

The effectiveness of home visiting programs for the prevention of child maltreatment recurrence at home: a systematic review and meta-analysis

Kyeongji Han¹, Sumi Oh²¹Registered Nurse, Jeju National University Hospital, Jeju · Graduate Student, College of Nursing, Jeju National University, Jeju; ²Assistant Professor, College of Nursing · Health and Nursing Research Institute, Jeju National University, Jeju, Korea

Purpose: This systematic review aimed to investigate the effectiveness of home visiting programs targeting parents who have maltreated their children on the prevention of child maltreatment recurrence. **Methods:** Major databases were searched (Ovid-Medline, PubMed, Cochrane Library, CINAHL, and RISS). The frequency of maltreatment was measured for the meta-analysis, which was conducted using Review Manager 5.2 software. The effect size was measured using odds ratios (ORs). **Results:** Six studies were included in the analysis, none of which were conducted in South Korea. The meta-analysis demonstrated that the risk of child maltreatment recurrence significantly decreased after a home visiting program was implemented (OR=0.45, 95% confidence interval [CI]=0.29-0.68). Nurses were the most common intervention providers. **Conclusion:** Home visiting programs should be provided for families in which maltreatment has already occurred to prevent the recurrence of maltreatment and foster a home environment in which children can live safely. Since the rate of child maltreatment in Korea is increasing, further research is needed to develop and implement home visiting programs in which nurses play a major role in preventing the recurrence of child maltreatment.

Key words: Child abuse; Parents; Home visits; Systematic review; Meta-Analysis

Corresponding author

Sumi Oh

College of Nursing · Health and Nursing
Research Institute, Jeju National
University, 102 Jejudaehak-ro, Jeju
63243, Korea
TEL: +82-64-754-3756
FAX: +82-64-702-2686
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INTRODUCTION

Child maltreatment refers to the abuse and neglect of children under 18 years of age. The World Health Organization broadly defines child maltreatment as a concept that includes all forms of neglect and exploitation, as well as physical, mental, and sexual abuse that endangers the health, survival, development, or dignity of a child [1]. In South Korea, there were more than 40,000 child maltreatment reports in 2019, of which 79.5% of incidents occurred in the child's home [2], indicating that the problem of domestic child maltreatment is serious. In addition, when domestic child maltreatment occurs, in most cases, the victim remains at or is returned to the home in which the abuse occurred, according to the 'Originating Family Protection Principle'[2]. Therefore, creating a home environment in which children can live safely is of the utmost importance.

By enacting the Act on Special Cases concerning the Pun-

ishment of Child Abuse Crimes in 2014, South Korea laid the groundwork for therapeutic interventions targeted to child abusers, going beyond the existing focus on the detection of child maltreatment and the protection of victims. The Child Abuse Punishment Act mandates treatment programs for child abusers, and, through this, efforts are being made to prevent the recurrence of maltreatment [2]. Nevertheless, the rate of child maltreatment recurrence is increasing and comprises 11.4% of all child abuse cases. Additionally, the number of recurrence cases of child maltreatment by parents was very high, accounting for 94.5% of the total number of cases of recurrence [2]. This high recurrence rate of domestic child maltreatment may be the result of families' poor parenting practices or the failure to teach various skills in interventions that are provided by child protective services [3].

In particular, the coronavirus disease 2019 pandemic increased the amount of time that children spent at home, and some families experienced crises such as economic difficulty,

which led to an increased incidence of child abuse [4]. Since child maltreatment in the home typically occurs in private, it is important to detect abuse early and improve family function through home visiting programs to prevent recurrence. In Korea, parents with current or previously documented reports of maltreatment are often excluded from home visiting programs, and interventions typically focus on preventing maltreatment before it occurs. Home visiting programs refer to programs in which families are screened to identify potentially vulnerable children that provide education, support, and referral to other services to improve children's health and developmental status through home visits [5]. Numerous previous studies have shown that home visiting programs are effective for improving birth outcomes, children's health and development, and parenting skills [6,7]. Although there are many reports of successful home visiting programs, some studies have found that such programs are effective at preventing the recurrence of child abuse while others have found them to be ineffective; thus, the results are heterogeneous across studies [8,9]. Therefore, the characteristics of home visiting programs implemented domestically and internationally must be explored, and strategies should be devised for constructing more effective home visiting programs by evaluating the effectiveness of existing programs to reduce the rate of recurrence of child maltreatment in the home.

There have been several systematic reviews on interventions for the prevention of child maltreatment. However, previous studies have typically examined the effectiveness of intervention programs for parents who were at high risk of child maltreatment or parents who had not maltreated their children [10-12], and it is thus difficult to estimate the effectiveness of programs for preventing the recurrence of child maltreatment in the home. In a systematic literature review study by Vlahovicova et al. [13], 14 studies were analyzed that reported the recurrence rate of physical abuse by parents with histories of abuse, and a meta-analysis was performed on four of them. As a result, it was found that home visiting programs had a significant positive effect on reducing the recurrence of child maltreatment; however, the interventions in the included studies were conducted in various settings such as hospitals, centers, and homes, and evidence suggesting particularly effective intervention methods and programs for preventing the recurrence of domestic child maltreatment was limited.

As such, there have been few systematic literature reviews to analyze the effectiveness of home visiting programs for parents who have maltreated their children at reducing the recurrence rate. Therefore, this study aimed to investigate the effectiveness of home visiting programs for parents who have maltreated a child at reducing the recurrence of child

maltreatment. The findings of the present study will contribute to the development of specialized programs for restoring the relationship between the victims of child abuse and the perpetrators for family integration.

METHODS

Ethics statement: This study is a literature review of previously published studies and was therefore exempt from institutional review board approval.

1. Study Design

This study is a systematic review that examined the characteristics of home visiting programs for parents who have maltreated their children in order to evaluate the effectiveness of interventions at reducing the recurrence of child maltreatment.

2. Literature Search, Inclusion and Exclusion Criteria of Data

The participants, intervention, comparisons, and outcome (PICO) of this study were defined as: parents who have previously engaged in child maltreatment (P), home visiting programs (I), routine interventions or no treatment (C), and the recurrence of child maltreatment (O). The literature search was conducted in accordance with the guidelines of the Korea Institute of Health and Medical Research [14] and Preferred Reporting Items of Systematic Reviews and Meta-Analysis (PRISMA) [15] guidelines for systematic literature reviews. On April 14, 2021, the literature search was conducted using Ovid-Medline, PubMed, Cochrane Library, Cumulative Index to Nursing and Allied Health Literature (CINAHL), and Academic Research Information Service (RISS).

In the domestic database, the search terms "child", "maltreatment", "home visit", "parent education", "program", and "recurrence" were combined and searched. In the international databases, the search was performed using relevant medical subject headings and words related to key concepts. The following search was made using the Boolean operator and truncation: {"baby.mp." OR "babies.mp." OR "infant.mp." OR "newborn.mp." OR "toddler.mp." OR "child*.mp." OR "toddler*.mp." OR "adolescen*.mp." OR "teen*.mp."} AND ("exp child abuse/" OR "maltreatment*.mp." OR "abus*.mp." OR "mistreat*.mp.") AND ("parent*.mp." OR "mother.mp." OR "father.mp." OR "famil*.mp.") AND ("home.mp." AND "visit*.mp."). A total of 1,439 articles (all of which were international in origin) were identified as a result of the search.

Duplicate data for 647 articles were removed using End Note. Among the remaining 805 articles, relevant articles were selected based on their titles and abstracts, and the original texts of the selected papers were reviewed to determine if they met the inclusion criteria. Studies targeting parents who maltreated their children that examined programs to prevent recurrence through home visits and studies that reported results related to the recurrence of child maltreatment were included. Studies published in languages other than English or Korean, studies that were not peer-reviewed, literature review studies, and duplicate studies were excluded. Literature selection and exclusion were conducted independently by two researchers, and when the researchers disagreed, a consensus was arrived at through discussion.

3. Literature Quality Appraisal

The quality of individual studies was evaluated using the method checklist by the UK Scottish Intercollegiate Guidelines Network (SIGN) [16]. The SIGN quality evaluation tool consists of five tools that are tailored to different types of studies. Of them, the quality evaluation checklist for comparative clinical trials was chosen for the evaluation in this study. The comparative clinical trial quality evaluation checklist consists of ten items: a focus question, randomization, concealment, blinding, similarities between groups, differences in treatment, validity, dropout rate, intent-to-treat analysis, and comparable results. The study received an evaluation of "++" if almost all of the criteria were met, "+" if some of the criteria were met, and "-" if almost all criteria were not met. Afterward, based on the evaluation of the contents for each item, the overall risk of bias in the literature was evaluated as "++", "+", or "-". Two researchers independently evaluated the selected literature, and if their evaluation results differed, the researchers arrived at a consensus through discussion.

4. Data Analysis

Data were qualitatively and quantitatively analyzed. Quantitative analysis was performed using the four studies for which the number of recurrences could be estimated based on the statistics they reported (e.g., when the total number of subjects and the recurrence rate were both reported). Statistical analysis was performed using Review Manager 5.2 software. The dichotomous data—the child maltreatment recurrence rate—was used for meta-analysis by calculating the number of recurrences in both the intervention and control groups as the frequency of occurrence (event). The effect size was measured using odds ratios (ORs).

When the number of recurrences by type of maltreatment

was reported rather than the total number of recurrences [5], there was a risk of overestimating the number of subjects due to repetition when counting the total number of occurrences, so only the type of maltreatment with the highest number of occurrences was included in the meta-analysis in these cases. In addition, when the number of cases of maltreatment from child protection agency records and from hospital records was reported separately [9], for consistency with other studies, only the number of recurrences from child protection agency records were included in the analysis.

Effect size heterogeneity was evaluated using a forest plot, the Cochran Q-test, and the Higgins I^2 test. Through the forest plot, it was confirmed whether there was an overlap in the estimate of the confidence interval (CI) and intervention effect between studies, and the results of the χ^2 test were checked using the Cochran Q-test. A p-value of $\leq .100$ was considered to indicate a basis for heterogeneity. In addition, Higgins' I^2 values below 25% were considered to indicate no heterogeneity, while values between 25% and 50% were considered to indicate small heterogeneity, values between 50% and 75% were considered to indicate medium heterogeneity, and values of 75% and above were considered to indicate large heterogeneity [14]. The sample, intervention method, and intervention intensity and duration for each study were different, and when the heterogeneity test results were combined, it was determined that heterogeneity existed. A random-effects model was used for further analysis. Publication bias was evaluated using a funnel plot.

RESULTS

1. Characteristics of the Included Studies

As a result of the process of literature inclusion and exclusion, a total of six randomized controlled trials were included in the final analysis [5,8,9,17-19] (Figure 1). According to the quality evaluation, only one study satisfied the criteria for concealment and blinding [18]. However, study quality was evaluated in consideration of the fact that concealment and blinding would be difficult due to the nature of the interventions. For the criterion measuring similarity between the intervention and control group, two studies [17,19] did not present comparative results for the intervention and the control group, and the data related to this criterion were considered to be unclear. The dropout rate in the two studies exceeded the acceptable level of 20% [8,17], but given that the follow-up period was 7 years and the dropout rates in the intervention and control groups were similar, this was judged as acceptable. As a result of the overall quality evaluation of the selected papers, two studies were evaluated as "++" [9,18] and

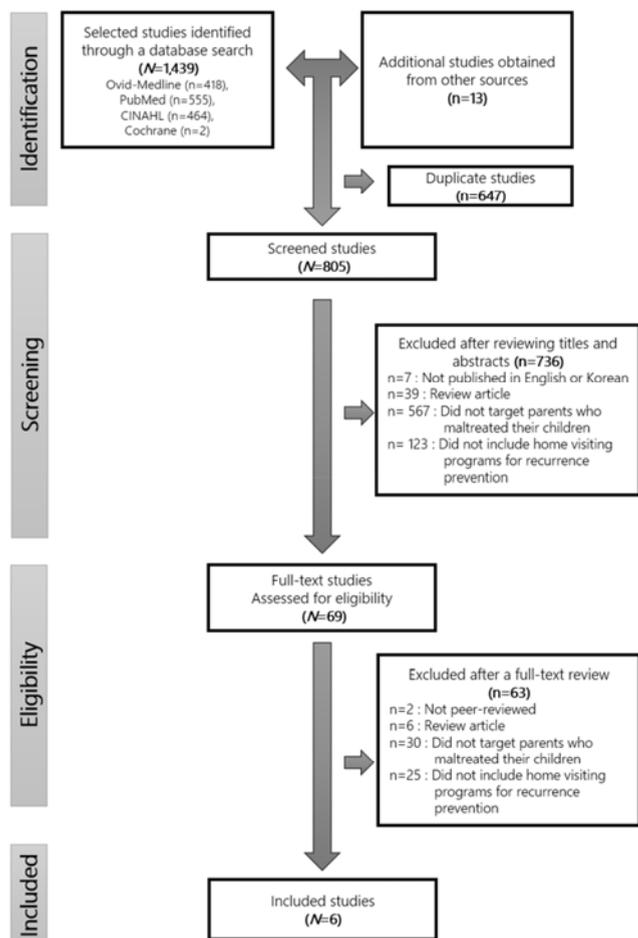


Figure 1. PRISMA flow diagram of the literature search.

four others as "+"[5,8,17,19] (Table 1). Therefore, the risk of bias in the selected literature was judged to be acceptable overall. The ORs were not analyzed according to the quality level of the literature since the quality of the selected studies was considered acceptable.

Many of the studies were published in 2018 or later [5,8, 17,18], and most of them were conducted in the United States [8,17-19]. The follow-up period ranged from less than 1 year to 7 years (Table 2).

2. Characteristics of Child Maltreatment Prevention Programs that Include Home Visits

Table 2 shows the characteristics of the child maltreatment recurrence prevention programs including home visits that were analyzed in this study. The components of the specific programs examined in each study varied, but, in general, home visits were conducted periodically to observe the health of children and families, children's growth and development status, and the nurturing environment and style, and to iden-

tify the needs of the family to provide the intervention.

The components of the programs included: advice on education and parenting methods related to essential topics such as child development and nutrition [5,9,18,19]; connecting participants to health care organizations and/or community services when problems with the children's and families' health and lifestyle arose [8,9,17-19]; family support [8,9,19]; child health and developmental screening [8,17,18]; assessment of and intervention for domestic crises such as drug addiction, domestic violence, depression, stress, lack of leisure time, and poor economic conditions [18,19]; fostering a safe and nurturing home environment [18,19]; and building informal support networks with other parents [17].

Four studies included details about the duration of the intervention [8,9,18,19]. Three studies that detailed the intensity of interventions reported that weekly visits were conducted when there were children under the age of 6 months, with the visit intervals being gradually extended thereafter [8,9,18]. Nurses, who were the intervention providers in three studies, were the most common intervention providers [5,8,9].

3. Effect of Home Visiting Programs on Preventing the Recurrence of Child Maltreatment

1) Effect on reducing the child maltreatment recurrence rate

All six studies reported results for the recurrence of child maltreatment after a home visiting program was conducted, of which five [8,9,17-19] assessed whether maltreatment occurred based on data reported to child protection agencies and one [5] assessed whether maltreatment occurred using a self-report questionnaire.

Four of the studies [8,9,18,19] reported the total maltreatment recurrence rate, and the recurrence rate in the intervention groups was found to range from 10.0% to 56.8%, while the recurrence rate in the control groups was found to range from 21.0% to 66.7%, indicating that the recurrence rate in the intervention group was lower than that of the control group in all studies. A study by Khosravan et al.[5] reported the recurrence rate by type of maltreatment and found that recurrence occurred significantly more frequently in the control group except in instances of neglect, malnourishment, and leaving children at home alone. The differences reported between the intervention and control groups varied from study to study. In three studies, the recurrence rate among the intervention group was significantly lower than that of the control group [5,18,19], and in two studies, there were no significant differences between the two groups [9,17]. One study [8] analyzed the hazard ratio (HR) of child maltreatment recurrence between the intervention and the control group and found an HR of a second recurrence of 0.69 ($p=.020$), which was sig-

Table 1. Results of the Quality Appraisal of the Studies Included in the Systematic Review (N=6)

First author (year) [R]	Focus question	Random-ization	Conceal-ment	Blinding	Similarities between groups	Differences in treatment	Validity	Dropout rate (%)	ITT analysis	Results comparable	Quality*
Easterbrooks (2019) [8]	Yes	Yes	Unclear	Unclear	Yes	Yes	Yes	32	Unclear	NA	+
Jonson-Reid (2018) [17]	Yes	Yes	Unclear	Unclear	Unclear	Yes	Yes	47	Unclear	NA	+
Khosravan (2018) [5]	Yes	Yes	Unclear	Partial yes	Yes	Yes	Yes	0	Unclear	NA	+
Lee (2018) [18]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Unclear	Yes	NA	++
Lutzker (1984) [19]	Yes	Yes	Unclear	Unclear	Unclear	Yes	Yes	3	Unclear	NA	+
MacMillan (2005) [9]	Yes	Yes	Yes	Unclear	Yes	Yes	Yes	15	Yes	NA	++

*+, the quality of research is acceptable; ++, the quality of research is good; ITT, intent-to-treat analysis; NA, not applicable; [R], reference number.

nificant; however, the results related to the third report of recurrence found that the home visiting program was not significantly associated with a lower risk of recurrence.

A meta-analysis was performed of four studies in which the number of recurrences in each group was reported or the number of recurrences could be estimated based on the reports in the study (Figure 2). The results of the meta-analysis found that the OR of child maltreatment recurrence was 0.45 (95% CI=0.29-0.68, I²=57%), indicating that the risk of child maltreatment recurrence was significantly reduced when home visiting programs were conducted, with moderate heterogeneity.

The analysis of the risk of publication bias to verify the validity of the study results was confirmed using a funnel plot, and, although the number of studies was limited, visual symmetry indicated no serious publication bias (Figure 3).

2) Effect on the interval between instances of child maltreatment recurrence

One study [8] examined whether the home visiting program was associated with a prolonged interval between instances of child maltreatment recurrence. The average period between the first occurrence of child maltreatment and recurrence was found to be 617.1 days for those in the intervention group and 492.0 days for those in the control group.

3) Effect on the number of instances of child maltreatment recurrence

One study [18] assessed the number of instances of child maltreatment recurrence after a home visiting program was conducted. The average number of instances of recurrence was 0.79 for the intervention group and 1.59 for the control

group, and there was a significant difference between the groups.

DISCUSSION

The purpose of this study was to systematically review intervention studies on domestic child maltreatment that reported recurrence-related results after home visiting programs were conducted for parents with histories of child maltreatment. The study examined papers published both in South Korea and abroad to provide a rational foundation and basic data for devising an effective program for preventing the recurrence of child maltreatment in homes.

A total of six studies were included in the analysis, and no Korean studies were identified that examined and assessed the effectiveness of child maltreatment recurrence prevention programs through home visits. Social interest in child maltreatment is increasing following the tragic deaths of two children from child abuse in Uju and Chilgok in 2013 [20]. However, while studies have been conducted internationally to develop and verify the effectiveness of education programs for preventing the recurrence of child maltreatment through home visits, no such studies to develop and examine the effectiveness of home visiting programs for the prevention of child maltreatment recurrence have been conducted in Korea; thus, it was confirmed that studies on the development and effectiveness of home visiting programs are needed.

An examination of the characteristics of the interventions included in the six studies showed that, in all of the studies, intervention providers visited homes and examined the parenting environment, parent-child interactions, and parenting

Table 2. Summary of the Studies Included in the Systematic Review (N=6)

First author (year) [R]	Nation	Population (n)/ child age	Intervention (n) vs. comparison (n)	Intervention	F/U period
Easterbrooks (2019) [8]	USA	First-time parents younger than 21 (356*)/ < 1 year	Healthy Families Massachusetts (NR) vs. referred to other services and/or received child development and parenting information (NR)	Specific goals: to prevent child maltreatment and promote child and parental health and well-being Components: goal setting, family support, developmental and health screenings, and referral services Provider: staff (e.g., paraprofessional, nurse) Length and duration: weekly visits (for > 6 month)	6 years
Jonson-Reid (2018) [17]	USA	Families with at least 1 CPS report (107 [†])/2 months-2.5 years	Early childhood connections program + usual care services (NR) vs. usual care services (NR)	Specific goals: to prevent repeated maltreatment and support child development Components: facilitated referral to patient as teacher program [†] Provider: MSW student Length and duration: NR	18 months
Khosravan (2018) [5]	Iran	Abusive mothers (64)/3-6 years	First-house program (32) vs. no intervention (32)	Specific goals: to provide an educational program based on growth and development Components: parenting education (child's growth and developmental characteristics, common behavioral changes, and parenting methods for dealing with these changes), investigation of the mother's parenting behaviors and family needs, advice on caregiving methods Provider: researcher (nurse) Length and duration: 90 mins, 5 sessions	2 months
Lee (2018) [18]	USA	Mothers who were involved in an indicated CPS report (as a non-victim) within 5 years prior to random assignment (104)/ < 3 months-5 years [§]	Healthy Families New York (52) vs. not referral to other home visiting programs [§] (52)	Specific goals: to promote parent-child attachment, foster safe home environments, and encourage positive parenting practices Components: educate families on child development and parenting, foster safe and nurturing home environments, refer families to services, conduct child developmental screening, work with parents to address family challenges (substance abuse, intimate partner violence, maternal depression, etc.) Provider: family support worker Length and duration: biweekly (during pregnancy) → weekly (from birth to 6 months) → reduce intensity according to change in family's needs	7 years
Lutzker (1984) [19]	USA	Families from protective services who had at least 1 previous incident of child maltreatment, or families that were considered high risk for maltreatment (97)/unclear	Project 12-ways (50) vs. usual protective service (47)	Specific goals: to reduce repeated child maltreatment Components: treatment and training (parenting, stress reduction, self-control, social support, health management, nutrition, etc.), home safety, assessment and intervention for domestic crises (job placement, marital problems, alcoholism referrals, etc.) Provider: counselor (advanced graduate students) Length and duration: 1 year	2 years
MacMillan (2005) [9]	Canada	Families who reported episodes of maltreatment within the previous 3 months (163)/ < 13 years	Standard care (routine follow-up, education about parenting, arrangement of referrals to other services) plus home visitation (89) vs. standard care (74)	Specific goals: to reduce stressors and increase support using an ecological model Components: family support, parent education about infant and child development, referrals to other services Provider: public-health nurse Length and duration: 1.5 hours, weekly (for 6 months) → every 2 weeks (for 6 months) → monthly (for 12 months)	3 years

*Number of mothers who had at least one maltreatment report after enrollment or the target child's date of birth; [†] Number of children who had a prior CPS history; [‡] Family-focused parent education program including regularly scheduled home visits, parent group meetings and build informal support networks with other parents, developmental screenings, and referrals to community services, as needed [21]; [§] Cited from a previously published study [6]; CPS, child protective services; F/U, follow-up; MSW, master of social work; NR, not reported; [R], reference number.

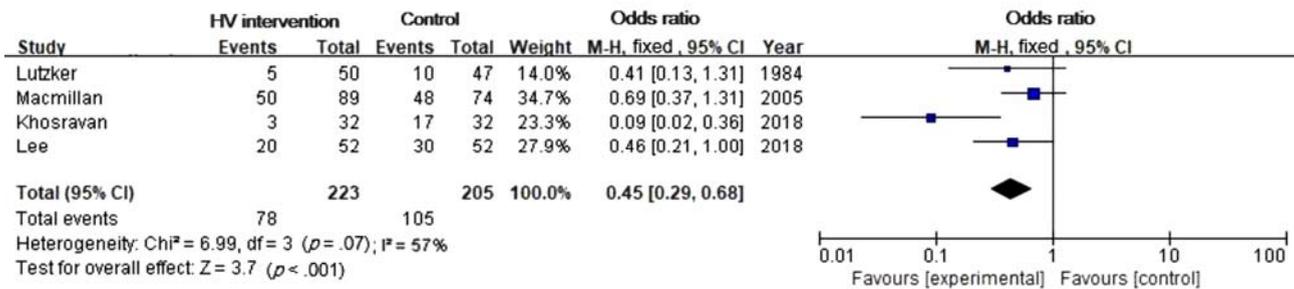


Figure 2. Forest plot of the effect of home visiting programs on decreasing the child maltreatment recurrence rate. CI, confidence interval; df, degrees of freedom; HV, home visiting program, M-H, Mantel-Haenszel.

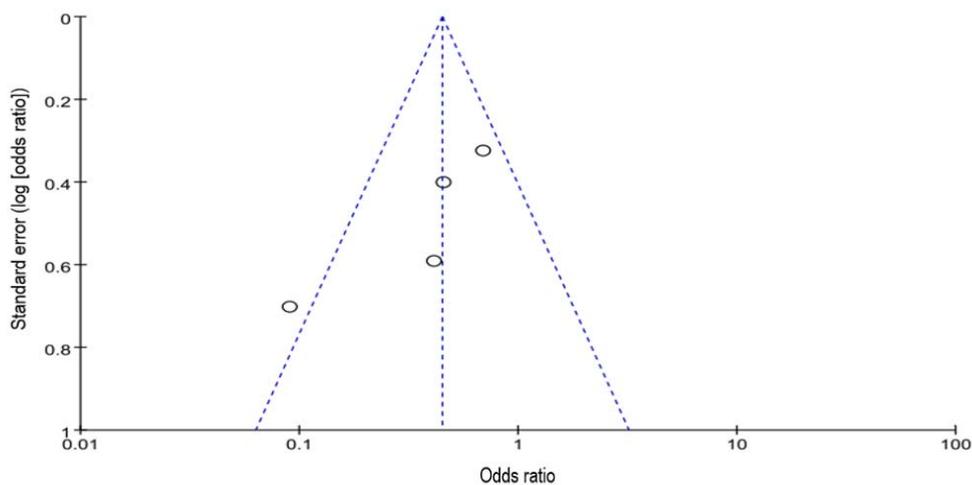


Figure 3. Funnel plot.

attitudes of families. It was confirmed that home visiting programs had an advantage for preventing the recurrence of child maltreatment, as the frequency and intensity of home visits and the educational materials included during home visits could be adjusted according to the characteristics of families. According to a report by the National Center for the Rights of the Child [22] that examined the characteristics of domestic abusers, a lack of parenting attitudes and methods accounted for the highest proportion of perpetrators of child maltreatment, followed by socioeconomic stress and isolation and marital and family conflict. Therefore, it is necessary to reduce the factors that lead to maltreatment by providing individualized interventions for families in crisis using the components of home visiting programs reported in the analyzed studies.

Nurses were the most common intervention providers. Nurses are the best human resource for identifying children who are maltreated and neglected and for planning and performing family-centered nursing interventions due to their interest in human behavior, professional knowledge about

nursing, and trusting relationships with parents. The Nurse-Family Partnership, which is one of the most popular international home visiting programs, is a program in which nurses visit the homes of low-income, high-risk families to conduct interventions for preventing child maltreatment, neglect, and health problems, and the program has been shown to be successful for improving various aspects of parental and child health in several randomized clinical trials [7,23,24]. Recently, in Korea, it was announced that an early-life health management pilot project in which healthcare professionals such as nurses visited the homes of children aged 2 years and younger to check their health status and detect abuse early would be expanded nationwide [25]. Although efforts are being made to identify children who are at a high risk of maltreatment early through these projects, the policy implications of nursing interventions for children who have already been victims of child maltreatment have not been observed. Therefore, in addition to the early detection of child maltreatment, it is important to foster a home environment in which children can live safely and prevent the recurrence of mal-

treatment through routine case management by a dedicated team, including for children who have already been victims of child maltreatment.

In five of the six studies included in the analysis [5,8,9,18,19], the recurrence rate of child maltreatment was higher in the control group than in the intervention group, and the results of the meta-analysis of four studies [5,9,18,19] showed that the risk of child maltreatment recurrence was significantly reduced when home visiting programs were implemented. In addition, the interval and frequency of instances of child maltreatment recurrence in the intervention groups were found to be lower than they were in the control groups, suggesting that home visiting programs were effective for preventing the recurrence of child maltreatment. In the United States, early childhood home visiting programs have been implemented to improve children's health and developmental outcomes [26]. Although child protection agencies in Korea also offer various necessary support services to help families create a home environment in which children can experience healthy growth and development, they are faced with a daunting task in the event of maltreatment since family function enhancement services are still insufficient, and, as of the time of this study, they can only provide field visits and incident management [22,27]. In Korea, a dedicated child protection agent is appointed to provide counseling and protective measures for children and periodically visit the home to provide follow-up management after the child is separated from the home [28]; however, the workloads of child protection agents tend to be heavy, and the work environment tends to be poor, making professional intervention difficult. Therefore, it is urgent to prioritize a budget for the efficient allocation of resources to recruit more people to carry out guidelines in order to strengthen the response to domestic child maltreatment.

In most studies, the outcome of maltreatment recurrence was measured based on the number of instances of child maltreatment reported to child protection agencies. In Korea, even when child maltreatment is suspected and reported, the National Center for the Rights of the Child determines whether child maltreatment occurred through on-site investigations and other methods, and the investigation is registered with and managed by the National Child Abuse Information System [29]. Therefore, if a domestic child maltreatment registration system were used to develop and implement a home visiting program for the prevention of child maltreatment at home, the effectiveness of the program could be accurately evaluated through objective and practical measurement of the results.

The limitations of this study are as follows. First, home visiting programs are flexible in their implementation since individual approaches are tailored to the family situation [30].

Therefore, the protocols for implementing home visiting programs presented in the literature may not apply equally to all subjects. In addition, since the analysis did not include any studies conducted in Korea, the results of this study are limited in their application to the population of Korea. In Korea, there is a socio-cultural perception that active mediation to address child maltreatment is difficult since many individuals view child maltreatment in the home as a form of legitimate parental discipline. Given the differences in the conditions and policies of Korea and other countries, home visiting programs should be developed that consider the full context of the society in which they are to be implemented. Second, child maltreatment may also be perpetrated by primary caregivers other than the parents, such as grandparents and relatives; however, this study only considered the effectiveness of home visiting programs aimed at parents. Therefore, further studies need to be undertaken to analyze the effectiveness of home visiting programs to prevent the recurrence of abuse perpetrated by and targeted to family members other than parents and children. Third, the studies included in the meta-analysis identified instances of recurrence based solely on reports of maltreatment to child protection agencies; however, child maltreatment reporting rates have been found to be low, and a significant number of maltreatment cases go unreported to child protection authorities [31]. Therefore, the results reported in the study likely do not include all instances of child maltreatment recurrence. Finally, since only studies that included the number of subjects and instances of recurrence in each group were included in the meta-analysis, the overall effect size in this study could have been overestimated or underestimated, and caution is required when interpreting the results. In addition, in this study, heterogeneity posed an issue since the meta-analysis was performed on studies with significantly different subjects, intervention components, and study periods. Ideally, a sub-group analysis would have been undertaken to examine the reasons for heterogeneity, but the number of studies included in the meta-analysis was very small, and sub-group analysis could not be performed. Therefore, a study should be conducted using more robust statistical methodology after gathering more evidence to estimate the effectiveness of home visiting programs to prevent recurrence of child abuse.

CONCLUSION

This study examined intervention studies on home visiting programs for the prevention of child maltreatment targeted to parents who have maltreated their children and analyzed their effects on the recurrence of child maltreatment. At a time when there is a national movement to introduce home visiting

programs conducted by nurses for the prevention of child maltreatment, this study indicates a need for an intervention aimed at families in which child maltreatment has already occurred, in addition to early detection of child maltreatment, to prevent recurrence. The present study is significant since it systematically considered the effects of home visiting programs on the prevention of child maltreatment recurrence.

Among the studies included in the analysis, none were conducted in Korea. Given that child maltreatment continues to increase in Korea, the need for a practical and effective child maltreatment prevention program should be addressed by developing and implementing a home visiting program to prevent the recurrence of child maltreatment, and the program's outcomes should be evaluated through objective indicators.

ORCID

Kyeongji Han <https://orcid.org/0000-0001-5588-6353>
Sumi Oh <https://orcid.org/0000-0002-5220-1299>

Authors' contribution

Conceptualization: all authors; Data collection, Formal analysis: all authors; Writing-original draft: Kyeongji Han; Writing-review and editing: Sumi Oh; Final approval of published version: all authors.

Conflict of interest

No existing or potential conflict of interest relevant to this article was reported.

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Data availability

Please contact the corresponding author for data availability.

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