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Contents

Thrice Monthly Volume 11 Number 29 October 16, 2023

MINIREVIEWS

6974 Applications of time series analysis in epidemiology: Literature review and our experience during COVID-19 pandemic

Tomov L, Chervenkov L, Miteva DG, Batselova H, Velikova T

ORIGINAL ARTICLE

Retrospective Cohort Study

6984 Acute cholangitis: Does malignant biliary obstruction *vs* choledocholithiasis etiology change the clinical presentation and outcomes?

Tsou YK, Su YT, Lin CH, Liu NJ

Retrospective Study

6995 Usefulness of analyzing endoscopic features in identifying the colorectal serrated sessile lesions with and without dysplasia

Wang RG, Ren YT, Jiang X, Wei L, Zhang XF, Liu H, Jiang B

7004 Roles of biochemistry data, lifestyle, and inflammation in identifying abnormal renal function in old Chinese

Chen CH, Wang CK, Wang CY, Chang CF, Chu TW

7017 Clinical efficacy and safety of Guipi decoction combined with escitalopram oxalate tablets in patients with depression

Yu J, Xu FQ

7026 Artificial intelligence technology and ultrasound-guided nerve block for analgesia in total knee arthroplasty

Tong SX, Li RS, Wang D, Xie XM, Ruan Y, Huang L

7034 Axenfeld-Reiger syndrome: A search for the missing links

Morya AK, Ramesh PV, Sinha S, Nishant P, Nain N, Ramavath RN, Gone C, Prasad R

Observational Study

7043 Self-management of osteoarthritis while waiting for total knee arthroplasty during the COVID-19 pandemic among older Malaysians

Mahdzir ANK, Mat S, Seow SR, Abdul Rani R, Che Hasan MK, Mohamad Yahaya NH

7053 "*In situ* bone flap" combined with vascular pedicled mucous flap to reconstruction of skull base defect

Qian M, Chen X, Zhang LY, Wang ZF, Zhang Y, Wang XJ

7061 Reference values of gait parameters in healthy Chinese university students: A cross-sectional observational study

Yu JS, Zhuang C, Guo WX, Chen JJ, Wu XK, Xie W, Zhou X, Su H, Chen YX, Wang LK, Li WK, Tian K, Zhuang RJ

World Journal of Clinical Cases

Thrice Monthly Volume 11 Number 29 October 16, 2023

Contents

7075 Effect of T-regulatory cells and interleukin-35, interleukin-10, and transforming growth factor-beta on diffuse large B-cell lymphoma

Wu H, Sun HC, Ouyang GF

META-ANALYSIS

7082 Meta-analysis on the effectiveness of parent education for children with disabilities

Jang J, Kim G, Jeong H, Lee N, Oh S

7091 Meta-analysis of the efficacy and safety of daratumumab in the treatment of multiple myeloma

Wang P, Jin SY

CASE REPORT

7101 Varicella-zoster virus meningitis with hypoglycorrhachia: A case report

Cao LJ, Zheng YM, Li F, Hao HJ, Gao F

7107 Unusual presentation of penile giant condyloma acuminatum with spontaneous prepuce perforation: A case report

Hsu FC, Yu DS, Pu TW, Wu MJ, Meng E

7113 Primary renal lymphoma presenting as renal failure: A case report and review of literature from 1989

Lee SB, Yoon YM, Hong R

7127 Intravascular ultrasonography assisted carotid artery stenting for treatment of carotid stenosis: Two case reports

Fu PC, Wang JY, Su Y, Liao YQ, Li SL, Xu GL, Huang YJ, Hu MH, Cao LM

7136 Mucoepidermoid carcinoma of the lung with hemoptysis as initial symptom: A case report

Xie WX, Liu R, Li Z, Zhou PL, Duan LN, Fu DD

7144 Co-infection of *Chlamydia psittaci* and *Tropheryma whipplei*: A case report

Du ZM, Chen P

7150 Surgical treatment of severe anterior capsular organized hard core cataract: A case report

Wang LW, Fang SF

7156 First platelet transfusion refractoriness in a patient with acute myelocytic leukemia: A case report

Tu SK, Fan HJ, Shi ZW, Li XL, Li M, Song K

7162 Rare finding of primary aortoduodenal fistula on single-photon emission computed tomography/computed tomography of gastrointestinal bleeding: A case report

Kuo CL, Chen CF, Su WK, Yang RH, Chang YH

7170 Rituximab combined with Bruton tyrosine kinase inhibitor to treat elderly diffuse large B-cell lymphoma patients: Two case reports

Zhang CJ, Zhao ML

World Journal of Clinical Cases

Thrice Monthly Volume 11 Number 29 October 16, 2023

Contents

7179 Use of Ilizarov technique for bilateral knees flexion contracture in Juvenile-onset ankylosing spondylitis: A case report

Xia LW, Xu C, Huang JH

7187 Case of takotsubo cardiomyopathy after surgical treatment of liver hydatid cyst: A case report

Altaş Y, Abdullayeva Ü

7193 Laparoscopic choledocholithotomy and transductal T-tube insertion with indocyanine green fluorescence imaging and laparoscopic ultrasound: A case report

Yoo D

7200 Hematopoietic stem cell transplantation of aplastic anemia by relative with mutations and normal telomere length: A case report

Yan J, Jin T, Wang L

7207 Emphysematous thrombophlebitis caused by a misplaced central venous catheter: A case report

Chen N, Chen HJ, Chen T, Zhang W, Fu XY, Xing ZX

7214 Aggressive angiomyxoma of the epididymis: A case report

Liu XJ, Su JH, Fu QZ, Liu Y

7221 Gastric and intestinal ectopic pancreas: Two case reports

Zhang H, Zhao HY, Zhang FH, Liang W

7227 Congenital leukemia: A case report and review of literature

Yang CX, Yang Y, Zhang FL, Wang DH, Bian QH, Zhou M, Zhou MX, Yang XY

7234 Imaging misdiagnosis and clinical analysis of significant hepatic atrophy after bilioenteric anastomosis: A case report

Liang SY, Lu JG, Wang ZD

7242 Surgical treatment of mixed cervical spondylosis with spontaneous cerebrospinal fluid leakage: A case report

Yu Z, Zhang HFZ, Wang YJ

7248 Simultaneous thyroglossal duct cyst with parathyroid cyst: A case report

Chen GY, Li T

7253 Submandibular solid-cystic mass as the first and sole manifestation of occult thyroid papillary carcinoma: A case report

Chen GY, Li T

LETTER TO THE EDITOR

7258 Artificial intelligence and machine learning in motor recovery: A rehabilitation medicine perspective

Swarnakar R, Yadav SL

Contents

Thrice Monthly Volume 11 Number 29 October 16, 2023

ABOUT COVER

AIMS AND SCOPE

The primary aim of *World Journal of Clinical Cases* (*WJCC*, *World J Clin Cases*) is to provide scholars and readers from various fields of clinical medicine with a platform to publish high-quality clinical research articles and communicate their research findings online.

WJCC mainly publishes articles reporting research results and findings obtained in the field of clinical medicine and covering a wide range of topics, including case control studies, retrospective cohort studies, retrospective studies, clinical trials studies, observational studies, prospective studies, randomized controlled trials, randomized clinical trials, systematic reviews, meta-analysis, and case reports.

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META-ANALYSIS

Meta-analysis on the effectiveness of parent education for children with disabilities

JongSik Jang, Geonwoo Kim, Hyewon Jeong, Narae Lee, Seri Oh

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Abstract

BACKGROUND

Parents of children with disabilities often have difficulty understanding their child's behavior and are unable to do it appropriately because they do not know what to do. The more we properly understand children with disabilities, the more positive the importance of parent education becomes in various aspects.

AIM

To demonstrate the effectiveness of parent education for children with disabilities in various aspects and present it as evidence that can be used clinically.

METHODS

For a meta-analysis on the effectiveness of parent education for children with disabilities, literature was collected from 2002 to 2022 using PubMed, Embase, Web of Science, Directory of Open Access Journals, and Europe PMC. Search terms were "disabled children," "disabled children," "parent education," "parent training," and "parent coaching." The final searched literature included a total of 11 articles. To calculate the effect size, the mean, standard deviation, and sample size of the experimental and control groups were analyzed, and a meta-analysis was performed using RevMan version 5.4.1. To analyze statistical heterogeneity, a chi-square test was performed to evaluate the significance of Q statistics to indicate statistical heterogeneity.

RESULTS

The final literature totaled 11 articles, and a total of 4 items were analyzed. There were 5 studies on parental depression, the heterogeneity was 98%, and the effect size for parental depression was 0.35 [confidence interval (CI: 0.30-0.40)], indicating a small but statistically significant effect size. There were 4 studies on parenting attitude, the heterogeneity was 100%, the effect size on parenting

attitude was 0.41 (CI: 0.37-0.46), which was a medium effect size, and the *P* value showed a statistically significant score. Additionally, face-to-face parent education was found to have a larger effect size than non-face-to-face education. Regarding parent education methods, face-to-face parent education had a medium effect size [0.57 (CI: 0.52-0.61]), while non-face-to-face parent education had a small effect size [0.23 (CI: 0.18-0.28]).

CONCLUSION

Parental education has shown high effectiveness in child development, and it has proven to be even more effective when face-to-face parenting education is conducted. Accordingly, more effective and objective data was presented. Based on this study, it is believed that parent education research applying various diagnostic groups should continue to be conducted.

Key Words: Children; Children with disabilities; Education; Meta-analysis; Parents; Parent education

Core Tip: Previous meta-analyses targeting the education of parents of children with disabilities have been limited to domestic papers or meta-analyses on parental depression and parenting attitude. Studies on the effectiveness of face-to-face versus non-face-to-face parental education is lacking. Our meta-analysis showed that parental education for parents of children with disabilities effectively enhanced parental attitude and diminished parental depression. We suggest effective educational methods and future research directions for parents of children with disabilities.

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INTRODUCTION

Children with disabilities have delays in various areas, such as cognitive, verbal, and physical, and are often at a specific stage of development because of slow motor development and inexperience in physical coordination[1,2]. Thus, it is difficult for children with disabilities to lead independent daily lives. Therefore, parents of children with disabilities must continue to (E1) care for them[3]. Parents of children with disabilities experience excessive stress in managing their children's behavior and needs, leading to changes in their overall family life[4,5]. In addition, parents of these children feel a psychological burden and experience relational and emotional difficulties in daily life while raising a child with disabilities[6,7]. Therefore, great effort is required from parents to acknowledge, nurture, and educate their children[7,8]. However, parents often have difficulty understanding their children's behavior and sometimes miss early education because they do not know how to cope with problems[8]. Therefore, proper parental education is essential for families of children with disabilities to enable them to perform their roles and function in a healthy manner[9]. The importance of parental education is growing in the sense that the more the parent of a disabled child understands the child correctly, the more effective the child's education is[8].

Parental education for children with disabilities is essential for family support in special education; it is an activity that changes parents' behavior, emotions, and thinking, helps improve family relationships, and provides parenting skills and knowledge[10]. Parental education plays a role in correctly understanding the disability and developmental characteristics of children, and home guidance methods, behaviors, habits, thoughts, and methods related to childrearing[11]. Education for parents of children with disabilities has various purposes, such as acquisition of skills and knowledge for raising their children, improvement of family relationships, and psychological and emotional support[12]. Considering that the need for parental care decreases in children without disabilities as they develop, and that children with disabilities require continued parental care even after becoming adults, parents of children with disabilities should have access to support systems. Therefore, education is essential to strengthen the capacity of parents of children with disabilities[13].

Studies have demonstrated the effectiveness of parental education programs for children with disabilities[13-17]. However, even though most studies examining these programs have proven their effectiveness, it is difficult to conclude a valid effect by analyzing the programs individually because of differences in the study populations, measurement tools, and program contents[18]. Therefore, it is necessary to obtain scientific and objective results to establish the effectiveness of parental education for children with disabilities. Meta-analysis is an effective statistical method for deriving objective results[19] and determining their clinical applicability by forming new knowledge through the integration of multiple studies and the synthesizing of results[20]. Meta-analyses are more accurate and reliable than single-study results and can be of great help in clinical decisions regarding interventions[20]. It is a statistical method used to draw new implications by classifying numerous research results implicitly rather than simply listing data; it can also reduce the risk of generalization[21].

Analyzing previous studies, we found a meta-analysis targeting parental education of children with disabilities, but it was limited to domestic papers or meta-analyses on parents' depression and parenting attitudes, while the effectiveness of face-to-face *vs* non-face-to-face education is lacking[18,22,23]. This meta-analysis assessed the effectiveness of parental education for children with disabilities.

MATERIALS AND METHODS

Study design

In this study, the participants, interventions, comparisons, outcomes, timing of outcome measurement, setting, study design method by the preferred reporting items for systematic reviews and meta-analyses was used to systematically review the literature.

Literature search strategy

PubMed, Embase, Web of Science, Directory of Open Access journals, and European PMC were used as databases and papers published between 2002 and 2022 were selected. The main search terms were "disabled children," "handicapped children," "parent education," "parent training," and "parent coaching." Literature search, selection, and data extraction were conducted by two researchers according to the systematic literature review criteria, and discrepancies were resolved by a third reviewer. The intervention effects of the studies selected by the three researchers were analyzed using a meta-analysis.

Literature standards

Studies published between 2002 and 2022 and conducted within 20 years of randomized clinical trials on parents of children with disabilities were selected. The clinical trials conducted at this time were limited to those that applied parental education. Studies that did not meet the purpose of the study were removed by reviewing titles and abstracts, and those that presented values that could be compared before and after the test were selected.

Data analysis

Data coding: The studies selected according to the research topic were coded by author, publication year, intervention method, main result, sample size, *etc.*, according to the research characteristics. Subsequently, to analyze the effect size, the mean and standard deviation and sample size were coded according to the evaluation purpose of the experimental and control groups.

Analysis method: After receiving an institutional review board exemption approval (KWNUIRB-2023-03-002) from the Bioethics Committee of Kangwon National University, we analyzed the general characteristics of the participants, characteristics of the interventions, and results of the 12 selected studies. In addition, the average and standard deviation of the experimental and control groups and the number of samples were analyzed to calculate the effect sizes, and a meta-analysis was conducted using RevMan version 5.4.1. To analyze statistical heterogeneity, a chi-square test was performed to assess the significance of the Q statistic, and a P value of less than 0.10 was considered indicative of statistical heterogeneity[24]. The effect size shows the difference in the effectiveness of the experimental group compared to the control group, and publication bias refers to an error that occurs depending on the direction or nature of the research results[25] (Figure 1).

RESULTS

Selection of studies for the analysis

A total of 8641 literatures collected from the database were selected according to the criteria for analysis by three doctoral students with more than three years of clinical experience and majors in occupational therapy. When the level of research evidence was analyzed, a meta-analysis was performed on the 12 studies that were finally selected as documents corresponding to the first stage with the highest level of evidence.

Meta-analysis of the effects of parental education

Twelve articles were included in the final analysis. First, when five articles on parental depression and four on parenting attitudes were analyzed to determine the effect of parental education, the literature on the effect on parental depression was the most common. A comparative analysis of ten studies on face-to-face parental education and four studies on non-face-to-face parental education showed that face-to-face parental education resulted in a higher effect size.

Effects of parental education on parents' depression

Five studies of parental depression were included in the analysis (Figure 2)[3,26-28]. Heterogeneity was 98%, and the effect size for parental depression was 0.35 [confidence interval (CI): 0.30-0.40], indicating a small but statistically significant effect size (Figure 2).

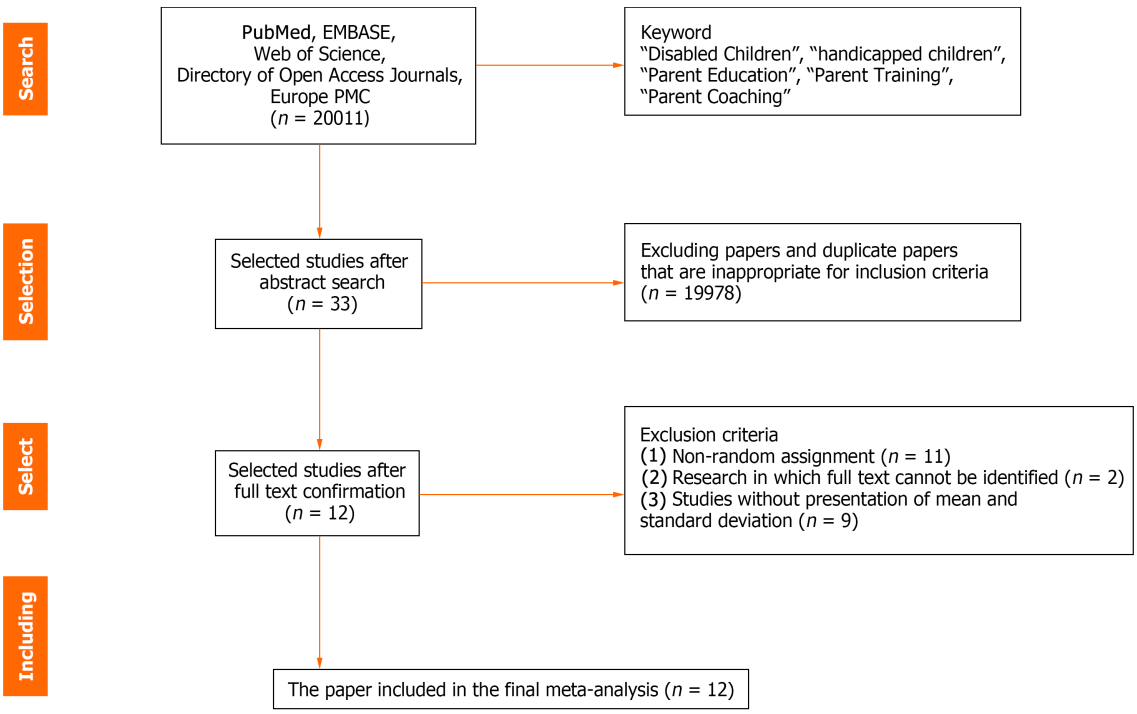

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Figure 1 PRISMA flow diagram.

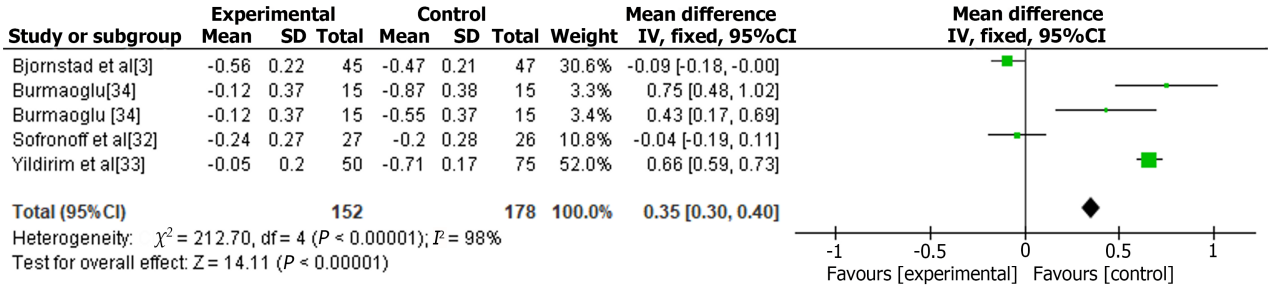

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Figure 2 Effects of parent education on parents' depression.

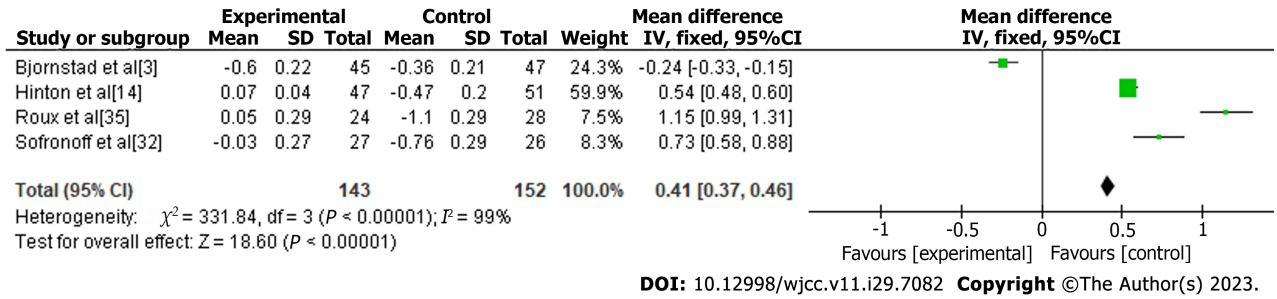

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Figure 3 Effects of parent education on parenting attitudes.

Effects of parental education on parenting attitudes

Four papers were published on the effects of parenting on parenting attitudes (Figure 3) [3,14,26,29]. Heterogeneity was 100%, the effect size for parenting attitude was 0.41 (CI: 0.37-0.46), indicating a medium effect size, and the *P* value showed a statistically significant score.

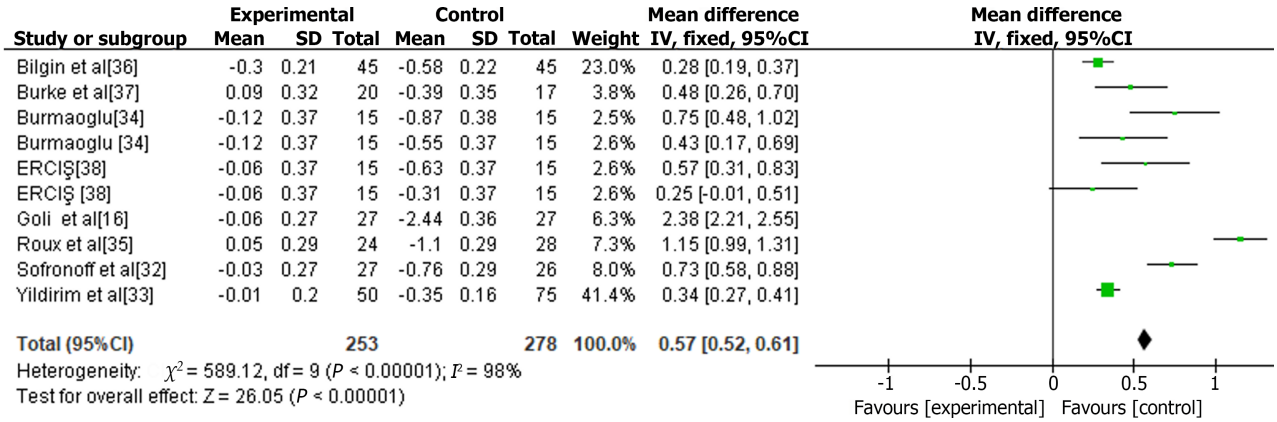

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Figure 4 Meta-analysis of parent education methods (face-to-face).

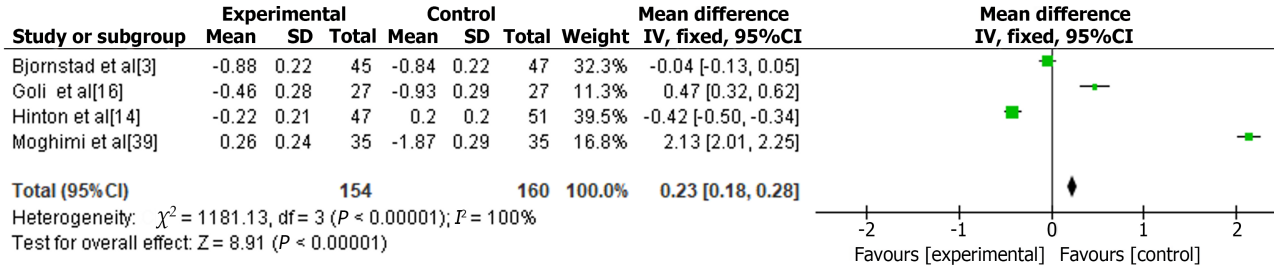

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Figure 5 Meta-analysis of parent education methods (non-face-to-face).

Meta-analysis of parental education methods

Regarding the parental education methods, face-to-face parental education had a medium effect size [0.57 (CI: 0.52-0.61)], whereas non-face-to-face parental education had a small effect size [0.23 (CI: 0.18-0.28)] (Figure 4 and 5)[3,14,16,26-33].

Publication convenience

As a result of analyzing publication convenience for this study, it was found that parental depression, parenting attitude, face-to-face parental education, and non-face-to-face parental education were symmetrical, and publication errors did not appear to be significant (Figure 6).

DISCUSSION

Parental education for children with disabilities is important for recognizing habits, behaviors, and thoughts related to the development and rearing of children with disabilities; improving family relationships; and ensuring emotional stability for parents. Therefore, this study conducted studies were analyzed to examine the effects of parental education.

First, when parental education was provided for parents of children with disabilities, both parenting attitudes (0.41) and parental depression (0.35) showed significant effects. The purpose of the parental education program is to understand the child's disability and developmental stage and to acquire direct parenting methods to influence the child's behavior and attitude[14]. Parental education was found to positively affect childrearing attitudes. Ultimately, parental education not only provides general knowledge and understanding of children's development, but also acquires parenting knowledge suitable for social and temporal changes and correct attitudes as a parent. This seems to be because it helps obtain[34]. This result is consistent with the existing thesis that parental education for parents raising children with disabilities shows positive results for parenting attitudes[35]. It is believed that the reason for the effect on parental depression is that the parental education program provides an opportunity to control the parents' psychological state through conversations with the leader so that the child has confidence and expectations for improvement[36]. This suggests that parental education for children with disabilities needs to be actively implemented in clinical phenomena because it has a significant effect on both parenting attitudes and parental depression.

Second, regarding the effectiveness of the parental education method for children with disabilities, face-to-face parental education showed a medium effect size (0.57), whereas non-face-to-face parental education showed a small but significant effect size (0.23). Many factors are believed to induce learning immersion, including immediate real-time feedback and various interactions during the learning process. However, the reason for the greater effectiveness of face-

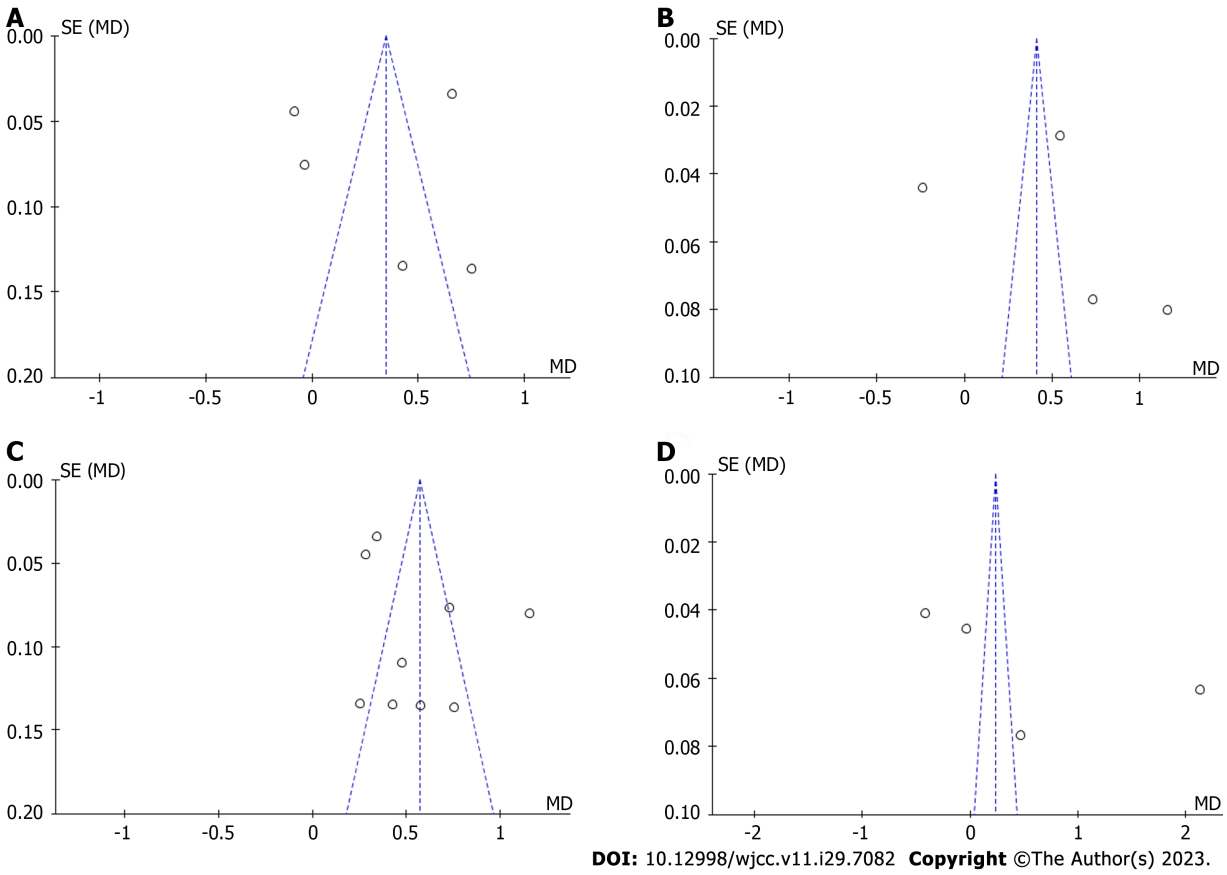

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Figure 6 Publication convenience. A: Parents' depression; B: Parenting attitudes; C: Parent education methods (face-to-face); D: Parent education methods (non-face-to-face).

to-face education is that both verbal and nonverbal communication is involved, increasing immersion. In addition, in face-to-face education, parents can communicate with educators in one space, expand their understanding through real-time questions and answers, and concentrate better[36,37]. These results are consistent with those of previous studies showing that face-to-face education is more effective than non-face-to-face education[38,39]. These data suggest the importance of actively conducting face-to-face education in future parental education programs.

This study had some limitations. Because all parental education studies were analyzed as one and detailed parental education methods were not analyzed, it seems necessary to conduct various meta-analyses by subdividing parental education studies. In addition, most studies used in the meta-analysis did not specify the exact diagnosis of children with disabilities; therefore, it was not possible to examine the effects of the parent education program on each diagnosis group. However, when this study was conducted on parental education for children with disabilities, and since the effectiveness of parental depression was analyzed separately, parenting attitude is considered significant in that clinicians who mediate and manage parents of children with disabilities can more effectively attempt education according to the intervention goals of parents of children with disabilities. Additionally, the results of the analysis of face-to-face and non-face-to-face parental education provide a basis for developing more effective education strategies. The results of this study provide information on effective educational methods for parents of children with disabilities and future research directions.

CONCLUSION

In this study, we searched the literature on parental education of children with disabilities and conducted a meta-analysis to provide clinicians with a clinical basis for intervention. A meta-analysis of 12 studies was conducted to analyze the effect size of parental education. The analysis showed that parental education was effective in improving parenting attitudes and depression, and it proved more effective when face-to-face parental education was conducted, suggesting more effective and objective data. Therefore, further research on parental education using various diagnostic groups should be conducted based on the effectiveness of parental education for children with disabilities shown in this study.

ARTICLE HIGHLIGHTS

Research background

Children with disabilities have delays in various areas, such as cognitive, verbal, and physical, and are often at a specific stage of development because of slow motor development and inexperience in physical coordination.

Research motivation

It is necessary to obtain scientific and objective results to establish the effectiveness of parental education for children with disabilities.

Research objectives

Meta-analysis of parents of children with disabilities is conducted to reveal the impact of parental education on children.

Research methods

Data from 2002 to 2022 were searched using Pubmed, Embase, Web of Science, Directory of Open Access Journals, and Europe PMC. The search terms were "disabled children," "handicapped children," "parent education," "parent training," and "parent coaching." Twelve studies were eligible for inclusion in the meta-analysis. The average and standard deviation of the experimental and control groups and the number of samples were analyzed to calculate the effect sizes, and a meta-analysis was conducted using RevMan version 5.4.1. To analyze statistical heterogeneity, a chi-square test was performed to assess the significance of the Q statistic, and a *P* value of less than 0.10 was considered to indicate statistical heterogeneity.

Research results

A total of 20011 literatures collected from the database were selected according to the criteria for analysis. Twelve articles were included in the final analysis. Five studies of parental depression were included. Heterogeneity was 98%, and the effect size for parental depression was 0.35 [confidence interval (CI): 0.30-0.40], indicating a small but statistically significant effect size. Four papers were published on the effects of parenting on parenting attitudes. Heterogeneity was 100%, and the effect size for parenting attitude was 0.41 (CI: 0.37-0.46), indicating a medium effect size, with the *P* value showing a statistically significant score. As a result of a meta-analysis targeting parents of children with disabilities, both parenting attitude and parental depression showed significant effect sizes, and E1 face-to-face parental education had a larger effect size than non-face-to-face education. Regarding the parental education methods, face-to-face parental education had a medium effect size [0.57 (CI: 0.52-0.61)], whereas non-face-to-face parental education had a small effect size [0.23 (CI: 0.18-0.28)].

Research conclusions

Future studies based on the results of this study and revealing strong evidence would provide more useful guidelines for parents of children with disabilities.

Research perspectives

Based on the effectiveness of parental education for children with disabilities shown in this study, research on parental education using various diagnostic groups should be conducted in the future.

FOOTNOTES

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