The Effectiveness of Interventions for Grandparents Raising Grandchildren: A Meta-Analysis

Abstract

Purpose: The research objective is to evaluate the effectiveness of intervention programs that aim to enhance the well-being of grandparent caregivers and the developmental outcomes of grandchildren, and identify useful program components. Methods: Relevant studies were identified via comprehensive literature searches of electronic databases. A random effects model was used to calculate effect sizes. Results: We included 20 studies published in and before April 2018. Our review indicates that interventions for grandparent caregivers have positive effects in regard to various well-being outcomes. Small to moderate effect sizes for increases in social support and parenting skills and a decrease in children's behavioral problems were found. Supportive and educational components could contribute to a promising intervention. Conclusions: The implementation of interventions for grandparents requires ongoing research efforts to obtain high-quality evidence for program effectiveness. We suggest future research be conducted to develop tailored interventions to meet the needs of different grandparent caregivers.

Keywords: grandparent caregivers, custodial grandparents, well-being, quantitative synthesis

The Effectiveness of Interventions for Grandparents Raising Grandchildren: A Meta-Analysis

Grandparents providing primary care for their grandchildren has become an increasingly prevalent phenomenon worldwide in the past two decades, regardless of cultural and socioeconomic variations (Choi, Sprang, & Eslinger, 2016; Hayslip, Fruhauf, & Dolbin-MacNab, 2017). In 2012, about 2.7 million grandparents in the United States were primary caregivers of their grandchildren; in addition to this, about 6% of children lived in grandparent-maintained households and this number has doubled since 1972 (Ellis & Simmons, 2014). In Australia, about 11% of children have lived in a three-generation household during their early childhood and over one quarter of children less than 12 years of age receive regular care from their grandparents (Kirby, 2015; Pilkauskas & Martinson, 2014). According to a survey conducted in 11 European countries, over 40% of grandparents provide care for their grandchildren to different extent (Glaser et al., 2013). For example, it is common in Southern Europe (such as in Italy, Portugal, and Spain) for grandparents to provide regular and intensive care for grandchildren. In contrast, most grandparents only provide occasional childcare in Northern European countries such as Sweden and Denmark, as there are more formal childcare services and more generous maternity leave (Glaser et al., 2013). It has also long been a cultural phenomenon for grandparents to provide care to grandchildren in some Asian countries in which strong extended family solidarity is prevalent. In Hong Kong, a large-scale survey indicates that grandparents are the main caregivers during the day in about a quarter of families with children under four years old (Leung, Leung, & Luk, 2012).

Social problems such as adult drug abuse, parental incarceration, teen pregnancy, family violence and abuse, familial economic distress, and housing crises increase the number of multigenerational and skipped-generation households, as well as the likelihood of grandparents becoming the primary caregivers of their grandchildren (Hayslip et al., 2017;

Keene & Batson, 2010). Higher divorce rates and greater demands of women in the workplace contribute to increasing grandparent involvement in intensive or occasional childcare (Corinne & Marc, 2011). Economic development and change of population structure also lead to grandparent caregiving. For example, in China, the massive internal migration results in over 25% of left-behind children live only with their grandparents in the rural area (UNICEF, 2017). Due to the low fertility rate in China resulting from the previous One-Child Policy, it is quite a common experience of urban families for grandparents to provide intensive care for their only grandchild (Chen, Liu, & Mair, 2011).

Grandparent Caregivers' Well-Being

Kirby and Sanders (2012) suggested that there are two distinct groups of grandparent caregivers: custodial and informal. Custodial grandparents are primary caregivers for their grandchildren (Hayslip et al., 2017), while informal grandparent caregivers serve as the secondary or supportive caregivers for their grandchildren. Both types of grandparent caregivers face more health, psychosocial, and economic challenges, compared with those who occasionally or seldom provide care, even though many of them value the emotional rewards of providing child caregiving. The results of an integrative review show that custodial grandparents reported feeling emotionally drained and experiencing worsening mental health, such as more psychological distress, anxiety, and depression (Grinstead, Leder, Jensen, & Bond, 2003). Grandparents were also reported to have lower levels of physical health since becoming primary caregivers (Peterson, 2017). However, some studies in recent years suggest that providing care for grandchildren is associated with better physical health, depending on the intensity and duration of the caregiving, prior health status, and financial and social resources (Di Gessa, Glaser, & Tinker, 2016; Hayslip, Blumenthal, & Garner, 2015; Hayslip et al., 2017; Ku et al., 2013). Financial hardship is another issue that many grandparent caregivers face because of the extra expenses associated with childrearing

(Bailey, Haynes, & Letiecq, 2013; A. B. Smith & Dannison, 2003). Grandparent caregivers can encounter interpersonal challenges as they become involved in childrearing, such as biological and in-law relationship tension (Kirby & Sanders, 2014).

Grandparenting and Grandchildren's Well-being

Grandparents' well-being is often affected by their new parental responsibilities (McCallion, Janicki, Grant-Griffin, & Kolomer, 2000). Grandparents are experienced in parenting, but their knowledge and skills in this respect may not be applicable to handling new challenges, such as the overuse of computing or mobile technology by grandchildren. The demands of caregiving are often more complex than when they were parents, for example, in regard to dealing with the absence of parents or with grandchildren with special needs (Lee & Blitz, 2016; Monahan, Smith, & Greene, 2013). Because parental absence is often a reflection of a range of family and social problems (e.g., family disruption, parental incarceration, parent substance abuse, domestic violence, etc.), dealing with the problems associated with parental absence exacerbates the burden of custodial grandparents (Choi et al., 2016; Hayslip et al., 2017). There is emerging evidence that grandparent caregivers of left-behind children may have a lack of nutrition knowledge and awareness about the need to stimulate child development (Morrison, Chunsuwan, Bunnag, Gronholm, & Lockwood-Estrin, 2018; Zhang et al., 2018). Ineffective grandparenting was found to be associated with grandchildren's internalizing and externalizing difficulties, such as emotional symptoms and conduct problems (G. C. Smith, Cichy, & Montoro-Rodriguez, 2015). Children in grandfamilies had poorer academic and socio-emotional well-being compared to those living with mothers (Pilkauskas & Dunifon, 2016). In addition, children of grandmother caregivers with psychological distress were more likely to have behavior problems (Kelley, Whitley, & Campos, 2011).

Intervention Programs with Grandparents Caregivers

Grandparents may frequently need community support and social services due to the challenges presented by an unexpected child caregiving role. However, in many cases, child welfare system is not involved, as such child caregiving arrangement is usually private and initiated by the family (A. B. Smith & Dannison, 2003). In fact, grandparents are more likely to provide regular and intensive care for grandchildren when formal childcare services and family welfare policies are insufficient (Glaser et al., 2013).

In light of this situation, a number of intervention programs have been designed to act as a buffer to the negative impacts of being grandparent caregivers. Early intervention programs generally have a particular focus on improving grandparents' physical and mental health, using stress and resilience models (Sumo, Wilbur, Julion, Buchholz, & Schoeny, 2017). In the recent decade, interventions began to draw upon the strengths of grandparents and focus on protective factors, such as the resourcefulness training developed by Zauszniewski and Musil (2014). To empower grandparents in regard to child caregiving, parenting programs specifically for grandparents have also been designed, such as the Grandparent Triple P, which combines parent education and psychoeducation (Kirby, 2015).

While existing systematic reviews have concluded that intervention programs can be efficacious in regard to grandparents' physical and mental health outcomes, the effects on other outcomes remain unclear (Sumo et al., 2017; McLaughlin, Ryder, & Taylor, 2017). Whether or not grandchildren under the care of grandparents can benefit from these interventions are equally important. In addition, the interventions differ by participant profiles, components, and settings, and different studies designs were used in evaluation. For example, the effectiveness and acceptability of grandparent interventions in different cultures has not been considered before. Thus, a meta-analysis using quantitative methods to synthesize the effectiveness of intervention programs for grandparent caregivers is necessary,

and the exploration of moderator variables would contribute to the future implementation of effective interventions.

Research Objectives

The first research objective of this meta-analysis is to calculate the effect sizes of intervention programs for grandparent caregivers in regard to grandparents' well-being, grandparenting, and grandchildren's well-being. The second research objective is to identify the program characteristics and components that may contribute to a promising intervention for custodial grandparents.

Method

Selection of Studies

Relevant studies were identified via electronic literature searches of PsychInfo, Sociological Abstracts, Social Service Abstracts, Medline, CINAHL Complete and PubMed (published in and before April 2018). Advanced searches using titles, keywords, and abstracts in the above databases were performed based on combinations of two groups of terms: (1) grandparent caregiver, custodial grandparents, grandparents/grandmothers/grandfathers raising grandchildren; and (2) intervention, training, support group. In addition to this, we reviewed the reference sections of related reviews and eligible studies, and searched grey literature resources such as conference abstracts, dissertations and unpublished studies. EndNote 7.8 software was used to manage the references from literature search.

Journal articles, book chapters, reports, dissertations and other grey literature were included if they fulfilled the following criteria. First, the study should adopt an experimental or quasi-experimental design. Second, the participants and respondents should be grandparent caregivers. Third, the study outcomes should include changes in grandparents or grandchildren. Fourth, the study should use quantitative evaluation methods and report sufficient statistical information to calculate the effect sizes.

Studies were excluded due to the following reasons. First, as we only included evidence from intervention studies, cross-sectional designs exploring the impacts of providing caring for grandchildren were not the focus of the current review. Second, evaluations that could not provide quantitative evidence regarding program effects (e.g., focus group interviews, client satisfaction surveys) were not included. Third, to ensure the statistical power of the current review, we only included studies with sample sizes larger than 10. We screened the titles and abstracts of the retrieved studies first, based on the inclusion and exclusion criteria, in order to locate the potentially relevant studies. Then, full article texts were screened to obtain the eligible studies.

Coding of Studies

A standardized coding sheet was designed to extract study characteristics and outcomes. Study characteristics include publication information (author, publication year, and country), methodological characteristics (study design, sampling method, sample size, and sample type), intervention characteristics (content, duration, frequency, attrition rate, site, service provider), and participant profiles (mean age, percentage of females, socio-economic status, health status, ethnicity, and grandchild characteristics).

The study outcomes are classified into two major types: (1) grandparents' well-being, and (2) grandparenting and grandchildren's well-being. As reviewed in the introduction, grandparents' well-being outcomes included the effects on grandparents' physical and mental health, satisfaction with their role and life, social support, and changes in the relationships between family members. Grandparenting and grandchild well-being outcomes included the improvement of parenting skills and the change in grandchildren's behavior.

Quality Assessment

To assess the validity of the studies and reduce the risk of bias in the current review, the quality of each eligible study was assessed based on a methodology checklist. The

checklist comprises seven items, including the study design, participant recruitment method, description of interventions, measurement, attrition rate, statistical method, and profiles of participants. The highest score is 10, if a study meets all the criteria in the checklist. The items of the checklist are shown in the Online Appendix I.

Two reviewers coded and evaluated each of the studies independently. Cohen's *k* was calculated to test for the degree of agreement between the two raters' judgement on the methodological quality of each study. In this review, there was a high level of agreement between the two reviewers, $k = .86$, $p < .001$. Disagreements were resolved by discussing the issues at hand with the first author until full agreement had been reached.

Statistical Analysis

We first summarized the characteristics of the included studies through a descriptive analysis. We synthesized the effectiveness of the interventions, focusing on custodial and informal grandparent caregivers, by calculating Cohen's *d*, which refers to a standardized difference in means (Borenstein, Hedges, Higgins, & Rothstein, 2009). We estimated the standardized mean difference as $d = \frac{\overline{X1} - \overline{X2}}{\text{Swithin}}$. For studies that use independent groups (i.e., RCTs and controlled trials), $\text{Swithin} = \sqrt{\frac{(n1-1)S1^2+(n2-1)S2^2}{n1+n2-2}}$. For studies that use pretest-posttest designs, $\text{Swithin} = \frac{Sdiff}{\sqrt{2(1-r)}}$. If the correlation *r* is not reported, we estimated the correlation *r* as .5. Sensitivity analyses using a range of plausible correlations were performed to ensure the appropriateness of using this figure, as suggested by Borenstein et al. (2009). Because of the different features of the interventions' contents and participants, a random effects model was used to calculate the pooled effect size of each outcome. We used the pooled mean effect size for publications based on the same trial. The *Q* statistic was used to test the heterogeneity between the included studies. To test the moderator variables that can potentially affect program effects, studies were classified into subgroups based on the

available study characteristics, and *Q* statistic was used. Publication bias was tested by visually examining a funnel plot. The asymmetry of a funnel plot usually implies that publication bias exists (Duval & Tweedie, 2000). Effect size calculations, tests of heterogeneity, moderator analyses, and tests of publication bias were completed using the *Comprehensive Meta-Analysis (CMA) 3.0* program.

Results

Study Characteristics

Publication information.

Comprehensive searching yielded 335 articles after removal of duplicates. A flow diagram, shown in Figure 1, describes the selection process, with the numbers of studies included or excluded. After title, abstract, and full-text screening, 20 studies were included in the final meta-analysis. The included studies were published between 1998 and 2018, and 70% of them were published in the recent decade. The majority of the studies were conducted in the United States (n = 17) and the other three studies were conducted in Australia (Kirby & Sanders, 2014), Hong Kong (Leung et al., 2014), and mainland China respectively (Zhang et al., 2018).

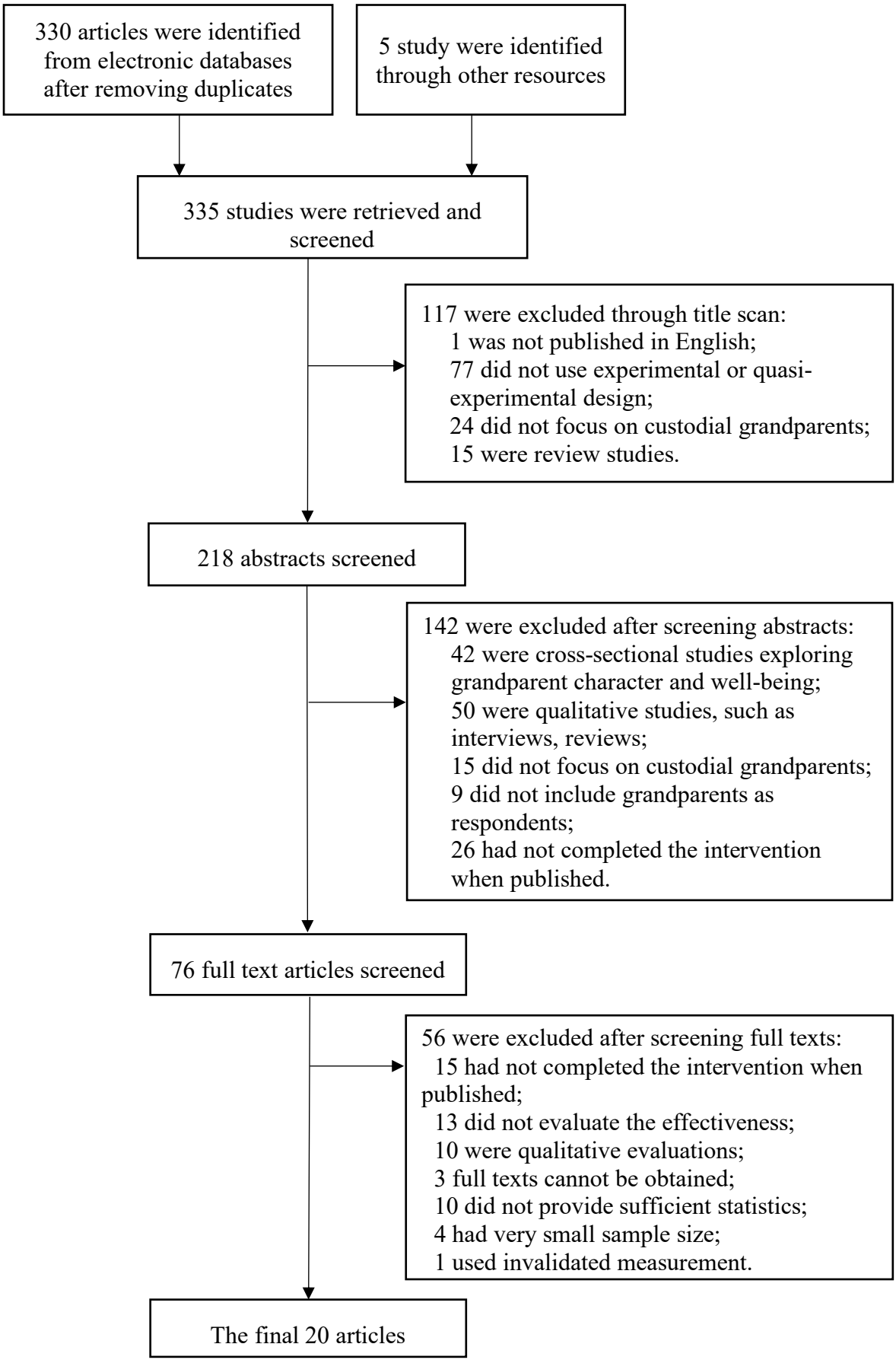

Figure 1. Flow diagram of study selection

Methodological characteristics.

Different research designs were applied to evaluate the programs' effects. Among the 20 included studies, three studies were RCTs (Kirby & Sanders, 2014; Leung et al., 2014; Zhang et al., 2018), four were two-group experimental designs (Hayslip, 2003; McCallion, Janicki, & Kolomer, 2004; Strozier, 2012; Zauszniewski, Musil, Burant, Standing, & Au, 2014), and the remaining 13 used one-group pretest-posttest designs. Sample size of the studies ranged from 10 to 529, with seven studies having a sample size below 25. The studies generally recruited a community sample through schools and community centers, or recruited participants from a pre-existing program. All of the 20 studies attained a total methodological quality score of seven or above, using appropriate measurements and statistical methods to evaluate the programs' effectiveness. The details of study methodological characteristics are shown in Supplementary Table 1.

Intervention characteristics.

Services for custodial grandparents were generally offered through group-based interventions or a combination of individualized home visits and group interventions. Support and education are two important components of group-based interventions, as shown in several studies (Burnette, 1998; McCallion et al., 2004). Support groups are widely applied in interventions for kinship caregivers, as they are relatively inexpensive, easy to implement, and considered to be effective (Strozier, 2012). To address the problems raised by grandparents, various educational components are tailored to their needs, including identifying stressors, improving coping strategies, parenting skill training, managing interpersonal relationships, identifying resources from social and health agencies, and practical skills to cope with stress, among others (Kirby & Sanders, 2014; Leung et al., 2014; McCallion et al., 2004; Musil, Zauszniewski, Burant, Toly, & Warner, 2015; Zauszniewski & Musil, 2014; Zauszniewski et al., 2014). The educational components are delivered to

grandparents in different forms, such as didactic presentations, training videos, workbooks, and other handout materials (Burnette, 1998; Musil et al., 2015). In addition to the traditional supportive and educational components, in recent years, researchers have also attempted physical activity programs (Young, 2014) and biofeedback interventions (Zauszniewski, Au, & Musil, 2013). Researchers have also tried to deliver interventions through online training (Musil et al., 2015).

Individually tailored services were also provided to custodial grandparents. For example, home visits by social workers and registered nurses, in conjunction with group interventions, are provided in the Project Healthy Grandparents (PHG) program, designed by a research team led by Kelley (Kelley, Whitley, & Sipe, 2007; Kelley, Whitley, & Campos, 2010, 2013; Kelley, Yorker, Whitley, & Sipe, 2001) and further adopted by Campbell (Campbell, Carthron, Miles, & Brown, 2012). Using a strengths-based approach, PHG staff work with custodial grandparents to help them establish goals in order to improve their physical and psychological well-being, as well as to increase access to resources and social support (Campbell et al., 2012; Kelley et al., 2001). In addition to case management by social workers, registered nurses conduct health screenings and assessments, as well as provide medication reviews, health education, and health-related referrals.

The community-based or home-based interventions involved a variety of service providers, such as nurses, social workers, educators, clinical professionals, and trained staff, although were trained professionals. Roughly half of the programs were short-term and intensive interventions (e.g., six to eight weekly sessions) and half were long-term, with lower dosages (e.g., bi-weekly, monthly sessions lasting for several months or one year). Low attrition rates were found in the included studies. Though grandchild well-being was also a target of some interventions, only two studies involved grandchildren in the

intervention itself (Littlewood et al., 2014; Young, 2014). The summary of intervention characteristics is shown in Supplementary Table 2.

Participant profiles.

The characteristics of the participants in the interventions generally reflected the profiles of grandparents living with grandchildren in the United States in that African American grandmothers are disproportionately represented in grandparents raising grandchildren, although Hispanic and Caucasian grandparents were also included in some interventions. The grandparents' mean ages ranged from 55 to 62 years old. Most grandparents were divorced, separated, or widowed, and most were unemployed and had low levels of education. The grandparents had at least six months of grandchild caregiving experience, with an average of one and a half to three grandchildren in their households. Some grandparents took care of grandchildren with developmental disabilities or delays (McCallion et al., 2004). Even though the majority of grandparents were primary caregivers, many of them did not have legal guardianship of their grandchildren (Campbell et al., 2012; Kelley et al., 2001). In recent years, more interventions have been introduced to custodial grandparents in the rural areas of China, who are less-educated and have lower family income compared with caregivers in developed areas (Zhang et al., 2018). The summary of participant characteristics is shown in Supplementary Table 3.

Effects on Different Outcomes

Because custodial grandparents experience a range of challenges in regard to taking care of their grandchildren, most interventions focused on multiple outcomes related to grandparent well-being and used various instruments to evaluate programs' effects. Specific information about the measurements and effect sizes for each study are shown in Supplementary Table 4. The interventions were effective in general but the beneficial effects were heterogeneous, with effect size ranged from very small to large, according to Cohen's

criteria for effect size interpretation (1992). Based on the aims of the programs, we categorized the outcomes into the following two major groups.

Improvement in grandparents' well-being.

Table 1 shows the random effect sizes pooled by different studies in regard to different outcomes. A great deal of attention has been paid to grandparents' health, including mental health (e.g., stress, depression, and anxiety) and physical health as related to their role as child caregivers. The random effect size of the 14 intervention programs that aimed to improve grandparents' mental health is 0.21 ($p < .001$; $Q = 9.7$, $df = 13$). Six studies evaluated the program's effects on grandparents' physical health with a small overall effect size ($d = 0.13$, $p < .05$; $Q = 7.45$, $df = 5$). In addition to this, a slightly larger effect size was found regarding grandparents' general health status ($d = 0.16$, $p < .05$; $Q = 5.76$, $df = 4$). The pooled effect size of outcomes regarding life satisfaction and empowerment is 0.25 ($p < .001$; $Q = 1.84$, $df = 4$), also reflecting a relatively small impact. Seven studies focused on enhancing the resources and social support of grandparent-headed families, and resulted in a small to moderate overall effect ($d = 0.46$, $p < .001$; $Q = 8.45$, $df = 6$). Five studies, including two RCT designs, evaluated the programs' effects on grandparents' relationships with family members and their social functioning. However, the effect size was very small ($d = 0.12$, $p < .01$; $Q = 2$, $df = 4$).

Improvements in grandparenting and grandchildren's well-being.

As shown in Table 1, six studies evaluated the effectiveness of educational components to improve grandparents' parenting skill and a small to moderate impact was found ($d = 0.49$, $p < .001$; $Q = 6.53$, $df = 5$). Two RCT studies focused on the behavior problems of grandchildren who were under the care of grandparents (Kirby & Sanders, 2014; Leung et al., 2014). A moderate effect ($d = 0.58$, $p < .001$; $Q = 0.69$, $df = 1$) was found after the grandparents attended the intervention.

Table 1

Effect Sizes of Interventions for Grandparent Caregivers on Different Outcomes at Posttest

Outcome	*k*	*d*	*SE*	95% CI	*Z*	*Q*	*df(Q)*	*p*
Grandparents' well-being	19	0.26	0.04	[0.17, 0.35]	6.05***	25.67	18	.11
Mental health	14	0.21	0.03	[0.15, 0.28]	6.35***	9.7	13	.72
Physical health	6	0.13	0.04	[0.04, 0.21]	3.00*	7.45	5	.19
General health	5	0.16	0.08	[0.01, 0.31]	2.13*	5.76	4	.22
Empowerment/Life satisfaction	5	0.25	0.07	[0.12, 0.39]	3.65***	1.84	4	.77
Family support	7	0.46	0.09	[0.29, 0.63]	5.19***	8.45	6	.21
Family relationship	5	0.12	0.04	[0.04, 0.20]	2.97**	2.0	4	.74
Grandparenting and grandchildren's well-being	7	0.42	0.12	[0.19, 0.65]	3.59***	15.7*	6	.02
Parenting skills	6	0.49	0.09	[0.31, 0.67]	5.32***	6.53	5	.26
Grandchild behavior	2	0.58	0.21	[0.18, 0.98]	2.83**	0.69	1	.41

Note. *k* = number of studies; *d* = effect size; *SE* = standard error; * $p < .05$, ** $p < .01$, *** $p < .001$.

Moderator variables and publication bias

We examined several factors that may affect program effectiveness through moderator analyses as shown in Table 2 and Table 3, including study design, sample type, sample size, program duration, intervention type, and whether or not a health component was included. However, only the last moderator variable was found with a significant between-group Q value in regard to the outcome of grandparent well-being ($Q_b = 5.32$, $df = 1$, $p < .05$).

The publication bias was examined using a funnel plot. For the outcomes regarding grandparent well-being, the studies were generally distributed symmetrically around the combined effect size, as shown in Figure 2. Thus, and the chance of publication bias was low. The funnel plot demonstrating the effects regarding grandparents' parenting skills and grandchildren's well-being was also symmetric in general, as shown in Figure 3. However, as there were only seven studies included in the funnel plot, we should interpret this finding with caution.

Table 2

Moderator Variables Analysis for Grandparent Caregivers' Well-being

Moderator Group	Subgroup	*k*	*d* [95% CI]	Q_b	*df(Q)*	*p*
Sample type	Community sample	12	0.29 [0.15, 0.43]	1.32	2	.52
	Clinical sample	3	0.39 [0.08, 0.71]			
	Both	4	0.22 [0.11, 0.33]			
Study design	Pretest-posttest	13	0.22 [0.15, 0.3]	5.54	2	.06
	Controlled trial	4	0.51 [0.26, 0.76]			
	RCT	2	0.05 [-0.37, 0.47]			
Sample size	Large	3	0.18 [0.1, 0.27]	5.39	2	.07
	Medium	7	0.4 [0.24, 0.57]			
	Small	9	0.27 [0.11, 0.43]			
Intervention type	Group-based	12	0.34 [0.19, 0.49]	1.69	2	.43
	Mixed (group intervention and home visitation)	6	0.22 [0.12, 0.32]			
	Biofeedback	1	0.33 [-0.15, 0.81]			
Duration	Long-term	8	0.24 [0.14, 0.34]	0.43	1	.51
	Short-term	11	0.31 [0.15, 0.46]			
Involving health component	Yes	6	0.19 [0.12, 0.27]	5.32*	1	.02
	No	13	0.37 [0.24, 0.51]			

Note. *k* = number of studies; *d* = effect size; Q_b = between-group Q statistic; * $p < .05$.

Table 3

Moderator Variables Analysis for Grandparenting and Grandchildren's Well-being

Moderator Group	Subgroup	*k*	*d* [95% CI]	Q_b	*df(Q)*	*p*
Sample type	Community sample	6	0.38 [0.12, 0.64]	0.56	1	.45
	Clinical sample	0				
	Both	1	0.62 [0.06, 1.18]			
Study design	Pretest-posttest	3	0.48 [0.06, 0.9]	0.43	2	.81
	Controlled trial	1	0.15 [-0.76, 1.06]			
	RCT	3	0.45 [0, 0.89]			
Sample size	Large	1	0.37 [-0.3, 1.05]	0.38	2	.83
	Medium	4	0.39 [0, 0.77]			
	Small	2	0.6 [-0.01, 1.21]			
Intervention type	Group-based	5	0.5 [0.18, 0.82]	0.5	1	.48
	Mixed (group intervention and home visitation)	2	0.3 [-0.13, 0.73]			
	Biofeedback	0				
Duration	Long-term	4	0.44 [0.14, 0.73]	0.02	1	.88
	Short-term	3	0.4 [-0.05, 0.85]			
Involving health component	Yes	2	0.21 [-0.08, 0.5]	3.45	1	.06
	No	5	0.58 [0.32, 0.85]			

Note. *k* = number of studies; *d* = effect size; Q_b = between-group Q statistic.

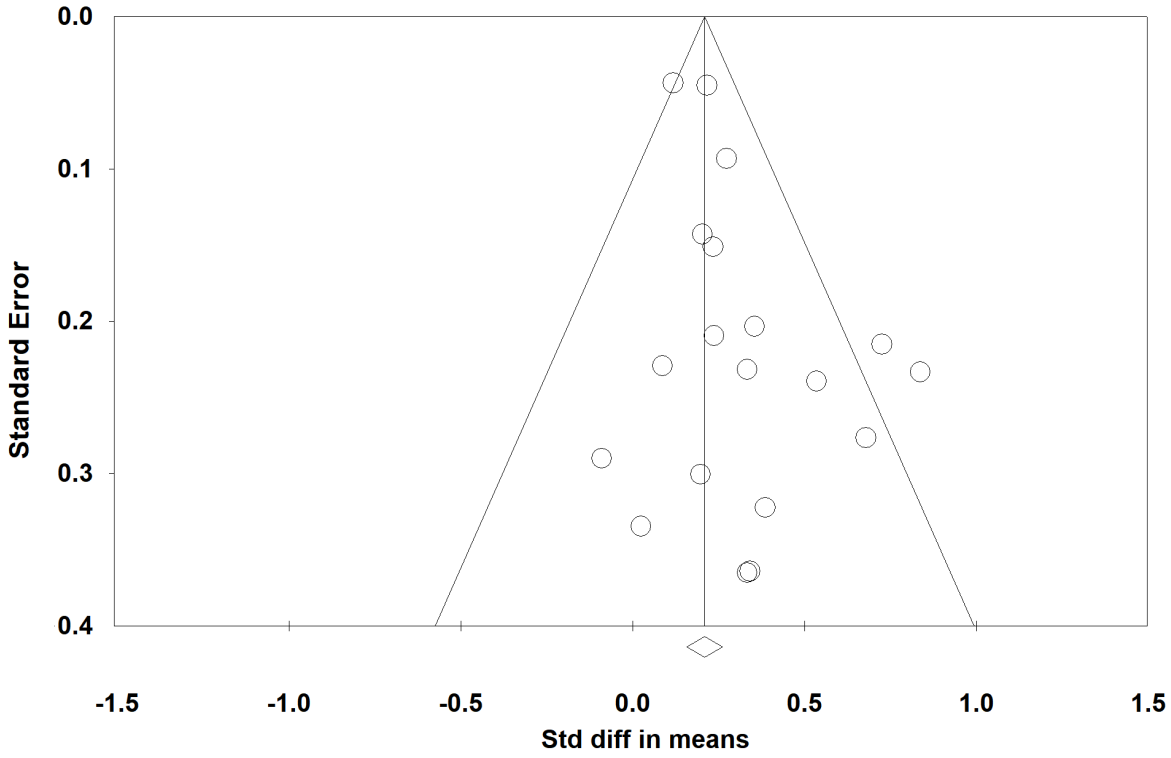

Figure 2. Funnel plot for the detection of publication bias – studies on grandparent caregivers' well-being.

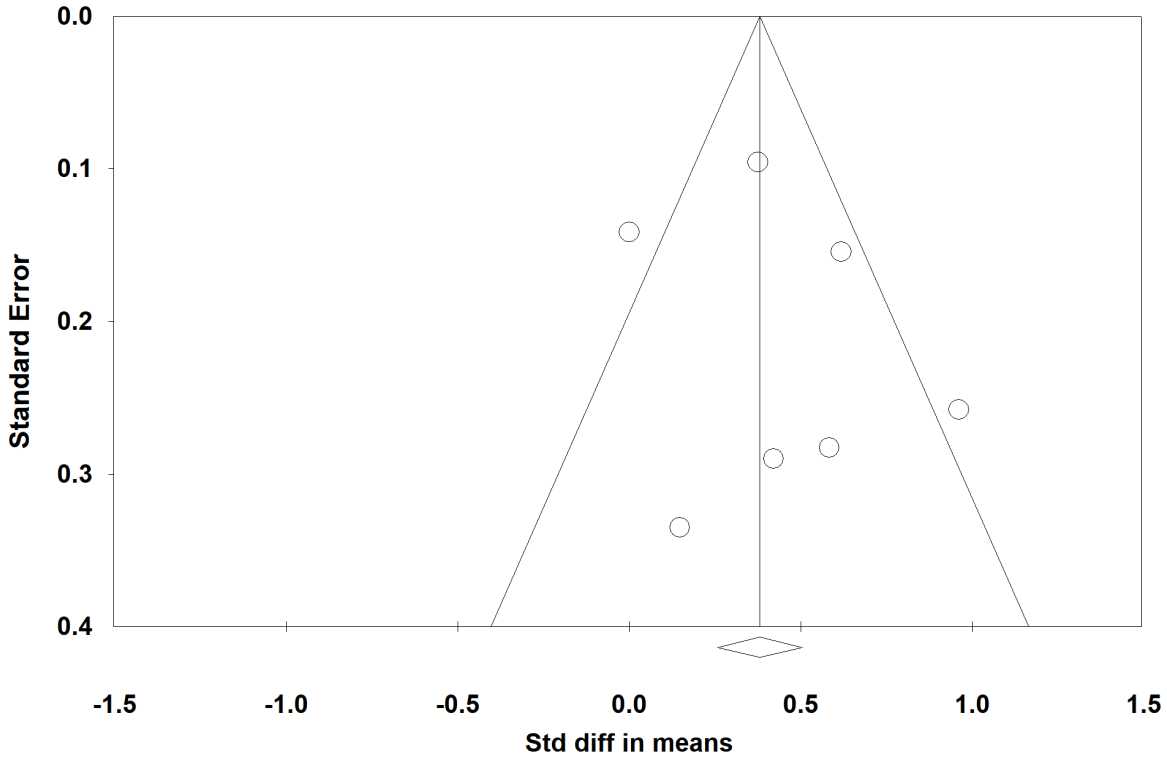

Figure 3. Funnel plot for the detection of publication bias – studies on grandparenting and grandchildren's well-being

Discussion and Applications to Practice

The challenges associated with grandparents' unexpected primary child caregiver roles may hinder their positive ageing (Lee & Blitz, 2016). Thus, several interventions have been designed specifically for the growing number of grandparent caregivers. The current meta-analytic study synthesized the evidence of the effectiveness of these programs in regard to different outcomes and identified promising approaches to improving grandparents' well-being.

The findings of this meta-analysis demonstrate that the included intervention programs had positive effects on grandparents' well-being, though the effect sizes of different well-being outcomes varied greatly. The positive effects on mental health outcomes reflect decreases in stress, anxiety, and depression. However, the pooled effect size of grandparents' mental health is considered to be small. One explanation for this is that grandparents' psychological stress is associated with complex factors including child caregiving responsibility, insufficient social support, relationship tensions, etc. Thus, improving grandparents' mental health conditions can be a long-term task. Small but positive effects on grandparents' physical health were also found through this review. However, it should be noted that a pretest-posttest design was used when evaluating program effects on physical health status. Considering the trend that people typically encounter more health problems as they get older, the effects of the interventions that included health components should be recognized.

Further to the interventions at grandparent caregivers' health status, there are increasing effective efforts to empower grandparents. The grandparents also reported a small to moderate increase in their social support. Strozier (2012) suggests that support groups can significantly improve formal support, including health care, professional agencies, schools,

church members, and social groups. Grandparents can increase their resourcefulness and confidence in seeking support from others.

A small but positive effect was found in regard to grandparents' relationships with other family members. Grandparents' involvement in child caregiving may lead to more complicated familial relationships or may intensify pre-existing conflict between grandparents and the grandchildren's parents (Mason, May, & Clarke, 2007). Children raised by their grandparents may exhibit behavioral and emotional problems as a result of parental abandonment, neglect and abuse, or their exposure to parental substance abuse and domestic violence. As a result, grandparents often need to establish ground rules with the children's parents (Monahan et al., 2013). Thus, managing familial relationships is difficult and it often takes a long time to reestablish and change these relationships (Leung et al., 2014). This echoes Strozier's (2012) findings, in that grandparents were less likely to receive informal support because of the stresses of family relationships.

Grandparents were also found to increase their skills and self-efficacy in dealing with parenting tasks, with a small to moderate effect size. As how to parent grandchildren is one of the major stressors for grandparents, which affects the quality of life of both grandparents and grandchildren, these findings demonstrate that the inclusion of a parent training component in interventions can be both effective and necessary (Leung et al., 2014).

Evidence from two RCT studies demonstrated a significant decrease in children's behavioral problems (Kirby & Sanders, 2014; Leung et al., 2014), indicating that grandchildren could also benefit from these programs. The distinct characteristics of the grandparents in the two RCT studies should be noted. Compared with custodial grandparent participants in other studies, most grandparents in the two RCTs were informal caregivers, though they still provided intensive child caregiving. The children's parents were still

involved in the child rearing. The population difference warrants the implementation and evaluation of similar educational programs with custodial grandparents.

This meta-analysis examined the effectiveness of intervention programs for grandparent caregivers in regard to a wide spectrum of well-being outcomes. In addition, the current review demonstrates that interventions with supportive, educational, and health components can be an effective approach for improving the well-being of grandparent caregivers and grandparent-headed families. Results of moderator analyses demonstrate that the interventions were effective, regardless of how participants were recruited, study design, sample size, the length of the intervention, and whether the intervention was group-based or involved home visitation. However, the programs with health components resulted in a smaller effect size compared with those without health components. The finding is reasonable as interventions aiming at grandparents' physical health may only result in a small but positive effect.

Most interventions in the review particularly focused on custodial grandparents who were at greater risk of a range of health and psychosocial problems (African American, female, low SES, divorced or widowed); thus, the effects may vary when other participants are included. For example, non-custodial grandparents in some European and East Asian countries can serve as important child caregivers and provide intensive childcare, warranting interventions that can reflect the differences within the grandparent population and also meet their specific needs (Chen et al., 2011; Glaser et al., 2013). In addition to this, the involvement of the grandfather may increase program effects, because spousal support is important in reducing the emotional strain caused by the caregiver role (Conway, Jones, & Speakes-Lewis, 2011).

There are some limitations of this meta-analysis. First, methodological limitations of the included studies should be noted. As interventions for grandparent caregivers are at an

early stage of development, pretest-posttest design is commonly used, especially for lengthy interventions with multiple components. The lack of comparison groups can undermine confidence in the programs' efficacy. Another methodological concern is the small sample sizes in several studies. These methodological limitations may contribute to the insignificant results of moderator variable analyses. Second, this meta-analysis included studies that were mainly conducted in the United States and focused on at-risk grandparent-headed families, lacking evidence on the acceptability and effectiveness of interventions for grandparents in other countries.

To find out what works in an intervention program and to facilitate the implementation of effective interventions, more analyses of moderator variables on the basis of high-quality evidence are needed. Thus, more studies using an RCT design that can control for bias are highly recommended for future research. In addition to this, we agree with McLaughlin et al.'s (2017) suggestion that studies should include diverse participants that are characterized by "gender, socioeconomic status, ethnicity, and geography". For example, previous studies have been composed overwhelmingly of grandmothers and so there is now a need to examine the involvement of grandfathers in child caregiving. There is also a need to examine the effectiveness of interventions designed for grandparents in different countries with different socioeconomic statuses. We also suggest that more efforts should be devoted to evaluating the effects on the developmental outcomes of grandchildren and well-being of other family members in future studies.

The results of this meta-analysis demonstrate that intervention programs are particularly effective in regard to enhancing grandparents' social support and parenting skills, which may be useful in promoting their psychosocial well-being and reducing grandchildren's behavioral problems. Therefore, we suggest that intervention approaches include these supportive and educational components. Also, as suggested by Hayslip et al.

(2017) and Strozier (2012), reducing social isolation needs to become a focus of intervention programs for grandparent caregivers. We need to consider an effective way to increase informal social support, improve family relationships, and reduce in-law conflict and other conflicts between grandparents and other family members. A family-based approach that takes into consideration the needs of grandparents, parents, and children may be useful.

Researchers and practitioners are encouraged to design and include effective health components in interventions to improve grandparents' physical health. Intervention programs tailored to the needs of grandparents with different profiles (e.g., gender, socioeconomic status, intensity of child caregiving) are needed. There is also a need to increase the recognition of cultural variability when implementing interventions in different countries. Technology-based interventions that use online resources may be a direction for future practice, in order to benefit more grandparents and grandchildren (Musil et al., 2015).

The current study demonstrates that intervention programs for custodial grandparents are a promising approach to improving grandparents' well-being, based on evidence from different evaluation studies. Programs using supportive and educational components resulted in significant increases in social support and parenting skills, as well as a significant decrease in the grandchildren's behavioral problems. However, there is no one-size-fits-all program. We need to develop tailored interventions on the basis of higher levels of evidence that consider grandparents' psychosocial needs and their demographic, socioeconomic, and geographic characteristics.

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