Efficacy of Parenting Programs to Reduce Parenting Burdens in Multicultural Families: A Systematic Review and Meta-Analysis

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Abstract

Background: We comprehensively investigated and summarized the current situation of parenting programs for multicultural families in South Korea.

Methods: Two researchers independently searched and selected 16 studies on parenting programs for multicultural families and analyzed the major dependent variables, including parenting stress, parenting efficacy, parenting attitude, and parental satisfaction, in a meta-analysis of parenting stress and parenting efficacy (n=6 each). This study was dealt with a Bayesian meta-analysis to perform examine the effect sizes for parenting stress and parenting efficacy. Sensitivity to prior distributions was evaluated before the Bayesian meta-analysis, and an optimal prior distribution was selected based on the Watanabe–Akaike information criterion.

Results: The combined effect sizes for parenting stress and parenting efficacy were found to be >1 in both the frequentist and Bayesian meta-analyses, indicating that the parenting programs for multicultural families in South Korea are highly effective.

Conclusion: These basic data can facilitate the expansion of customized social services for reducing parenting burdens in multicultural families.

Keywords: Multicultural family; Parenting stress; Parenting efficacy; Meta-analysis; Heterogeneity

Introduction

Municipal statistics on foreign residents show that the number of foreign residents in South Korea has increased by approximately 3.8-fold from 536,627 in 2006 to 2,054,621 in 2018. The number of children of foreign immigrants increased by 6.8%, to 237,506, between 2017 and 2018. Among these, 226,145 (95.2%) children were South Korean citizens by birth, and their number has been consistently increasing (1). Moreover, the number of North Korean refugees increased to 33,293 between 2018 and Dec 2019 and continues to increase; 57.3% of the North Korean refugees are men and women in their 20s or 30s. Thus, the number of North Korean refugees married or became parents in South Korea is increasing (2-4). Unlike their parents, children born into a multicultural family spend their childhood in Korea and grow into conflict with their parents due to cultural differences (5). As the Korean society places

a greater emphasis on the importance of maternal roles, rather than paternal roles, in parenting, these mothers experience high parenting burdens that are further exacerbated by problems in communication, lack of support systems, and financial difficulties (6-8). The immigrant mothers may struggle to obtain information about parenting on the Internet and from books due to their lack of proficiency in Korean, struggle to adapt to the patriarchal culture and the different parenting style in Korea, and suffer from the lack of social support (7,9,10). In Dec 2019, 80.7% of North Korean refugees were reported to be female (4). Besides adapting to the South Korean society, these individuals are faced with an additional task of adapting to the parenting and education styles of South Korea and may clash with their children due to generational and cultural differences and lack of understanding about the education system in South Korea (2,11). All of these abovementioned challenges hinder the healthy growth and development of children in multicultural families.

Studies have investigated the impact of interventional programs for married immigrant women, satisfaction among women in multicultural families, marriage satisfaction, and children and adolescents in multicultural families (12-15). However, few studies have comprehensively assessed the effect of parenting programs on multicultural families.

This systematic review and meta-analysis aimed at providing basic research data for future research on multicultural families in South Korea and for public health policy-making through a review of parenting programs for multicultural families.

Methods

Selection of studies
This study was conducted according to the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-analysis) guideline. Studies were selected by population, intervention, comparison, outcome, and study design. Of the studies that evaluated the effect of a parenting program for multicultural families in South Korea (updated

before February 2020), we selected studies by the following inclusion criteria: 1) studies whose participants (P) were a father or mother from a multicultural family in South Korea; 2) studies in which interventions (I) were parenting programs; 3) studies in which the comparator (C) was not subjected to an intervention; 4) studies that measured the effect of a parenting program as the outcome (O); and 5) published studies with a randomized controlled trial (RCT) or non-randomized controlled trial (NRCT) study design (S). Only studies published in Korean that reported the statistics (mean and standard deviation (SD)) needed to calculate the effect sizes of the control and experimental groups were selected. Literature reviews, survey studies, qualitative studies, studies for which effect sizes could not be calculated, abstracts, reports, and conference papers were excluded.

Article quality evaluation
Two researchers independently performed the quality assessment. Disagreements, if any, between the researchers were resolved by a joint review of the study to reach a consensus.

Method of literature search
The literature search was conducted by using electronic databases in South Korea between Feb 16, 2020 and Feb 29, 2020. The search period was from the default-beginning year to the latest update as of February 2020. Articles published or updated after the default year of database inception and Feb 2020 were searched. Studies were searched in the Research Information Service System and Korean Studies Information Service System databases by using the following keywords: "multicultural" + "parenting" and "marriage immigration" + "parenting." Overall, 1,182 studies were retrieved on the initial search. Four articles were additionally identified through a search in Google Scholar and a review of the references lists of the initially identified studies. Overall, 1,186 studies was obtained, and 552 duplicate studies were removed from the list. Subsequently, the remaining 634 studies were screened by a review of

their titles and abstracts in accordance with the inclusion and exclusion criteria. Thereafter, 559 studies (188 irrelevant studies, 13 reports, 19 conference papers, 6 articles with irrelevant participants, 164 survey studies, 135 qualitative studies, 73 literature reviews, and 1 study using a mixed method) were excluded, and the remaining 35 were selected for a full-text review. Nineteen studies (15 studies with a one-group pretest–posttest

study design, 3 studies with inadequate results, and 1 study with inadequate statistics) were excluded, and 16 studies were finally selected. Two researchers independently searched and selected these studies; in case of disagreements about study inclusion, a consensus was reached through a joint review of the study (Fig. 1).
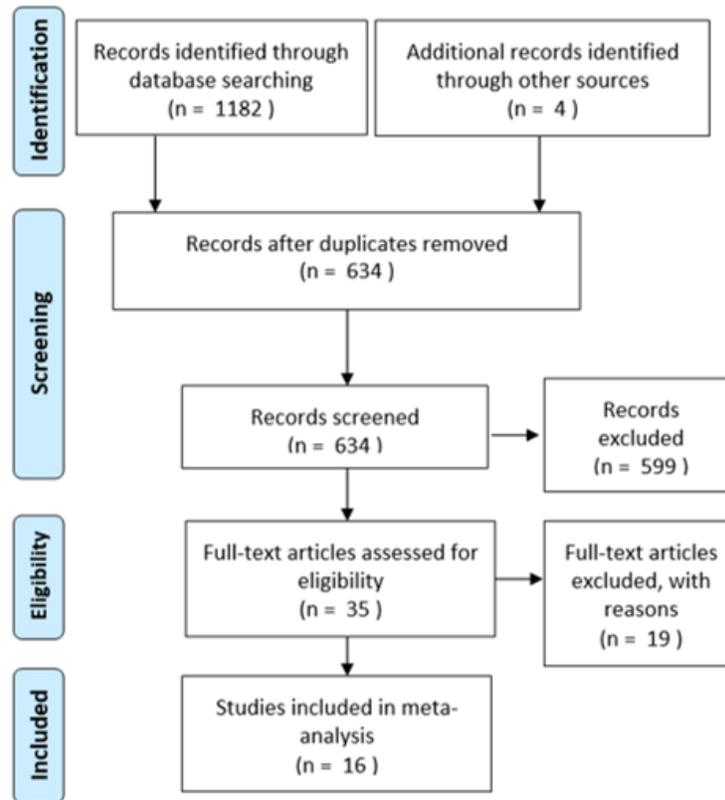

Fig. 1: PRISMA flow chart diagram of study selection process

Statistical analysis

To test the null hypothesis, which assumes that all studies examined in the meta-analysis have the same effect size, the Q statistics was used. T statistics, which explain the variations in the effect sizes and do not depend on the number of studies, and I^2, which is a measure of statistical heterogeneity, were determined. An Egger's test, which is a test for the asymmetry of the funnel plot, was used to assess publication bias. The meta-analysis was

conducted using R package meta statistical software (16).

Bayesian meta-analysis is useful for combining the results of heterogeneous studies or when the sample size is too small for a meta-analysis. The analysis facilitates predictions while accounting for uncertainty when useful prior information is available, and it incorporates uncertainty for all parame-

ters (17). In a meta-analysis of the effect of parenting programs for multicultural families, the selected studies were found to have heterogeneous outcomes, and the number of studies examined was too small; thus, a Bayesian meta-analysis was deemed to be more suitable than the frequentist meta-analysis for this study.

As the results of a Bayesian meta-analysis can change based on the prior distribution, a prior distribution of variance must be carefully selected when the number of studies is small (18). In this study, a sensitivity analysis was conducted on four prior distributions of variance between the studies.

a: $\tau \sim cauchy(0,0.5)$
b: $\tau \sim uniform(0,10)$
c: $\tau \sim LogNormal(0,1)$
d: $\tau \sim InverseGamma(2,1)$

Bayesian inference estimates the posterior distribution rather than the maximum likelihood. By determining the mean log-likelihoods of the parameters obtained from the posterior distribution, the Watanabe–Akaike Information Criterion (WAIC) can be obtained (19). The AIC gradually matches the WAIC when the posterior distribution approximates the normal distribution. However, posterior distributions generally do not approximate normal distributions. Therefore, the WAIC was used for the model selection in this study. The Bayesian meta-analysis was performed using the R brms package, a Bayesian regression model package that uses Stan (20).

Results

General characteristics

Table 1 summarizes the characteristics of the 16 selected articles. The search was not filtered for publication dates, but all studies were published after 2008. The number of participants was determined by only the number of mothers examined in the studies. Overall, 396 participants (194 in the experimental groups; 202 in the control groups) were included.

Table 1: Characteristics of included studies (N=16)

Variable	Category	n
Published year	2008	1
	2010	1
	2011	2
	2012	1
	2013	2
	2014	3
	2015	2
	2016	4
Study design	Non-equivalent control group pre-post test design	13
	Non-equivalent control group non-synchronized design	3
Subjects	Mother	11
	Mother & child	3
	Parent	2
Dependent variables*	Parenting stress	6
	Parenting efficacy	6
	Parenting attitude	3
	Parent-role satisfaction	3
Participants	Experimental group (total N=194)	mean: 12.1
	Control group (total N=202)	mean: 12.6
Note. *Multiple response		

Methodological quality assessment

Four studies (ID 3, 7, 9, and 10) did not perform a homogeneity test on the "comparability" and "selection of control group." However, as no difference was found in the likelihood of exposure to an intervention between the experimental and control groups in these studies, the groups were deemed comparable; therefore, the risk of bias was low for all parameters. All of the studies that examined the "measurement of intervention," "outcome assessment," and "selective outcome reporting" used reliable and validated tools and explained the major predicted outcomes; thus, the risk of bias was low for these parameters. The risk of bias was high for "blinding of examiners" as not all studies had blinded investigators. The risk of bias was low for "confounding variables" in 15 studies and was uncertain in one study (ID 3) that did not provide explanations about pairing, homogeneity test, or any adjustments that were made. The risk of bias was deemed uncertain for "incomplete data" in six studies (ID 1, 2, 5, 8, 11, and 14) that reported withdrawal or dropout rates of 5% or higher and low for the remaining 10 studies (Table 2).

Content analysis

The sample size was in the range of 5–23 for experimental groups (mean: 12.1) and 6–27 for control groups (mean: 12.6). Five studies reported the method of sample size calculation. Social welfare and nursing were the commonest major categories among the interventions provided (n=5), followed by education (n=4), and pediatric studies and counseling (n=1, each). All studies used reliable and validated tools. Interventions were provided to a team of individuals, individuals, or both. The interventions were undertaken for 1–10 wk/3–17 sessions/40.8–240.0 min per session (mean 5.7 wk/7.5 sessions/102.6 min). Parenting stress was the commonest dependent variable, followed by parenting efficacy, parenting attitude, and satisfaction with parental roles. Most studies reported significant effects of interventions on these variables (Table 2).

Table 2: Descriptive summary of selected studies

ID	First Author	Studies	Participants					Interventions				Outcome variables	Homogeneity test
			Subjects	Exp. (n)	Con. (n)	Drop (n)	Cal.	Provider's major	Name	Format	Weeks/No. of sessions/Min		
1	Kim	(21)	Mother	6	7	5	-	Social work	Resilient parenting P	Team	6/6/90	PE*, PRS*	+
2	Kim	(22)	Mother	16	17	3	+	Nursing	Pregnancy and delivery Educational P	Team	3/3/120	Non-main variables	+
3	Kang	(23)	Mother & child	5	6	0	-	Education	Language development P	Individual	9/17/-	PA*	-
4	Jo	(24)	Mother	12	12	0	-	Counseling	Group counseling P based on the MBTI	Team	5/10/90	PA*	+
5	Lee	(25)	Mother	17	16	3	+	Nursing	Newborn care education P	Team	3/3/90	PE*, PS*	+

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6	Chung	(26)	Mother	8	8	0	-	Education	Christian parenting education P	Team	8/8/90	PA*, PS*, PRS*	+
7	Han	(27)	Parent	10	10	0	-	Social work	Parent empowerment P	Team	8/8/120	Non-main variables	-
8	Kim	(28)	Mother	23	27	8	+	Social work	Parent education P	Team	3/6/90	PE*, PS*	+
9	Im	(29)	Mother	12	12	0	-	Education	Parent education P	Team	-/10/-	Non-main variables	-
10	Han	(30)	Parent	10	10	0	-	Social work	Parenting P	Team	10/10/120	PE*, PRS*	-
11	Kim	(31)	Mother	8	10	2	-	Child studies	Cognitive behavioral therapy	Team	5/10/120	PE*, PS*	+
12	Lee	(32)	Mother	12	12	0	-	Education	Parent education P	Team	10/10/120	Non-main variables	+
13	Kim	(33)	Mother & child	6	6	0	-	Social work	Mother-child filial therapy	Team	5/5/240	PE	+
14	Park	(34)	Mother	16	17	10	+	Nursing	Individual breast-feeding promotion P	Individual & Team	1/3/45	Non-main variables	+
15	Park	(35)	Mother	18	17	0	-	Social work	Child abuse prevention P	Team	5/5/60	PS	+
16	Lee	(36)	Mother & child	15	15	0	+	Nursing	Newborn parenting P	Individual	5/6/40.8	PS*	+

Note. Exp.-Experimental group; Con.-Control group; Cal.-Calculation; Min-Minutes; P-Program.; PE-Parenting efficacy; * -**P** <.05; PRS-Parenting role satisfaction; PA-Parenting attitude; PS-Parenting stress;.

Meta-analysis of major variables

A meta-analysis was performed on parenting stress and parenting efficacy, which were the major dependent variables discussed in six studies each (Fig. 2).

Studies that examined parenting stress were heterogeneous with Q of 13.79 (P=.017) and I^2 of 64%. The mean effect size that was calculated by using the random effects model was −1.102 (Z=−3.481, P<.050); thus, there was a significant difference in the effect sizes between the experimental and control groups. We detected publication bias in the results of Egger's test, although the test lacked statistical power because fewer than 10 studies were analyzed (t= −4.287, P=.013).

Furthermore, studies that examined parenting efficacy were inhomogeneous (Q=12.63, P=.027; I^2=60.0). The combined effect size was 1.280 and statistically significant (Z=3.674, P<.050). No publication bias was found in the Egger's test (t=0.345, P=.748).
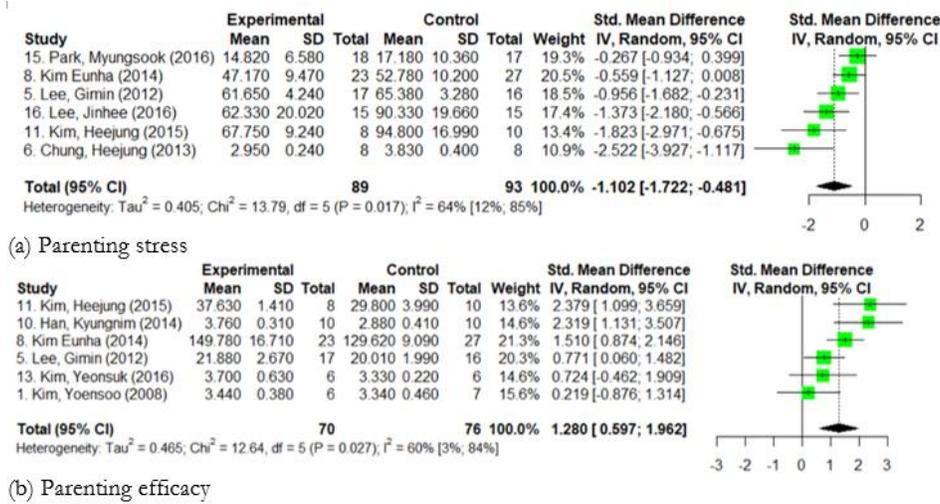
Fig. 2: The forest plot of meta-analysis, including a 95% confidence interval

Bayesian meta-analysis on major variables

In general, an interventional program that is analyzed in a meta-analysis is deemed ineffective if the SMD is less than 0.3. By using the empirical cumulative distribution function for the posterior distribution of SMDs obtained in the Bayesian meta-analysis, the Pr ($SMD \geq -0.3$) = 0.022 for parenting stress was found at 0.022 and the Pr ($SMD \leq -0.3$) = 0.001 of parenting efficacy at 0.001.

Figure 3 shows a forest diagram for the Bayesian meta-analysis that considers the uncertainty in individual studies. The SMDs for parenting stress and parenting efficacy were found to be −1.111 and 1.272, respectively. In contrast to the results of the frequentist meta-analysis shown in Fig. 2, the mean effect size obtained from the posterior distributions of individual studies was directed toward the combined effect size. The studies were included in the 95% confidence interval of the combined effect size, indicating that the heterogeneity among the studies was resolved.
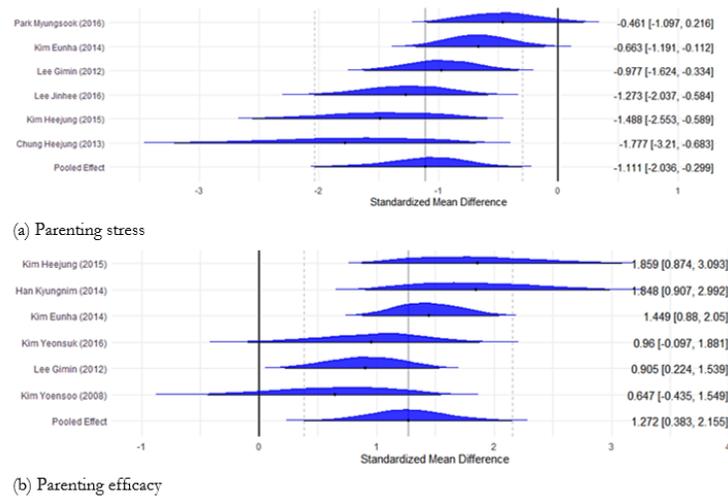

Fig. 3: The forest plot of Bayesian meta-analysis, including a 95% credible interval

Discussion

The number of South Korean residents who are foreign immigrants married to a Korean or who are North Korean refugees is increasing in line with the increasing international exchanges and globalization. Many multicultural families struggle to adapt to the new environment and language and face financial difficulties in the early period of immigration. Immigrant mothers additionally face parenting challenges but lack social support from the government or local communities (2,3,6-8).

Parenting stress, parenting efficacy, parenting attitude, and satisfaction with parental roles were the most frequently assessed dependent variables in the studies. In most studies, parenting programs had a significant effect on these variables, which supports previously reported findings (13,15).

A meta-analysis was performed to combine the results of the selected studies on parenting stress and parenting efficacy. The SMD for parenting stress and parenting efficacy was −1.102 and 1.280, respectively. Considering the small number of studies analyzed and their heterogeneity, a Bayesian meta-analysis was performed. The SMD was −1.111 for parenting stress and 1.272 for parenting efficacy. According to Cohen (37), parenting stress and parenting efficacy were both confirmed to have large effect sizes through two meta-analyses. Despite the examination of different populations, the SMDs found in this study were close to or higher than those reported for parenting stress (1.08) and parenting efficacy (0.72) in a Korean study on the effect of parenting programs for parents with special needs children (38). A study that compares the level of parenting stress and efficacy between mothers in multicultural families and mothers with special needs children is needed. The results of the meta-analysis conducted in this study showed that parenting programs effectively reduce parenting stress and efficacy in mothers in multicultural families.

The largest reduction on parenting stress was observed in a study that examined the effect of parenting programs on North Korean refugee mothers. Further research is needed to explain this finding. A study that reported the largest effect size for parenting efficacy provided a parent-training program that included cognitive behavioral therapy for female immigrants married to Koreans. Interventional programs in which all members of the family can participate must be conducted to measure the effect of the programs on the whole family (39).

Parenting programs reduce the parenting burdens in multicultural families who struggle to adapt to the new culture and face financial difficulties after immigration (13,15). Consistent with these studies, parenting programs were found to reduce the parenting stress and increase the parenting efficacy in immigrant mothers in this Bayesian meta-analysis. Parenting stress and efficacy, which had large effect sizes, are important target factors in interventional programs to reduce the parenting burdens in multicultural families. However, the sample size of 16 articles is too small to sufficiently explain the effect of parenting programs on dependent variables besides parenting stress and efficacy. It is necessary to examine the effect of parenting programs on other dependent variables, including parenting attitude and satisfaction with parental roles, when more research data on multicultural families becomes available.

Conclusion

Parenting programs for multicultural families significantly reduced parenting stress and significantly increased parenting efficacy. Long-term and continuous interventions for multicultural families in South Korea and other countries that are developing into multicultural societies will further provide the data needed to develop social services that are customized for different types of families. The results of this study can be used as basic research data for planning measures to aid multicultural families in their parenting and societal integration to create a harmonious, multicultural Korean society.

Journalism Ethical considerations

Ethical issues (Including plagiarism, informed consent, misconduct, data fabrication and/ or falsification, double publication and/ or submission, redundancy, etc.) have been completely observed by the authors.

Acknowledgements

Conflict of interest

The authors declare that they have no conflicts of interest to disclose.

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