn, Fomby, and Dennis (2011)	L	School	United States	8,450	Early childhood	49	Multi-G	NR	NR
Musil et al. (2018)	CS	Community	United States	157	Adolescence	59	Skipped-G	Urban	Grand-mothers only
Pilkauskas (2014)	L	School	United States	6,550	Early childhood	49	Multi-G	Urban	Maternal only
Pilkauskas and Dunifon (2016)	L	NR	US	3,182	Middle childhood	NR	Skipped-G	Urban	62% grand-mothers, 74% maternal
Pittman and Boswell (2008)	CS	Community	United States	2,162	Middle childhood	48	Multi-G	Urban	Grand-mothers only
Rapoport, Muthiah, Keim, and Adesman (2020)	L	Community	United States	80,646	Mixed age range	67.3	Skipped-G	NR	NR
Smith and Palmieri (2007)	CS	Community	United States	9,878	Middle childhood	53.3	Skipped-G	Urban	Grand-mothers only
Sonuga-Barke and Mistry (2000)	CS	School	United Kingdom	86	Middle childhood	NR	Multi-G	Urban	NR
Zhao et al. (2019)	CS	School	China	60	Early childhood	47	Multi-G	Urban	NR
Zhao et al. (2020)	CS	School	China	450	Early childhood	NR	Multi-G	Urban	NR
Zhu (2015)	CS	School	China	385	Early childhood	NR	Multi-G	NR	NR
Ziol-Guest and Dunifon (2014)	L	Community	United States	67,558	Mixed age range	NR	Skipped-G	NR	Grand-mothers only

CS, cross-sectional; L, longitudinal; multi-G, multigeneration; NR, not reported, skipped-G, skipped-generation.

Comparison group	Outcome category	Outcome rater	Key mental health findings
Two-parent family (40%), single mother family (37%), others (17%)	Socioemotional well-being	Professional	Mental health: joint mother–grandmother families were nearly as effective as mother–father families
Children living with parents in nuclear families	Overall mental problems, socioemotional well-being	Child	Children in 3-generation and 2-generation households showed similar levels of mental health
Children cared by biological parent(s)	Internalizing problems	Child	Positive association between grandparental care and child depression for children aged below 12
Two-parent care (53%), single-parent care (21%), other adult care (17%)	Internalizing problems	Child	Anxiety: grandparental care children > other types of care
Children do not live with grandparents (64% two parents, 9% single parent)	Overall mental problems	Teacher, caregiver	The presence of a grandparent was associated with an increased risk for child mental health problems
Children do not live with grandparents (67% married parents, 14% cohabiting, 19% single parent)	Externalizing problems	Caregiver	Externalizing problems: children from grandparent-only families > children from other family structures
Children cared by biological parent(s)	Internalizing problems	Child	Depression: children raised by grandparents > children in multigenerational families
Children do not live with grandparents	Internalizing problems, externalizing problems, socioemotional competencies	Caregiver	Multigenerational coresidence was associated with more externalizing behavior for White and American Indian/Alaskan Native children but less externalizing behavior for Hispanic and Black children
Children do not live with grandparents (live with mothers)	Internalizing problems, externalizing problems	Caregiver, teacher, child	Internalizing and externalizing problems: children living with their grandparents > children without colive grandparents
Children do not live with grandparents	Internalizing problems, externalizing problems, socioemotional well-being	Caregiver	Young adolescents with a custodial grandmother had more externalizing problems but fewer depressive symptoms
Primary caregiver: parents	Externalizing problems	Caregiver	Preschool and school-age children in grandparent-headed households were more likely to have ADHD
A normative sample of children	Overall mental problems, socioemotional well-being	Caregiver	Total difficulties: custodial grandchildren > normative sample; prosocial behaviors: custodial grandchildren < normative sample
Children living with parents in nuclear families	Externalizing problems	Teacher	Problem behaviors: children in nuclear family > children living with grandparents
Children cared by biological parent(s)	Internalizing problems, externalizing problems	Caregiver	Internalizing and externalizing problems: parent–child families and skipped-G families > coparenting families
Children cared by biological parent(s)	Internalizing problems, externalizing problems	Caregiver	Internalizing and externalizing problems: grandparental care children > parental care children
Children cared by biologic parent(s)	Overall mental problems	NR	Mental health problems: grandparental care children > parental care children
Children cared by biological parents (61.7%)	Internalizing problems	Caregiver	Internalizing problems: children with custodial grandmother > children with both parents

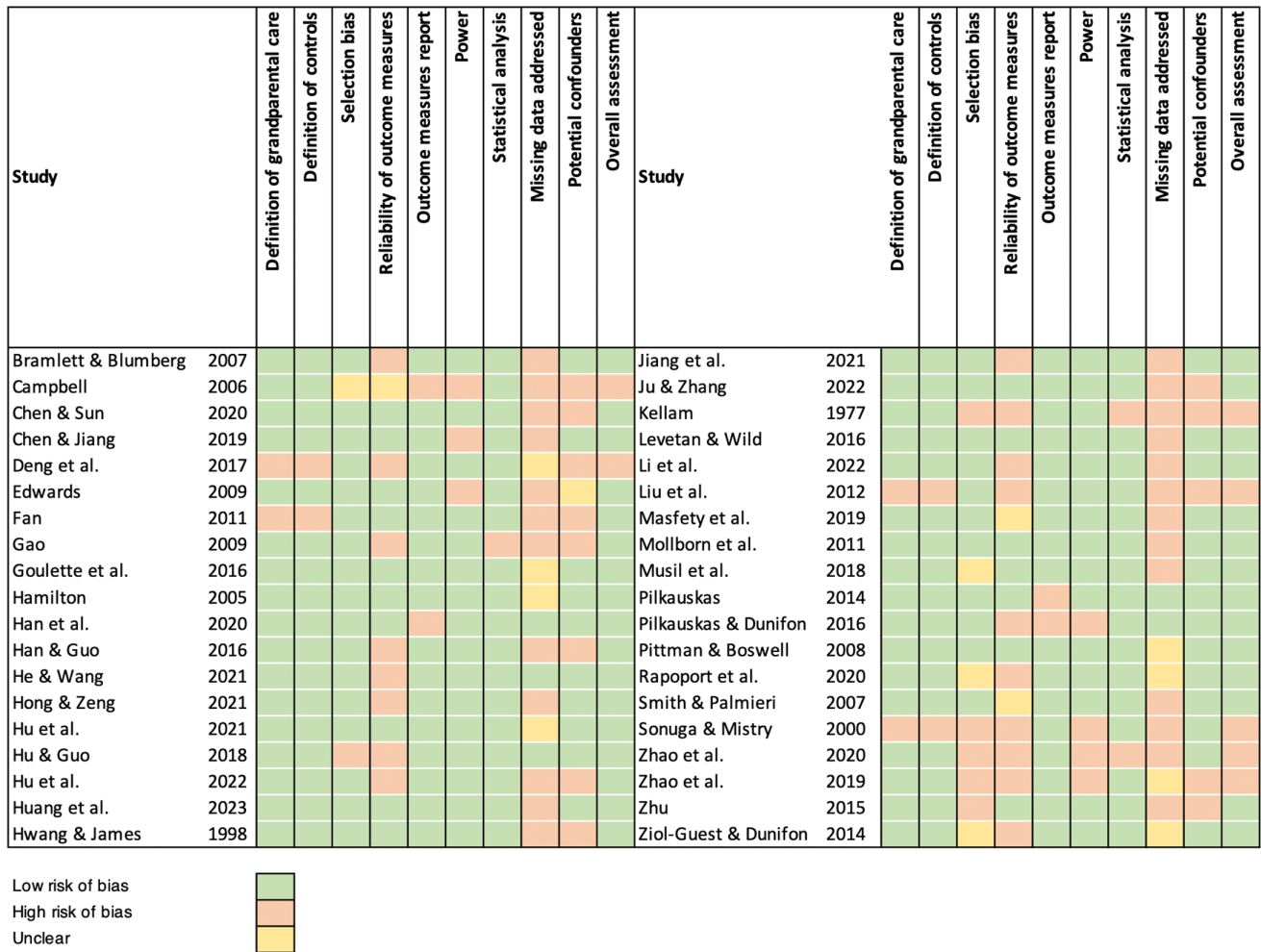


Figure 2 Risk of bias analysis

variance across studies reflected variations in true effects rather than sampling error. The 95% prediction intervals suggest the true effect sizes in 95% of all comparable populations fall in these intervals. The wide intervals suggest that the association between grandparental care and child mental health varied across populations.

Table 3 presents the univariate moderator analyses of the combined effect sizes on average mental health outcomes in each study. Two moderators contributed significantly to effect size variance: study design ($Q_b = 4.97, p = .03$) and child gender ($Q_b = 5.96, p = .02$). Studies with cross-sectional design showed larger negative effects of grandparental care ($k = 27, d = -0.29, 95\% \text{ CI } [-0.41, -0.18]$) than studies with longitudinal design ($k = 11, d = -0.08, 95\% \text{ CI } [-0.25, 0.09]$). In terms of participants' gender, studies where more than 50% of the participants were girls ($d = -0.36, 95\% \text{ CI } [-0.53, -0.19]$) showed worse mental health than studies with predominantly boys ($d = -0.10, 95\% \text{ CI } [-0.25, 0.04]$). The effects of grandparental care did not vary significantly by other moderators, such as recruitment setting, child age group, study region, cultural context,

living area, family type, predominant comparison group, and outcome rater.

Sensitivity analyses

We performed three types of sensitivity analyses to examine the robustness of our results. First, we calculated pooled effect sizes and conducted moderator analyses without one outlier (Zhao, Lyu, & Jin, 2019), in which the mean effect size fell below or above three standard deviations from the average; see Figure S1, Table S4). Second, we calculated pooled effect sizes and conducted moderator analyses without seven studies that were rated as high risk-of-bias (see Figure S2, Table S5). Finally, we ran fixed-effect models for the main effect analyses (see Figure S3). In all the sensitivity analyses, the estimates and significance levels were overall consistent with our main results.

Publication bias

We used funnel plot visual inspection, Egger's test, and the rank correlation test to identify any potential publication bias. Figure 4 shows the funnel plot for

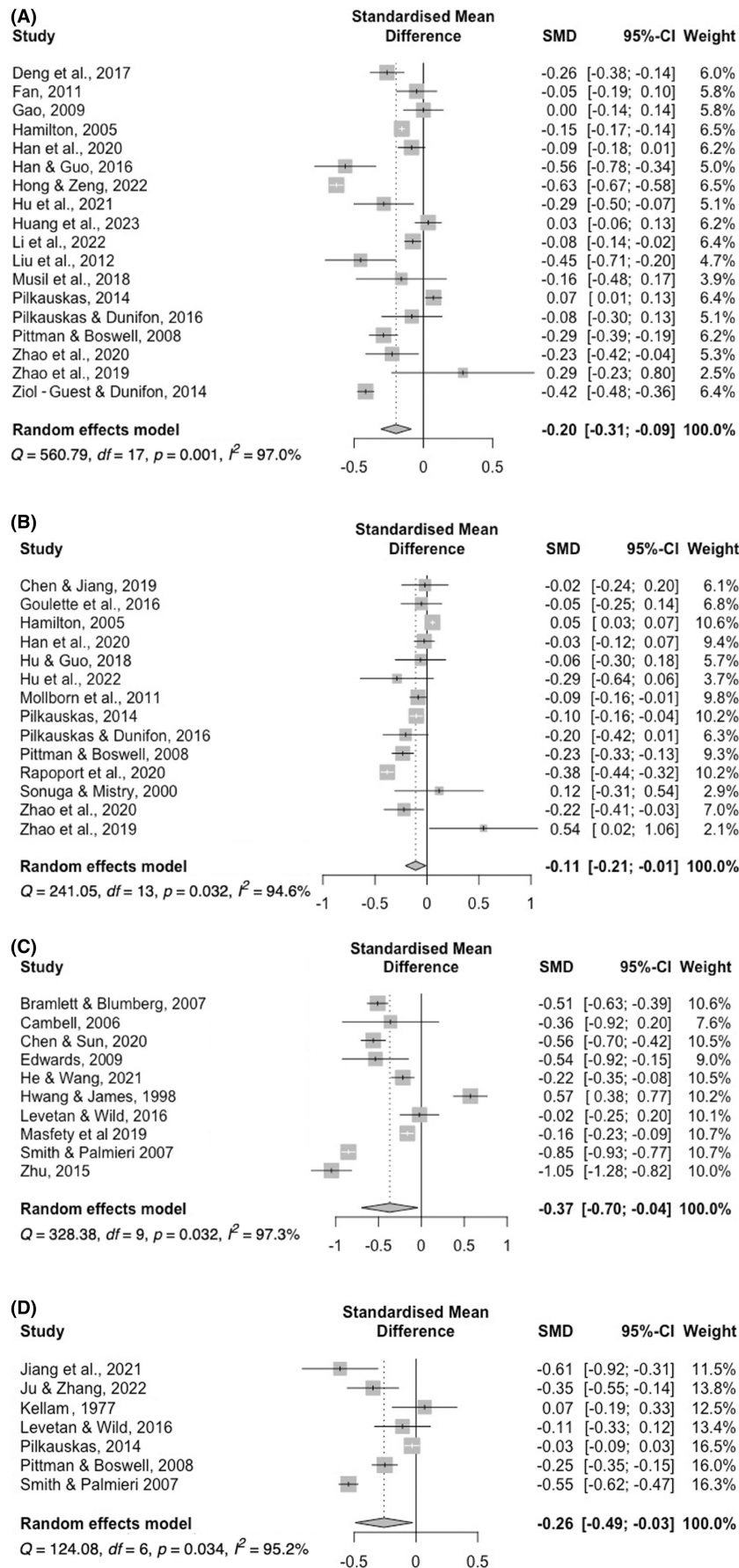


Figure 3 Meta-analyses results. (a) Meta-analyses results: Internalizing problems (Random effects model, k = 18). (b) Meta-analyses results: Externalizing problems (Random effects model, k = 14). (c) Meta-analyses results: Overall mental problems (Random effects model, k = 10). (d) Meta-analyses results: Socioemotional well-being (Random effects model, k = 7)

Table 2 Heterogeneity

Parameters	Internalizing problems (<i>k</i> = 18)	Externalizing problems (<i>k</i> = 14)	Overall mental problems (<i>k</i> = 10)	Socioemotional well-being (<i>k</i> = 7)
<i>Q</i>	560.79	241.05	328.38	124.08
τ^2	0.04	0.04	0.20	0.05
<i>I</i> ²	97.0%	94.6%	97.3%	95.2%
<i>df</i>	17	13	9	6
95% CI of SMD	[-0.31, -0.09]	[-0.21, -0.01]	[-0.70, -0.04]	[-0.49, -0.03]
95% Prediction interval	[-0.65, 0.23]	[-0.54, 0.33]	[-1.37, 0.63]	[-0.80, 0.28]

Table 3 Subgroup analysis of combined effect size on mental health outcomes by participant and study characteristics

	<i>k</i>	SMD [95% CI]	<i>Q_w</i>	<i>df</i>	<i>p</i>	<i>I</i> ²
Study design	38		<i>Q_b</i> = 4.97*		.026	
Cross-sectional	27	-0.29 [-0.41, -0.18]	533.23	26		95.1%
Longitudinal	11	-0.08 [-0.25, 0.09]	282.05	10		96.5%
Recruitment setting	37		<i>Q_b</i> = 0.90		.638	
Community-based	10	-0.29 [-0.45, -0.12]	201.88	9		95.5%
School-based	26	-0.20 [-0.34, -0.07]	735.14	25		96.6%
Juvenile justice	1	-0.36 [-0.92, 0.20]	0.00	0		-
Child age group	38		<i>Q_b</i> = 1.78		.620	
Early childhood (0–6)	9	-0.24 [-0.56, 0.07]	92.66	8		91.4%
Middle childhood (7–12)	11	-0.28 [-0.43, -0.12]	167.79	10		94.0%
Adolescence (13–18)	12	-0.25 [-0.41, -0.10]	170.90	11		97.1%
Mixed age range	6	-0.07 [-0.44, 0.30]	264.99	5		97.4%
Child gender	27		<i>Q_b</i> = 5.96*		.015	
Predominantly male	16	-0.10 [-0.25, 0.04]	112.55	15		86.7%
Predominantly female	11	-0.36 [-0.53, -0.19]	127.28	10		92.1%
Region of study country	36		<i>Q_b</i> = 2.73		.255	
United States	14	-0.25 [-0.39, -0.12]	505.18	13		97.4%
China	19	-0.28 [-0.43, -0.12]	430.53	18		95.8%
Europe countries (inc. United Kingdom)	3	-0.17 [-0.31, -0.02]	2.28	2		12.2%
Cultural context	36		<i>Q_b</i> = 0.00		.950	
Individualistic cultures	16	-0.24 [-0.36, -0.11]	507.83	15		97.0%
Collectivistic cultures	20	-0.23 [-0.40, -0.06]	507.23	19		96.3%
Living area	26		<i>Q_b</i> = 0.05		.828	
Urban areas	15	-0.22 [-0.37, -0.07]	254.10	14		94.5%
Rural areas	11	-0.24 [-0.39, -0.08]	304.53	10		96.7%
Family type	38		<i>Q_b</i> = 1.35		.245	
Multigeneration	21	-0.18 [-0.33, -0.02]	248.29	17		91.9%
Skipped-generation	17	-0.29 [-0.41, -0.16]	371.97	14		95.7%
Comparison group (predominant)	16		<i>Q_b</i> = 1.60		.205	
Two-parent family	14	-0.12 [-0.28, 0.04]	191.43	13		93.2%
Single-parent family	2	-0.02 [-0.34, 0.30]	0.19	1		0.0%
Outcome rater	37		<i>Q_b</i> = 5.56		.235	
Child self-report	17	-0.21 [-0.32, -0.09]	589.75	16		97.3%
Parent/caregiver	11	-0.29 [-0.46, -0.12]	263.39	10		96.2%
Teacher	3	0.06 [-1.33, 1.46]	26.33	2		92.4%
Professional	3	-0.29 [-1.20, 0.62]	11.37	2		82.4%
Multiple raters	3	-0.12 [-0.27, 0.03]	3.12	2		35.9%

the 38 included studies. Although there was one outlier, the funnel plot for mental health outcomes was mostly symmetrical around the combined effect size. The Egger's test showed a nonsignificant result (intercept = 0.47, $p = .64$), which seemed to suggest no evidence of publication bias. We also did a rank correlation test to measure the association between studies' standardized effects with their variances, and the result also indicated no evidence of bias (Kendall's $\tau = -0.03$, $p = .48$).

Discussion

Childhood mental health is crucial to individual well-being and development throughout the life course. This systematic review examined the associations between grandparental care and child mental health and explored the moderating effects of participant and study characteristics. Based on the aggregated data from 38 studies, this meta-analysis shows that grandparental care was significantly and negatively

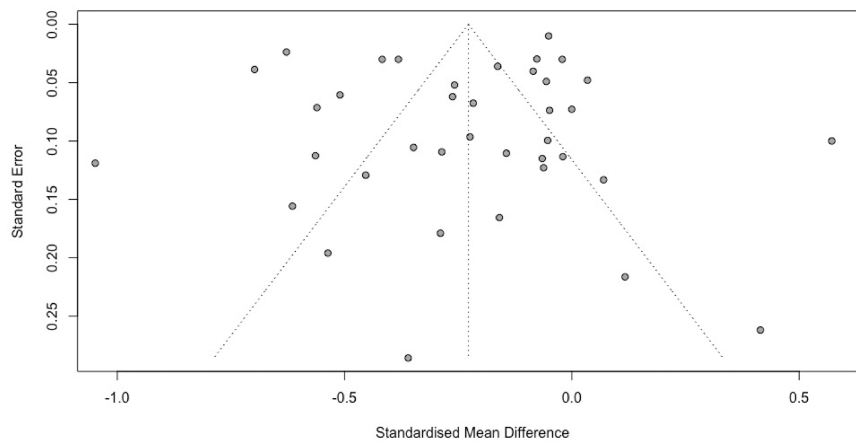


Figure 4 Funnel plot. *Note.* Each dot represents an included study. The *x*-axis represents study effect size (Cohen's *d*), and the *y*-axis represents study precision (standard errors of the effect estimates). Studies with smaller standard errors or larger sample sizes appear toward the top

associated with child mental health outcomes, including more internalizing problems, externalizing problems, overall mental problems, and poorer socioemotional well-being. Although a few individual studies reported beneficial mental health effects of grandparental care (e.g., Zhao et al., 2019; Zhao, Lin, Zhu, & Guo, 2020), no overall benefit was found in any of the outcomes we synthesized.

These negative associations may be attributed to limitations in grandparental care practices as noted in the literature, such as ineffective discipline and low nurturance (Smith, Cichy, & Montoro-Rodriguez, 2015), a possible result of grandparents' energy and health limitations and their psychological distress (Smith & Hancock, 2010). Some studies also suggest that grandparents of left-behind children (whose parents had migrated for work purpose) may lack the knowledge and awareness about the importance of stimulating child development (Schneiders et al., 2021; Urrieta & Martínez, 2011). Furthermore, as grandparents age and no longer have a spouse to share the caretaking responsibilities, they can be physically and emotionally overwhelmed, which may further compromise grandparenting outcomes (Chan et al., 2019).

Another potential explanation for our findings is selection bias. Families with custodial grandparents were more likely to be disadvantaged, and children in such families were more likely to develop poorer mental health. For example, custodial grandparents in the United States tend to be members of lower socioeconomic classes, ethnical minorities, and single mothers (Danielsbacka, Křenková, & Tanskannen, 2022). In addition, grandparents may involve in childcare in the absence of parents due to divorce, separation, migration, incarceration, among other reasons (Hayslip, Smith, Montoro-Rodriguez, Streider, & Merchant, 2017). In such cases, grandparental care may not be the contributing factor to

grandchildren's mental health but is confounded with other family factors. However, we could not examine these potential confounders because detailed family background information was rarely reported in our included studies.

Although grandparental care showed negative association with children's mental health in our main analyses, some of our included studies showed that grandparental care did not necessarily have a negative effect and may even predict better child mental health. For example, a Korean study found that children living with their parents and grandparents had fewer behavioral problems than those living with parents only (Hwang & St James-Roberts, 1998). Several Chinese studies also reported similar findings, where children in grandparent–parent joint care had the best mental health outcomes compared with skipped-generational care and parental care alone (Zhao et al., 2019, 2020). This is consistent with the argument that grandparents play distinct roles when they serve as “surrogate parents” in skipped-generational households versus when they assist with child-rearing in multigenerational households (e.g., Luo, LaPierre, Hughes, & Waite, 2012). A possible explanation is that coresiding grandparents could provide sources of knowledge, attachment, and affection to the grandchildren, as well as parenting support to the middle generation (Karmacharya, Cunningham, Choufani, & Kadiyala, 2017). Notably, such positive effect of coparenting was only found in studies of East Asian families, where grandparents have long been playing significant roles and providing substantial support to adult children in the familism culture (Lo & Lindsay, 2022).

Regarding study design, our moderator analysis found that the negative effect of grandparental care was trivial ($d = -0.08$) in longitudinal studies. This suggests that grandparental care may not

necessarily have a negative impact on child mental health in the long term. One plausible explanation is that among the 11 longitudinal studies, 6 controlled for children's mental health status in previous waves, which indicates that children's mental health outcomes may be predicted by earlier family factors (such as parental mental health difficulties) rather than grandparental care. These earlier factors may have increased both grandparent involvement and children's mental health symptoms over time. Another explanation for this result could be that children who received care from their grandparents may have gained resilience over time as they navigated through challenging life events with the care of grandparents (Li, Bottrell, & Armstrong, 2018; Zhou, Yu, Dong, & Zhang, 2021). This idea aligns with Downie, Hay, Horner, Wichmann, and Hislop (2010), who suggested that grandparents' protection, care, and material support can act as sources of resilience for their grandchildren, enabling the children to cope effectively with their traumatizing experiences. However, studies have rarely focused on grandparental care and child resilience. More research with a strength-based approach is needed to explore whether and how grandparental care may benefit child development.

With respect to the moderating effects of participant characteristics, our findings suggested that grandparental care had a larger negative association with child mental health when the children comprised mostly girls. This finding was consistent with a previous study conducted in rural China, which indicated that girls who were cared for by their grandparents in skipped-generational households were more prone to problematic behaviors (Wang, Yuan, Zhang, & Houser, 2023). This gender-specific finding may be attributed to the prevalent son-preference culture in Asian countries (Das Gupta et al., 2003), which is the context for most of our included studies ($k=20$). In these countries, grandparents, particularly in rural regions, have been criticized for providing less care and attention to girls than boys (Wang et al., 2023). In addition, a previous study of US grandchildren showed that girls in grandparental care showed more overall difficulties and emotional symptoms than boys, while grandparent-cared boys had more conduct and hyperactivity problems (Attar-Schwartz et al., 2009). Given that internalizing problems are more common in girls and externalizing problems more common in boys (Chaplin & Aldao, 2013), this result may also be explained by the larger number of studies on internalizing problems ($k=18$) than externalizing problems ($k=14$).

Moreover, this gender effect may be associated with the "kin-keepers theory," which suggests that children tend to have more interaction and closeness with grandparents of the same gender (Dubas, 2001). Nonetheless, we could not test this hypothesis as

most studies did not report grandparent gender. Therefore, we recommend that future studies provide more demographic information about grandparents and further explore the gendered effects of grandparental care.

Our moderator analyses did not reveal any significant difference across regions or cultural contexts. This result contradicts the culture-specific hypotheses of grandparental care as suggested in the literature (e.g., Sadrudin et al., 2019). Our nonsignificant finding may be a result of low statistic power, as moderator tests are likely to be underpowered in meta-analyses (Valentine, Pigott, & Rothstein, 2010). Another possible reason is that participants' diverse cultural backgrounds within studies made it difficult to detect between-study differences. For instance, three US studies in our review included participants from diverse ethnic and cultural origins but did not compare child mental health status across ethnicities. As a result, our country-based categorization of cultural context could be inaccurate. Future research should consider providing more information about participants' cultural backgrounds or family norms to contextualize grandparental care.

Our moderator analyses also showed no significant main effect difference between skipped-generational and multigenerational households. Nonetheless, grandparental care showed a trivial effect ($d=-0.18$) in multigenerational households but a small effect ($d=-0.29$) in skipped-generational households. We speculate that the difference may come from several included studies of multigenerational households (e.g., Zhao et al., 2019) showed that grandparent-parent collaborative caregiving arrangements yielded the most favorable outcomes for children's mental health. This collaborative care approach effectively amalgamates parents' evidence-based scientific parenting knowledge with grandparents' lifelong parenting experience (Zhao et al., 2019). Future studies of multigenerational households may continue to explore how the extent and approach of grandparental-parent cocare affects child well-being. Note that only less than half of our included studies ($k=15$) reported the extent of grandparental care in detail such as the time and frequency of grandparental care. Future studies should use more nuanced measures for grandparental care intensity, such as the number of hours of grandparental care, or the number of years of grandparental coresidence. Additionally, grandparents' involvement goes beyond childcare (Pulgaron et al., 2016). The resources that grandparents may transfer to their grandchildren include practical assistance, food provision, financial support, childcare, and emotional support (Coall & Hertwig, 2011). In addition to childcare engagements, we recommend more studies to employ multidimensional measurements of grandparental involvement to

comprehend grandparents' impact in children's lives.

Methodological limitations of the included studies should also be noted. As discussed previously, grandparental care may not be the only contributing factor to children's mental health because most of our included studies (71.05%) used a cross-sectional design, which could not establish causal relationships. In fact, our analysis of the 11 longitudinal studies showed a nonsignificant result ($d = -0.08$, 95% CI $[-0.25, 0.09]$). Although this result should be interpreted with caution given our small sample size, it is possible that grandparental care does not lead to worse child mental health in the long term. More longitudinal studies and studies with causal analyses are needed to fill this gap. Additionally, only 12 (31.58%) studies reported grandparents' gender and lineage, and only three of them included grandparents' demographic details, such as their age, race, and physical and mental health status. More grandparental characteristics should be provided to disentangle the effects of grandparental care across these subgroups. Furthermore, although all of our included studies mentioned whether the middle generation was present, the studies overall had limited measurement and discussion of parental factors and family dynamics. As suggested by the linked lives concept in life course theory, the lives of children, parents, and grandparents are interdependent across each generation's life course (Allen, Henderson, & Murray, 2019; Gilligan, Karraker, & Jasper, 2018). Future research should investigate family mechanisms, such as parenting and cohesion as well as conflict among the three generations, to enhance our understanding of grandparenting within the family system.

This meta-analysis has several limitations. First, we did not include studies of foster children with formal grandparental care, given our focus on global grandparental care in a family environment and to minimize selection bias across contexts. However, foster grandparenting is a major form of grandparental care in countries such as the United States and the United Kingdom (Poitras, Tarabulsky, Valliamée, Lapierre, & Provost, 2017). Future research could examine the differences in the impact of grandparent care in both foster families and nonfoster families to identify grandparents' roles when child welfare system is involved. Second, as discussed previously, the small number of studies in certain variables, such as studies that specified their predominant comparison groups, may render our moderator analyses underpowered to gauge the associations between grandparental care and child mental health across families.

Conclusions

This systematic review and meta-analysis consolidated current evidence of the associations between grandparental care and children's mental health. Grandparental care showed significant, trivial-to-small associations with increased children's internalizing problems, externalizing problems, and overall mental problems, and poorer socioemotional well-being. The findings highlight that grandparental care can be a risk factor for child mental health, but we cannot rule out potential confounders such as family hardships and parental difficulties given the limited family background information. Our moderator analyses further revealed that the effects of grandparental care varied across study design and child gender. These results underscore the need for additional research on grandparental care with more nuanced and comprehensive measurements of the context and extent of grandparental care. Our findings also call for more supportive preventions and early mental health interventions for children living in grandfamilies.

Supporting information

Additional supporting information may be found online in the Supporting Information section at the end of the article:

Table S1. Outcome grouping for included studies.

Table S2. Data extraction form.

Table S3. Risk of bias analysis form.

Table S4. Moderator analysis with one outlier (Zhao et al., 2019) removed.

Table S5. Moderator analysis with high risk-of-bias studies removed.

Figure S1. Pooled effect on externalizing problems after removing outlier ($k = 13$).

Figure S2. Sensitivity analysis after removing high risk-of-bias studies.

Figure S3. Sensitivity analysis using fixed-effect model.

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Data availability statement

Data sharing not applicable to this article as no datasets were generated or analysed during the current study.

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Key points

- This is the first meta-analysis to synthesize the evidence for the relationship between grandparental care and child mental health in terms of both mental problems and well-being.
- The meta-analysis of 38 empirical studies suggests that children being cared for by their grandparents had worse mental health status compared with their counterparts.
- Future studies should use more nuanced and comprehensive measurements of the roles that grandparents play in grandchildren's lives.
- Future research should also specify the context and extent of grandparental care and grandparental characteristics such as their gender and lineage.

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