www.e-chnr.org

ISSN(Print) 2287-9110
ISSN(Online) 2287-9129

CHNR

Child Health Nursing Research

Vol.31, No.1, January 2025

Child Health Nursing Research

Vol.31, No.1, January 2025

www.e-chnr.org

CHNR

Child Health Nursing Research

Vol.31, No.1, January 2025

www.e-chnr.org

Korean Academy of Child Health Nursing

CHNR
Child Health Nursing Research

pISSN 2287-9110
eISSN 2287-9129

About the Journal

Child Health Nursing Research (CHNR) is the official peer-reviewed research journal of the Korean Academy of Child Health Nursing. CHNR is a multidisciplinary, double-blind peer-reviewed, open-access journal that publishes original research, theory, and review papers on health care and nursing from the beginning of life to young adulthood, including both children and their families. It is devoted to all fields of child health, including global and cultural issues, aimed at both domestic and international healthcare professionals. The journal is published quarterly (Jan 31, Apr 30, July 31, and Oct 31) in English. The journal welcomes submissions from healthcare professionals around the world, and encourages the submission of papers dealing with cultural issues and those studied by international research teams.

- Indexed in major databases: PubMed Central, PubMed, Scopus, CINAHL, DOAJ, Crossref Metadata, Google Scholar, ScienceCentral, KCI (Korea Citation Index), RISS, KoreaMed, and KoMCI.
- Its abbreviated title is Child Health Nurs Res.
- Open access: All articles published in the journal are freely available with an open access license for everyone to read and download from the CHNR website (http://www.e-chnr.org/) immediately and permanently after publication.

Aims and Scope

Child Health Nursing Research aims to promote the health, development, and well-being of children and their families in Korea and all over the world by providing research on evidence-based practices.
Its scope includes the most recent clinically and academically relevant topics in health care and nursing from the beginning of life to young adulthood, including both children and their families. The journal deals with articles that address research, theory, and practice in a wide range of child health nursing areas and relevant cultural issues. Its regional scope is mainly Korea, but it welcomes submissions from researchers and nurses worldwide.
The primary readers of this journal are healthcare professionals, administrators and scientists serving newborns, infants, children, adolescents, young adults, and their families, including nurses, midwives, physicians, developmental specialists, public health workers, scientists, educators, epidemiologists, and other health caregivers.
The ultimate goal of *Child Health Nursing Research* is to develop a body of knowledge on the health of newborns, infants, children, adolescents, young adults, and their families while improving the clinical field and community with evidence-based practices to promote the health of children and families all over the world.

Manuscripts should be submitted via the online Manuscript Central website (http://www.e-chnr.org). Other correspondences can be sent by an e-mail to the Editor, Dr. Yunsoo Kim, Department of Nursing, Catholic Kwandong University, Gangneung, Korea (Tel: +82-33-649-7614, Fax: +82-33-649-7620, e-mail: agneskim@cku.ac.kr).

Correspondence concerning business matters should be addressed to Treasurer, Sangmi Lee, Department of Nursing, Dongyang University, Yeongu, Korea (Tel: +82-54-630-1712, Fax: +82-54-630-1371, e-mail: lsm95@dyu.ac.kr). The subscription price of this journal is Korean Won, 200,000 (US$ 187.00 or equivalent) annually. Back issues are available. Please contact the office of the Korean Academy of Child Health Nursing.

© 2025 Korean Academy of Child Health Nursing
Printed January 31, 2025 Published January 31, 2025

Published by the Korean Academy of Child Health Nursing

College of Nursing, Daegu Catholic University, Korea
Tel: +82-53-650-4829, Fax: +82-53-650-4392, e-mail: hykoo@cu.ac.kr

Printed by M2PI

#805, 26 Sangwon 1-gil, Seongdong-gu, Seoul 04779, Korea
Tel: +82-2-6966-4930, Fax: +82-2-6966-4945, E-mail: support@m2-pi.com

It is identical to Creative Commons Non-Commercial License.
This paper meets the requirements of KS X ISO 9706, ISO 9706-1994 and ANSI/NISO Z.39.48-1992 (Permanence of Paper).

Editorial Board

pISSN 2287-9110
eISSN 2287-9129

Editor in Chief

Yunsoo Kim [RN, PhD]
Associate Professor, Department of Nursing, Catholic Kwandong University, Republic of Korea

Editorial Board

Young Mee Ahn [RN, PhD]
Professor, Department of Nursing, Inha University, Republic of Korea

Bernie Carter [RN, PhD]
Professor, Faculty of Health and Social Care, Edge Hill University, UK

Eunji Cho [RN, PhD]
Assistant Professor, Connell School of Nursing, Boston College, USA

Eun Kyoung Choi [RN, PhD, CPNP]
Associate Professor, College of Nursing, Yonsei University, Republic of Korea

Yeo-Jin Im [RN, PhD]
Professor, College of Nursing Science, Kyung Hee University, Republic of Korea

Noriyo Kaneko [RN, PhD]
Associate Professor, School of Nursing, Nagoya City University, Japan

HyunJu Kang [RN, PhD]
Professor, College of Nursing, Kangwon National University, Republic of Korea

Donghee Kim [RN, PhD]
Professor, College of Nursing, Sungshin Womens University, Republic of Korea

Gaeun Kim [RN, PhD]
Assistant Professor, College of Nursing, Keimyung University, Republic of Korea

Shin-Jeong Kim [RN, PhD]
Professor, School of Nursing, Hallym University, Republic of Korea

Hyun Young Koo [RN, PhD]
Professor, College of Nursing, Daegu Catholic University, Republic of Korea

Bo Ryeong Lee [RN, PhD]
Assistant Professor, College of Nursing, Daegu Catholic University, Republic of Korea

Jaeyoung Lee [RN, PhD]
Associate Professor, Department of Nursing, Kyungsung University, Republic of Korea

Won-Oak Oh [RN, PhD]
Professor, College of Nursing, Korea University, Republic of Korea

Nguyen Thi Anh Phuong [MD, PhD]
Professor, University of Medicine and Pharmacy, Hue University, Vietnam

Mohammed Nader Shalaby [PhD]
Associate Professor, Biological Sciences and Sports Health Department, Faculty of Physical Education, Suez Canal University, Egypt

Min Sohn [RN, PhD]
Professor, Department of Nursing, Inha University, Republic of Korea

Lai Har WU [RN, PhD]
Professor, School of Nursing, The Hong Kong Polytechnic University, Hong Kong

Ethics Editor

Kyung-Ah Kang [RN, PhD]
Professor, College of Nursing, Sahmyook University, Republic of Korea

Statistics Editors

Seongyong Kim [RN, PhD]
Assistant Professor, Department of Big Data and AI, Hoseo University, Republic of Korea

Eunmi Lee [RN, PhD]
Associate Professor, Department of Nursing, Hoseo University, Republic of Korea

Yong-Gyu Park [PhD]
Emeritus Professor, Department of Medical Lifescience, College of Medicine, Catholic University of Korea, Republic of Korea

Manuscript Editor

Hyun Joo Kim
InfoLumi Co.,Republic of Korea

Jihye Jang [RN]

English Editor

Andrew Dombrowski [PhD]
Compecs, Inc. Republic of Korea

Layout Editor

In A Park
M2PI, Republic of Korea

Website and JATS XML File Producer

Min Young Choi
M2PI, Republic of Korea

Manuscript Reviewers

pISSN 2287-9110
eISSN 2287-9129

Hye Young Ahn RN, PhD
College of Nursing, Eulji University, Republic of Korea

Sung Yun Ahn RN, PhD
Department of Nursing, Pai Chai University, Republic of Korea

Young Mee Ahn RN, PhD
Department of Nursing, Inha University, Republic of Korea

Kyung-Sook Bang RN, PhD
College of Nursing, Seoul National University, Republic of Korea

Robin Bartlett RN-BC, PhD
Capstone College of Nursing, The University of Alabama, USA

Bernie Carter RN, PhD
Faculty of Health and Social Care, Edge Hill University, UK

Sun-Mi Chae RN, PhD, CPNP-PC
College of Nursing, Seoul National University, Republic of Korea

Eunji Cho RN, PhD
Connell School of Nursing, Boston College, USA

Haeryun Cho RN, PhD
Department of Nursing, Wonkwang University, Republic of Korea

Hun-Ha Cho RN, PhD
College of Nursing, Kosin University, Republic of Korea

In Young Cho RN, PhD
College of Nursing, Chonnam National University, Republic of Korea

In-Sook Cho RN, PhD
Department of Nursing, Kwangju Women's University, Republic of Korea

Kyungmi Cho RN, PhD
Department of Nursing, Kyung-In Women's College, Republic of Korea

Eun Kyoung Choi RN, PhD, CPNP
College of Nursing, Yonsei University, Republic of Korea

Hye Sun Choi RN, PhD
Department of Nursing, Woo Suk University, Republic of Korea

Jihea Choi RN, CPNP, PhD
Department of Nursing, Yonsei University Wonju College of Medicine, Republic of Korea

Mi-Young Choi RN, PhD
Department of Nursing, Chungbuk National University, Republic of Korea

Linda S. Franck RN, PhD, FRCPCH, FAAN
Department of Family Health Care, Nursing University of California, San Francisco, USA

Nirmal Gautam RN, MS
Department of Medical and Allied Science, Faculty of Public Health, Karnali College of Health Science, Nepal

Sungsil Hong RN, PhD
Department of Nursing, College of Health Science, Kangwon National University, Republic of Korea

Kyung-Hye Hwang RN, PhD
Department of Nursing, Suwon Science College, Republic of Korea

Mihae Im RN, PhD
Department of Nursing, Choonhae College of Health Sciences, Republic of Korea

Yeo-Jin Im RN, PhD
College of Nursing Science, Kyung Hee University, Republic of Korea

Yu-Mi Im RN, PhD
College of Nursing, Dankook University, Republic of Korea

Gun-Ja Jang RN, PhD
College of Nursing, Daegu University, Republic of Korea

Eun Sun Ji RN, PhD
Department of Nursing, Konkuk University Glocal Campus, Republic of Korea

Juhye Jin RN, PhD
Department of Nursing, Korea National University of Transportation, Republic of Korea

Hyeon-Ok Ju RN, PhD
Department of Nursing, Dong-A University, Republic of Korea

Hyang-Mi Jung RN, PhD
Department of Nursing, Dongeui University, Republic of Korea

So Young Jung RN, PhD, CHNP
Department of Nursing, Ansan University, Republic of Korea

Noriyo Kaneko RN, PhD
School of Nursing, Nagoya City University, Japan

Hyunju Kang RN, PhD
College of Nursing, Kangwon National University, Republic of Korea

Kyung-Ah Kang RN, PhD
Department of Nursing, Sahmyook University, Republic of Korea

So Ra Kang RN, PhD
College of Nursing, Sungshin Women's University, Republic of Korea

Dong-Hee Kim RN, PhD
College of Nursing, Sungshin Women's University, Republic of Korea

Dong Yeon Kim RN, PhD
The Catholic University of Korea, Seoul St. Mary's Hospital, Republic of Korea

Eunjung Kim RN, PhD
Department of Family & Child Nursing Faculty and Administration, University of Washington, USA

Gaeun Kim RN, PhD
College of Nursing, Keimyung University, Republic of Korea

Geun Myun Kim RN, PhD
Department of Nursing, Gangneung-Wonju National University, Republic of Korea

Hyun-Ok Kim RN, PhD
College of Nursing, Chonebuk National University, Republic of Korea

Jeong-Mi Kim RN, PhD
Department of Nursing, Kaya University, Republic of Korea

Ji-Soo Kim RN, PhD
College of Nursing, Gachon University, Republic of Korea

Jin Sun Kim RN, PhD
Department of Nursing, Chosun University, Republic of Korea

Shin-Jeong Kim RN, PhD
School of Nursing, Hallym University, Republic of Korea

Sujeong Kim RN, PhD
College of Nursing, The Catholic University of Korea, Republic of Korea

Sunghee Kim RN, PhD
Red Cross College of Nursing, Chung-Ang University, Republic of Korea

Tae-Im Kim RN, PhD
Department of Nursing, Daejeon University, Republic of Korea

Yae Young Kim RN, PhD
(Former) Department of Nursing, Kyungil University, Republic of Korea

Youngjoo Kim RN, PhD
Department of Nursing Science, U1 University, Republic of Korea

Yunsoo Kim RN, PhD
Department of Nursing, Catholic Kwandong University, Republic of Kore

Hyun Young Koo RN, PhD
College of Nursing, Daegu Catholic University, Republic of Korea

Anna Lee RN, PhD
College of Nursing, Yonsei University, Republic of Korea

Bo Ryeong Lee RN, PhD
College of Nursing, Daegu Catholic University, Republic of Korea

Eun Jee Lee RN, PhD
College of Nursing, Jeonbuk National University, Republic of Korea

Hye-Jung Lee RN, PhD
College of Nursing, Yonsei University, Republic of Korea

In-Sook Lee RN, PhD
Department of Nursing, Hannam University, Republic of Korea

Jaeyoung Lee RN, PhD
Department of Nursing Science, Kyungsung University, Republic of Korea

Ji-Won Lee RN, PhD
Department of Nursing, Catholic University of Pusan, Republic of Korea

Joo Hyun Lee RN, PhD
College of Nursing, Eulji University, Republic of Korea

Meen Hye Lee RN, PhD
Department of Nursing, Gangneung-Wonju National University, Republic of Korea

Sangmi Lee RN, PhD
Department of Nursing, Dongyang University, Republic of Korea

Soo-Yeon Lee RN, PhD
Department of Nursing, Koje College, Republic of Korea

Sunhee Lee RN, PhD
College of Nursing, The Catholic University of Korea, Republic of Korea

Young-Eun Lee RN, PhD
College of Nursing, Kosin University, Republic of Korea

Yu-nah Lee RN, PhD
College of Nursing, Chodang University, Republic of Korea

Ji-Young Lim RN, PhD
College of Nursing, CHA University, Republic of Korea

Hyeon-Ah Nam RN, PhD
Department of Nursing, Howon University, Republic of Korea

Mi-Jung Nam RN, PhD
Department of Nursing, Daejeon Health Sciences College of Korea, Republic of Korea

Jina Oh RN, PhD
Department of Nursing, Inje University, Republic of Korea

Sang-Eun Oh RN, PhD
College of Nursing, Chonnam National University, Republic of Korea

Sumi Oh RN, PhD
College of Nursing, Jeju National University, Republic of Korea

Won-Oak Oh RN, PhD
College of Nursing, Korea University, Republic of Korea

Il Tae Park RN, PhD
College of Health and Welfare, Woosong University, Republic of Korea

Jiyoung Park RN, PhD
Department of Nursing, College of Medicine, Inje University, Republic of Korea

Sunghee Park RN, PhD
Department of Nursing, Kunsan National University, Republic of Korea

Sun-Nam Park RN, PhD
Seoul Women's College of Nursing, Republic of Korea

Jin Suk Ra RN, NNP, PhD
College of Nursing, Chungnam National University, Republic of Korea

Kaka Shim RN, PhD
Department of Nursing, Sang Myung University, Republic of Korea

Hyewon Shin RN, PhD
College of Nursing, Ewha Womans University, Republic of Korea

Hyunsook Shin RN, APN, CPNP, PhD
College of Nursing Science, Kyung Hee University, Republic of Korea

Hyun-Mi Sohn RN, PhD
College of Nursing, Pusan National University, Republic of Korea

Min Sohn RN, PhD
Department of Nursing, Inha University, Republic of Korea

Young Ran Tak RN, PhD
Department of Nursing, Hanyang University, Republic of Korea

Kyeongra Yang RN, PhD, MPH
School of Nursing, Rutgers, The State University of New Jersey, USA

Ji-Young Yeo RN, PhD
Department of Nursing, Hanyang University, Republic of Korea

Hana Yoo RN, PhD
Department of Nursing, Daejeon University, Republic of Korea

Juyoun Yu RN, PhD
Department of Nursing, Changwon National University, Republic of Korea

Mi Yu RN, PhD
College of Nursing, Gyeongsang National University, Republic of Korea

The Board of Directors

pISSN 2287-9110
eISSN 2287-9129

President

Hyun Young Koo RN, PhD
College of Nursing, Daegu Catholic University, Republic of Korea

Vice-president

Won-Oak Oh RN, PhD
College of Nursing, Korea University, Republic of Korea

Director of General Affairs

Sun-Nam Park RN, PhD
Seoul Women's College of Nursing, Republic of Korea

Editor-in-Chif, Child Health Nursing Research

Yunsoo Kim RN, PhD
Department of Nursing,Catholic Kwandong University, Republic of Korea

Director of Academic affairs

Eun Sun Ji RN, PhD
Department of Nursing, Konkuk University Glocal Campus, Republic of Korea

Treasurer

Sangmi Lee RN, PhD
Department of Nursing, Dongyang University, Republic of Korea

Director of Public Relations

Gun-Ja Jang RN, PhD
College of Nursing, Daegu University, Republic of Korea

Director of Educational Affairs

Sunhee Lee RN, PhD
College of Nursing, The Catholic University of Korea, Republic of Korea

Director of Publication

So Young Jung RN, PhD
Department of Nursing, Ansan University, Republic of Korea

Director of Secretary Affairs

Il Tae Park RN, PhD
College of Health and Welfare, Woosong University, Republic of Korea

Regional Committee

Eun Jee Lee RN, PhD
College of Nursing, Jeonbuk National University, Republic of Korea

Jiyoung Park RN, PhD
College of Nursing, Inje University, Republic of Korea

Advisory Committee

Kyung-Sook Bang RN, PhD
College of Nursing, Seoul National University, Republic of Korea

Hyunju Kang RN, PhD
College of Nursing, Kangwon National University, Republic of Korea

CHNR
Child Health Nursing Research

pISSN 2287-9110
eISSN 2287-9129

Vol.31, No.1, January 2025

Editorial 1 Journal statistics in 2024, and the new era of *Child Health Nursing Research* in 2025
Yunsoo Kim

Review Articles 4 The role of nurses in child abuse situations: a systematic review
Bomi Kim, Sunyeob Choi

Original Articles 15 Childbearing intentions and influencing factors among single young adults in South Korea: a cross-sectional study
Hyewon Shin, Anna Lee, Sunyeob Choi, Minjeong Jo

28 Socioecological factors influencing sugar-sweetened beverage consumption among adolescents in South Korea: a cross-sectional study
Jin Suk Ra, Sun Hwa Kim

40 Tutoring experiences of a high-risk newborn care simulation among nurse tutors and nursing student tutees in South Korea: a qualitative study
Hyun Young Koo, Bo Ryeong Lee, Hyeran An

52 Development for a concept mapping multicultural education program for Mother and Baby Unit nurses: a quasi-experimental study in South Korea
Dahae Kang, Soonyoung Shon

63 The parent-doctor-child triangle: a structural equation modeling-based study in pediatric outpatient clinics in Indonesia
Areta Idarto, Ferdi Antonio

EDITORIAL

Child Health Nurs Res Vol.31, No.1, January 2025;31(1):1-3
https://doi.org/10.4094/chnr.2025.002

pISSN 2287-9110
eISSN 2287-9129

CHNR

Journal statistics in 2024, and the new era of *Child Health Nursing Research* in 2025

Yunsoo Kim

Associate Professor, Department of Nursing, Catholic Kwandong University, Gangneung, Korea

As the editor-in-chief of *Child Health Nursing Research* (CHNR), I am delighted to present Volume 31, Issue 1. In 2024, CHNR showcased its academic achievements by publishing 33 papers on various topics in child health nursing through four issues (Volume 30, Issues 1 to 4). In this Editorial, we will review the status and main trends of the papers published in 2024 and suggest research directions in pediatric nursing that are expected to be submitted to CHNR in the future.

1. Status of CHNR Paper Publications in 2024

CHNR Volume 30 was published in four issues, featuring a total of 33 papers in English: Vol. 30 (1) had eight papers, Vol. 30 (2) had nine papers, Vol. 30 (3) had five papers, and Vol. 30 (4) had 11 papers. The average number of authors per paper was 2.4 (standard deviation=1.1; range, 2–5) (Table 1). Of these authors, 85.4% were Korean, and the remaining 14.6% were Indonesian, Jordanian, and Ghanaian. The proportion of foreign authors increased by 5.2% compared to the previous year. Furthermore, 33.3% of the papers were supported by government agencies, universities, and public institutions, reflecting a 10% decrease from the previous year.

The types of articles published in CHNR in 2024 are shown in Table 2. They consisted of five editorials (15.2%), 26 original articles (78.8%), and two review articles (6.0%), indicating a significant increase in the proportion of original articles compared to 2022–2023. Similar to 2023, descriptive and/or cross-sectional studies were most common (13 articles, 39.5%), followed by experimental studies (four articles, 12.1%), secondary analysis studies (three articles, 9.1%), and qualitative analysis studies (three articles, 9.1%). In addition, one methodological study, one mixed-methods study, and one real-time Delphi methods study (3.0% each) were published. Although the number of original articles increased compared to 2023, the number of review articles decreased, consisting of one systematic review and one scoping review (3.0% each). The total number of papers published in CHNR in 2024 increased compared to 2023, but review article submissions remained low. Nevertheless, securing greater diversity in author nationality and increasing the number of published papers remain ongoing challenges. We hope that readers worldwide will submit a wider variety of high-quality papers.

2. Status and development direction of topics covered in CHNR in 2024

The papers in CHNR in 2024 can be classified into three main topic clusters (Table 3).

1) Child and adolescent health issues and the role of the family

CHNR featured studies emphasizing the roles of the family and parents in obesity, mental health, and stunting, along with parental health concerns and family resilience.

Corresponding author
Yunsoo Kim
Department of Nursing, Catholic Kwandong University, 24 Beomil-ro 579beon-gil, Gangneung 25601, Korea
Tel: +82-33-649-7614
Fax: +82-33-649-7610
E-mail: agneskim@cku.ac.kr

Received: January 20, 2025 **Accepted:** January 22, 2025

This is an Open Access article distributed under the terms of the Creative Commons Attribution NonCommercial License (https://creativecommons.org/licenses/by-nc-nd/4.0/) which permits unrestricted noncommercial use, distribution, and re-production in any medium, provided the original work is properly cited.
© 2025 Korean Academy of Child Health Nursing

Table 1. Bibliometric analysis of *Child Health Nursing Research* in 2024 (N=33)

Variable	Value
No. of articles	33
Vol. 30 (1)	8 (24.2)
Vol. 30 (2)	9 (27.3)
Vol. 30 (3)	5 (15.2)
Vol. 30 (4)	11 (33.3)
Language of articles	
English	33 (100.0)
No. of authors per article	2.4±1.12 (2–5)
Country of authors[a)]	
Korea	70 (85.4)
Indonesia	7 (8.5)
Jordan	4 (4.9)
Qatar	1 (1.2)
Funding resource	
Not supported	22 (66.7)
Supported: by a national institution	6 (18.2)
Supported: by a university	5 (15.1)

Values are presented as number (%) or mean±standard deviation (range).
[a)]The target population for the country of authors comprised 82 people.

Table 2. Research subjects, article types, and methodologies of publications in *Child Health Nursing Research* in 2024 (N=33)

Variable	No. (%)
Type of articles (n=33)	
Editorial	5 (15.2)
Original article	26 (78.8)
Review article	2 (6.0)
Methodologies	
Editorial	5 (15.2)
Original articles	
Descriptive and/or cross-sectional study	13 (39.5)
Experimental study	4 (12.1)
Secondary analysis study	3 (9.1)
Qualitative analysis study	3 (9.1)
Methodological study	1 (3.0)
Mixed-method study	1 (3.0)
Real-time Delphi method study	1 (3.0)
Review articles	
Systematic review	1 (3.0)
Scoping review	1 (3.0)

Table 3. Topics covered in papers published in *Child Health Nursing Research* in 2024

Category	Main topics
Child and adolescent health and family roles	
Child and adolescent health	Obesity, mental health, stunting, chronic illness
Family roles and parental experiences	Parental health concerns, family resilience
Nursing practice and educational development	
Nursing practice and safety	Antibiotic stewardship, patient safety
Nursing education and professionalism	Simulation, self-efficacy, professionalism
Healthcare technology and intervention programs	
Technology-based interventions	Chatbots, mobile apps, telehealth
Effectiveness of intervention programs	Child abuse prevention, cancer treatment, coaching

2) Development of nursing practice and education

CHNR published studies on nurses' practical expertise and educational innovations, such as simulation-based learning, self-efficacy enhancement, and professional development. The educational aspect will be an essential cornerstone for improving the quality of pediatric nursing practice.

3) Innovation in medical technology and intervention programs

The intervention studies published in CHNR in 2024 w included technology-based approaches such as chatbots, mobile apps, and telemedicine, focusing on increasing efficiency and innovating patient care methods. Additionally, studies evaluating the effectiveness of intervention programs for child abuse prevention and cancer treatment were published. This trend shows CHNR's rapid multidisciplinary development, integrating nursing practice, technology, and family-centered nursing.

3. Expected directions for child health-related research in 2025

In 2025, CHNR encourages fellow scholars in the field of pediatric nursing to actively research and submit papers on the following topics:

1) Climate change and child health

Research analyzing the impact of environmental changes on child health and proposing relevant nursing interventions.

2) Health equity and vulnerable groups

Research addressing health issues faced by socially disadvantaged or vulnerable children and suggesting nursing strategies to improve their well-being.

3) Artificial intelligence and nursing practice

Research exploring innovative examples and clinical applications of child nursing practice using artificial intelligence.

4) Global health and collaborative research

Research on health issues of children in developing countries, international cooperation in nursing interventions, and solutions to global health concerns.

5) Mental health and digital therapeutics

Research on digital therapeutics and their effectiveness in addressing mental health challenges among children and adolescents.

4. Commitment to the further development of CHNR

CHNR is indexed in several reputable databases, such as the Cumulative Index to Nursing and Allied Health Literature (CINAHL), Scopus, Directory of Open Access Journals (DOAJ), Google Scholar, Crossref, Korea Citation Index (KCI), KoreaMed, and the Korean Medical Citation Index (KOMCI). These databases meticulously maintain records of all publications in CHNR. Notably, CHNR was approved for inclusion in the DOAJ and Scopus Content Selection and Advisory Boards in July 2019 and February 2018, respectively. CHNR is also part of the KCI, and all manuscripts published in CHNR are permanently accessible to the public through the CHNR website (http://www.e-chnr.org/). Furthermore, CHNR has been indexed in PubMed Central (PMC) since January 2019 (Vol. 26, Issue 1). The CHNR journal editorial board is confident that the journal will be listed in MEDLINE and the Emerging Sources Citation Index (ESCI), in addition to PMC.

CHNR has reached its current status thanks to the dedication and efforts of many individuals. First, I extend my sincere gratitude to the authors who submitted their excellent work to CHNR. I also thank the reviewers who provided valuable feedback and the editorial committee members who worked tirelessly to enhance the quality of the papers. My appreciation also goes to the past executives of the Korean Society of Pediatric Nursing, whose material and moral support has helped CHNR become a significant milestone in pediatric nursing. As the official journal of the Korean Society of Pediatric Nursing, CHNR will continue striving to serve as a core academic platform for introducing various innovative and practical studies in child health nursing. Ongoing interest and engagement from readers around the world will drive the continued development of pediatric nursing. I look forward to receiving more meaningful submissions from researchers devoted to children's well-being and to advancing pediatric nursing scholarship.

ARTICLE INFORMATION

Authors' contribution

All the work was done by Yunsoo Kim.

Conflict of interest

Yunsoo Kim has been the editor-in-chief of *Child Health Nursing Research* since 2022. She was not involved in the review process of this editorial. No existing or potential conflict of interest relevant to this article was reported.

Funding

None.

Data availability

Please contact the corresponding author for data availability.

Acknowledgements

None.

ORCID and ResearcherID

Yunsoo Kim https://orcid.org/0000-0002-1788-563X
https://researcherid.com/rid/GPF-8147-2022

REVIEW ARTICLE

Child Health Nurs Res Vol.31, No.1, January 2025;31(1):4-14
https://doi.org/10.4094/chnr.2024.022

pISSN 2287-9110
eISSN 2287-9129

CHNR

The role of nurses in child abuse situations: a systematic review

Bomi Kim[1], Sunyeob Choi[2]

[1]Assistant Professor, Department of Nursing, Chodang University, Muan, Korea
[2]Assistant Professor, College of Nursing, Dongguk University WISE, Gyeongju, Korea

Corresponding author
Sunyeob Choi
College of Nursing, Dongguk University WISE, 123 Dongdae-ro, Gyeongju 38066, Korea
Tel: +82-54-770-2623
Fax: +82-54-770-2616
E-mail: sunyeobchoi@dongguk.ac.kr

Received: May 19, 2024
Revised: June 26, 2024
Accepted: August 30, 2024

Purpose: Nurses play a crucial role in cases of victims of child abuse; however, but there is a need for a comprehensive understanding of their specific roles, responsibilities, and best practices is needed.
Methods: This integrative review aims to synthesize existing evidence on the role of nurses in cases of victims of child abuse. A literature search was conducted using PubMed, Cumulative Index to Nursing and Allied Health Literature (CINAHL), PsycINFO, and Scopus databases. A literature search was conducted using PubMed, CINAHL, PsycINFO, and Scopus databases. This review included 12 qualitative and quantitative studies.
Results: This review identified the following four themes: nurses' responsibility, intention to report child abuse, perceptions of child abuse, and risk assessment of child abuse. The findings revealed that nurses play a multifaceted role in child abuse situations. Evidence-based practices and guidelines were identified to optimize recovery outcomes among children who have experienced abuse.
Conclusion: This integrative review contributes to the body of knowledge on nurses' role in cases of victims of child abuse by providing valuable insights for nursing practice, education, and policy. These findings can help guide nurses in developing evidence-based interventions and collaborative approaches to support the recovery of victims of child abuse.

Keywords: Child abuse; Nurses; Nursing; Nurse's role; Review

INTRODUCTION

Child abuse, a pervasive and detrimental problem, encompasses various forms of physical, emotional, and sexual maltreatment, and neglect. Such harmful experiences exert long-lasting effects on the psychological, social, and physical well-being of affected children [1,2]. The World Health Organization (WHO) estimates that approximately one billion children aged 2–17 years have experienced some form of physical, sexual, or emotional violence, or neglect [3]. In the United States (USA), nearly 700,000 children were victims of abuse and neglect in 2020, with infants under the age of one being the most vulnerable [4]. According to the Centers for Disease Control and Prevention, at least one in seven children in the United States experienced abuse or neglect in the past year, although this is likely an underestimate due to underreporting. In 2021, 1,820 children died from abuse and neglect [5].

Considering the complex and detrimental effects of child abuse, nurses' role in recognizing, reporting, and providing the necessary care for victims of child abuse becomes extremely crucial [6]. Nurses typically the first point of contact for children and their families provide essential services, such as assessment, intervention, and support throughout

This is an Open Access article distributed under the terms of the Creative Commons Attribution NonCommercial License (https://creativecommons.org/licenses/by-nc-nd/4.0/) which permits unrestricted noncommercial use, distribution, and re-production in any medium, provided the original work is properly cited.
© 2025 Korean Academy of Child Health Nursing

the recovery process [7,8]. Despite the critical nature of nurses' roles in managing child abuse cases, there is a noted lack of a comprehensive understanding regarding their specific roles, responsibilities, and optimal practices is lacking. Additionally, several nurses hesitate to report child abuse and maltreatment [9]. To fill this knowledge gap, integrative reviews can synthesize existing evidence; identify unexplored areas, and inform future research, education, and policy initiatives [10].

Childhood is a crucial period in which an individual's physical, emotional, and mental development occurs [1,2]. Child abuse emerges as a particularly significant issue during this developmental process and abuse can impede a child's healthy development and growth, with its effects potentially lasting throughout one's lifetime. Nurses play a vital role in the prevention of and response to child abuse [7,8]. Moreover, the well-being of children during this period can be promoted by holistic nursing during this period can promote the well-being of children that considering considers their physical, emotional, and mental needs [1].

This study integrative review aimed to thoroughly examine the nurses' role of nurses in addressing child abuse cases and to developing effective nursing strategies for the future. Nurses play a crucial role in facilitating early identification, intervention, and ongoing support for these vulnerable individuals. By clarifying their role, training programs can be enhanced, multidisciplinary collaboration can be improved, and the effective implementation of ensure that evidence-based practices can be ensured, ultimately resulting in better outcomes for children who are abused [11]. This review follows the integrative review framework proposed by Whittmore and Knafl [10].

METHODS

Ethical statements: This study is a literature review of previously published studies and was therefore exempt from Institutional Review Board approval.

1. Study Design

This integrative review was conducted in accordance with the framework proposed by Whittemore and Knafl [10]. This methodology is useful for integrating and summarizing evidence derived from multiple methodological approach [10]. An integrative review comprises the following five steps: problem identification, literature search, data evaluation, data analysis, and presentation. This integrative review's results were reported based on the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) [12].

2. Search Strategy

The PRISMA flowchart [12] was used to search for relevant literature. A comprehensive literature search was conducted using the PubMed, Cumulative Index to Nursing and Allied Health Literature (CINAHL), PsycINFO, and Scopus databases to identify relevant studies nurses' role in the recovery process of victims of child abuse. The search strategy combined terms related to child abuse (e.g., "child abuse," "child maltreatment," "child neglect," "child victimization") and nursing (e.g., "nurses," "nursing," "registered nurse," "nurse practitioners," "nursing staff") and terms related to nursing's role, function, and impact (e.g., "role," "function," "responsibility," "impact"). The search was limited to English-language articles. This study did not limit the search by publication year, ensuring the inclusion of all studies examining nurses' role in child abuse cases. The included studies' reference lists were reviewed to identify additional relevant publications. Studies were included in the review if they fulfilled the following criteria: (1) focused on nurses' role in the recovery process of victims of child abuse; (2) employed qualitative, quantitative, or mixed-methods research designs; (3) were peer-reviewed; and (4) were published in English. This review's exclusion criteria were as follows: (1) studies not specifically focusing on nurses' role in the recovery process of victims of child abuse, (2) literature reviews, editorials, commentaries, or opinion articles; and (3) articles published in languages other than English.

Two reviewers independently screened the identified articles' titles and abstracts to assess their eligibility for inclusion. Subsequently, full-text articles were obtained from potentially relevant studies, and the two reviewers independently assessed their eligibility for inclusion based on the aforementioned criteria. Disagreements between the reviewers were resolved through discussion, if necessary.

3. Search Outcomes

We used the PRISMA flowchart to select the relevant literature [12] (Figure 1). The initial databased search identified

1,624 articles. After removing 74 duplicates, 1,550 articles were retained for title and abstract screening.

After reviewing the titles, 78 studies were selected. Subsequently, 42 studies were selected after reviewing their abstracts. Finally, after reading the full texts, 12 studies were selected. Two reviewers independently extracted data from the included studies using a standardized data extraction form. The extracted information included study characteristics (e.g., authors, publication year, country of origin, study design), population characteristics (e.g., sample size, age, gender, type of abuse), details regarding the nursing role (e.g., specific responsibilities, interventions, collaboration with multidisciplinary teams), and key findings related to nurses' role in cases of victims of child abuse.

4. Quality Appraisal

The included studies' methodological quality was independently assessed by two reviewers using the Crowe Critical Appraisal Tool (CCAT) [13]. This tool provides a consistent and comprehensive approach for evaluating the credibility, reliability, and validity of research studies, irrespective of their design. Disagreements between the reviewers were resolved through discussion or consultation, if necessary. The quality appraisal results were used to assess the included studies' credibility, transferability, dependability, and confirmability, and inform the finding's interpretation.

Assessing the studies using the CCAT revealed that the scores were relatively low in some crucial categories (Table 1). Specifically, in Category 3, "Design", a considerable number of studies lacked sufficient consideration of the appropriateness of the research design and potential biases. Additionally, in Category 4, "Sampling", some studies omitted explanations for the chosen sampling method and its rationale, and suitability. In Category 5, "Data collection", some studies did not describe the data collection methods. In Category 6, "Ethical Considerations", several studies did not provide adequate information regarding participant compensation and privacy protection. However, barring these areas, most studies performed reasonably well across other categories (Table 1).

5. Data Extraction

Data extraction was conducted according to the framework by Whittemore and Knafl [10]. To facilitate data extraction, we developed a tool to summarize and analyze the data related to the study objective: research design, research setting, study aim, key variables, main results, and recommendations.

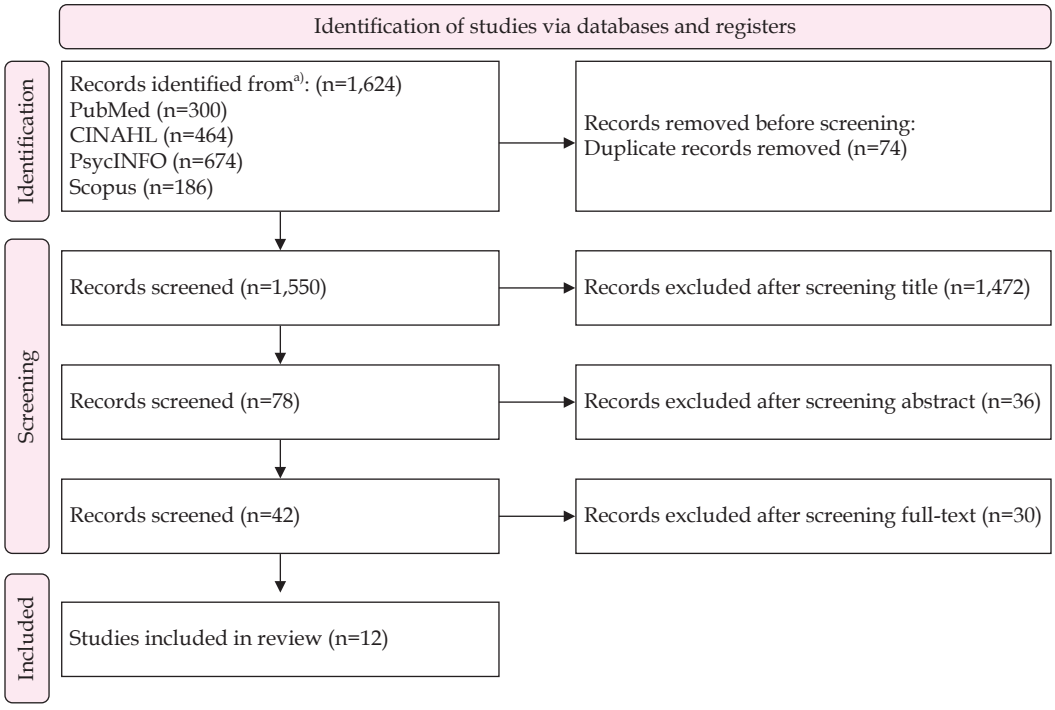

Figure 1. Flow chart of study selection. [a]PubMed, Cumulative Index to Nursing and Allied Health Literature (CINAHL), PsycINFO, and Scopus.

Table 1. Quality assessment scores of the reviewed studies using Crowe Critical Appraisal Tool

Article no.	First author (year)	1. Preliminaries	2. Introduction	3. Design	4. Sampling	5. Data collection	6. Ethical concerns	7. Results	8. Discussion	Total
A1	Atencion et al. [16] (2019)	5	5	4	4	4	0	5	5	32
A2	Barrett et al. [28] (2017)	5	5	5	4	3	0	5	5	32
A3	Chan et al. [17] (2020)	5	5	3	0	3	3	5	5	29
A4	Cho et al. [29] (2015)	5	5	5	5	5	5	5	5	40
A5	Crisp and Lister [14] (2004)	5	5	5	3	5	3	5	5	36
A6	Feng and Wu [18] (2005)	5	5	5	4	5	5	5	5	39
A7	Fraser et al. [19] (2010)	5	5	5	4	5	0	5	5	34
A8	Hornor et al. [21] (2017)	5	5	4	4	3	3	5	5	34
A9	Ko [32] (2007)	5	5	3	5	3	0	5	5	31
A10	Lee and Kim [20] (2018)	5	5	5	4	5	5	5	5	39
A11	Lee and Kim [15] (2018)	5	5	5	5	5	5	5	5	40
A12	Lines et al. [22] (2024)	5	5	5	4	3	4	5	5	36

A narrative synthesis of the extracted data was performed to summarize the key findings and to identify common themes and patterns related to nurses' role in the recovery process of victims of child abuse. The results are organized and presented according to the identified themes in Table 2.

6. Synthesis

Each theme reflects key concepts that repeatedly appeared in the findings of multiple included studies, and these themes were identified accordingly. The first theme, the burden on parents, reflects the psychological, emotional, and economic burdens that parents experience in child abuse situations, as highlighted by multiple studies [14,15]. This burden significantly impacts the recovery process of victims of child abuse and provides essential information for nurses to support parents effectively. The second theme involves the factors affecting the burden on parents, such as the level of social support, economic status, and the child abuse incidents' severity [16,17]. Understanding these factors enables nurses to assess parents' situations more accurately and offer tailored support. The third theme, coping strategies to reduce the burden, is based on findings indicating that the various coping strategies that parents use in child abuse situations significantly affect their psychological well-being [18,19]. This information is crucial for nurses to suggest and support effective coping strategies for parents. Finally, suggestions for clinical practice were derived from studies emphasizing the importance of educational programs that equip nurses with the necessary knowledge and skills to respond more effectively to child abuse situations [20,21]. These suggestions provide practical guidance for nurses to apply directly in their practice. The four themes derived offer a comprehensive understanding of nurses' role in child abuse situations, serving as essential foundational data. This integrative approach can significantly aid the development of education and training programs for nurses and ultimately contribute to the recovery and protection of victims' child abuse.

RESULTS

1. Selected Studies' Characteristics

Regarding this study's general characteristics, an analysis was conducted on the years of research implementation, research designs, countries of research, research participants, and sample sizes (Table 2). The years of research implementation ranged from 2004 to 2023. The research designs includ-

Table 2. Summary of studies (n=12)

Article No.	First author (year)	Country	Research design	Participants	Research setting	Aim	Key variables	Main results	Recommendations
A1	Atencion et al. [16] (2019)	The Philippines	Descriptive cross-sectional	146 nurses	District hospital	Determining factors related to nurses' intention to report child abuse	Pre-service education and in-service training regarding child abuse	Nurses' intention to report child abuse was greatly influenced by the opinions of people significant to them	Further attention is required for professional preparation, education, and training in managing child abuse
A2	Barrett et al. [28] (2017)	Ireland	Qualitative	10 pediatric nurses	Pediatric unit	Understanding pediatric nurses' experiences caring for infants with nonaccidental injuries	Personal impact, professional roles, nurse-client relationship, resources	Caring for infants with nonaccidental injuries evokes complex personal emotions and influences nurses' reflections on their own lives	Peer support must be encouraged and nursing experience must be drawn on for managing nonaccidental injuries
A3	Chan et al. [17] (2020)	Hong Kong	Descriptive cross-sectional	91 nurses	Nursing council	Measuring child protection knowledge and attitudes, perceived norms, control, and reporting intention	Child protection knowledge and perceptions	Nurses' attitudes toward perpetrator culpability affect their perception of neglect and abuse	Training programs should include discussions on personal and professional attitudes toward child protection
A4	Cho et al. [29] (2015)	Korea	Descriptive cross-sectional	131 nurses	Emergency center of five hospitals	Identifying awareness and legal knowledge about abuse and attitudes towards domestic violence among emergency nurses	Recognition of abuse and violence, legal knowledge of abuse, and attitudes towards domestic violence	Approximately 60% of participants experienced suspected abuse or violence, but reporting rates were low	Emergency nurses require systematic education about abuse and violence, and appropriate interventions
A5	Crisp and Lister [14] (2004)	The UK	Qualitative	99 nurses	National Health Service trust in a Scottish city	Exploring nurses' understanding of their roles in child protection	Perception of nursing role in child protection	Some nurses perceived a conflict between the traditional roles of supporting families and a perceived shift towards actively seeking to detect child abuse	Align child protection work must be aligned with public health interventions such as supporting families, parenting education, and service development to reduce perceived conflict and enhance role clarity
A6	Feng and Wu [18] (2005)	Taiwan	Descriptive cross-sectional	1617 nurses	Emergency rooms, psychiatric units, and pediatric units	Identifying factors associated with nurses' intention to report suspected child abuse	Nurses' intention to report	Attitudes toward reporting, perceived control, norms, and knowledge explained 85%–91% of the variance in reporting intention	This study provides a substantive foundation for understanding this phenomenon from a cross-cultural perspective

(Continued on next page)

https://doi.org/10.4094/chnr.2024.022

Table 2. Continued

Article No.	First author (year)	Country	Research design	Participants	Research setting	Aim	Key variables	Main results	Recommendations
A7	Fraser et al. [19] (2010)	Australia	Descriptive cross-sectional	930 nurses	Clinical settings throughout Queensland	Investigating factors affecting nurses' reporting of child abuse/neglect	Nurse characteristics, training, knowledge of legislative duty, attitudes	Nurses were most confident and knowledgeable about physical and sexual abuse Confidence and knowledge about emotional abuse and neglect were less robust	Educational preparation and training must be enhanced to better equip nurses to recognize and report all forms of child abuse and neglect
A8	Hornor et al. [21] (2017)	USA	Descriptive cross-sectional	243 PNPs	Pediatrics	Describing PNP practice behaviors related to screening and guidance for child maltreatment	The Risk Assessment Survey	A significant number of PNPs do not routinely screen for child maltreatment and psychosocial risk factors, especially sexual abuse	Screening practices and anticipatory guidance related to child maltreatment and psychosocial risk factors are essential for comprehensive care
A9	Ko [33] (2007)	Korea	Vignette	1,029 Korean registered nurses	Hospital and school	Identifying nurses' perceptions regarding child sexual abuse	Nurses' perceptions of child sexual abuse	The intrusiveness of the sexual act exerted the greatest impact on nurses' perceptions of the seriousness of child sexual abuse	Further research is needed on how different types of sexual abuse experienced by nurses relate to their perceptions
A10	Lee and Kim [20] (2018)	Korea	Descriptive cross-sectional	200 emergency nurses	Eight general hospitals	Investigating predictors of child abuse reporting intention	Child abuse reporting intention	Attitude toward child abuse is the main predictor of reporting intention	Emergency nurses need emotional support throughout the reporting process
A11	Lee and Kim [15] (2018)	Korea	Descriptive cross-sectional	116 pediatric nurses	Two university hospitals	Identifying knowledge and awareness of child abuse reporting, and professionalism among pediatric nurses	Reporting child abuse	Nursing autonomy and intentions to report child abuse significantly influenced attitudes toward mandatory reporting	Systems and policies for addressing child abuse must be improved, and develop reporting procedures must be developed
A12	Lines et al. [22] (2024)	Australia	Delphi	137 nurses and midwifery	Child-focused settings	Investigating role perceptions and safeguarding roles in child-focused settings	Role in child safety	Nurses agreed that safeguarding children is a core component of their practice	Further research is needed on the ongoing development of roles in safeguarding children

PNPs, pediatric nurse practitioners.

CHNR

ed Delphi, vignette, descriptive, and qualitative studies. The countries of research included Australia, Korea, Hong Kong, Taiwan, the USA, the Philippines, Ireland, and the United Kingdom. The research participants comprised nurses and midwives, emergency room nurses, pediatric nurses, and pediatric nurse practitioners (PNPs), with some studies lacking specific participant descriptions. The sample sizes ranged from 10 to more than 1,000 participants. Regarding the outcome variables, two, six, three, and one studies focused on nurses' responsibility, intention to report, perceptions of child abuse, and risk assessment of child abuse, respectively (Table 3).

1) Nurses' responsibility

Two studies (A5 and A12) focused on nurses' role in child abuse situations. Nurses perceived maintaining safety in the child abuse context as their primary role (A12). However, numerous nurses were unaware that identifying and detecting child abuse were part of their responsibilities (A5). Additionally, consensus regarding nurses' role in child protection issues, particularly the extent to which they should actively seek protection against child abuse, was lacking (A5). Therefore, a need exists for social discussions on nurses' role in child abuse situations and continuous education for nurses to clarify their roles.

2) Intention to report child abuse

Six studies (A1, A3, A6, A7, A10, and A11) focused on nurses' intention to report child abuse. These studies explored nurses' attitudes toward abuse (A10), knowledge about abuse (A6, A11), perceived behavioral control (A10), nursing autonomy (A11), nurses' attitudes (A1, A3, A6, and A7), workplace factors (A7), and training (A7). Nurses exhibited an intention to report and an understanding of the importance of reporting. Therefore, policy and system improvements are needed to ensure that their intention to report translates into actual reporting behavior (A10).

3) Nurses' perceptions of child abuse

Three studies (A2, A4, and A9) focused on nurses' perceptions of abuse. Regarding sexual abuse, factors affecting the perception of sexual abuse included victim age, perpetrator age, cross-gender abuse, victim resistance, and the sexual act's frequency and intrusiveness (A9). Additionally, other studies examined nurses' knowledge of abuse (A4). Nurses reported experiencing psychological difficulties when confirming the evidence of child abuse and were aware of their role in child protection and advocacy (A2). In child abuse situations, nurses relied on informal support from colleagues (A2). Nurses acknowledged the presence of violence but expressed difficulties in providing interventions, primarily owing to a lack of knowledge (A4). Consequently, nurses expressed a desire for child abuse-related education (A4).

4) Risk assessment of child abuse

One study examined nurses' risk assessment of abuse, focusing on child abuse PNPs (A8). A significant number of child abuse PNPs did not routinely screen for psychosocial

Table 3. Summary of key findings related to nurses' roles in child abuse situations

Outcome variables	No. of studies	Key findings
Nurses' responsibility	2	1. Nurses perceive maintaining safety in child abuse situations as their primary role. 2. Several nurses are unaware that the identification and detection of child abuse are part of their responsibilities.
Intention to report child abuse	6	1. Nurses exhibit the intention to report and understand the importance of reporting. 2. Factors such as attitudes towards, and knowledge about abuse, perceived behavior control, nursing autonomy, attitudes, workplace factors, and training play a role.
Nurses' perceptions of child abuse	3	1. Factors affecting the perception of sexual abuse include victim age, perpetrator age, cross-gender abuse, victim resistance, and the sexual acts' frequency, and intrusiveness. 2. Nurses face psychological difficulties while confirming evidence of child abuse and are aware of their role in child protection and advocacy. 3. Nurses recognize the presence of violence but face difficulties in providing interventions owing to a lack of knowledge.
Risk assessment of child abuse	1	1. A significant number of child abuse PNPs do not routinely screen for psychosocial risk factors associated with child abuse. 2. Only approximately 50% of PNPs conducted anorectal genital exams on children at risk of sexual abuse, while only 12% confirmed the potential for sexual abuse with parents.

PNPs, pediatric nurse practitioners.

risk factors associated with child abuse. Only approximately 50% of PNPs conducted anorectal genital examinations among children at risk of sexual abuse, while only 12% confirmed the potential for sexual abuse to parents. These factors were attributed to time constraints and a lack of training. Recognizing psychosocial risk factors is essential for preventing child abuse and providing relevant interventions. Therefore, enabling nurses to accurately and effectively assess the risk of child abuse by addressing the identified factors of time constraints and lack of training is necessary.

DISCUSSION

This integrative review aimed to provide a comprehensive understanding of the nurses' role in child abuse situations. This section explores the implications of this review's findings, identifies its limitations, and suggests directions for future research. This review identified the following four themes: nurses' responsibility, intention to report child abuse, perceptions of child abuse, and risk assessment of child abuse. These themes highlight nurses' multifaceted role and underscore the challenges that they face in addressing child abuse in healthcare settings.

Nurses, particularly those working with children, play multiple roles in ensuring their safety, including the prevention of and early intervention in child abuse as well addressing the physical and psychosocial needs of children who are abused [22]. According to the WHO [23], healthcare and other professionals involved in the care of children bear the responsibility to ensure that they have the opportunity to grow up in healthy environments, free from abuse, and with their dignity preserved, thus emphasizing professionals' crucial role in safeguarding children's well-being, promoting environments conducive to their health and development, and protecting them from mistreatment. Although nurses in child abuse situations recognize their role in ensuring children's safety of children, they face difficulties in identifying and detecting abuse [14]. Additionally, clear consensus regarding the scope of nurses' responsibilities in child abuse situations is lacking [14]. Standardized protocols and continuous education are essential to ensure that nurses are equipped to effectively identify and manage child abuse cases.

Evidence clearly indicates that nurses in child abuse situations are aware of their intention to report abuse, and this awareness is influenced by their knowledge of and attitudes toward abuse [15-18]. However, the frequently subtle and inconclusive nature of abuse indicators makes them difficult to recognize, which can reduce their intention to report child abuse [24,25]. To address this issue, comprehensive training programs that enhance nurses' ability to recognize and report abuse are crucial. These programs should focus on improving knowledge, attitudes, and perceived control over reporting behaviors.

In pediatric and child health settings, nurses have daily contact with children and therefore require knowledge and skills to identify and respond to child abuse. In settings such as emergency departments, nurses use formalized assessment tools (e.g., screening guidelines) to evaluate suspicious physical injuries [26]. However, in pediatric and community child health settings, nurses rely on their clinical judgment to suspect possible child abuse and decide whether to refer cases to child protection authorities [27,28]. While nurses recognize their role in child protection and advocacy in child abuse situations [29], they often lack the knowledge of the specific actions that they must perform [30]. Early and accurate assessment and identification of child abuse cases are critical for improved outcomes [8]. Nurses play a significant role in this process, and the use of evidence-based assessment tools and procedures is vital to accurately identify abuse cases [22,31]. Integrating evidence-based tools and consistent training can enhance nurses' capabilities for early detection and intervention, ultimately improving better outcomes for abused children.

Nurses experience emotional difficulties in child abuse situations and rely on informal support systems to overcome them [31,32]. They report a lack of knowledge regarding child abuse situations and difficulties in understanding the psychosocial factors related to abuse [32]. Psychosocial support and advocacy have emerged as critical components of nursing care for victims of child abuse. Essential aspects of this support include building trusting relationships with victims and their families, providing information about available resources, and assisting with decision-making processes [6,11]. Fostering strong communication and interpersonal skills among nurses is crucial to effectively support victims of child abuse and their families. Additionally, providing emotional and psychological support to nurses dealing with such cases can mitigate their emotional burden and improve care quality.

This integrative review exhibits its limitations, such as the exclusion of non-English language articles and the potential for publication bias. A significant limitation of the included

studies is their reliance on cross-sectional designs, which provide only a snapshot in time and do not capture the nursing interventions' longitudinal impact on child abuse cases. Additionally, these studies' focus of the studies varies, with some examining nurses who directly care for abused children and others surveying examining general nurses. This variation results in a heterogeneous dataset, making rendering it challenging to draw comprehensive conclusions about regarding nurses' overall role of nurses in child abuse situations.

Furthermore, there is a limitation exists in vis-à-vis understanding the impact of the nurses' role on the child, as most studies were conducted from the former's perspective of nurses, and outcomes from the child's latter's perspective were not assessed. To address these gaps, future research should focus on longitudinal studies that explore the long-term effects of nursing interventions' long-term effects on child abuse victims of child abuse. Further, including children's perspectives in research will can also provide a more comprehensive understanding of the outcomes of these interventions' outcomes.

Moreover, future studies should aim to identify and evaluate specific evidence-based practices and interventions for nurses working with victims of child abuse victims. Investigating the effectiveness of interprofessional collaboration during the recovery process is also essential. Finally, longitudinal research could offer valuable insights into the long-term outcomes for child abuse victims of child abuse and how nursing care contributes to their recovery.

CONCLUSION

This study analyzed the nurses' role in child abuse situations, aiming to elucidate their contributions to nursing interventions and holistic care provision for children who are abused. Through this analysis, this study seeks to contribute to future efforts in nursing interventions and comprehensive care for children who are abused. In conclusion, this integrative review provides a comprehensive understanding of nurses' multifaceted role in case of victims of child abuse. This review's findings underscore the importance of assessment and identification, therapeutic interventions, psychosocial support and advocacy in nursing care for these vulnerable children. By informing future research, education, and policy initiatives, this review's findings can help to enhance the quality of care provided and support optimal outcomes for victims of child abuse.

ARTICLE INFORMATION

Authors' contribution

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

Conflict of interest

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

Funding

None.

Data availability

Please contact the corresponding author for data availability.

Acknowledgements

None.

ORCID and ResearcherID

Bomi Kim https://orcid.org/0000-0002-8438-8502
https://researcherid.com/rid/KLK-6665-2024
Sunyeob Choi https://orcid.org/0000-0001-9879-2947
https://researcherid.com/rid/ITT-9426-2023

REFERENCES

1. Norman RE, Byambaa M, De R, Butchart A, Scott J, Vos T. The long-term health consequences of child physical abuse, emotional abuse, and neglect: a systematic review and meta-analysis. PLoS Med. 2012;9(11):e1001349. https://doi.org/10.1371/journal.pmed.1001349
2. Stoltenborgh M, Bakermans-Kranenburg MJ, van Ijzendoorn MH. The neglect of child neglect: a meta-analytic review of the prevalence of neglect. Soc Psychiatry Psychiatr Epidemiol. 2013;48(3):345-355. https://doi.org/10.1007/s00127-012-0549-y

3. Hillis S, Mercy J, Amobi A, Kress H. Global prevalence of past-year violence against children: a systematic review and minimum estimates. Pediatrics. 2016;137(3):e20154079. https://doi.org/10.1542/peds.2015-4079
4. National Children's Alliance. National statistics on child abuse [Internet]. National Children's Alliance; 2021 [cited 2024 Apr 19]. Available from: https://www.nationalchildrensalliance.org/media-room/national-statistics-on-child-abuse/
5. Centers for Disease Control and Prevention. About child abuse and neglect [Internet]. Centers for Disease Control and Prevention; 2023 [cited 2024 Apr 19]. Available from: https://www.cdc.gov/child-abuse-neglect/about/?CDC_AAref_Val=https://www.cdc.gov/violenceprevention/childabuseandneglect/fastfact.html
6. Gilbert R, Widom CS, Browne K, Fergusson D, Webb E, Janson S. Burden and consequences of child maltreatment in high-income countries. Lancet. 2009;373(9657):68-81. https://doi.org/10.1016/s0140-6736(08)61706-7
7. Tener D, Murphy SB. Adult disclosure of child sexual abuse: a literature review. Trauma Violence Abus. 2015;16(4):391-400. https://doi.org/10.1177/1524838014537906
8. Thackeray JD, Hibbard R, Dowd MD. Intimate partner violence: the role of the pediatrician. Pediatrics. 2010;125(5):1094-1100. https://doi.org/10.1542/peds.2010-0451
9. Karakachian A, Colbert A, Zoucha R, Goldman GS. "Did I do the right thing?" Nurses' experiences of caring for victims of child maltreatment: a qualitative study. J Pediatr Nurs. 2024;76:45-51. https://doi.org/10.1016/j.pedn.2024.02.002
10. Whittemore R, Knafl K. The integrative review: updated methodology. J Adv Nurs. 2005;52(5):546-553. https://doi.org/10.1111/j.1365-2648.2005.03621.x
11. Hamric AB, Hanson CM, Tracy MF, O'Grady ET. Advanced practice nursing: an integrative approach. 5th ed. Elsevier; 2014.
12. Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. Updating guidance for reporting systematic reviews: development of the PRISMA 2020 statement. J Clin Epidemiol. 2021;134:103-112. https://doi.org/10.1016/j.jclinepi.2021.02.003
13. Crowe M, Sheppard L, Campbell A. Comparison of the effects of using the Crowe Critical Appraisal Tool versus informal appraisal in assessing health research: a randomised trial. Int J Evid Based Healthc. 2011;9(4):444-449. https://doi.org/10.1111/j.1744-1609.2011.00237.x
14. Crisp BR, Lister PG. Child protection and public health: nurses' responsibilities. J Adv Nurs. 2004;47(6):656-663. https://doi.org/10.1111/j.1365-2648.2004.03154.x
15. Lee IS, Kim KJ. Factors that influence mandatory child abuse reporting attitudes of pediatric nurses in Korea. J Forensic Nurs. 2018;14(1):31-41. https://doi.org/10.1097/JFN.0000000000000186
16. Atencion BC, Alingalan AF, Oducado RF, Cordova JD, Dumaguing MC, Suaboksan MT. Factors associated with intention to report child abuse among district hospital nurses in Iloilo, Philippines. Int J Caring Sci. 2019;12(1):210-217.
17. Chan AC, Cheng WL, Lin YN, Ma KW, Mark CY, Yan LC, et al. Knowledge and perceptions of child protection and mandatory reporting: a survey of nurses in Hong Kong. Compr Child Adolesc Nurs. 2020;43(1):48-64. https://doi.org/10.1080/24694193.2018.1561763
18. Feng JY, Wu YW. Nurses' intention to report child abuse in Taiwan: a test of the theory of planned behavior. Res Nurs Health. 2005;28(4):337-347. https://doi.org/10.1002/nur.20087
19. Fraser JA, Mathews B, Walsh K, Chen L, Dunne M. Factors influencing child abuse and neglect recognition and reporting by nurses: a multivariate analysis. Int J Nurs Stud. 2010;47(2):146-153. https://doi.org/10.1016/j.ijnurstu.2009.05.015
20. Lee HM, Kim JS. Predictors of intention of reporting child abuse among emergency nurses. J Pediatr Nurs. 2018;38:e47-e52. https://doi.org/10.1016/j.pedn.2017.10.007
21. Hornor G, Bretl D, Chapman E, Herendeen P, Mitchel N, Mulvaney B, et al. Child maltreatment screening and anticipatory guidance: a description of pediatric nurse practitioner practice behaviors. J Pediatr Health Care. 2017;31(6):e35-e44. https://doi.org/10.1016/j.pedhc.2017.05.006
22. Lines LE, Kakyo TA, Hutton AE, Grant JM. Nurses' and midwives' contributions to a public health response to keeping children safe from abuse and neglect: a Delphi study. J Child Health Care. 2024;28(3):610-623. https://doi.org/10.1177/13674935231153248
23. World Health Organization. Preventing child maltreatment: a guide to taking action and generating evidence. World Health Organization; 2006.
24. Svärd V. "Why don't they report?": hospital personnel working with children at risk. Child Care Pract. 2016;23(4):342-355. https://doi.org/10.1080/13575279.2016.1188765
25. Escobar MA Jr, Pflugeisen BM, Duralde Y, Morris CJ, Haferbecker D, Amoroso PJ, et al. Development of a systematic protocol to identify victims of non-accidental trauma. Pediatr Surg Int. 2016;32(4):377-386. https://doi.org/10.1007/s00383-016-3863-8
26. Dahlbo M, Jakobsson L, Lundqvist P. Keeping the child in focus while supporting the family: Swedish child healthcare nurses experiences of encountering families where child maltreatment is present or suspected. J Child Health Care. 2017;21(1):103-111. https://doi.org/10.1177/1367493516686200
27. Saltmarsh T, Wilson D. Dancing around families: neonatal nurses and their role in child protection. J Clin Nurs. 2017;26(15-16):2244-

2255. https://doi.org/10.1111/jocn.13645
28. Barrett E, Denieffe S, Bergin M, Gooney M. An exploration of paediatric nurses' views of caring for infants who have suffered nonaccidental injury. J Clin Nurs. 2017;26(15-16):2274-2285. https://doi.org/10.1111/jocn.13439
29. Cho OH, Cha KS, Yoo YS. Awareness and attitudes towards violence and abuse among emergency nurses. Asian Nurs Res. 2015;9(3):213-218. https://doi.org/10.1016/j.anr.2015.03.003
30. Green M. Nurses' adherence to mandated reporting of suspected cases of child abuse. J Pediatr Nurs. 2020;54:109-113. https://10.1016/j.pedn.2020.06.007
31. Hamric AB, Hanson CM, Tracy MF, O'Grady ET. Advanced practice nursing: an integrative approach. 5th ed. Elsevier; 2014.
32. Min HY, Kim SJ, Lee JM, Kang SR, Lee J. A survey of nurses' perceptions on child abuse. Child Health Nurs Res. 2017;23(2):229-237. https://doi.org/10.4094/chnr.2017.23.2.229
33. Ko C, Koh CK. The influence of abuse situation and respondent background characteristics on Korean nurses' perceptions of child sexual abuse: a fractional factorial design. Int J Nurs Stud. 2007;44(7):1165-1176. https://doi.org/10.1016/j.ijnurstu.2006.05.009

ORIGINAL ARTICLE

Child Health Nurs Res Vol.31, No.1, January 2025;31(1):15-27
https://doi.org/10.4094/chnr.2024.025

pISSN 2287-9110
eISSN 2287-9129

CHNR

Childbearing intentions and influencing factors among single young adults in South Korea: a cross-sectional study

Hyewon Shin[1], Anna Lee[2], Sunyeob Choi[3], Minjeong Jo[4]

[1]Assistant Professor, College of Nursing, Ewha Womans University, Seoul, Korea
[2]Assistant Professor, College of Nursing and Mo-Im Kim Nursing Research Institute, Yonsei University, Seoul, Korea
[3]Assistant Professor, College of Nursing, Dongguk University-WISE, Seoul, Korea
[4]Associate Professor, College of Nursing, The Catholic University of Korea, Seoul, Korea

Corresponding author
Minjeong Jo
College of Nursing, The Catholic University of Korea, 222 Banpo-daero, Seocho-gu, Seoul 06591, Korea
Tel: +82-2-3147-8435
Fax: +82-2-3147-8659
E-mail: minjeongjo@catholic.ac.kr

Received: July 2, 2024
Revised: September 20, 2024
Accepted: November 7, 2024

Purpose: To identify the childbearing intentions of young adults in South Korea and examine the factors influencing them using a social-ecological model (SEM).
Methods: A descriptive cross-sectional study design was used. Unmarried employed men and women (n=181) aged 25–40 years completed an online survey. The data included socio-demographic characteristics and responses at four levels: (1) intrapersonal (perception of parenthood and fertility knowledge), (2) interpersonal (quality of family relationships), (3) institutional (work-family culture), and (4) community and public policy (adequacy of government policies and social support systems). Data were analyzed using descriptive statistics, correlations, and multiple logistic regression.
Results: Approximately 77% of the participants planned to have children, and more than 60% wanted to have two or more children. Among the four levels of SEM, only intrapersonal factors, including intention to marry, fertility knowledge, and attitudes toward parenthood, were statistically significant in influencing childbearing intentions. The model explaining the intention to have a child demonstrated an explanatory power of 59.6%, incorporating factors such as marital intention, perceptions of parenthood, and fertility knowledge.
Conclusion: A noticeable gap exists between childbearing intentions and childbirth in South Korea. These findings provide insights into the nursing educational content needed for delivering family planning education to young adults. Targeted interventions such as counseling services and community education should be integrated into nursing practice. Moreover, nursing curricula should discuss factors influencing childbearing intentions to equip future nurses better to support young adults' family planning decisions.

Keywords: Family planning services; Reproductive behavior; Young adult

INTRODUCTION

In South Korea, families were traditionally formed through marriage and are regarded as legal and social units. In a small community, marriage mainly involves childbearing and emotional support functions [1]. The number of marriages experienced a significant one-third decline, decreasing to 191.690 in 2022 from the figure recorded in 2015 [2]. This was the lowest since marriage statistics were first compiled in the 1970s. In 2002, the average age at first marriage was 29.8

This is an Open Access article distributed under the terms of the Creative Commons Attribution NonCommercial License (https://creativecommons.org/licenses/by-nc-nd/4.0/) which permits unrestricted noncommercial use, distribution, and re-production in any medium, provided the original work is properly cited.
© 2025 Korean Academy of Child Health Nursing

years for men and 27.0 years for women, and in 2022, the average age at first marriage was 33.7 years for men and 31.3 years for women [3]. The decline in the marriage rate and postponement of marriage contributed to a reduction in the birth rate in South Korea.

South Korea has the lowest birth rate among the member countries of the Organization for Economic Cooperation and Development (OECD) [4]. The sharp decline in the birth rate is attributed to birth control policies initiated by the Korean government in the 1960s and the social atmosphere favoring smaller families [5]. Additionally, changes in the values and attitudes of the younger generation toward marriage, childbearing, and family have contributed to the decline in birth rates [6]. Dissimilar to the older generation, which regards marriage and childbearing as obligatory, South Korea's younger generation has increasingly considered marriage and childbirth options. Additionally, the growing number of women with higher education and career pursuits and job market competition have accelerated childbearing delays. This trend has further contributed to a decline in birth rates.

The postponement of parenthood has become a popular trend in developed countries in recent decades [7]. Researchers have demonstrated that socioeconomic factors lead to a negative attitude towards childbearing among women [8], with other studies highlighting economic stability as a requirement for parenthood [9] and financial stability, adequate housing, and stable relationships as key determinants in the decision to become parents [10]. In many countries, several interrelated factors, including the longer pursuit of education, changes in gender roles, economic insecurity, and individual characteristics and culture, are associated with delays in childbirth among young adults [11,12]. The younger generation in South Korea is experiencing difficulties related to job preparation, tuition fees, and housing [13]. Difficulties in obtaining a job cause generation of marriageable age to be economically unstable, which can lead to late marriage, non-marriage, and low birth rates. To better understand the complexities associated with childbearing among young adults in South Korea, it is important to consider both personal and environmental factors. Therefore, we identified the intention to have a child among single Korean men and women and examined the factors influencing such intentions from a socio-ecological model (SEM) perspective.

The SEM developed by Bronfenbrenner [14] proposes that the combined influence of individual characteristics and social and environmental features affects the outcomes. McLeroy et al. [15] modified the ecological model for health promotion. In this model, intrapersonal factors, interpersonal processes, primary groups, institutional factors, community factors, and public policies determine an individual's behavior. The SEM by McLeroy et al. [15] was utilized in this study because it emphasizes the importance of environmental support in delivering health promotion, implementing environmental interventions to facilitate individual behavioral changes, and recognizing that the responsibility for an individual's health cannot be solely determined by personal behavior. This model can comprehensively analyze an individual's childbearing intentions and environmental interventions that can support young adults' childbearing decisions. The early adult group, between the ages of 20 and 40, mainly strives to build a social, professional, and financial foundation and form a family in the developmental cycle of life. These young adults can be considered the prospective parent generation of the near future concerning their desire for marriage and parenthood. The SEM framework's analysis of factors influencing the intention to have a child will inform educators, researchers, and policy developers of the intra- and interpersonal effects on young adults of marriageable age and how best to target intervention programs.

METHODS

Ethical statements: This study was approved by the institutional review board (IRB) of Ewha Womans University (No. 202209-0002-01). Informed consent was obtained from all participants.

1. Study Design

A cross-sectional descriptive design was used for the online survey. The reporting of this study was based on the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) reporting guidelines [16].

2. Theoretical Framework

Based on SEM, this study modeled the following four-level variables as factors influencing young adults' intention to have a child: (1) intrapersonal factors, (2) interpersonal factors, (3) institutional factors, and (4) community and public policies. The fourth and fifth levels of the original SEM images were combined. Figure 1 presents the conceptual frame-

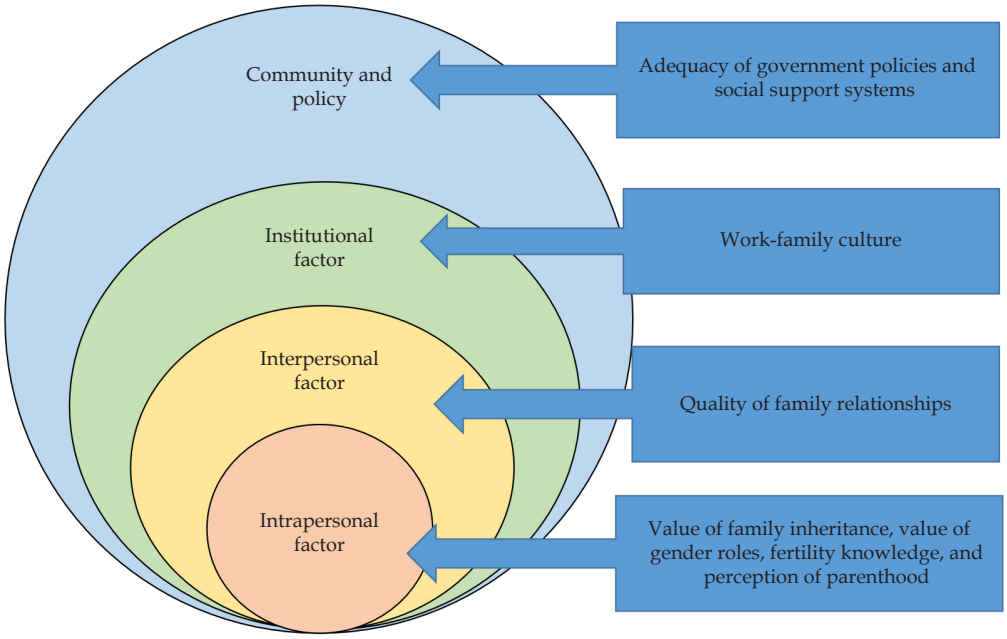

Figure 1. Four-level variables affecting intention to have a child within socio-ecological model.

work of this study. This study aimed to describe the intention to have a child among single Korean men and women and to examine the factors influencing such intentions from the SEM perspective. This study selected the variables based on SEM to examine the factors influencing childbearing intentions. At the individual level, variables such as the value of family inheritance, gender roles, fertility knowledge, and perception of parenthood were included to reflect how personal beliefs and attitudes impact fertility decisions. The quality of family relationships was considered at the interpersonal level, recognizing that supportive family dynamics significantly influenced childbearing intentions. Additionally, the institutional level included work-family culture because its impact on balancing work and family responsibilities was acknowledged. Finally, the adequacy of government policies and social support systems were included at the community and public policy levels, highlighting their influence on family planning decisions. These variables aligned with the SEM framework, addressing the interplay between individual and interpersonal relationships, institutions, communities, and public policies on childbearing intentions.

3. Study Setting and Sample

After obtaining permission from website administrators, we collected data from five Korean networking websites with 5,000–2,966,540 members. These websites are large online communities where single men and women post ideas, information, and thoughts concerning marriage, childbirth, and parenthood. Participants were eligible for this study if they (1) were aged between 25 and 40 years, (2) were unmarried, (3) did not have children, or (4) were employed at the time of data collection. Based on the G*Power ver. 3.1 program (Heinrich-Heine-Universität Düsseldorf; http://www.gpower.hhu.de/), a sample size of at least 161 was required to detect a medium effect size (odds ratio, 1.65), with a statistical power of 0.80 at an alpha level of 0.05. With an estimated dropout rate of 10%, 177 participants were included in this study. A total of 181 individuals participated in this study, which is a satisfactory sample size. We included the enrolled participants because we collected data online during a certain period in December and wanted sufficient data; therefore, we did not delete the number. We reported the final number of patients to the IRB and obtained their approval. We had more female than male participants, but since this was an anonymous online data collection, we could not control for the ratio of sex.

4. Measures

Tee scales measuring participants' fertility knowledge, perception of parenthood, and work-family culture were trans-

lated from English into Korean based on the guideline of DeVellis [17]. The translation was conducted after permission was obtained from the developer of the original scale. Five nursing experts, four professors, and one doctoral student with experience in measurement translation evaluated the content validity using the item-level content validity index (I-CVI). The I-CVIs of the scales assessing fertility knowledge, perception of parenthood, and work-family culture were 1.0, 0.98, and 0.99, respectively, indicating good content validity [18].

1) Socio-demographic characteristics of participants

Participants' socio-demographic characteristics were collected using a socio-demographic form. This form included questions concerning the respondents' sex, age, education level, employment status, monthly income, and religion. The form also included questions concerning the participants' intentions to marry. Additionally, study variables were collected at four levels, as suggested by the SEM: (1) intrapersonal factors, (2) interpersonal factors, (3) institutional factors, and (4) community and public policy.

2) Intrapersonal factors

(1) Value of family inheritance

Participants' value of family inheritance was measured using the question, "Do you think it is necessary to have at least one son for family succession and inheritance?" Participants were asked to rate their beliefs on a 7-point Likert scale ranging from 0 (not at all) to 7 (absolutely). A higher score indicated a stronger degree to which the participants believed that having a child inheriting the family line was important.

(2) Value of gender role

Participants' values of gender roles were measured using the question, "Do you think that husbands and wives should have separate family life responsibilities?" Participants were asked to rate their beliefs on a 7-point Likert scale ranging from 0 (not at all) to 7 (absolutely). Higher scores indicated a stronger degree to which the participants believed their family life roles were fixed.

(3) Perception of parenthood

Participants' perceptions of parenthood were measured using the Korean version of the Parenting Expectation Questionnaire (PEQ). The original PEQ was developed to assess college students' motivations and expectations for parenthood [19]. The PEQ consists of 24 items, and participants are asked to rate their agreement with each item on a 5-point Likert scale ranging from 0 (strongly disagree) to 4 (strongly agree). The total scores ranged from 0 to 96. Higher scores indicated that the respondents were strongly motivated to become parents and believed that having children had more benefits than costs. The internal consistency of the instrument was 0.89.

(4) Knowledge of fertility

Participants' fertility knowledge was measured using the Korean version of the Cardiff Fertility Knowledge Scale (CFKS) [20]. The Korean version of the CFKS comprises 13 items that assess fertility knowledge, decreased fertility, factors associated with infertility, and misconceptions about fertility. Correct answers were given a score of 1, whereas incorrect and "do not know" answers received no scores. The total score ranges from 0 to 13, with a higher score indicating a higher level of knowledge about fertility. In this study, the Kuder-Richardson (KR 20) Korean version of the CFKS was 0.62.

3) Interpersonal factors: quality of family relationship

Participants' perceived quality of relationships with their family members was measured using the Korean version of McMaster's Family Assessment Device-General Functioning (FAD-GF) [21]. The Korean version of the FAD-GF comprises 12 items assessing the healthy and unhealthy functioning of the family. Participants were asked to rate each item on a 4-point Likert scale ranging from 1 (strongly disagree) to 4 (strongly agree). The total score ranges from 12 to 48, with higher scores indicating an unhealthy level of family functioning. A cut-off score of 30 or higher indicates a low-income family functioning [20]. In this study, the internal consistency of the Korean version of the FAD-GF was 0.90.

4) Institutional factors: work-family culture

Participants' perceived work-family culture was measured using the Korean version of the Work-Family Culture Measure (WFCM). The original WFCM was developed to assess culture and values regarding how much an organization supports and values the integration of employees' work and family lives [22]. The Korean version of the WFCM comprises 20 items assessing the following dimensions: managerial support for work-family balance, career consequences associated with using work-family benefits, and organizational

time expectations interfering with family responsibilities. Participants were asked to rate each item on a 5-point Likert scale ranging from 0 (strongly disagree) to 4 (strongly agree). The total score ranges from 0 to 80, with a higher score indicating a greater supportive work-family culture. In this study, the internal consistency of the Korean version of the WFCM was 0.90.

5) Community and public policy: adequacy of government policies and social support systems

The degree of adequacy of government policies and social support systems for child-rearing was measured using a questionnaire developed by the research team. The questionnaire comprises six items assessing the adequacy of the following dimensions: maternity pay, childcare allowance, parental leave, counseling services for parenting, childcare support from the community, and childcare programs. Participants were asked to rate each item on a 5-point Likert scale ranging from 0 (very poor) to 4 (very good). The total score ranges from 0 to 24, with a higher score indicating a higher perceived adequacy of parenting-related policies or social systems.

5. Data Collection

The study participants were recruited from December 1 to December 31, 2022. Websites that single men and women could use to identify or share information on marital preparation and childbirth were initially searched. The administrators of each website were approached to obtain permission to post study information to recruit participants. After receiving permission from the administrators of the five websites, the researcher posted flyers containing information regarding the study. The flyer provided information on the research purpose, eligibility criteria, and participation methods. Additionally, a link to the online survey was provided through flyers. Individuals interested in the study could access the survey by clicking the link, and only those who consented could participate.

6. Data Analysis

Data were analyzed using IBM SPSS Windows software ver. 25.0 (IBM Corp.). Descriptive statistics were computed to summarize participants' characteristics and survey scores, including means, standard deviations, and percentages. Chi-square and t-tests were conducted to determine whether there was a difference in childbearing intentions according to the socio-demographic characteristics of the participants. Hierarchical multiple logistic regression analysis was performed to identify factors associated with childbearing intentions.

RESULTS

1. Characteristics of Participants

The mean age of the participants was 29.6 years (standard deviation=3.9), and 73.5% were women (Table 1). Approximately 95% of the participants graduated from university, and 81.8% were permanent employees. The proportion of those who indicated their average monthly income was between 2,000,000–4,000,000 Korean won was the highest at 72.9%. A total of 87.8% of the respondents reported that they had plans to marry. Among the participants, 76.8% intended to have a child in the future, and more than 60% (n=90) wanted two or more children (Table 1).

2. Descriptive Statistics of Variables

Descriptive statistics for each variable at the four levels suggested by the SEM. Regarding the intrapersonal variables, the mean scores for the value of family inheritance and gender roles were 0.87 (out of 7) and 1.13 (out of 7), respectively. The mean score of participants' perceptions of parenthood was 43.71 (out of 96), and fertility knowledge was 7.77 (out of 13). For the interpersonal-level variable, the perceived quality of family relationships had a mean score of 24.57 (out of 80). A family relationship score of less than 30 indicates healthy family functioning. Regarding the institutional-level variable, the mean score for work-family culture was 46.8 (out of 80). Regarding community- and public policy-level variables, the mean score for the adequacy of government policies and social support systems was 9.01 (out of 24) (Table 2).

1) Intention to have a child according to socio-demographic characteristic

There were statistically significant differences in the intention to have a child according to employment status ($\chi^2=3.92$, $p=.048$), monthly income ($\chi^2=7.81$, $p=.020$), and plan to marry ($\chi^2=28.43$, $p<.001$) among young adults.

Table 1. Characteristics of participants and intention to have a child according to socio-demographic characteristics (N=181)

Characteristic	Total	Intention to have a child		χ^2	*p*
		Yes	No		
Age (yr)	29.6±3.9				
≤29	106 (58.6)	26 (24.5)	80 (75.5)	2.09	.353
30–34	50 (27.6)	13 (26.0)	37 (74.0)	13 (26.0)	
≥35	25 (13.8)	3 (12.0)	22 (88.0)	3 (12.0)	
Sex					
Male	48 (26.5)	10 (20.8)	38 (79.2)	0.21	.650
Female	133 (73.5)	32 (24.1)	101 (75.9)		
Education level					
≤High school	10 (5.5)	4 (40.0)	6 (60.0)	3.49	.175
University graduate	154 (85.1)	32 (20.8)	122 (79.2)		
≥Graduate school	17 (9.4)	6 (35.3)	11 (64.7)		
Employment status					
Permanent	148 (81.8)	30 (20.3)	118 (79.7)	3.92	**.048**
Temporary	33 (18.2)	12 (36.4)	21 (63.6)		
Monthly income (KRW)					
≤2,000,000	8 (4.4)	5 (62.5)	3 (37.5)	7.81	**.020**
2,000,000–4,000,000	132 (72.9)	30 (22.7)	102 (77.3)		
≥4,000,000	41 (22.7)	7 (17.1)	34 (82.9)		
Religious status					
No	107 (59.1)	29 (27.1)	78 (72.9)	2.23	.135
Yes	74 (40.9)	13 (17.6)	61 (82.4)		
Plan to marry					
No	22 (12.2)	15 (68.2)	7 (31.8)	28.43	**<.001**
Yes	159 (87.8)	27 (17.0)	132 (83.0)		
Intention to have a child					
No	42 (23.2)				
Yes	139 (76.8)				
The desired no. of children					
1	49 (35.3)				
2	81 (58.3)				
3	7 (5.0)				
4	2 (1.4)				

Values are presented as mean±standard deviation or number (%). Statistically significant results are marked in bold.
KRD, Korean won.

Table 2. Differences in four levels of variables according to intention to have a child

Level	Variable	Total score	Intention to have a child		t	*p*
			No (n=42)	Yes (n=139)		
Intrapersonal	Value of family inheritance	0.87	0.55±1.38	0.97±1.70	–1.65	.104
	Value of gender role	1.13	0.69±1.35	1.26±1.68	–2.25	.027
	Perception of parenthood	43.71	31.14±10.23	47.51±9.34	–9.73	<.001
	Knowledge of fertility	7.77	7.14±2.50	7.96±2.11	–2.10	.038
Interpersonal	Quality of family relationship	24.57	23.12±6.47	25.01±5.99	–1.76	.081
Institutional	Work-family culture	46.80	45.93±11.42	47.06±13.01	–0.51	.613
Community and public policy	Adequacy of government policies and social support systems	9.01	8.55±4.68	9.14±4.49	–0.75	.456

Values are presented as mean±standard deviation unless otherwise stated.

2) Differences in variables according to intention to have a child

The mean differences in each level of the variables according to childbearing intentions are presented in Table 2. There were statistically significant mean differences only in the intrapersonal-level variables: values of gender roles (t=–2.25,

p=.027), perception of parenthood (t=–9.73, p<.001), and fertility knowledge (t=–2.10, p=.038). Participants who responded that they were willing to have children had higher mean scores on the values of gender roles, perception of parenthood, and knowledge of fertility than those who did not.

3) Intention to have a child according to socio-demographic characteristics

An analysis of 181 participants revealed that employment status, monthly income, and marital plans significantly influenced the intention to have a child. Specifically, permanent employees were more likely to want children than temporary employees (χ^2=3.92, p=.048). Higher monthly income was associated with a greater desire to have children (χ^2=7.81, p=.020). Additionally, those planning to marry had a significantly higher intention to have children than those not (χ^2=28.43, p<.001). In contrast, sex (χ^2=0.21, p=.650), age (χ^2=2.09, p=.353), education level (χ^2=3.49, p=.175), and religious status (χ^2=2.23, p=.135) did not show significant differences in childbearing intentions. These findings suggest that economic stability and future life plans are more crucial in influencing the decision to have children than demographic factors, such as sex, age, education, and religion (Table 1).

4) Correlation among variables suggested by socio-ecological model

The correlations among the variables suggested by the SEM are presented in Table 3. Family inheritance (r=.26, p<.001) and gender roles (r=.24, p=.001) showed a statistically weak positive correlation with the perception of parenthood. Perception of parenthood (r=.16, p=.036) and fertility knowledge (r=.22, p=.003) had statistically weak positive correlations with the quality of family relationships.

5) Influencing factors on intention to have a child

Hierarchical multiple logistic regression analyses examined factors influencing the intention to have a child. The models included various predictors, such as employment status, monthly income, marriage plans, and perceptions of parenthood and fertility (Table 4).

Model 1 showed that the intention to have a child was positively associated with planning to marry (OR, 4.842; 95% confidence interval [CI], 1.217–19.264; p=.025). Perception of parenthood was strongly associated with a higher intention to have a child (OR, 1.192; 95% CI, 1.119–1.270; p<.001), as was knowledge of fertility (OR, 1.288; 95% CI, 1.020–1.626; p=.033). The R^2 value of model 1 was 59.6% (p<.001). Model 2 was adjusted for additional variables, including the quality of family relationships and work-family culture. Planning to marry was also a significant predictor (OR, 4.994; 95% CI, 1.242–20.081; p=.023). Fertility knowledge was marginally substantial (OR, 1.272; 95% CI, 1.001–1.617; p=.049). Perception of parenthood showed a strong positive association (OR, 1.192; 95% CI, 1.118–1.270; p<.001). Other factors, including employment status, monthly income, and values related to family and sex, were not significantly associated. The R^2 value for model 2 was 59.7% (p<.001). Model 3 incorporated additional variables related to work-family culture and government policies. Planning to marry remained a significant predictor (OR, 5.723; 95% CI, 1.343–24.388; p=.018). Perception of parenthood remained significantly associated with having a child (OR, 1.194; 95% CI, 1.119– 1.274; p<.001). Fertility knowledge was not significant (OR, 1.264; 95% CI, 0.992–1.610; p=.058). Employment status and monthly income, including values related to family and gender roles, were not significantly associated. The R^2 value of model 3 was 60% (p<.001).

Model 4 included all the variables, including the adequacy

Table 3. Correlation among levels of variables suggested by socio-ecological model

	(1) Value of family inheritance	(2) Value of gender roles	(3) Perception of parenthood	(4) Fertility knowledge	(5) Quality of family relationship	(6) Work-family culture	(7) Government policies & social support
	r (*p*)	r (*p*)	r (*p*)	r (*p*)	r (*p*)	r (*p*)	r (*p*)
(1)	1						
(2)	.54 (<.001)	1					
(3)	.26 (<.001)	.24 (.001)	1				
(4)	.03 (.734)	.13 (.086)	.02 (.795)	1			
(5)	.06 (.403)	.04 (.645)	.16 (.036)	.22 (.003)	1		
(6)	–.05 (.517)	–.15 (.041)	.06 (.401)	–.03 (.685)	.14 (.058)	1	
(7)	.12 (.112)	.10 (.202)	.18 (.015)	–.10 (.179)	.02 (.813)	.11 (.101)	1

Table 4. Four-level variables affecting intention to have a child within the socio-ecological model

Variable	Model 1		Model 2		Model 3		Model 4	
	OR (95% CI)	*p*	OR (95% CI)	*p*	OR (95% CI)	*p*	OR (95% CI)	*p*
Employment status								
Permanent	2.177 (0.605–7.835)	.234	2.290 (0.617–8.504)	.216	2.362 (0.633–8.816)	.201	2.426 (0.647–9.092)	.189
Monthly income (KRW)								
2,000,000–4,000,000	3.252 (0.469–22.569)	.233	2.966 (0.403–21.818)	.286	3.217 (0.431–24.000)	.254	3.555 (0.455–27.770)	.226
≥4,000,000	5.857 (0.677–50.665)	.108	5.397 (0.597–48.810)	.134	5.915 (0.645–54.234)	.116	6.681 (0.690–64.668)	.101
Plan to marry								
Yes	4.842 (1.217–19.264)	.025	4.994 (1.242–20.081)	.023	5.723 (1.343–24.388)	.018	5.702 (1.337–24.327)	.019
Value of family inheritance	0.879 (0.554–1.395)	.584	0.871 (0.550–1.378)	.554	0.862 (0.545–1.362)	.524	0.854 (0.539–1.353)	.502
Value of gender role	1.107 (0.722–1.698)	.641	1.110 (0.727–1.695)	.630	1.095 (0.713–1.681)	.679	1.132 (0.727–1.762)	.584
Perception of parenthood	1.192 (1.119–1.270)	<.001	1.192 (1.118–1.270)	<.001	1.194 (1.119–1.274)	<.001	1.195 (1.120–1.274)	<.001
Knowledge of fertility	1.288 (1.020–1.626)	.033	1.272 (1.001–1.617)	.049	1.264 (0.992–1.610)	.058	1.247 (0.978–1.590)	.075
Quality of family relationship			1.017 (0.931–1.111)	.705	1.020 (0.934–1.114)	.659	1.017 (0.931–1.111)	.708
Work-family culture					0.984 (0.940–1.030)	.480	0.985 (0.941–1.032)	.533
Adequacy of government policies and social support systems							0.976 (0.915–1.042)	.463
R^2	.596		.597		.600		.602	
χ^2 (*p*)	90.85 (<.001)		90.99 (<.001)		91.49 (<.001)		92.03 (<.001)	

OR, odds ratio; CI, confidence interval.

of government policies and social support systems. Planning to marry was a significant predictor (OR, 5.702; 95% CI, 1.337–24.327; $p = .019$). Perception of parenthood remained significantly associated with having a child (OR, 1.195; 95% CI, 1.120–1.274; $p < .001$). Fertility knowledge was not significant (OR, 1.247; 95% CI, 0.978– 1.590; $p = .075$). Other factors, such as employment status, monthly income, and values related to family and gender roles, did not show significant associations. The R^2 value of model 4 was 60.2% ($p < .001$). In models 1–4, the explanatory power exhibited slight increases; however, all models demonstrated significant factors associated with planning to marry and perceptions of parenthood. Model 1 incorporated another factor—fertility knowledge—an essential determinant of the intention to have a child.

Consequently, model 1 was selected as the final model.

DISCUSSION

This study aimed to identify unmarried young adults' childbearing intentions and the factors influencing childbearing. Influencing factors were analyzed from the SEM perspective to understand better the complexities of having a child. More than three-quarters of participants responded that they would like to have children in the near future. Intrapersonal factors, including participants' intentions to marry, fertility knowledge, and attitudes toward parenthood, influenced their intentions to have children.

In this study, approximately 77% of participants planned to have children, and more than 60% wanted to have two or more children. These findings indicate that many participants were favorable toward giving birth, and this result is similar to those reported in previous studies on unmarried populations in South Korea. Hong [23] reported that approximately 66% (of 259) of children between 18 and 45 years old were willing to have children, and approximately 61% reported wanting to have two or more children. In a study by Shin et al. [24], approximately 72% (out of 166) of university students planned to have children in the future, and the average number of desired children was two.

However, these findings differ from previous studies of

married populations and large-scale statistical surveys. Among the 1,779 newlyweds who had been married for less than seven years, the average number of children they wanted was 1.4 [25].

Approximately 68% of dual-income couples with one child reported no plans to have another child [26]. Additionally, the total fertility rate (TFR) in South Korea was 0.78 in 2022 [27]. The TFR refers to the number of children born per woman over their lifetime. The gap between these results may be attributed to the fact that our sample consisted of employed, unmarried young adults who may possess a comparatively optimistic outlook on their future financial stability and work-life balance, unlike married individuals or those experiencing uncertain employment conditions. Such optimism may contribute to more positive attitudes toward family planning decisions. Our findings suggest that in South Korea, although the intention to give birth is relatively high before marriage or at a young age, it may not lead to actual childbirth. Underachievement, a discrepancy between earlier fertility desires and achieved outcomes, is frequently observed in advanced industrialized societies, including South Korea [28]. Involuntary infertility, the development of competing priorities (e.g., education and career aspirations), or the repeated postponement of parenthood can lead to underachieving fertility goals, with these pathways often intersecting [28]. It is beneficial to help young, unmarried individuals who plan to have children understand this phenomenon and the trajectories that may lead to it, thus enabling them to make informed decisions regarding family planning and potential challenges.

Various factors influence childbirth, such as individual characteristics and the surrounding environment. From the perspective of SEM [15], four factors can affect a woman's childbirth intention: the individual, close relationships, the workplace, and society. In this study, intrapersonal factors, including intention to marry, fertility knowledge, and attitudes toward parenthood, were statistically significant factors influencing the intention to have children. These findings suggest that individuals with plans to marry, high fertility knowledge, and positive attitudes toward parenthood are more likely to have childbearing intentions. These results are similar to those of previous studies. The more favorable an individual's attitude toward marriage is, the higher the intention to have children [23]. In a narrative review [29], poor knowledge concerning fertility and misunderstanding of reproductive potential were the reasons for delays in childbearing. In a national cross-sectional study [30], higher levels of knowledge regarding reproduction were associated with higher fertility intentions, whereas childbearing-related anxiety was inversely associated with fertility intentions. Given these findings, this study provides additional insights for healthcare professionals, including nurses and policymakers, regarding the target population and the educational content that should be prepared to enhance positive attitudes toward childbirth and fertility rates.

Contrary to the researchers' expectations, family functioning did not influence childbearing intentions in this study. The mean score for family functioning, as assessed using McMaster's FAD-GF, was 24.6 (out of 36). Given that a mean FAD-GF score of 30 or more indicates ineffective family functioning [21], the family functioning perceived by the participants was within the normal range. In South Korea, families are traditionally considered the most important and basic societal unit. Within the culture of Confucianism, each individual grew up being cared for mainly within the family, leading an economic and leisure life as a family unit. However, through industrial evolution, primary functions traditionally performed within families, such as education and care, have been granted to institutions and social agencies. Along with the decline in functioning, the family structure shrinks rapidly. According to statistics, single-person households in Korea will account for 33.4% of the total population by 2022 [27] . Young adults of childbearing age in South Korea may not be aware of the importance of family formation or healthy family functioning. Instead, they value their relationships with friends and colleagues.

Among the interpersonal factors within SEM, a person's family members and close social circle peers or partners influence their behavior and contribute to their experiences [31]. Friends and colleagues' beliefs, values, and behaviors can shape an individual's perceptions of family and childbearing. The influence of friends and colleagues on an individual's decisions regarding pregnancy and childbirth appears significant, as evidenced by the finding that the estimated number of pregnancies would be reduced by 1,151 (5.8%) without the colleague effect [32]. Close relationships such as support networks, peer pressure, or role models can influence an individual's childbearing intentions. Therefore, future studies should further assess the quality of social relationships, including interaction frequency and intimacy in the workplace, neighborhood, and family.

From the SEM perspective, factors at other levels, such as

the perception of work-family culture (institutional level) and the adequacy of government policies and social institutions (community and public policy levels), did not influence childbearing intentions. South Korea has the lowest TFR among OECD countries [4]. Although governments and companies have implemented various supporting policies and systems (including maternity leave, family care leave, and reduction of working hours for childcare) to encourage childbirth, they cannot elevate birth rates. In this study, the extent to which participants perceived a family-friendly organizational culture was moderate (mean score of the 20-item WFCM=46.8 out of 80). Although it is difficult to compare as no other studies have used this instrument directly, our findings are similar to those of previous studies. One study reported a mean score of 54.96 among married workers employing a 14-item WFCM with a total score of 98 [13]. Moreover, the appropriateness of childcare policies promoted by the government was considered low in this study. These findings indicate that despite expanding the government's support policy, it still does not meet the needs of the young childbearing-age group.

Additionally, given the participants' generational traits, it is understandable why individual-level factors rather than relational or social factors had a greater influence on childbearing intentions. As previously discussed, South Korea has traditionally been recognized within the Confucian framework for its strong collectivist culture in which individuals identify with and maintain close ties with their families or organizations, often prioritizing collective goals over personal desires [33]. However, the emergence of the MZ generation (Millennials and Generation Z) has marked a cultural shift in South Korea. Researchers suggest that collectivism may no longer dominate, with this generation being the most individualistic in the country's history [34,35]. For the current participants, namely the MZ generation, individual traits such as marital intentions, fertility knowledge, and views on parenthood may significantly influence their behaviors or intentions compared to traditional collectivist values such as family or organizational expectations. While previous studies have highlighted the influence of social support systems and government policies on childbearing intentions, our findings suggest that these systems' perceived adequacy or efficacy may not align with participants' expectations or needs. Young adults may not view existing policies or support systems as sufficiently robust or relevant to their personal circumstances, which leads them to rely more on individual factors when making family planning decisions. This gap underscores the necessity of policies and interventions for childbearing intentions that are both available and perceived as meaningful and accessible by the intended target population of young adults.

Healthcare professionals, including nurses and experts in both clinical and community settings, play a crucial role in advocating for a family-friendly environment that supports childbearing and parenthood. Within the realm of nursing education, it is imperative to integrate comprehensive modules of reproductive decision-making into the curriculum. These modules should emphasize the detailed exploration of fertility options and family planning strategies. Acquiring such knowledge is vital to prepare nursing students to advocate for and support individuals in their reproductive choices effectively. Additionally, it is essential to provide nursing students with an understanding of the specific cultural context and societal trends in South Korea because numerous individual and environmental factors affect childbearing intentions. Intervention programs can be implemented in both hospital and community settings. In hospitals, nurses can offer comprehensive education and counseling regarding family planning and parenthood. Community education can be conducted through outreach programs, especially where traditional family values change. These interventions and educational initiatives are pivotal in shaping public perceptions of and decision-making regarding childbearing.

This study was limited in that most participants had an educational level of college or higher and had full-time jobs. These findings may not reflect the intention to have a child as perceived by economically and educationally vulnerable individuals. Additionally, although an online survey can engage individuals from various backgrounds and elicit honest answers, this may have caused a sampling bias in this study. Additionally, the data collected from websites are not guaranteed to represent single men and women in South Korea. Therefore, caution should be exercised when interpreting these results. Despite these limitations, this study is significant because it directly investigated the intention to have a child in a population group where marriage and family planning are required as developmental tasks. Most previous studies have analyzed fragmentary data collected at the national level; therefore, only limited information is available on personal characteristics (e.g., age, income, and education) related to the intention to have a child. Although having a child is an individual decision, providing a supportive envi-

ronment for child-rearing is important to allow individuals to choose to have a child. Analysis of the factors within the respective levels of the SEM framework in this study will inform healthcare providers, employers, and policymakers of the intra-and interpersonal effects on intentions to have a child among younger generations and how best to target interventions.

CONCLUSION

The functions and sizes of families have gradually decreased through industrialization, and the number of individuals planning to have children has reduced rapidly. South Korea has a low birth rate, which is recognized as a social and national problem. The intention to have a child was relatively high among the participants in this study; therefore, there was a gap between intention and actual childbirth. The findings of this study indicate that individual factors such as intention to marry, fertility knowledge, and attitudes toward parenthood are significantly related to the intention to bear children. Therefore, targeted interventions, such as providing counseling services for young adults, enhancing community education, and incorporating discussions on these factors into the nursing curriculum, are essential to increase birth rates. Further research is required to assess how young adults, including those with various educational levels and occupations, perceive the social environment and support related to their intention to bear children.

ARTICLE INFORMATION

Authors' contribution

Conceptualization: HS, AL MJ; Data collection: HS, AL SC, MJ; Formal analysis: HS, SC, MJ; Writing–original draft: HS, AL SC, MJ; Writing–review and editing: HS, AL SC, MJ; Final approval of the published version: HS, AL SC, MJ.

Conflict of Interest

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

Funding

None.

Data availability

Please contact the corresponding author for data availability.

Acknowledgements

None.

ORCID and ResearcherID

Hyewon Shin	https://orcid.org/0000-0003-1831-3710 https://researcherid.com/rid/ITU-5631-2023
Anna Lee	https://orcid.org/ 0000-0001-9277-8204 https://researcherid.com/rid/LMP-5091-2024
Sunyeob Choi	https://orcid.org/0000-0001-9879-2947 https://researcherid.com/rid/ITT-9426-2023
Minjeong Jo	https://orcid.org/0000-0002-1101-4008 https://researcherid.com/rid/DJMC-8894-2023

REFERENCES

1. Park CS, Yeoum SG. The analysis of the structural relationship between self-actualization, gender equality awareness, and marriage value in unmarried women. J Korean Data Anal Soc. 2015;17(3):1633-1651. https://doi.org/10.21321/jfr.22.2.71
2. Yoon L. Number of marriages registered in South Korea from 1981 to 2023 [Internet]. Statista; 2024 [cited 2024 Jun 25]. Available from: https://www.statista.com/statistics/641581/south-korea-marriage-number/
3. Statistics Korea. Statistics of marriage and divorce in 2022 [Internet]. Statistics Korea; 2023 [cited 2024 Jun 25]. Available from: https://Kostat.Go.Kr/Anse/
4. Organization for Economic Cooperation and Development. Fertility rates [Internet]. Organization for Economic Cooperation and Development; 2022 [cited 2024 Jun 25]. Available from: https://data.oecd.org/pop/fertility-rates.htm/
5. Woo HB. Future demographic change and policy directions. Health Welf Policy Forum. 2020;(279):23-36. https://doi.org/10.23062/2020.01.3
6. Lee Y, Bae J, Kim EJ, Jin HY, Joo BH, Namkoong EH, et al. Survey on in-depth awareness and values of the public in response to a low birthrate and aging society [Internet]. Korea Institute for Health and Social Affairs; 2020 [cited 2024 Jun 25]. Report No.: 2020-26. Available from: https://www.kihasa.re.kr/publish/report/research/view?page=20&seq=35901
7. Sobotka T. Post-transitional fertility: childbearing postponement

and the shift to low and unstable fertility levels [Internet]. Vienna Institute of Demography; 2017 [cited 2024 Jun 25]. Available from: https://doi.org/10.1553/0x003cd016

8. De Wet-Billings N, Imo CK, Du Preez P, Mosley EA. Postponement of parenthood in South Africa. South Afr J Demogr. 2021;21(1):1-26. https://doi.org/10.2307/27125722
9. Bodin M, Holmström C, Plantin L, Schmidt L, Ziebe S, Elmerstig E. Preconditions to parenthood: changes over time and generations. Reprod Biomed Soc Online. 2021;13:14-23. https://doi.org/10.1016/j.rbms.2021.03.003
10. Datta J, Maxwell KJ, Mitchell KR, Lewis R, Wellings K. Factors shaping the timing of later entry into parenthood: narratives of choice and constraint. Soc Sci Humanit Open. 2023;8(1):100700. https://doi.org/10.1016/j.ssaho.2023.100700
11. Beaujouan É, Sobotka T. Late childbearing continues to increase in developed countries. Popul Soc [Internet]. 2019 [cited 2024 Jun 25];(562):1-4. Available from: https://www.ined.fr/fichier/s_rubrique/28820/562.ang.web_1.en.pdf
12. Lawson KL. Development and psychometric properties of the perceptions of parenting inventory. J Psychol. 2004;138(5):433-455. https://doi.org/10.3200/jrlp.138.5.433-455
13. Lee Y. Marriage and family life in response to declining fertility. Crisisonomy. 2016;12(6):115-124. https://doi.org/10.14251/crisisonomy.2016.12.6.115
14. Bronfenbrenner U. Ecological models of human development In: Carnoy M, editors. International encyclopedia of education [Internet]. 2nd ed. Elsevier; 1994 [cited 2024 Jun 25]. Available from: https://www.ncj.nl/wp-content/uploads/media-import/docs/6a45c1a4-82ad-4f69-957e-1c76966678e2.pdf
15. McLeroy KR, Bibeau D, Steckler A, Glanz K. An ecological perspective on health promotion programs. Health Educ Q. 1988;15(4):351-377. https://doi.org/10.1177/109019818801500401
16. von Elm E, Altman DG, Egger M, Pocock SJ, Gøtzsche PC, Vandenbroucke JP, et al. Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement: guidelines for reporting observational studies. BMJ. 2007;335(7624):806-808. https://doi.org/10.1136/bmj.39335.541782.AD
17. DeVellis RF. Scale development: theory and applications. 4th ed. Sage Publications; 2016.
18. Shi J, Mo X, Sun Z. Content validity index in scale development. Zhong Nan Da Xue Xue Bao Yi Xue Ban. 2012;37(2):152-155. https://doi.org/10.3969/j.issn.1672-7347.2012.02.007
19. O'Laughlin EM, Anderson VN. Perceptions of parenthood among young adults: implications for career and family planning. Am J Fam Ther. 2001;29(2):95-108. https://doi.org/10.1080/01926180125728
20. Bunting L, Tsibulsky I, Boivin J. Fertility knowledge and beliefs about fertility treatment: findings from the International Fertility Decision-making Study. Hum Reprod. 2013;28(2):385-397. https://doi.org/10.1093/humrep/des402
21. Lee SK. The effects of risk and protective factors on children's adaptation: the theoretical process model [dissertation]. Sookmyung Women's University; 1997.
22. Thompson CA, Beauvais LL, Lyness KS. When work-family benefits are not enough: the influence of work-family culture on benefit utilization, organizational attachment, and work-family conflict. J Vocat Behav. 1999;54(3):392-415. https://doi.org/10.1006/jvbe.1998.1681
23. Hong SH. Factors related to the willingness to have a child, parental age at first child's birth, and the planned number of children among men and women. J Fam Resour Manag Policy Rev. 2020;24(2):69-87. https://doi.org/10.22626/jkfrma.2020.24.2.004
24. Shin H, Lee J, Kim SJ, Jo M. Attitudes towards parenthood and fertility awareness in female and male university students in South Korea. Child Health Nurs Res. 2020;26(3):329-337. https://doi.org/10.4094/chnr.2020.26.3.329
25. Cho S, Byoun S, Kim M, Kim J. A survey of marriage and childbirth trends among young adults [Internet]. Korea Institute for Health and Social Affairs; 2019 [cited 2024 Jun 25]. Report No.: 2019-26. Available from: https://www.kihasa.re.kr/publish/report/research/view?page=29&seq=27984
26. Kim K, Cho E. Reliability and validity of the Korean version of the Contraceptive Self-efficacy Scale: focused on women university students. Korean J Women Health Nurs. 2016;22(3):151-161. https://doi.org/10.4069/kjwhn.2016.22.3.151
27. Statista. Fertility rate Seoul, South Korea from 2005 to 2023 [Internet]. Statista; 2023 [cited 2024 Jun 25]. Available from: https://www.statista.Com/Statistics/1290118/South-Korea-Total-Fertility-Rate-in-Seoul/
28. Nitsche N, Hayford SR. Preferences, partners, and parenthood: linking early fertility desires, marriage timing, and achieved fertility. Demography. 2020;57(6):1975-2001. https://doi.org/10.1007/s13524-020-00927-y
29. Safdari-Dehcheshmeh F, Noroozi M, Taleghani F, Memar S. Factors influencing the delay in childbearing: a narrative review. Iran J Nurs Midwifery Res. 2023;28(1):10-19. https://doi.org/10.4103/ijnmr.ijnmr_65_22
30. Zhang C, Wei L, Zhu Y, Teng L, Zhang W, Xu J, et al. Fertility intentions among young people in the era of China's three-child policy: a national survey of university students. BMC Pregnancy Childbirth. 2022;22(1):637. https://doi.org/10.1186/s12884-022-04873-y
31. Dahlberg LL, Krug EG. Violence a global public health problem. Cien Saúde Colet. 2006;11(2):277-292. https://doi.org/10.1590/

S1413-81232006000200007
32. Buyukkececi Z, Leopold T, van Gaalen R, Engelhardt H. Family, firms, and fertility: a study of social interaction effects. Demography. 2020;57(1):243-266. https://doi.org/10.1007/s13524-019-00841-y
33. Kim BS, Atkinson DR, Umemoto D. Asian cultural values and the counseling process: current knowledge and directions for future research. Couns Psychol. 2001;29(4):570-603. https://doi.org/10.1177/0011000001294006
34. Park C. Generation XYZ with individualities of circles, squares, and triangles. Int J Glocal Cult [Internet]. 2019 [cited 2024 Jun 25];8(1):6-9. Available from: https://www.dbpia.co.kr/journal/articleDetail?nodeId=NODE08751744
35. Yang J, Lie JW. Has the collectivism of Koreans been changed?: an exploratory study. J Korea Contents Assoc. 2020;20(12):593-610. https://doi.org/10.5392/JKCA.2020.20.12.593

ORIGINAL ARTICLE

Child Health Nurs Res Vol.31, No.1, January 2025;31(1):28-39
https://doi.org/10.4094/chnr.2024.041

pISSN 2287-9110
eISSN 2287-9129

CHNR

Socioecological factors influencing sugar-sweetened beverage consumption among adolescents in South Korea: a cross-sectional study

Jin Suk Ra[1], Sun Hwa Kim[2]

[1]Professor, College of Nursing, Chungnam National University, Daejeon, Korea
[2]Graduate Student, College of Nursing, Chungnam National University, Daejeon, Korea

Corresponding author
Sun Hwa Kim
College of Nursing, Chungnam National University, 266 Munhwa-ro, Jung-gu, Daejeon 35015, Korea
Tel: +82-42-538-8333
Fax: +82-42-530-8309
E-mail: ksh5140@cnuh.co.kr

Received: October 23, 2024
Revised: December 3, 2024
Accepted: December 15, 2024

Purpose: This study explored the intrapersonal, interpersonal, and school factors, following the socioecological model, associated with sugar-sweetened beverage (SSB) consumption in Korean high-school students.
Methods: A total of 231 students from first to third grade, aged 15–18 years, participated in this cross-sectional study. Multiple linear regression analysis was conducted to identify the factors.
Results: Among the intrapersonal factors, fast-food consumption (β=0.13, t=1.97, p=.050) and habit strength of SSB consumption were positively associated (β=0.35, t=4.30, p<.001), and sleep duration was negatively associated with SSB consumption (β=–0.14, t=–2.02, p=.045). Among interpersonal factors, perceived SSB consumption by peers was positively associated (β=0.30, t=4.93, p<.001), and among school factors, vending machines at school (β=0.13, t=2.07, p=.039) and supermarkets and convenience stores near schools were positively associated with SSB consumption (β=0.17, t=2.87, p=.005).
Conclusion: School nurses should propose policies and interventions that consider the multilevel factors to reduce SSB consumption in adolescents.

Keywords: Adolescent; Feeding behavior; Schools; Sugar-sweetened beverages

INTRODUCTION

Sugar-sweetened beverages (SSBs) are drinks with added sugar, including soft drinks, sports drinks, and energy drinks. Adolescents, particularly high-school students, are major consumers of SSB in the United States and South Korea [1,2]. Similarly, 29% of US adolescents (including high-school students) and 37.6% of South Korean high school students consume SSBs at least once daily [3,4], indicating that SSB consumption is a common dietary habit of adolescents in these countries.

SSBs have no nutritional benefits and are leading sources of excessive sugar and calorie intake in adolescents, with a daily average consumption of 143 calories in the United States [5]. Excessive SSB consumption is associated with increased body mass index (BMI) and metabolic health problems in children and adolescents [6]. In addition, previous studies have reported that it may be associated with psychological problems such as depressive symptoms in adolescents [7]. Thus, preventing excessive SSB consumption is important for promoting physical and psychological health in adolescents, including high-school students. Previous studies have emphasized the need for effective strategies to reduce SSB consumption in adolescents, particularly high-school students [1,5]. However, as a first step in developing interventions, individual and environmental factors associated with SSB con-

This is an Open Access article distributed under the terms of the Creative Commons Attribution NonCommercial License (https://creativecommons.org/licenses/by-nc-nd/4.0/) which permits unrestricted noncommercial use, distribution, and re-production in any medium, provided the original work is properly cited.
© 2025 Korean Academy of Child Health Nursing

sumption in adolescents should be identified [8].

According to the socioecological model of beverage consumption proposed by von Philipsborn et al. [9], which represents the factors associated with beverage consumption as divided into micro, meso, and macro levels, beverage consumption is influenced by intrapersonal factors (e.g., sex, age, and ethnicity), interpersonal factors (e.g., parenting practice, peer pressure, and support), and settings (e.g., beverage environment in educational contexts). With growing autonomy as a developmental characteristic, adolescents tend to choose their own dietary habits, including SSB consumption [10]. In addition, as parents and family represent the closest environments for children and adolescents, parental role-modeling practices and SSB availability at home significantly influence their SSB consumption [11]. School is an educational setting that enhances knowledge of and behavior toward healthy dietary habits [5]. Vézina-Im et al. [5] reported that the school environment is responsible for healthy habit formation, including dietary habits (e.g., SSB consumption) in adolescents. Thus, the school environment may significantly influence adolescents' dietary habits. In these contexts, the multilayered intrapersonal, interpersonal, and school factors influencing SSB consumption must be identified based on the socioecological model.

However, few previous studies that have explored the multilevel factors associated with SSB consumption in adolescents have focused on Western countries [8]. Individual dietary habits are developed within social contexts and influenced by sociocultural characteristics [12]. Thus, factors associated with SSB consumption in adolescents may vary according to race and ethnicity [13]. In particular, South Korean high school students tend to spend most of their waking hours preparing for college entrance exams. In addition, they often meet peers at private academies after school and on weekends and have snacks and dinners together. Thus, factors related to peers and schools may be more significantly associated with SSB consumption in South Korean high-school students than family factors. In contrast, family factors are more significantly associated with SSB consumption in adolescents in Western countries [8]. However, a previous study based on a national data source (the Korea Youth Risk Behavior Web-based Survey) mainly focused on identifying the individual factors (e.g., sociodemographic factors, health-related behaviors) associated with SSB consumption in South Korean high-school students [14]. In this context, this study aimed to identify the factors associated with SSB consumption among South Korean high-school students based on the socioecological model and literature review.

METHODS

Ethical statements: This study was approved by the Institutional Review Board of Chungnam National University Hospital in South Korea (CNUSH 2023-11-010-001). Informed consent was obtained from all participants and their legal guardians.

1. Study Design

This cross-sectional study was based on the socioecological model of beverage consumption proposed by von Philipsborn et al. [9]. The reporting of this study was based on the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) reporting guidelines [15].

2. Conceptual Framework

According to this model, beverage consumption is affected by factors within multi-layered systems, including intrapersonal factors (e.g., age, gender, health status, knowledge, and self-efficacy), interpersonal factors (e.g., family structure, parenting practices, and peer pressure and support), and community settings (e.g., environments of educational settings). Referencing the model, this study focused on identifying intrapersonal factors, interpersonal factors, and school factors for understanding SSB consumption in adolescents. The model explores intrapersonal, interpersonal, and school-level factors associated with beverage consumption. Thus, it may be an appropriate conceptual framework for an integrated understanding of the factors associated with SSB consumption in adolescents.

According to the literature review based on the socioecological model of von Philipsborn et al. [9], intrapersonal factors include demographic characteristics (sex [16], grade [2], adiposity [16]), pocket money [16], raw vegetable and fruit consumption [16], sugar-sweetened snack consumption [16], fast-food consumption [8], physical activity [16], screen time [17], sleep duration [8], knowledge of SSB consumption [18], perception of SSB consumption [18], habit strength of SSB consumption [19], and self-efficacy in controlling SSB consumption [18]. Interpersonal factors include perceived SSB consumption by peers [20], social influences of peers on SSB

consumption [20], social influences of parents on SSB consumption [11], easy access to SSBs at home [21], allowed consumption of SSBs without restriction at home [21], adiposity of parents [11], educational level of parents [21], perceived socioeconomic status of family [21], number of supermarkets and convenient stores near home [16], and number of visits to the supermarkets and convenient stores near home [22]. Finally, school factors included the availability of beverage vending machines and cafeterias in school [16] and supermarkets and convenience stores near school [16] (Figure 1).

3. Participants

The participants were 231 students from first to third grade of high school and aged 15–18 (mean age, 16.32±0.88 years). Using a convenience sampling method, the students were recruited from three high schools located in Daejeon Province (a metropolitan area). The selection criteria were as follows: (1) able to read, understand, and respond to a questionnaire without others' help; (2) no health problem or disability diagnosed by specialists, which may influence lifestyle behaviors such as dietary habits, sitting behaviors, and physical activity (e.g., diabetes, chewing and swallowing problems, digestive and absorption disorders, difficulty in sitting and voluntary range of motion, and sleep disorders); and (3) students and their parents/legal guardians voluntarily agreed to participate in the study and submitted informed consent. The required sample size with an effect size of 0.15 (medium), a significance level of 0.05, a statistical power of 0.80, and 39 predictors in the multiple linear regression model was 211. Thus, 231 participants were sufficient for power analysis.

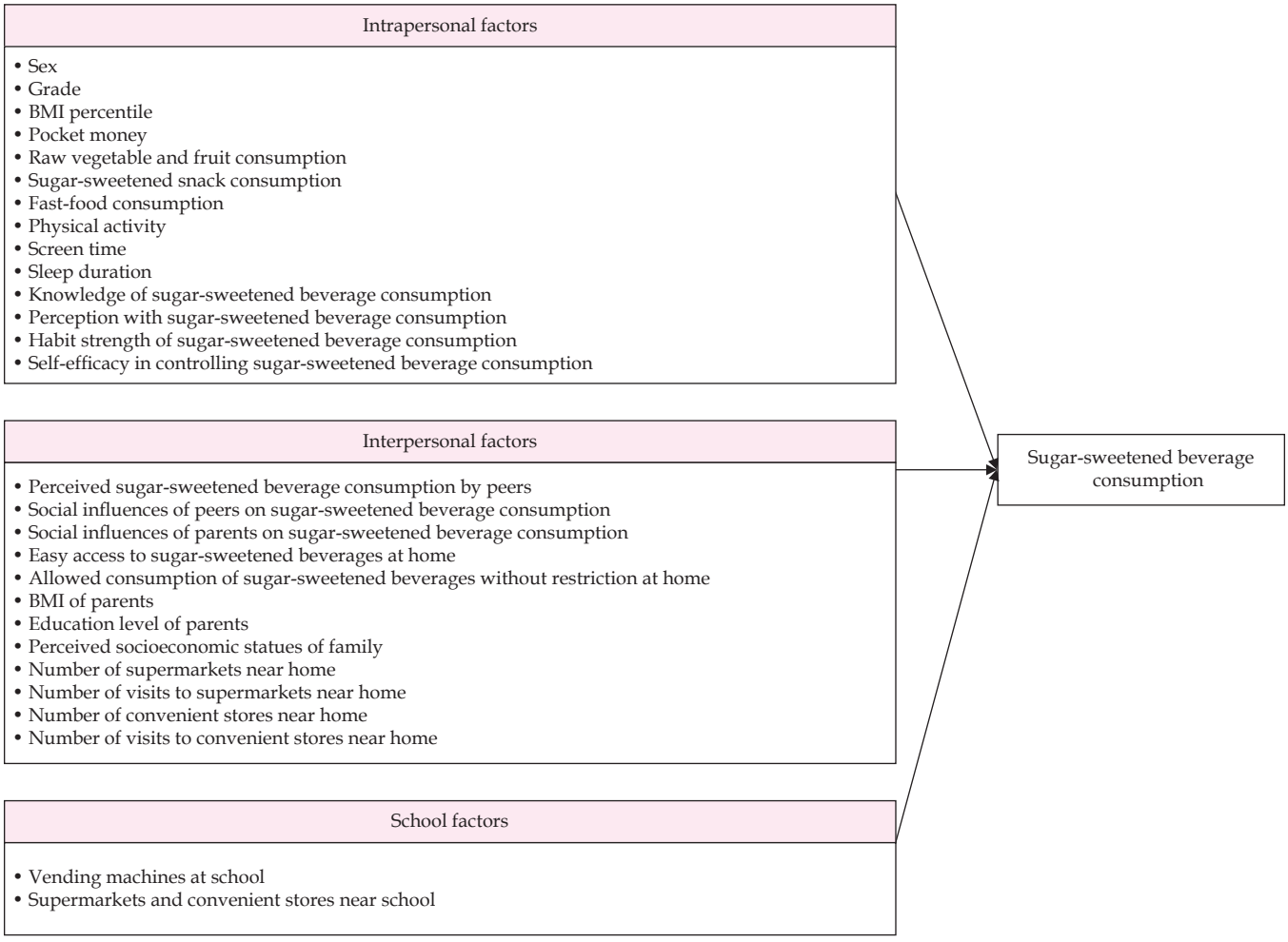

Figure 1. Hypothesized model. BMI, body mass index.

4. Study Variables

1) Measurements outcome variables

(1) SSB consumption

SSB consumption was assessed using two items: weekly SSB consumption (in number of days) and the average amount of SSB consumed on those days [23]. Responses were obtained as 0 days (none) to 7 days (every day) and self-reported cups (rounded up to one decimal place; 1 cup = 250 mL), respectively. Based on these two items, the average SSB consumption per day was calculated as [(days of SSB consumption in a week × cups of SSB consumption on the day)/7].

2) Independent variables

(1) Intrapersonal factors

Demographic characteristics: Sex was classified as boy or girl. Grades were categorized into first (15–16 years), second (16–17 years), and third (17–18 years), following the high-school grading system in South Korea. For adiposity, the BMI was calculated using self-reported height and weight (kg/m^2). The BMI values were transformed into BMI percentiles using the South Korean national growth chart for children and adolescents [3].

Pocket money: Pocket money was assessed by asking about the average weekly pocket money (in won), which was converted to US dollars (1 USD = 1,350 Korean won).

Raw vegetable and fruit consumption: Raw vegetable and fruit consumption was assessed by asking how often raw vegetables and fruits were consumed from three meals, with options of once to thrice.

Sugar-sweetened snack consumption: Sugar-sweetened snack consumption (e.g., ice cream, candy, jelly, snack, and candied fruit skewers) was assessed using daily consumption. Responses were self-recorded in terms of daily frequency.

Fast-food consumption: Fast food consumption was assessed using weekly consumption. Responses were self-recorded in terms of daily or weekly frequency.

Physical activity: Physical activity was assessed by asking the number of days in the past week they engaged in at least 60 minutes of activity that increased their heart rate or made them feel out of breath (moderate and vigorous physical activity). Responses were self-recorded in terms of daily frequency.

Screen time: Screen time (e.g., watching TV, using a mobile phone, computer, laptop, and video games) was assessed using two items that asked about the average screen time per day on weekdays and weekends. Based on the responses to the two items, the average screen time per day was calculated as [(average screen time per day on weekdays × 5)+(average screen time per day on weekends × 2)]/7.

Sleep duration: Sleep duration was assessed using usual wake-up and bedtime on weekdays and weekends. The average sleep durations per day on weekdays and weekends were recorded. Finally, the average sleep duration per day was calculated as [(average sleep duration per day on weekdays × 5)+(average sleep duration per day on weekends × 2)]/7.

Knowledge of SSB consumption: Knowledge of SSB consumption was assessed using a tool developed targeting high-school students in Taiwan [24]. The instrument consists of nine items, with the following response options: "true," "false," and "don't know." One point was awarded for correct responses, while 0, for incorrect or "don't know." The total score ranged from 0 to 9 points, and higher total scores indicated greater knowledge of SSB consumption.

Perception of SSB consumption: For the perception of SSB consumption, perceived benefits and barriers of SSB consumption were assessed using four items developed by Wang and Chen [24]. For example, SSB consumption can refresh me (perceived benefit), but SSB consumption would not be helpful for my health (perceived barrier). Responses were obtained on a 5-point Likert scale ranging from 0 (not probable) to 4 (very probable). The total score ranged from 0 to 16 points. Higher total scores indicated more perceived benefits and barriers to SSB consumption. Cronbach's α of the instrument was 0.84 in a previous study [24] and 0.89 in this study. In addition, Cronbach's α for perceived barriers was 0.78 in a previous study [24] and 0.77 in this study.

Habit strength of SSB consumption: To assess habit strength, we used the Self-Report Habit Index (SRHI) developed by Verplanken and Orbell [25]. It consists of 12 items evaluating three features of habitual behaviors: automaticity, repeated characteristics, and the sense of identity reflected by the behavior. Responses to the items were obtained on a 5-point Likert scale ranging from 0 (completely disagree) to 4 (completely agree). The total score ranges from 0 to 48 points, and a higher total score indicates increased habit strength of SSB consumption. The SRHI has sufficient reliability and validity [25]. Cronbach's α of 0.88 was obtained in a previous study [23] and 0.91 in this study.

Self-efficacy in controlling SSB consumption: Self-efficacy

was assessed using the Self-Efficacy Scale [24]. The instrument consists of nine items in three subscales: mental exhaustion (three items), need for company (three items), and high accessibility (three items). The scores ranged from 0 (not sure at all) to 3 (extremely sure), based on the perceived control of the respondents on their SSB consumption. The total score ranges from 0 to 9 points, and a higher total score indicates increased self-efficacy in controlling SSB consumption. Cronbach's α of the subscales reported in a previous study was 0.83 for mental exhaustion, 0.77 for need company, and 0.72 for high accessibility [24] and 0.75, 0.79, and 0.76, respectively, in the present study.

(2) Interpersonal factors

Perceived SSB consumption by peers: Perceived SSB consumption by peers was assessed by asking about the subjective perception of the average amount of SSB consumption by peers. The responses were self-recorded in the number of cups, which was converted into mL (one cup = 250 mL).

Social influences of peers on SSB consumption: The social influence of peers regarding SSB consumption was assessed with three items on three subscales: subjective norms (one item), modeling (one item), and social pressure (one item) [26]. Responses to each item were scored from –2 (definitely not) to 2 (definitely yes).

Social influences of parents on SSB consumption: The social influence of parents on SSB consumption was assessed using three items on three subscales: subjective norms (one item), modeling (one item), and social pressure (one item) [26]. Responses to each item were scored from –2 points (definitely not) to 2 points (definitely yes).

Easy access to SSB at home: Easy access to SSB at home was assessed by asking whether sugary drinks were readily and easily accessible at home, with response options of yes or no.

Allowed consumption of SSB without restriction at home: Allowed consumption of SSBs without restrictions at home was assessed by asking whether they could consume SSBs without restrictions from their parents. The response options were yes or no.

BMI of parents: The BMI (kg/m^2) of parents was calculated based on self-reported weight and height provided by the participants. Education level of parents: The educational levels of parents were assessed with a single question about the highest level of education obtained. Responses options were "less than middle school," "high school," "junior college and 4-year university," and "graduate school."

Perceived socioeconomic status of family: The perceived socioeconomic status of the family was assessed by asking about the subjective perception of the socioeconomic status, with options of high, middle, and low levels.

Number of supermarkets near home: The participants were asked about the number of supermarkets within 15 minutes walking distance from home. The responses were self-recorded in terms of number.

Number of visits to supermarkets near home: The participants' number of visits to supermarkets near home was self-recorded in terms of frequency of visits over the past week.

Number of convenience stores near home: The participants were asked about the number of convenience stores within 15 minutes of walking distance from their homes.

Number of visits to convenience stores near home: The frequency of the participants' visits to convenience stores near home in the past week was self-recorded.

(3) School factors

Vending machines at school: Vending machines at schools were assessed by asking about the presence of SSB vending machines at schools. The responses to each item were yes or no.

Supermarkets and convenient stores near school: Supermarkets and convenience stores near schools were assessed by asking about the presence of supermarkets and convenience stores within 15 minutes walking distance of the school. The responses to each item were yes or no.

5. Data Collection Procedure

The data were collected between March and April 2024 by two trained research assistants with master's degrees in nursing. After obtaining approval from the principal, the research assistants posted a recruitment notice on the school bulletin board, with the cooperation of the school nurse. Those who wished to participate in this study were asked to contact the research assistants via their mobile phones or email. Self-reported electronic questionnaires were provided to the participants' cell phones with their permission. Trained research assistants explained the purpose and data collection procedure of this study and provided verbal and text message instructions on how to respond to the questionnaire. A total of 240 questionnaires were distributed, and 231 (response

rate=96.3%) were collected.

Regarding ethical considerations, trained research assistants explained the purpose and data collection procedures. They also explained the voluntary nature of participation, the possibility of withdrawal at any time, and the rights of individuals. In addition, they explained that the collected data would be anonymized using unique codes to protect personal information and would be used only for this study. Participants were provided with a 20,000 Korean won gift voucher (approximately 15 USD) that could be used at convenience stores.

6. Data Analyses

The data were analyzed using IBM SPSS for Windows ver. 29.0 (IBM Corp.). Descriptive statistics were used to describe the frequency, percentage, and mean of the individual, parental, familial, peer, and school factors. In addition, a multiple linear regression analysis was performed to assess the factors associated with SSB consumption in adolescents using three models (models 1, 2, and 3) based on the hypothesized model. Intrapersonal, intrapersonal, and school factors were included in models 1, 2, and 3, respectively. Akaike information criterion (AIC) value was used for the model selection, and a lower AIC value indicates a better model fit.

RESULTS

1. Participant Characteristics

The mean daily SSB consumption of the participants was 241.61±157.90 mL (range, 0–612.50 mL). Table 1 shows the intrapersonal, interpersonal, and school factors. Of the 231 participants, 48.9% (n=113) and 51.1% (n=118) were boys and girls, respectively. In addition, 33.8%, 34.2%, and 32.0% were in first, second, and third grades, respectively, with a mean age of 16.32±0.88 years (range, 15–18 years).

2. Factors Associated with Adolescents' SSB Consumption

In model 1 with intrapersonal factors, screen time (β=0.12, t=2.03, p=.044) and habit strength of SSB consumption (β=0.39, t=4.97, p<.001) were positively associated with SSB consumption in adolescents. In addition, sleep duration (β=–0.26, t=–4.31, p<.001) was negatively associated with SSB

Table 1. Characteristics of intrapersonal, interpersonal, and school factors (N=231)

Characteristic	Value
Intrapersonal factors	
Sex	
Boys	113 (48.9)
Girls	118 (51.1)
Grade	
1st	78 (33.8)
2nd	79 (34.2)
3rd	74 (32.0)
BMI percentile	55.77±26.31 (1–100)
Underweight	8 (3.5)
Normal weight	182 (78.8)
Overweight	30 (13.0)
Obesity	11 (4.7)
Pocket money (US$/wk)	34.21±22.05 (7.41–222.22)
Raw vegetable and fruit consumption (times out of 3 meals/day)	1.10±0.68 (0–3)
Sugar-sweetened snack consumption (times/day)	1.99±1.49 (0–7)
Fast-food consumption (times/wk)	1.88±1.95 (0–14)
Physical activity (day/wk)	1.54±1.70 (0–7)
Screen time (hr/day)	2.45±1.03 (0.25–4.00)
Sleep duration (hr/day)	6.91±0.85 (4.75–9.13)
Knowledge of SSB consumption	4.68±1.62 (0–8)
Perception of SSB consumption	
Perceived benefits	12.84±2.05 (7–19)
Perceived barriers	10.01±2.79 (2–16)
Habit strength of SSB consumption	23.84±8.79 (0–48)
Self-efficacy in controlling SSB consumption	
Mental exhaustion	5.19±1.77 (0–9)
Need for company	5.46±1.70 (0–9)
High accessibility	5.29±1.62 (0–9)
Interpersonal factors	
Perceived SSB consumption by peers (mL/day)	879.87±515.96 (0–1,750)
Social influences of peers on SSB consumption	
Subjective norms	0.11±0.91 (–2 to 2)
Modelling	0.82±0.83 (–2 to 2)
Social pressure	–0.18±0.95 (–2 to 2)
Social influences of parents on SSB consumption	
Subjective norms	–0.66±0.96 (–2 to 2)
Modelling	–0.12±1.03 (–2 to 2)
Social pressure	–0.81±0.89 (–2 to 2)
Easy access to SSBs at home	
Yes	154 (66.7)
No	77 (33.3)
Allowed consumption of SSBs without restriction at home	
Yes	220 (95.2)
No	11 (4.8)

(Continued on next page)

Table 1. Continued

Characteristic	Value
BMI of fathers (kg/m^2)	25.35±1.88 (20.68–30.84)
BMI of mothers (kg/m^2)	22.74±2.68 (16.41–29.48)
Education level of fathers	
≤Middle school	1 (0.4)
High school	70 (30.3)
Junior college and 4 years university	147 (63.7)
Graduated school	13 (5.6)
Education level of mothers	
≤Middle school	5 (2.2)
High school	85 (36.8)
Junior college and 4 years university	133 (57.6)
Graduated school	8 (3.4)
Perceived socioeconomic statues of family	
Low	39 (16.9)
Middle	179 (77.5)
High	13 (5.6)
No. of supermarkets near home (within 15 minutes by foot)	1.79±1.32 (0–10)
No. of visits to supermarkets near home (/wk)	1.27±1.70 (0–16)
No. of convenient stores near home	2.43±1.59 (0–10)
No. of visits to convenient stores near home (/wk)	2.33±1.55 (0–10)
School factors	
Vending machines at school	
Yes	218 (94.4)
No	13 (5.6)
Supermarkets and convenient stores near school	
Yes	213 (92.2)
No	18 (7.8)

Values are presented as mean±standard deviation (range) or number (%).
BMI, body mass index; SSB, sugar-sweetened beverage.

consumption. In model 2 with intrapersonal and interpersonal factors, habit strength of SSB consumption (β=0.33, t=4.06, p<.001) was positively associated, and sleep duration (β=–0.15, t=–2.20, p=.029) was negatively associated with SSB consumption in adolescents. Among interpersonal factors, perceived SSB consumption by peers (β=0.32, t=5.35, p<.001) was positively associated with SSB consumption in adolescents (Table 2).

Finally, in model 3 with intrapersonal, interpersonal, and school factors, fast-food consumption (β=0.13, t=1.97, p=.050) and habit strength of SSB consumption (β=0.35, t=4.30, p<.001) were positively associated, and sleep duration (β=–0.14, t=–2.02, p=.045) was negatively associated with SSB consumption in adolescents. Among interpersonal factors, perceived SSB consumption by peers (β=0.30, t=4.93, p<.001) was positively associated with SSB consumption in adolescents. Among school factors, vending machines at school (β=0.13, t=2.07, p=.039) and supermarkets and convenience stores near schools (β=0.17, t=2.87, p=.005) were positively associated with SSB consumption in adolescents (Table 2). Without autocorrelation (d=1.84) or multicollinearity (variation inflation factors: 1.22–2.86) between the variables, the explanatory powers (adjusted R^2) of models 1, 2, and 3 were 36.0% (F=8.09, p<.001), 48.7% (F=6.39, p<.001), and 50.3% (F=6.34, p<.001), respectively. AIC values in models 1, 2, and 3 were 2,956.15, 2,887.36, and 2,839.97, respectively.

DISCUSSION

This study identified the factors associated with SSB consumption in South Korean adolescents and high-school students. Among the intrapersonal factors in the socioecological model, frequent fast-food consumption, increased habit strength of SSB consumption, and short sleep duration were associated with increased SSB consumption.

A previous study found that frequent consumption of fast foods (more than thrice a week) is associated with increased SSB consumption among adolescents [8]. Furthermore, previous studies have reported a positive linear association between fast food and SSB consumption [27]. Miller et al. [28] reported that fast food consumption was the strongest behavioral risk factor associated with SSB consumption. As fast food and SSBs are usually offered as a set menu with promotions in fast food restaurants, they can be easily obtained without a long wait time, and their prices tend to be cheaper than those of meals with fresh ingredients [28]. Thus, adolescents are more likely to consume meals or snacks containing fast food and SSBs. In addition, frequent exposure to positive images of fast food and soda through media advertising (e.g., TV) can increase the preference for these products [14]. Thus, reducing fast food consumption may be an effective strategy for decreasing SSB consumption. Healthcare providers at schools (school nurses) must educate adolescents and their parents about reducing fast food consumption and suggest healthy replacement foods. In addition, policies should be proposed to restrict the sale and marketing of fast food in schools, including banning the sale in school cafeterias.

Additionally, the strength of habit in SSB consumption

Table 2. Factors associated with adolescents' sugar-sweetened beverage consumption (N=231)

Variable	Model 1[a]			Model 2[a]			Model 3[a]		
	β	t	*p*	β	t	*p*	β	t	*p*
(Constant)		3.05			0.70			0.46	
Intrapersonal factors									
Sex (ref: girls)	0.02	0.41	.683	0.05	0.90	.370	0.07	1.17	.242
Grade (ref: 1st)									
2nd	0.10	1.54	.125	0.06	0.87	.385	0.03	0.52	.606
3rd	0.06	0.92	.361	0.06	0.94	.347	0.03	0.50	.618
BMI percentile	0.08	1.26	.211	0.05	0.90	.368	0.07	1.18	.240
Pocket money	–0.06	–0.93	.356	–0.05	–0.77	.444	–0.11	–1.19	.061
Raw vegetable and fruit consumption	–0.10	–1.65	.101	–0.07	–1.22	.225	–0.09	–1.54	.125
Sugar-sweetened snack consumption	0.08	1.19	.236	0.05	0.83	.409	0.04	0.62	.539
Fast-food consumption	0.11	1.73	.085	0.13	1.93	.056	0.13	1.97	.050
Physical activity	0.01	0.17	.867	0.002	0.03	.973	0.01	0.17	.867
Screen time	0.12	2.03	.044	0.01	0.07	.942	–0.03	–0.43	.669
Sleep duration	–0.26	–4.31	< .001	–0.15	–2.20	.029	–0.14	–2.02	.045
Knowledge of SSB consumption	0.08	1.27	.206	0.08	1.32	.187	0.06	1.08	.283
Perception of SSB consumption									
Perceived benefits	–0.01	–0.24	.809	–0.05	–0.78	.438	–0.03	–0.57	.568
Perceived barriers	0.08	1.33	.185	0.12	1.93	.055	0.11	1.76	.081
Habit strength of SSB consumption	0.39	4.97	< .001	0.33	4.06	< .001	0.35	4.30	< .001
Self-efficacy in controlling SSB consumption									
Mental exhaustion	–0.09	–1.06	.289	–0.05	–0.59	.559	–0.05	–0.63	.527
Need for company	–0.04	–0.47	.638	–0.08	–0.94	.348	–0.09	–1.07	.288
High accessibility	0.04	0.45	.656	0.07	0.91	.363	0.10	1.26	.208
Interpersonal factors									
Perceived SSB consumption by peers				0.32	5.35	< .001	0.30	4.93	< .001
Social influences of peers on SSB consumption									
Subjective norms				0.07	0.91	.366	0.09	1.09	.276
Modelling				0.04	0.59	.554	0.04	0.55	.584
Social pressure				–0.06	–0.78	.438	–0.10	–1.35	.178
Social influences of parents on SSB consumption									
Subjective norms				0.01	0.06	.952	0.01	0.16	.873
Modelling				–0.08	–1.16	.249	–0.11	–1.61	.108
Social pressure				0.09	1.09	.275	0.07	0.91	.363
Easy access to SSBs at home				0.06	0.84	.400	0.07	0.97	.335
Allowed consumption of SSBs without restriction at home				0.05	0.89	.375	0.04	0.80	.427
BMI of fathers				–0.09	–1.53	.127	–0.09	–1.65	.101
BMI of mothers				0.05	0.78	.435	0.06	0.89	.377
Education level of fathers (ref: less than high school)				0.09	1.45	.148	–0.04	–0.71	.481
Education level of mothers (ref: less than high school)				0.04	0.61	.543	0.01	0.15	.884
Perceived socioeconomic statues of family (ref: low)									
Middle							0.04	0.06	.952
High							–0.03	–0.55	.586
No. of supermarkets near home							–0.04	–0.57	.567
No. of visits to supermarkets near home							0.03	0.43	.668
No. of convenient stores near home							–0.07	–0.87	.387
No. of visits to convenient stores near home							0.10	1.49	.137
School factors									
Vending machines at school (ref: no)							0.13	2.07	.039
Supermarkets and convenient stores near school (ref: no)							0.17	2.87	.005

BMI, body mass index; SSB, sugar-sweetened beverage.
[a]Adjusted R^2=0.36 in model 1, adjusted R^2=0.49 in model 2, and adjusted R^2=0.51 in model 3.

was positively associated with SSB consumption in adolescents. Habits are unconscious and automatized patterns of behavior that respond to external cues [29]. Thus, habitual behavior can persist for a long time, even if the related information is insufficient and the intention or motivation is absent, and can be further strengthened through repetitive performance [29]. Furthermore, habitual behaviors may be performed without considering efficiency or intentional control [29]. Lifestyle behaviors, such as dietary behavior, are habitual behaviors repeated in similar contexts (time and place) in daily life [29]. Thus, the strength of habit in dietary behavior may be a significant predictor of dietary behavior [30].

Similarly, as habit strength surpasses the intention to eat healthy snacks, it becomes the strongest predictor of unhealthy snacking [30]. De Vet et al. [30] reported that strong habits of unhealthy snacking in adolescents were positively associated with increased consumption of unhealthy snacks, even after considering the effects of the intention to eat healthy snacks. In this context, healthy drinking habits are required to reduce SSB consumption in adolescents. According to a systematic review [31], habit was the strongest modifiable determinant of SSB consumption in adolescents. Although habits represent behaviors that have already been formed, some recent evidence shows that habitual behavior can be successfully changed. In these contexts, interventions need to focus on habit chance and formation in order to effectively reduce SSB consumption [31]. Thus, healthcare providers at schools should develop interventions for habit formation for healthy drinking (e.g., drinking water instead of SSB) based on the suggested strategies for behavioral change with habit formation.

The American Academy of Sleep Medicine recommends 8–10 hours as the appropriate sleep duration at night for adolescents [32]. However, on weekdays and weekends, the average nightly sleep hours for South Korean high-school students were 7.4 and 6.2 hours, respectively [33]. According to Liu et al. [34], short sleep might lead to increased high-calorie food intake with decreased leptin (appetite-suppressing hormone) levels and increased ghrelin (appetite-stimulating hormone) levels in the serum. Increased feelings of hunger and appetite with sleep deprivation result in the intake of high-calorie foods and carbohydrates, such as SSBs [34]. In addition, adolescents who sleep more at night have less time to eat as well as less screen time, which reduces their chances of exposure to SSB advertisements [11]. Thus, maintaining sufficient sleep duration is important to reduce SSB consumption in adolescents. In addition, the consumption of caffeinated drinks as SSBs may reduce sleep duration in adolescents [35]. As caffeine consumption and sleep duration have a cyclical relationship, caffeine may reduce short sleep duration associated with daytime sleepiness or tiredness, and short sleep duration may increase the consumption of caffeinated drinks [35]. Thus, healthcare providers at schools should emphasize the need for adolescents, parents, and teachers to have sufficient sleep duration and consider the adverse effects of caffeinated drinks on sleep in adolescents. In addition, interventions should be developed to reduce the consumption of SSBs containing caffeine (e.g., energy drinks, coffee drinks, soda, and caffeine).

As a more statistically significant associated factor, perceived SSB consumption by peers was positively associated with adolescents' SSB consumption among the interpersonal factors. Social influences may determine adolescents' beverage consumption [12]. Additionally, adolescents want to follow social norms (expectations of behaviors in social groups) to avoid judgment by their social groups. High school students tend to be independent of their parents while spending a lot of time with their peers and building close relationships with them. Thus, the perceived social norms of peer groups may determine adolescents' dietary behaviors [12]. Similarly, misperception of peers' SSB consumption (descriptive norms) was more strongly associated with SSB consumption among adolescents than with peers' actual SSB consumption [12]. That is, the overestimation of SSB consumption by peers may be associated with an increased SSB consumption in adolescents. Lally et al. [12] emphasized the need to modify the misperception of peers' SSB consumption as a strategy to reduce adolescents' SSB consumption. Thus, school healthcare providers should develop strategies for correctly perceiving peers' SSB consumption and peer group-based interventions.

Finally, among the school factors, beverage vending machines in schools and supermarkets and convenience stores near schools were positively associated with adolescents' SSB consumption. The increased availability of SSBs in schools is significantly associated with increased SSB consumption [16]. Godin et al. [22] also reported that purchasing snacks from vending machines in schools, corner stores, and canteens near schools was associated with increased SSB consumption (soda, sweetened coffee/tea, and energy drinks) among adolescents. School is an important setting in which adolescents spend their daytime. In particular, South Korean high school students may spend more awake time at school than at

home. Thus, the increased availability of SSB in/near schools may increase their SSB consumption. In this context, mandatory restrictions on SSB availability in schools are a major strategy for reducing adolescent consumption [20]. Along with American Academy of Pediatrics and American Heart Association, Muth et al. [36] also emphasized the importance of the school environment and proposed implementing school-based public policies to reduce SSB consumption in children and adolescents (e.g. prohibiting the sale of SSB in school or allowing limited quantity of SSBs in school meals). Thus, school healthcare providers should propose policies focused on prohibiting the sale and advertising of SSBs in school.

Based on the results of this, social relationships and school environments, rather than parents and familial environments, might have more significant influences on SSB consumption in South Korean adolescents. Thus, school is primarily the most important community where strategies and interventions to reduce SSBs consumption in South Korean adolescents should be applied. School nurses should develop or propose strategies for maintaining healthy eating habits, including reducing SSB consumption at multiple levels, in adolescent students. According to a systematic review, school-based interventions (e.g., education, social support, restructuring of the physical environment, and behavioral change) are effective in reducing SSB consumption in adolescents [5]. Thus, school nurses should consider associated factors when developing their interventions.

This study had some limitations. Participants were recruited using convenience sampling from three high schools in a city. Thus, the generalizability of the results is limited. Future studies should use randomized sampling methods. Furthermore, a nationwide study would be helpful for obtaining more reliable evidence. In addition, the data collected for several variables (e.g., SSB consumption, screen time, sleep duration, height, and weight) were self-reported. Thus, subjective estimations were analyzed, and data may have been over- or underestimated. Many variables were also assessed using a single item, which may reduce validity and reliability. Therefore, future studies should use objective and systematic measurements with sufficient validity and reliability. Although this study was conducted among South Korean high-school students, dietary behaviors differed according to their sociocultural background. Thus, the factors associated with SSB consumption must be compared with those of adolescents from other countries. Additionally, as a further source of factors potentially associated with SSB consumption of adolescents in South Korea, the characteristics of significant family members such as parents and siblings (e.g. attitudes, SSBs consumption) should be evaluated in the context of South Korea's specific sociocultural attributes in future studies. Finally, this study focused on the intrapersonal, interpersonal, and school factors associated with SSB consumption among adolescents. Thus, the association between community environments, policies, and SSB consumption must be verified.

CONCLUSION

Based on the results of this study, school nurses should propose policies to develop healthy food environments to decrease SSB consumption, such as restricting sales and marketing of SSBs in schools. In addition, considering the factors associated with SSB consumption at the intrapersonal, interpersonal, and school levels, school nurses need to develop educational programs (to introduce healthy food and beverages that replace fast food and SSB) and interventions for healthy drinking habit formation, reduced consumption of SSB associated with short sleep duration, and correct perception of peers' SSB consumption.

ARTICLE INFORMATION

Authors' contribution

Conceptualization: JSR, SHK; Data collection: JSR; Formal analysis: JSR; Interpretation of data: JSR, SHK; Writing–original draft: JSR; Writing–review and editing: JSR, SHK; Final approval of published version: JSR, SHK.

Conflict of interest

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

Funding

This study was supported by a National Research Foundation of Korea (NRF) grant funded by the government of the Republic of Korea (No. 2021R1A2C100682811).

Data availability

Please contact the corresponding author for data availability.

Acknowledgements

None.

ORCID and ResearcherID

Jin Suk Ra https://orcid.org/0000-0001-7284-1886
https://researcherid.com/rid/JWO-9922-2024
Sun Hwa Kim https://orcid.org/0009-0002-7959-3760
https://researcherid.com/rid/LLL-3210-2024

REFERENCES

1. Joo N, Kim SK, Yoon JY. High school students' sugar intake behaviors and consumption of sugary processed food based on the level of sugar-related nutrition knowledge in Seoul area. Korean J Community Nutr. 2017;22(1):1-12. https://doi.org/10.5720/kjcn.2017.22.1.1
2. Park S, Sherry B, Foti K, Blanck HM. Self-reported academic grades and other correlates of sugar-sweetened soda intake among US adolescents. J Acad Nutr Diet. 2012;112(1):125-131. https://doi.org/10.1016/j.jada.2011.08.045
3. Kim JH, Yun S, Hwang SS, Shim JO, Chae HW, Lee YJ, et al. The 2017 Korean National Growth Charts for children and adolescents: development, improvement, and prospects. Korean J Pediatr. 2018;61(5):135-149. https://doi.org/10.3345/kjp.2018.61.5.135
4. Park S, Lee SH, Merlo C, Blanck HM. Associations between knowledge of health risks and sugar-sweetened beverage intake among US adolescents. Nutrients. 2023;15(10):2408. https://doi.org/10.3390/nu15102408
5. Vézina-Im LA, Beaulieu D, Bélanger-Gravel A, Boucher D, Sirois C, Dugas M, et al. Efficacy of school-based interventions aimed at decreasing sugar-sweetened beverage consumption among adolescents: a systematic review. Public Health Nutr. 2017;20(13):2416-2431. https://doi.org/10.1017/S1368980017000076
6. Li S, Cao M, Yang C, Zheng H, Zhu Y. Association of sugar-sweetened beverage intake with risk of metabolic syndrome among children and adolescents in urban China. Public Health Nutr. 2020;23(15):2770-2780. https://doi.org/10.1017/S1368980019003653
7. Lin CJ, Chang LY, Wu CC, Chang HY. The effect of childhood depression trajectories on sugar-sweetened beverage habit trajectories in adolescence: exploring sleep problems as a mediator. Appetite. 2024;194:107199. https://doi.org/10.1016/j.appet.2023.107199
8. Watts AW, Miller J, Larson NI, Eisenberg ME, Story MT, Neumark-Sztainer D. Multicontextual correlates of adolescent sugar-sweetened beverage intake. Eat Behav. 2018;30:42-48. https://doi.org/10.1016/j.eatbeh.2018.04.003
9. von Philipsborn P, Stratil JM, Burns J, Busert LK, Pfadenhauer LM, Polus S, et al. Environmental interventions to reduce the consumption of sugar-sweetened beverages and their effects on health. Cochrane Database Syst Rev. 2019;6(6):CD012292. https://doi.org/10.1002/14651858.CD012292.pub2
10. Gan WY, Mohamed SF, Law LS. Unhealthy lifestyle associated with higher intake of sugar-sweetened beverages among Malaysian school-aged adolescents. Int J Environ Res Public Health. 2019;16(15):2785. https://doi.org/10.3390/ijerph16152785
11. Bogart LM, Elliott MN, Ober AJ, Klein DJ, Hawes-Dawson J, Cowgill BO, et al. Home sweet home: parent and home environmental factors in adolescent consumption of sugar-sweetened beverages. Acad Pediatr. 2017;17(5):529-536. https://doi.org/10.1016/j.acap.2017.01.015
12. Lally P, Bartle N, Wardle J. Social norms and diet in adolescents. Appetite. 2011;57(3):623-627. https://doi.org/10.1016/j.appet.2011.07.015
13. Fontes AS, Pallottini AC, Vieira DA, Fontanelli MM, Marchioni DM, Cesar CL, et al. Demographic, socioeconomic and lifestyle factors associated with sugar-sweetened beverage intake: a population-based study. Rev Bras Epidemiol. 2020;23:e200003. https://doi.org/10.1590/1980-549720200003
14. Ra JS, Park M. Sex-based differences in factors associated with sugar-sweetened beverage consumption among Korean high school students. Front Nutr. 2022;9:907922. https://doi.org/10.3389/fnut.2022.907922
15. von Elm E, Altman DG, Egger M, Pocock SJ, Gøtzsche PC, Vandenbroucke JP, et al. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement: guidelines for reporting observational studies. PLoS Med. 2007;4(10):e296. https://doi.org/10.1371/journal.pmed.0040296
16. Scully M, Morley B, Niven P, Crawford D, Pratt IS, Wakefield M. Factors associated with high consumption of soft drinks among Australian secondary-school students. Public Health Nutr. 2017;20(13):2340-2348. https://doi.org/10.1017/S1368980017000118
17. Sampasa-Kanyinga H, Chaput JP. Consumption of sugar-sweetened beverages and energy drinks and adherence to physical activity and screen time recommendations among adolescents. Int J Adolesc Med Health. 2016;29(5):20150098. https://doi.org/10.1515/ijamh-2015-0098
18. Wang CW, Chen DR, Chan CC, Yeh YP, Chen HH. 'I knew I should

stop, but I couldn't control myself': a qualitative study to explore the factors influencing adolescents' consumption of sugar-sweetened beverages and sugary snacks from a socio-ecological perspective. Public Health Nutr. 2022;25(9):2465-2474. https://doi.org/10.1017/S1368980022001185
19. Tak NI, Te Velde SJ, Oenema A, Van der Horst K, Timperio A, Crawford D, et al. The association between home environmental variables and soft drink consumption among adolescents: exploration of mediation by individual cognitions and habit strength. Appetite. 2011;56(2):503-510. https://doi.org/10.1016/j.appet.2011.01.013
20. Zhang Y, Li R, Zhao Q, Fan S. The impact of peer effect on students' consumption of sugar-sweetened beverages-instrumental variable evidence from north China. Food Policy. 2023;115:102413. https://doi.org/10.1016/j.foodpol.2023.102413
21. Tasevska N, DeLia D, Lorts C, Yedidia M, Ohri-Vachaspati P. Determinants of sugar-sweetened beverage consumption among low-income children: are there differences by race/ethnicity, age, and sex? J Acad Nutr Diet. 2017;117(12):1900-1920. https://doi.org/10.1016/j.jand.2017.03.013
22. Godin KM, Chacón V, Barnoya J, Leatherdale ST. The school environment and sugar-sweetened beverage consumption among Guatemalan adolescents. Public Health Nutr. 2017;20(16):2980-2987. https://doi.org/10.1017/S1368980017001926
23. Kremers SP, van der Horst K, Brug J. Adolescent screen-viewing behaviour is associated with consumption of sugar-sweetened beverages: the role of habit strength and perceived parental norms. Appetite. 2007;48(3):345-350. https://doi.org/10.1016/j.appet.2006.10.002
24. Wang CW, Chen DR. Associations of sugar-sweetened beverage knowledge, self-efficacy, and perceived benefits and barriers with sugar-sweetened beverage consumption in adolescents: a structural equation modeling approach. Appetite. 2022;168:105663. https://doi.org/10.1016/j.appet.2021.105663
25. Verplanken B, Orbell S. Reflections on past behavior: a self-report index of habit strength. J Appl Soc Psychol. 2003;33(6):1313-1330. https://doi.org/10.1111/j.1559-1816.2003.tb01951.x
26. van der Horst K, Kremers S, Ferreira I, Singh A, Oenema A, Brug J. Perceived parenting style and practices and the consumption of sugar-sweetened beverages by adolescents. Health Educ Res. 2007;22(2):295-304. https://doi.org/10.1093/her/cyl080
27. Pollard CM, Meng X, Hendrie GA, Hendrie D, Sullivan D, Pratt IS, et al. Obesity, socio-demographic and attitudinal factors associated with sugar-sweetened beverage consumption: Australian evidence. Aust N Z J Public Health. 2016;40(1):71-77. https://doi.org/10.1111/1753-6405.12482
28. Miller C, Wakefield M, Braunack-Mayer A, Roder D, O'Dea K, Ettridge K, et al. Who drinks sugar sweetened beverages and juice?: an Australian population study of behaviour, awareness and attitudes. BMC Obes. 2019;6:1. https://doi.org/10.1186/s40608-018-0224-2
29. van't Riet J, Sijtsema SJ, Dagevos H, De Bruijn GJ. The importance of habits in eating behaviour: an overview and recommendations for future research. Appetite. 2011;57(3):585-596. https://doi.org/10.1016/j.appet.2011.07.010
30. De Vet E, Stok FM, De Wit JB, De Ridder DT. The habitual nature of unhealthy snacking: how powerful are habits in adolescence? Appetite. 2015;95:182-187. https://doi.org/10.1016/j.appet.2015.07.010
31. Calabro R, Kemps E, Prichard I. Socio-cognitive determinants of sugar-sweetened beverage consumption among young people: a systematic review and meta-analysis. Appetite. 2023;180:106334. https://doi.org/10.1016/j.appet.2022.106334
32. Paruthi S, Brooks LJ, D'Ambrosio C, Hall WA, Kotagal S, Lloyd RM, et al. Recommended amount of sleep for pediatric populations: a consensus statement of the American Academy of Sleep Medicine. J Clin Sleep Med. 2016;12(6):785-786. https://doi.org/10.5664/jcsm.5866
33. Korea Ministry of Education, Korea Ministry of Health and Welfare, Korea Center for Disease Control and Prevention. The statistics on the 15th Korea youth risk behavior survey in 2020. Korea Center for Disease Control and Prevention; 2020.
34. Liu S, Wang X, Zheng Q, Gao L, Sun Q. Sleep deprivation and central appetite regulation. Nutrients. 2022;14(24):5196. https://doi.org/10.3390/nu14245196
35. Lodato F, Araújo J, Barros H, Lopes C, Agodi A, Barchitta M, et al. Caffeine intake reduces sleep duration in adolescents. Nutr Res. 2013;33(9):726-732. https://doi.org/10.1016/j.nutres.2013.06.005
36. Muth ND, Dietz WH, Magge SN, Johnson RK, American Academy of Pediatrics, Section on Obesity, et al. Public policies to reduce sugary drink consumption in children and adolescents. Pediatrics. 2019;143(4):e20190282. https://doi.org/10.1542/peds.2019-0282

ORIGINAL ARTICLE

Child Health Nurs Res Vol.31, No.1, January 2025;31(1):40-51
https://doi.org/10.4094/chnr.2024.038

pISSN 2287-9110
eISSN 2287-9129

CHNR

Tutoring experiences of a high-risk newborn care simulation among nurse tutors and nursing student tutees in South Korea: a qualitative study

Hyun Young Koo[1], Bo Ryeong Lee[2], Hyeran An[2]

[1]Professor, College of Nursing, Research Institute of Nursing Science, Daegu Catholic University, Daegu, Korea
[2]Assistant Professor, College of Nursing, Research Institute of Nursing Science, Daegu Catholic University, Daegu, Korea

Corresponding author
Hyeran An
College of Nursing, Research Institute of Nursing Science, Daegu Catholic University, 33 Duryugongwon-ro 17-gil, Nam-gu, Daegu 42472, Korea
Tel: +82-53-650-3629
Fax: +82-53-650-4392
E-mail: ahr777@cu.ac.kr

Received: October 11, 2024
Revised: December 12, 2024
Accepted: January 13, 2025

Purpose: This study aimed to explore tutoring experiences related to a high-risk newborn care simulation among nurses and nursing students to derive insights into developing effective neonatal nursing practice.
Methods: A qualitative content-analysis study was conducted in March 2023. Data were collected through narrative surveys and focus group interviews with four neonatal intensive care unit nurses and 12 senior nursing students participating in a 1-day high-risk newborn care simulation program. A content analysis was performed on the collected data.
Results: Three categories ("efforts to foster a sense of presence," "efforts to promote positive awareness of the neonatal intensive care unit," and "establishing one's role as an educator") and six subcategories were derived from the nurses' responses. Three categories ("growth through a realistic virtual simulation," "improved learning effects," and "hope for continued development") and six subcategories were derived from the nursing students' responses.
Conclusion: The nursing students experienced realistic practice with their nurse tutors in the high-risk newborn care simulation, which helped them form their professional identity as future nurses. After tutoring, the nurses' perceptions of nursing students changed positively, which affected their teaching methods.

Keywords: Neonatal nursing; Nursing students; Qualitative research; Simulation training

INTRODUCTION

Nursing students must gain experience in applying their knowledge of nursing to clinical settings if they intend to become qualified nurses. Neonatal nursing practice is essential for students to improve their newborn care competency [1]. Clinical practice allows nursing students to learn about the nursing procedures involved in neonatal health assessment, improvement, and recovery [2]. Nurses also impact nursing students through clinical practice because students engage with them frequently and can learn firsthand how to execute their jobs, communicate with others, and connect with patients [3].

However, clinical nurses reported that nursing students were too passive to approach them and learn nursing care, whereas nursing students have reported being unwilling to approach busy nurses [4]. Due to ethical and legal concerns, such as the protection of patients and nurses' overwork, the

This is an Open Access article distributed under the terms of the Creative Commons Attribution NonCommercial License (https://creativecommons.org/licenses/by-nc-nd/4.0/) which permits unrestricted noncommercial use, distribution, and re-production in any medium, provided the original work is properly cited.
© 2025 Korean Academy of Child Health Nursing

provision of direct nursing care by nursing students has been restricted [5]. Despite the insufficient possibilities in clinical settings for nursing students to actively care for newborns vulnerable to infections and accidents, students desired opportunities for direct nursing practice in the nursery and neonatal intensive care unit (NICU) [4].

To resolve learning issues in clinical practicum, simulation training has been used to help nursing students practice caring for newborns in secure environments [6]. Simulation of neonates with health issues improved nursing students' clinical practice performance and class satisfaction [7]. Simulation training on caring for high-risk neonates was also favored by NICU nurses [8]. Nurses in clinical practicum fields should understand how to operate simulations to become competent clinical nurse instructors, since simulations allow nursing students to learn crucial nursing skills in a controlled and safe simulated environment [9]. In addition to the principles of how the clinical practicum works, nurses must gain new information and skills in diverse teaching approaches [10]. Facilitating nurses experience and learn new teaching methods can promote nursing competency by allowing nursing students to perform nursing care in a clinical setting [11].

Moreover, nursing students can utilize tutoring, which is a small-group study method composed of a tutor and tutees [12], to extend their learning effects in simulation training [13]. Tutors effectively support tutees' learning because their encouragement and suggestions act as buffers against the problems that tutees confront [14].

Tutoring is an interactive teaching-learning method that facilitates small-group learning by providing personalized guidance and feedback [12]. It is an effective strategy for promoting critical thinking, practical skills, and collaborative learning, particularly in areas like neonatal nursing care that require precision and adaptability [14,15]. In simulation-based education, tutoring improves learning outcomes by offering structured support and real-time feedback [13]. Tutors play a vital role in bridging the gap between theoretical knowledge and clinical practice, enabling students to develop essential skills in a safe environment [16]. Incorporating NICU nurses as tutors in neonatal nursing simulations is expected to leverage their clinical expertise and facilitate the delivery of high-quality training, thereby contributing to the development of students' professional identity and confidence [15,17].

Providing practical support as tutors in simulation training furnishes NICU nurses with an opportunity not only to improve their abilities as educators [16] but to reflect on and evaluate their own competencies as nurses. Peer tutoring programs are recognized as effective educational methods for both tutors and tutees. However, dissatisfaction among tutees regarding underqualified tutors is a frequently reported issue [15]. To address this concern, involving NICU nurses—who are currently engaged in clinical practice—as tutors in simulation training is expected to qualitatively enhance the high-risk neonatal care competencies of student tutees. Previous studies on neonatal nursing simulations for nursing students have generally focused on educational needs [6,8] or program outcomes [7]. Studies that applied peer tutoring to neonatal nursing simulations [17] typically involved students in the roles of both tutors and tutees, without incorporating nurses as tutors. Therefore, this study introduced NICU nurses as tutors in a high-risk neonatal nursing simulation program for nursing students. By exploring the experiences of nurse tutors and student tutees, this study aims to contribute to the development of effective educational strategies for neonatal nursing simulation training.

METHODS

Ethical statements: This study was approved by the Institutional Review Board of Daegu Catholic University (CUIRB-2022-0052). Informed consent was obtained from all participants.

1. Study Design

This study adopted qualitative content analysis to explore the tutoring experiences of a high-risk newborn care simulation among nurses and nursing students (Figure 1). This study was based on the methodology of the Consolidated Criteria for Reporting Qualitative Research (COREQ) reporting guidelines [18].

2. Setting and Sample

Through convenience sampling, four nurses from a university-affiliated hospital and 12 senior nursing students from a university in a South Korean metropolitan city were selected. In March 2023, participants who freely provided written consent to participate in the study were enrolled. The number of participants was determined to be 16 and consisted of four focus groups, with a focus group size of 4 to 12

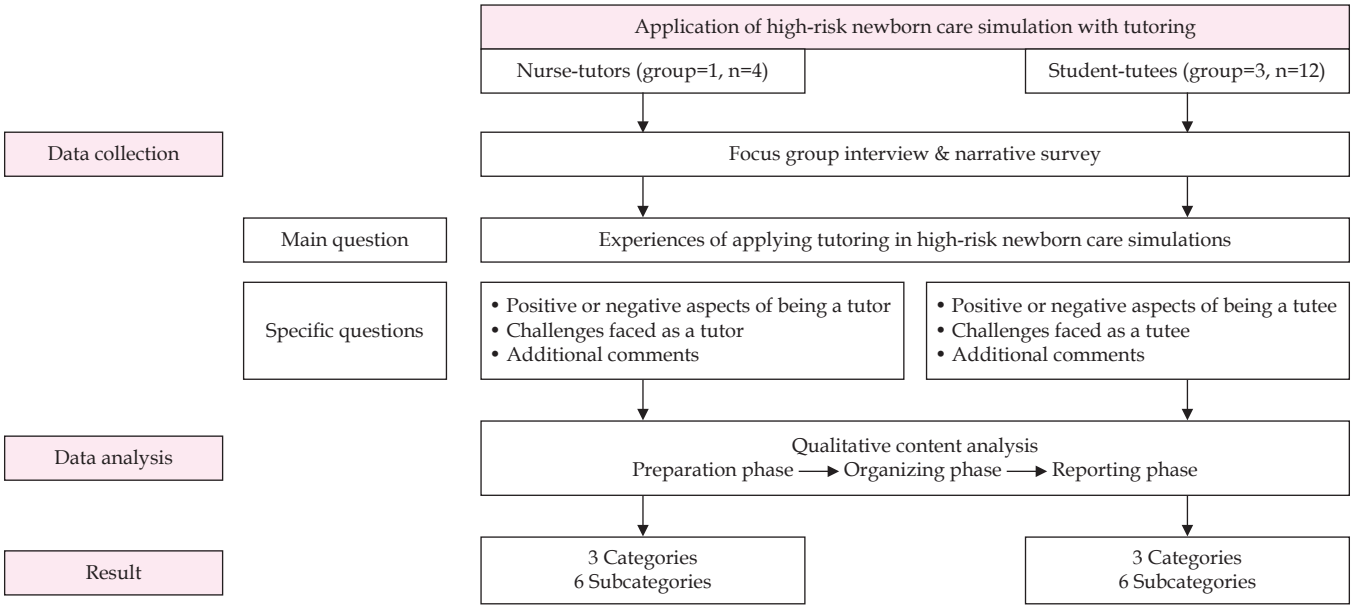

Figure 1. Research process of this study.

persons considered ideal [19]. The inclusion criteria comprised nurses who had guided nursing students during a neonatal nursing practicum, worked in the NICU, and taken part in a similar program, as well as senior nursing students who had completed a neonatal nursing practicum the previous semester and taken part in a 1-day high-risk newborn care simulation program. Nurses who had not directed a neonatal nursing practicum were excluded, as were students who chose not to participate in the study or who had not completed a neonatal nursing practicum. All four nurses completed the narrative survey and focus group interview. The nurses were female and ranged in age from 28 to 49 years. Their employment periods ranged from 6 to 27 years, and their preceptorship experience ranged from 1 to 10 times, despite their having no prior simulation or tutoring experience with students. All 12 nursing students completed the narrative survey and focus group interview. The nursing students were between the ages of 21 and 25 years, and three of the 12 were male. Their simulation experience ranged from none to 4 times, and their simulation experience with senior tutors was 0 to 1 time; they had no prior tutoring experience in simulations with nurse tutors (Table 1).

3. Application of High-Risk Newborn Care Simulation with Tutoring

This simulation focused on nursing care for newborns with respiratory distress syndrome, including respiratory assessments using monitors, invasive airway management, oxygen supply, endotracheal and oropharyngeal suctioning, and reporting to a physician. The simulation comprised six stages. The first stage (30 minutes) included an orientation on simulations with tutoring. The second stage (1 hour) consisted of a verbal test to assess pre-learning. The third stage (30 minutes) included a pre-briefing on the simulation. The fourth stage (2 hours) included a nurse tutor overseeing the tutees in teams of three and facilitating their nursing skills development. Nurse tutors supported the tutees' learning in their assigned teams, and all tutors performed the same role. The fifth stage (20 minutes) included the teams carrying out the simulation, with one researcher who was not in charge of pediatric practice serving as an evaluator and nurse tutors acting as observers for the debriefing. The sixth stage (40 minutes) included the evaluator, nurse tutors, and student tutees gathering for a debriefing. Before the simulation began, another researcher conducted pre-education for the nurse tutors. Pre-education was divided into two stages. In the initial stage, the researcher gave the tutors simulation learning materials, and they studied independently. The tutors analyzed the simulation scenario in the second stage (30 minutes) and acquired teaching skills. If necessary, the researcher assisted the tutors and the tutees at the same location while the tutors were assisting student tutees.

Table 1. General characteristics of tutors and tutees (N=16)

Participant	Gender	Age (yr)	No. of simulation participations	No. of times participating as a tutee in simulations where a senior was the tutor	Clinical/NICU career (mo)	Preceptor career (no. of times)	Position
Tutee 1	Female	22	3	1			
Tutee 2	Female	21	4	1			
Tutee 3	Female	22	4	1			
Tutee 4	Female	22	2	1			
Tutee 5	Female	25	3	None			
Tutee 6	Male	23	1	None			
Tutee 7	Male	24	3	1			
Tutee 8	Female	23	3	1			
Tutee 9	Female	21	1	None			
Tutee 10	Female	21	2	1			
Tutee 11	Female	21	1	1			
Tutee 12	Male	25	2	1			
Tutor 1	Female	49	<5		324/324	≤10	Charge nurse
Tutor 2	Female	49	<5		312/288	≤10	Head nurse
Tutor 3	Female	30	<5		96/96	4	Staff nurse
Tutor 4	Female	28	<5		69/69	1	Staff nurse

NICU, neonatal intensive care unit.

4. Data Collection

On March 18, 2023, narrative surveys and focus group interviews were conducted with four nurses and 12 senior nursing students following a 1-day high-risk newborn care simulation program, which was an optional extracurricular activity, not part of the mandatory curriculum.

In the narrative survey, participants were invited to describe their experiences during tutoring for high-risk newborn care simulations, as well as any positive or negative aspects and any extra comments they might have. The researcher did not intrude while the participants filled out the narrative survey. In the focus group interview, one group of nurses and three groups of senior nursing students, each with four participants, were interviewed once for 60 to 90 minutes by an independent researcher who had not participated in the simulation program. The interviews were held in a seminar room at the institution affiliated with the researchers and students, ensuring a quiet and comfortable environment. A semi-structured interview guide was employed for data collection, and open-ended questions were posed. The main question was, "Please tell us about your tutoring experiences during high-risk newborn care simulations." For nurse tutors, specific questions such as "How did your experiences as a tutor during the tutoring sessions help you?" and "What challenges did you face as a tutor?" were asked. For student tutees, questions included, "How did your experiences as a tutee during the tutoring sessions help you?" and "What challenges did you face as a tutee?" were posed. Additionally, all participants, both tutors and tutees, were asked, "Please share if you have comments about the tutoring." These specific questions were designed to elicit more detailed information and clarify participants' responses.

For ethical consideration, when recruiting participants, the researcher explained the study's aims, methods, and protocols to ensure participants fully understood the purpose of the research. It was emphasized that participation was entirely voluntary and that anyone could withdraw from the study at any time without consequences. Students were assured that their academic performance would not be affected by their decision to participate. Furthermore, all participants provided written informed consent prior to their involvement.

The researcher ensured that participant data were coded, saved on the chief researcher's computer, and secured with password protection to maintain confidentiality and anonymity. Additionally, participants were informed that all data collected during the study would be destroyed after its completion to protect their privacy. A modest gift was provided to all participants as a token of appreciation for their time and effort.

All data were audio-recorded and transcribed verbatim. Nonverbal responses observed during the interviews, including facial expressions, mannerisms, and vocal fluctuations, were documented in field notes and analyzed.

5. Data Analysis

In accordance with the inductive methodology of qualitative content analysis [20], data collection and analysis were conducted concurrently. The preparation phase involved researchers studying the data as a whole by reading the transcripts several times. Sentences that described experiences during tutoring for high-risk newborn care simulations were chosen as the unit of analysis, in consideration of the fact that the unit should not be too broad to take the context into account but be large enough to evaluate the entire phenomenon [21]. The organizing phase utilized open coding, during which significant sentences were selected after comprehending participants' experiences by reading each unit of analysis several times. Important information was noted on the coding sheets as general and abstract statements, and related information was gathered into subcategories that were at a higher abstract level. The subcategories were grouped by similarity to form categories, and each category was then described using terms that best described them. In the reporting phase, the derived categories were presented.

6. Rigor

The researchers have extensive experience in qualitative research and have published numerous studies in this field. Since the beginning of the study, they provided simulation training and diligently reviewed the literature on qualitative research to thoroughly investigate and explain participants' experiences. Strong support for credibility, transferability, dependability, and confirmability, which were the evaluation criteria recommended by Guba and Lincoln [22], was rigorously applied to ensure the rigor of the study outcomes. To ensure credibility, open-ended questions were used to allow participants to convey their experiences in their native language. Additionally, one of the researchers who interviewed the focus groups cross-checked the transcripts to ensure accuracy and minimize any data omission or distortion. To increase transferability, purposeful sampling was employed to choose participants, and data collection was maintained until theoretical saturation was achieved [23]. Two study participants verified that the findings from the data analysis accurately reflected their experiences. For dependability, the study was carried out strictly in accordance with the qualitative content analysis approach [20], and the research process and results were discussed and evaluated by researchers. To ensure confirmability, the researcher sought to explore tutoring experiences objectively, avoiding subjective judgments or pre-existing preconceptions while conducting interviews and evaluating the data.

RESULTS

1. Tutors' Experiences

Analyzing the experiences of nurses who participated as tutors in the high-risk neonatal nursing simulation yielded six themes and three theme clusters (Table 2).

1) Efforts to foster a sense of presence

(1) Describing how nursing is currently practiced in the clinical field

The tutors said that they participated because they thought their knowledge and experience, which arise from their current work in the clinical field, could improve the quality of the simulation. They had set the simulated situation to be as similar as possible to a clinical setting, and they tried to provide a situation rich in realism by adding their own clinical experiences to what the tutees learned through the simulation.

> "There are many differences between what students learn in school and what nurses actually do in clinical settings, so I was able to talk about that." (Tutor 1)

Table 2. Categories and subcategories from tutor interview responses

Category	Subcategory
Efforts to foster a sense of presence	• Describing how nursing is currently practiced in the clinical field • Providing diverse perspectives
Efforts to promote positive awareness of the NICU	• Explaining the need for the NICU • Conveying rewarding experiences as a NICU nurse
Establishing one's role as an educator	• Perception of students has changed positively • Opportunity to examine one's role as an educator

NICU, neonatal intensive care unit.

"Medical devices were operated and items were set up as if they were real, so that students could feel the simulated situation as though it were a real clinical situation." (Tutor 2)

(2) Providing diverse perspectives

The tutors said that whenever there was a slight difference between what new nurses had learned and a real situation, the new nurses were too nervous to solve problems, as though they did not know anything. The tutors tried to broaden the perspectives of the tutees, who would become new nurses soon, by informing them that even if the situation seemed the same, the solution could be different depending on the patient.

"New nurses get nervous and flustered when things don't go as expected, so I thought it was necessary to expand their perspective on problems while they were students." (Tutor 1)

"I think the students will be less embarrassed later in a clinical context if they know that even if the disease is the same, the solution may be slightly different for each patient. So, I talked to the students about situations that seemed similar but had to be addressed in completely different ways." (Tutor 2)

2) Efforts to promote positive awareness of the NICU

(1) Explaining the need for the NICU

The tutors were concerned about securing a stable number of nurses in the NICU in the future, since most students wanted to work in wards serving adult patients and few students wanted to work in the NICU. The tutors said that they confirmed to new nurses that the NICU was not only excluded from desired departments but was also considered an avoided department. Therefore, the tutors said that they participated in this simulation to help students, as NICU nurses, become interested in and have a positive perception of neonatal nursing.

"I think most students only hope to work in wards with adult patients. And it seems that relatively many students have too much resistance to the NICU. Not long ago, a new nurse who was assigned to the NICU quit before her first day of work because it was a NICU. Through this time, I wanted to let students know how much newborn care is needed." (Tutor 3)

(2) Conveying rewarding experiences as a NICU nurse

The tutors said that the NICU is a place where, as nurses, they can provide truly holistic nursing care to patients, and that they can immediately see and feel the improvement of the patient due to their care. The tutors hoped that these aspects would be conveyed to the tutees through the high-risk newborn care simulation.

"Unlike for adults, I can take care of everything for newborn patients as a nurse, and it is very rewarding to watch them improve right next to me." (Tutor 4)

3) Establishing one's role as an educator

(1) Perception of students has changed positively

The tutors said they were disappointed by the tutees' approach of trying to solve clinical-practice tasks only with patient information obtained through electronic medical records (EMRs) and of practicing without motivation. The nurses participating in this simulation as tutors overcame their existing prejudice against students after seeing that the students who participated as tutees asked questions actively and were eager to learn.

"I was really surprised to see students participating in clinical practice only looking at the EMR to solve their assignments, but today they were actively participating in the simulation." (Tutor 1)

"COVID-19 (coronavirus disease 2019) has limited what students who have been practicing in the clinical field can do, but these days, students are sitting in empty chairs and dozing off after coming to the clinical field and doing all the tasks they have to do that day on the computer. It's usually seven to eight out of ten students. Most students are not interested in children at all. But when I met the students in the simulation, they weren't normally like that. I was surprised that all the students actively asked questions and practiced hard." (Tutor 3)

(2) Opportunity to examine one's role as an educator

The tutors said that they did not actively teach tutees in the clinical field because the tutees had no interest or enthusiasm for clinical practice. Because the tutees participated actively in the simulation, the tutors thought that the tutees' lack of motivation in clinical practice may be their problem, not the tutees' problem. The tutors thought that in the future they should be more active in teaching tutees undergoing clinical

training. In addition, the tutors said that as clinical practice instructors, they began to worry about how to guide the tutees when they came to the clinical field so that they could have an active attitude, as they had had in the simulation.

"In clinical practice, most students have no focus or motivation. However, when I came here today and looked at the students, I thought that their lack of motivation might be our problem, not their problem, and I began to reflect on myself." (Tutor 2)

"The students really enjoyed trying things out on their own. A new concern arose for me as to whether I should provide standards for the extent to which students can practice nursing directly or indirectly during clinical practice." (Tutor 3)

2. Tutees' experiences

As a result of analyzing the experiences of students who participated as tutees in the high-risk newborn nursing simulation, six themes and three theme clusters were identified (Table 3).

1) Growth through a realistic virtual simulation

(1) Expanding one's perspective on the situation

Most tutees said that they were able to learn about actual clinical situations and nursing care through tutors in a virtual simulation situation. In this simulation, the tutees interpreted and learned the scenario not piecemeal, but from a holistic perspective.

"Nurses with diverse experiences in clinical fields came and helped us learn about our simulation situations from various perspectives." (Tutee 2)

"Through the tutors, it was great to be able to compare the differences between what I learn at school and actual nursing practice in clinical settings." (Tutee 9)

(2) Forming identity through the rewards of being a nurse

Most of the tutees said that they had expected only to learn about nursing skills from the tutor, but they also said that they were able to learn the mindset of treating patients as a nurse through the tutor. The tutees learned from their tutors about the aspects that must be considered first in order to provide nursing care that puts the patient first, rather than nursing that solves problems the fastest. Through this simulation, tutees had the opportunity to think about what kind of nurse they should become in the future.

"I remember the tutor saying that observing the patient's condition should be a higher priority than checking the monitor." (Tutee 3)

"As a nurse, I was able to learn and feel how to treat patients through the tutors." (Tutee 5)

2) Improved learning effects

(1) Learning clearly

Most tutees said that they were able to learn stably while solving problems immediately, thanks to the tutor who was with them during practice time. The tutees finished the practice with confidence that they were doing well because the tutor corrected even the parts they did not think they were doing wrong.

"When we practiced by ourselves, we weren't sure if we were doing it right or not. This time, whenever I had a question, the tutor was right next to me to teach me, so I was able to study clearly without getting confused." (Tutee 6)

"While I was practicing, the tutor was right next to me and gave me specific instructions on how to improve what I was doing. It was great because the tutor saw what I was doing and helped me." (Tutee 10)

(2) Motivation to learn

The tutees felt that the tutors in clinical settings did not

Table 3. Categories and subcategories from tutee interview responses

Category	Subcategory
Growth through a realistic virtual simulation	• Expanding one's perspective on the situation
	• Forming identity through the rewards of being a nurse
Improved learning effects	• Learning clearly
	• Motivation to learn
Hope for continued development	• Desire for a learning environment similar to the clinical field
	• Interest in becoming a tutor

teach them properly and neglected them because of their nursing duties. The tutees said that because the tutor taught them actively in the simulation, they were able to participate actively in learning, and through this, they developed an interest in child nursing. The tutees recognized their shortcomings based on their interactions with the tutor and vowed to study harder in the future.

"During my child nursing practice, I rarely directly nursed patients. I was interested in child nursing, but I didn't really feel like I had to study hard. However, through this time, I became interested in child nursing and realized the need to study hard." (Tutee 10)
"I thought that I could do most nursing skills well now, but after watching the tutor do it, I realized that I still lack many things. Now I think I need to study harder from now on." (Tutee 9)

3) Hope for continued development

(1) Desire for a learning environment similar to the clinical field

The tutees said that when listening to the tutor explain the clinical field, understanding accurately was difficult due to the differences between the simulation environment and the clinical environment. In addition, the tutees said that their understanding of medical devices and medical consumption used in clinical practice was limited when conveyed only through the tutor's explanation. The tutees expected that they would be able to learn more from tutors if the simulation environment resembled the clinical environment more closely and if medical equipment and medical consumables used in clinical practice were provided at the school.

"I did not fully understand the medical devices and supplies currently used in the clinical field because I only heard explanations from the tutor. If there are such medical devices or supplies at school, I think it will be easier to understand them because I can see and use them and learn from a tutor." (Tutee 7)
"The tutor explained the differences between simulation situations and clinical situations, but I was confused because I couldn't picture the details in my head. When a tutor teaches us in a simulation, I think we will be able to learn more accurately if the environment is as similar to a clinical setting as possible." (Tutee 2)

(2) Interest in becoming a tutor

All tutees wanted to participate in the simulation to help tutees if they became nurses like the tutors. The tutees said that if they became nurses and participated in the simulation as a tutor, they would be able to teach in a way that the tutees could understand easily. They said that if they became nurses and tutors, they would like to help students by teaching them what they need to learn before becoming nurses.

"Since I received help, I want to help students later when I become a nurse. At that time, I think I will be a nurse who understands students and be able to teach in a way easy for students to understand." (Tutee 2)
"When I become a tutor, I want to teach my students about the things they must learn as a nursing student." (Tutee 11)

DISCUSSION

This study explored the tutoring experiences of high-risk newborn care simulation among nurses and nursing students, identifying the characteristics of tutoring provided by nurse tutors and experienced by student tutees during simulation training.

In the first category identified for nurse tutors, "efforts to foster a sense of presence," the nurses sought to provide clinical knowledge and experiences that were as realistic as possible. Additionally, they emphasized that patients in similar situations might require different interventions, encouraging students to broaden their perspectives. This aligns with the subcategory identified for student tutees, "expanding one's perspective on the situation." The nursing students in this study were able to understand multiple perspectives, moving beyond simply perceiving the simulation scenario, when the nurses offered realistic clinical knowledge and field-based experiences. A thematic synthesis on the mentorship experiences of students and nurses demonstrated that nursing students gained confidence in their practice when guided by a nurse and reported positive learning experiences when nurses exhibited exemplary qualities [24].

In the second category identified for nurse tutors, "efforts to promote positive awareness of the NICU," the nurses participated in the tutoring of high-risk newborn care simulations to spark nursing students' interest in neonatal care and conveyed to the students the rewarding experience of being a NICU nurse. This aligns with the subcategory identified for student tutees, "forming identity through the rewards of be-

ing a nurse." The nursing students in this study initially expected to focus solely on learning skilled nursing techniques from nurses, but they also gained a fundamental understanding of how to care for newborns. Furthermore, the nursing students envisioned the type of nurse they aspired to become. The nurses served as essential role models for patient-centered care, significantly enhancing the nursing students' professional identities [25].

In the third category identified for nurse tutors, "establishing one's role as an educator," the nurses developed more favorable perceptions of nursing students and gained opportunities to reflect on their roles as clinical educators. Initially, the nurses felt disappointed by a perceived lack of motivation among nursing students in clinical practicums and held negative stereotypes about the students. However, observing the students' active participation in the simulation enabled the nurses to overcome these preconceptions. An earlier study highlighted the mutual lack of understanding between nurses and nursing students [4]. Nursing students reported being reluctant to approach busy nurses, while clinical nurses viewed the students as too passive to initiate learning interactions. When nurses are tasked with unmotivated or challenging students, they may feel dissatisfied and disengaged [26]. Nurses cannot provide effective teaching or constructive feedback if they maintain negative perceptions of students or fail to understand their needs. During neonatal practicums, some nurses were described as non-responsive, only addressing students' questions because they were uncertain about what or how to teach [4]. However, feedback from nurses, plays a critical role in the learning and development of nursing students [24]. The simulation-based tutoring experiences provided a valuable opportunity for nurses to recognize students' unique characteristics and potential. Nurses' positive attitudes toward students can empower students to achieve their practice goals and improve their learning outcomes.

The nurses participating in this study realized that the students were not inherently passive; instead, they were placed in a passive role by the structure of the clinical practicum. The nurses recognized that the challenges in practicum guidance were not the students' fault, but rather their own responsibility as educators. The simulation-based tutoring experience provided an opportunity for self-examination and reflection by the nurses. The tutors' attitudes toward tutees had a greater impact on the tutees' satisfaction with the educational program and learning outcomes than their knowledge and skills [15]. As clinical nurse instructors, nurses should identify students' learning needs, facilitate their learning processes, motivate them, and provide constructive feedback [27]. Introspection and reflection enable nurses to mature and develop as effective clinical instructors.

In the first category identified for nursing student tutees, "growth through a realistic virtual simulation," the nursing students experienced highly realistic simulations guided by nurse tutors actively working in the clinical field and began to form their professional identity as future nurses. Nursing students need the practical skills imparted by nurses to build confidence and competence [24]. As clinical experts, nurses' participation in practicums substantially facilitates students' learning. Collaboration between academic education and clinical practicums enhances nursing students' ability to develop into competent nurses. Additionally, the nursing students in this study gained insights into the nurses' philosophy and beliefs about neonatal care through natural interactions. Nurses serve as role models for nursing students, teaching them not only technical skills but also attitudes and professional values [24]. Therefore, nurses should be provided with systematic support to improve their teaching abilities during practicums.

In the second category identified for nursing student tutees, "improved learning effects," the nursing students were able to immediately seek guidance from the nurses to address challenges, which increased their satisfaction with learning. Additionally, the nursing students were motivated to study harder by the active support provided by the nurse tutors, leading to increased interest in neonatal care. In a study of peer tutoring in a neonatal nursing simulation [17], the tutees improved their skills when they received targeted assistance from their tutors and accurately identified problems. Similarly, the nursing students in this study expressed satisfaction with the clinical nurses' ability to teach nursing skills precisely and clearly. The students were further motivated to learn because the clinical nurses prioritized patient care and guidance despite the demands of a busy clinical setting, and they were actively present in the simulation alongside the students. This aligns with the subcategory identified for nurse tutors, "perception of students has changed positively." The students' active learning attitudes positively influenced the nurses' perceptions of the students, and the reverse was also true. A strong tutor-tutee relationship is essential for effective learning and development [24]. Therefore, nurses and students must understand one another and

establish strong relationships in clinical practicums.

In the third category identified for nursing student tutees, "hope for continued development," the nursing students expressed a desire to participate in more realistic simulations with nurse tutors. In an antecedent study [17], the tutees hoped to continue peer tutoring and sought standardized instruction from their tutors. Similarly, the nursing students in this study aspired to become nurse tutors to support and encourage future students. The nursing students who were tutored by nurses valued the assistance they received and expressed a desire to give back by mentoring younger students after they became nurses. This finding aligns with a prior study [17], which reported that tutees wished to take on the role of tutors. Tutors also benefit from the tutoring process because it improves their teaching abilities and fosters their motivation to study [16]. Therefore, nursing educators should provide students with adequate support and resources to develop their skills and understand the role of tutors.

The use of clinical nurses as tutors in simulations offers a practical approach to improving nursing education. This study showed that nursing students improved their technical skills and gained deeper understanding of neonatal care values, strengthening their professional identity [24,25]. To effectively implement this approach, clinical nurses need systematic support to enhance teaching skills and build strong tutor-student relationships. Collaboration between academic and clinical settings can further boost students' competence and confidence.

This study has some limitations. First, the participants engaged in tutoring for a high-risk newborn care simulation only once, and this process involved both nurses and nursing students. Nurses and nursing students who participate together in multiple tutoring simulations may have different experiences, leading to varied insights. Future studies should explore the experiences of participants involved in repeated tutoring simulations. Second, the nurse tutors in this study had differences in clinical experience, NICU experience, preceptorship experience, and position. Future studies should examine how these differences in the tutors' experience and position influence the learning outcomes of the tutees.

CONCLUSION

This study explored the tutoring experiences of a high-risk newborn care simulation among nurses and nursing students. The tutoring experiences of nurses consisted of three categories—"efforts to foster a sense of presence," "efforts to promote positive awareness of the NICU," and "establishing one's role as an educator." The nurses attempted to extend the students' perspectives, explained to them the positive experience of being a NICU nurse, and evaluated themselves as clinical educators. The tutoring experiences of the nursing students consisted of three categories—"growth through a realistic virtual simulation," "improved learning effects," and "hope for continued development." The nursing students experienced a realistic simulation with the nurse tutors, built their professional identity as future nurses, and wanted to become nurse tutors in the future to inspire students. The nurses' evaluations of the nursing students improved after the tutoring event, and the nursing students were motivated to learn neonatal care. Tutoring methodologies for nurses and nursing students will be used to aid nursing students' learning in neonatal nursing practice.

ARTICLE INFORMATION

Authors' contribution

Conceptualization: HYK, HA; Data collection: BRL, HA; Formal analysis; HYK, HA; Interpretation of data: HA; Writing–original draft: all authors; Writing–review and editing: all authors; Final approval of published version: all authors.

Conflict of interest

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

Funding

This research was supported by the Basic Science Research Program through the National Research Foundation of Korea (NRF) funded by the Ministry of Education (NRF-2020R1I1 A3052780).

Data availability

Please contact the corresponding author for data availability.

Acknowledgements

None.

ORCID and ResearcherID

Hyun Young Koo https://orcid.org/0000-0001-5848-2143
https://researcherid.com/rid/AHA-3307-2022
Bo Ryeong Lee https://orcid.org/0000-0003-4014-9056
https://researcherid.com/rid/KQV-0491-2024
Hyeran An https://orcid.org/0000-0002-8285-8291
https://researcherid.com/rid/KGK-9558-2024

REFERENCES

1. Korean Accreditation Board of Nursing Education. The manual of nursing education accreditation for university. Korean Accreditation Board of Nursing Education; 2021.
2. Korean Society of Nursing Science. Learning objectives of subjects for nursing students. Korean Society of Nursing Science; 2017.
3. Collier AD. Characteristics of an effective nursing clinical instructor: the state of the science. J Clin Nurs. 2018;27(1-2):363-374. https://doi.org/10.1111/jocn.13931
4. Koo HY, Lee BR. Educational needs for practicing neonatal intensive care among Korean nursing students. Child Health Nurs Res. 2021;27(4):339-353. https://doi.org/10.4094/chnr.2021.27.4.339
5. Berga KA, Vadnais E, Nelson J, Johnston S, Buro K, Hu R, et al. Blended learning versus face-to-face learning in an undergraduate nursing health assessment course: a quasi-experimental study. Nurse Educ Today. 2021;96:104622. https://doi.org/10.1016/j.nedt.2020.104622
6. Park SJ, Ji ES. Clinical competence according to experiences on the neonatal nursing care in nursing students and educational needs of the nursing simulation. J Learn Cent Curric Instr [Internet]. 2016 [cited 2024 Dec 20];16(7):97-112. Available from: https://www.kci.go.kr/kciportal/ci/sereArticleSearch/ciSereArtiView.kci?sereArticleSearchBean.artiId=ART002131861
7. Kim SG. Effects of a simulation-based high-risk neonatal care education on learning satisfaction, class participation, learning motivation and clinical competency in nursing students. J Korea Acad Ind Coop Soc. 2015;16(10):6807-6815. https://doi:10.5762/KAIS.2015.16.10.6807
8. Ji EA. Educational needs in the development of simulation-based program on extremely low birth weight infants nursing care for nurses in the neonatal care unit. J Korea Soc Simul Nurs. 2020;8(1):17-29. https://doi:10.17333/JKSSN.2020.8.1.17
9. Parsh B. Characteristics of effective simulated clinical experience instructors: interviews with undergraduate nursing students. J Nurs Educ. 2010;49(10):569-572. https://doi.org/10.3928/01484834-20100730-04
10. Davidson KM, Rourke L. Surveying the orientation learning needs of clinical nursing instructors. Int J Nurs Educ Scholarsh. 2012;9:Article 3. https://doi.org/10.1515/1548-923X.2314
11. Koo HY, Lee BR. Development of a protocol for guidance in the pediatric nursing practicum in South Korea: a methodology study. Child Health Nurs Res. 2022;28(1):51-61. https://doi.org/10.4094/chnr.2022.28.1.51
12. Li T, Petrini MA, Stone TE. Baccalaureate nursing students' perspectives of peer tutoring in simulation laboratory: a Q methodology study. Nurse Educ Today. 2018;61:235-241. https://doi.org/10.1016/j.nedt.2017.12.001
13. Carey MC, Chick A, Kent B, Latour JM. An exploration of peer-assisted learning in undergraduate nursing students in paediatric clinical settings: an ethnographic study. Nurse Educ Today. 2018;65:212-217. https://doi.org/10.1016/j.nedt.2018.03.014
14. Joung J, Kang KI, Yoon H, Lee J, Lim H, Cho D, et al. Peer mentoring experiences of nursing students based on the caring perspective: a qualitative study. Nurse Educ Today. 2020;94:104586. https://doi.org/10.1016/j.nedt.2020.104586
15. Kim YK, Song HD. The effects of tutees' perceived a tutor competency level on learning outcome in peer tutoring program. J Learn Cent Curric Instr [Internet]. 2015 [cited 2024 Dec 20];15(5):229-250. Available from: https://www.kci.go.kr/kciportal/ci/sereArticleSearch/ciSereArtiView.kci?sereArticleSearchBean.artiId=ART001996119
16. Jeong H. A qualitative study on the purpose, difficulties, achievements, and improvements of peer tutoring at university: from the perspective of tutors. Korean J Educ Methodol Stud. 2019;31(4):737-766. https://doi.org/10.17927/tkjems.2019.31.4.737
17. An H, Koo HY. Peer tutoring experiences of neonatal nursing simulations among Korean nursing students: a qualitative study. Child Health Nurs Res. 2022;28(4):280-290. https://doi.org/10.4094/chnr.2022.28.4.280
18. Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. Int J Qual Health Care. 2007;19(6):349-357. https://doi.org/10.1093/intqhc/mzm042
19. Grove SK, Burns N, Gray JR. Practice of nursing research. Park J, Jo J, Cha D, Im Y, translator. Soomoonsa; 2017.
20. Elo S, Kyngäs H. The qualitative content analysis process. J Adv Nurs. 2008;62(1):107-115. https://doi.org/10.1111/j.1365-2648.2007.04569.x
21. Graneheim UH, Lundman B. Qualitative content analysis in nursing research: concepts, procedures and measures to achieve trustworthiness. Nurse Educ Today. 2004;24(2):105-112. https://doi.org/10.1016/j.nedt.2003.10.001

22. Guba EG, Lincoln YS. Effective evaluation: improving the usefulness of evaluation results through responsive and naturalistic approaches. 4th ed. Jossey-Bass; 1985.
23. Patton MQ. Qualitative research and evaluation methods: integrating theory and practice. 4th ed. Sage Publications; 2014.
24. Lee NP, Chiang VC. The mentorship experience of students and nurses in pre-registration nursing education: a thematic synthesis of qualitative studies. Nurs Health Sci. 2021;23(1):69-86. https://doi.org/10.1111/nhs.12794
25. Felstead IS, Springett K. An exploration of role model influence on adult nursing students' professional development: a phenomenological research study. Nurse Educ Today. 2016;37:66-70. https://doi.org/10.1016/j.nedt.2015.11.014
26. O'Brien A, Giles M, Dempsey S, Lynne S, McGregor ME, Kable A, et al. Evaluating the preceptor role for pre-registration nursing and midwifery student clinical education. Nurse Educ Today. 2014;34(1):19-24. https://doi.org/10.1016/j.nedt.2013.03.015
27. Pramila-Savukoski S, Juntunen J, Tuomikoski AM, Kääriäinen M, Tomietto M, Kaučič BM, et al. Mentors' self-assessed competence in mentoring nursing students in clinical practice: a systematic review of quantitative studies. J Clin Nurs. 2020;29(5-6):684-705. https://doi.org/10.1111/jocn.15127

ORIGINAL ARTICLE

Child Health Nurs Res Vol.31, No.1, January 2025;31(1):52-62
https://doi.org/10.4094/chnr.2024.043

pISSN 2287-9110
eISSN 2287-9129

CHNR

Development for a concept mapping multicultural education program for Mother and Baby Unit nurses: a quasi-experimental study in South Korea

Dahae Kang[1], Soonyoung Shon[2]

[1]Doctoral Student, College of Nursing, Keimyung University, Daegu, Korea
[2]Assistant Professor, College of Nursing, Keimyung University, Daegu, Korea

Corresponding author
Soonyoung Shon
College of Nursing, Keimyung University, 1095 Dalgubeol-daero, Dalseo-gu, Daegu 42601, Korea
Tel: +82-53-258-7672
Fax: +82-53-258-7616
E-mail: sy.shon@kmu.ac.kr

Received: October 30, 2024
Revised: December 9, 2024
Accepted: December 23, 2024

Purpose: This study aimed to develop a multicultural education program for Mother and Baby Unit (MBU) nurses by using concept mapping, and to evaluate its effectiveness in enhancing the nurses' cultural competence and multicultural acceptance.
Methods: This study utilized the ADDIE model (which comprises the Analysis, Design, Development, Implementation, and Evaluation stages) to design and implement a concept mapping-based multicultural education program for MBU nurses in a quasi-experimental pre- and post-test design. This program was structured into five sessions, each incorporating the use of concept maps to facilitate self-reflection and critical thinking. All sessions were conducted using the online Zoom platform, allowing participants to engage without restrictions on time or location. A total of 53 nurses participated, with 26 assigned to the experimental group and 27 to the control group. The program's effectiveness was assessed through changes in cultural competence and multicultural acceptance, measured using validated scales.
Results: The results demonstrated significant improvements in both cultural competence and multicultural acceptance in the experimental group compared to the control group, supporting the hypotheses that such educational interventions can enhance nurses' ability to provide culturally appropriate care.
Conclusion: Concept mapping fosters self-reflection and critical thinking, effectively increasing MBU nurses' cultural competence and multicultural acceptance. This study offers a practical framework for integrating multicultural education into nursing training, ultimately improving care for foreign mothers and reducing the challenges faced by MBU nurses.

Keywords: Concept mapping; Cultural competency; Migrants; Multicultural education; Nursing education research

INTRODUCTION

Korea is rapidly transitioning into a multicultural society, with a significant proportion being comprised of marriage migrant women. A total of 101,671 marriage migrant women were granted visas through marriage to Korean nationals, and marriage migrant women constitute 21% of all female migrants in South Korea [1]. Nurses operating in the Mother and Baby Units (MBUs) of domestic hospitals play a crucial role in providing care to mothers from multicultural backgrounds throughout pregnancy and labor [2]. By delivering culturally sensitive care, MBU nurses can enhance the quality

This is an Open Access article distributed under the terms of the Creative Commons Attribution NonCommercial License (https://creativecommons.org/licenses/by-nc-nd/4.0/) which permits unrestricted noncommercial use, distribution, and re-production in any medium, provided the original work is properly cited.
© 2025 Korean Academy of Child Health Nursing

of healthcare services and increase patient satisfaction which can lead to positive health outcomes for foreign mothers [3]. Therefore, MBU nurses must possess cultural competence in their nursing practice to provide care that respects and aligns with the cultural nuances of migrant mothers' lives [4].

Previous studies reported that MBU nurses experience various challenges, including burden avoidance, prejudice, sympathy, and feelings of sorrow, when providing care to foreign mothers in the absence of adequate cultural competence [5]. Furthermore, the nurses have reported feelings of self-doubt, as healthcare providers, when they are unable to offer sufficient explanations and appropriate care to migrant mothers [6]. Despite their obligation to accept foreign mothers without prejudice and facilitate their integration into Korean society, MBU nurses may, at times, harbor preconceived notions of different cultures, languages, or appearances, which may lead to a lack of multicultural acceptance [7]. To address these challenges, it is essential to provide multicultural education for MBU nurses, fostering positive cultural perceptions about migrant mothers [8]. The multicultural education will empower MBU nurses to recognize the diversity of cultures, enhancing their multicultural acceptance and cultural competence in practice. This, in turn, may enable them to provide culturally sensitive nursing care to foreign mothers.

Self-reflection motivates job commitment and enhances nursing competence. However, self-reflection cannot occur without intrinsic motivation or willingness, and nurses who are not trained in self-reflection are unable to provide advanced nursing care [9]. Concept mapping is an educational method that facilitates nurses' self-reflection and critical thinking while enabling self-directed learning [10]. Additionally, concept mapping, as a diagrammatic approach, offers advantages over narrative reflection methods. It allows the summarized content to be visually organized and listed sequentially, enabling easier understanding of the overall situation. Moreover, it can be utilized without limitations of time and place [11].

This study aimed to develop and evaluate the effectiveness of concept mapping when applied through a multicultural education program for MBU nurses. We aimed to enhance nursing competence, build cultural nursing capabilities, foster multicultural acceptance, and promote self-reflection, ultimately facilitating the delivery of appropriate nursing care for migrant mothers.

METHODS

Ethical statements: This study was approved by the Institutional Review Board (IRB) of Keimyung University (IRB no., 40525-202106-HR-030-01). Informed consent was obtained from all participants.

1. Study Design

This study followed a quasi-experimental pre-posttest study design to develop a concept mapping multicultural education program for MBU nurses and evaluate its effectiveness in enhancing the nurses' cultural competence and multicultural acceptance.

2. Setting and Samples

Nurses who worked for more than 3 months in the MBU (i.e., the high-risk maternal-fetal intensive care, labor and delivery, obstetric ward, neonatal, neonatal intensive care, pediatric ward, and pediatric intensive care units) Dongsan Medical Center in Daegu Metropolitan City were selected as participants. The number of participants was calculated using the G-power ver. 3.1 program (Heinrich-Heine-Universität Düsseldorf). For calculating the sample size, the effect size was measured based on the results of two previous studies that confirmed the effects of cultural competence in nursing programs for MBU nurses [12]. The calculation showed that 52 participants were required, with an effect size of 0.80, significance level of .05, and power of 0.80. Therefore, we estimated that 58 participants were required, considering a dropout rate of 10%.

A total of 53 participants were recruited (26 participants in the experimental group and 27 participants in the control group), whose data were used for analysis. There were no dropouts during the recruitment period. Among the MBU nurses who agreed to participate in the study, those who wanted to participate in the concept mapping multicultural education program were randomly assigned to the experimental group, whereas those who did not were randomly assigned to the control group for convenience sampling. Those in the experimental group were instructed not to disclose the program's contents while participating in the study to prevent the diffusion of the treatment.

3. Measurements and Instruments

1) Cultural competence in nursing

Cultural competence in nursing was measured using the Cultural Competence Scale for Registered Nurses (CCS-RN), developed by Kim et al. [13]. The scale consists of 35 questions and seven subfactors. The participants were asked to answer each question using a 5-point Likert scale. The total scores range from 35 to 175 points, with higher scores indicating higher levels of cultural competence in nursing. The reliability of the original instrument showed the Cronbach's α score of α=0.94, whereas the Cronbach's α score for this study was α=0.97.

2) Multicultural acceptance

Multicultural acceptance was measured using the 2018 Korean Multicultural Acceptability Scale, developed by Ahn et al. [14] and modified by Kim et al. [15]. The scale consists of 35 questions and eight subfactors, described across three dimensions. The reverse-coded questions were calculated backward, and the score for multicultural acceptability was calculated as the original score divided by the number of questions. The total score ranges from 1 to 5, with higher scores indicating higher levels of multicultural acceptance. Questions about the area of residence, which were not relevant to the study, and questions that were identical to the general characteristics questions of the study were excluded. The original tool had a Cronbach's α reliability of α=0.92, whereas this study had a Cronbach's α reliability of α=0.95.

4. Development of a Concept Mapping Multicultural Education Program for MBU Nurses

The educational program was developed based on the ADDIE model (which comprises the Analysis, Design, Development, Implementation, and Evaluation stages), which is representative of instructional design models. The ADDIE model is generally used to develop educational programs [16].

1) Analysis

To investigate the educational needs of MBU nurses, two processes were followed: (1) we conducted interviews, using open-ended questions; and (2) we collected and analyzed data published by previous studies. A total of eight nurses were interviewed; the general characteristics of the nurses were as follows: average age, 29.5 years; education—one community college graduate, six university graduates, and one graduate school graduate; and marital status—all single. Three of the nurses worked in neonatal units, two in neonatal intensive care units, one in a pediatric intensive care unit, and two in obstetrics units, with an average of 4 years and 9 months in the MBU. The interviews were conducted one-on-one, for an average duration of 15 minutes, using the following open-ended questions: "On average, how many foreign mothers do you care for/experience in your hospital per year?"; "What is the country of origin of the majority of migrant mothers whom you care for/experience in your hospital?"; "What are the challenges of caring for/experiencing foreign mothers?"; "How did you overcome the difficulties that arose while caring for/experiencing migrant mothers?"; "What questions do you usually have while caring for/experiencing foreign mothers?"; "How did you resolve your questions about migrant mothers?"; and "If you were to participate in multicultural education for MBU nurses, what would be your preferred method of learning?"

Interviews were conducted with eight nurses from a MBU to analyze the characteristics of multicultural mothers they encountered and to assess their educational needs regarding multicultural nursing. The findings revealed that each nurse engaged with at least one multicultural mother per month. These mothers primarily resided in Korea for various reasons, including marriage migration, undocumented status, U.S. military affiliations, or medical tourism, representing nationalities such as Vietnamese, Chinese, Thai, Cambodian, Filipino, American, Japanese, and Russian, with Vietnamese marriage migrants constituting the largest group.

The nurses reported experiencing frustration and regret due to language and cultural differences. Multicultural mothers often exhibited passive and reserved behaviors, stemming from language barriers. To address communication challenges, nurses frequently sought assistance from the hospital's international medical team or utilized translation devices, in addition to employing nonverbal communication strategies such as gestures to better understand the mothers' needs. Confusion occasionally arose from unexpected situations linked to cultural discrepancies, leading to instances where multicultural mothers misinterpreted nurses' explanations, thereby posing potential health risks.

The analysis of educational needs indicated that the available resources for culturally competent nursing were often unverified and inadequate for independent learning. The nurses expressed a need to acquire cultural knowledge and context in

a structured educational environment prior to their interactions with multicultural mothers. Suggested topics for educational content included country-specific practices related to pregnancy, childbirth, and childcare, culturally specific precautions, health beliefs, South Korea's multicultural policies, and tailored nursing interventions for multicultural mothers.

Regarding preferences for multicultural education, nurses noted that conventional lecture-based formats, which they had encountered during their university studies, tended to be less memorable over time. They expressed an interest in special sessions where multicultural mothers could share their experiences and challenges within hospital settings. Flexibility in scheduling and location for educational offerings was deemed essential, along with access to PowerPoint materials for on-demand reference and opportunities to engage with case-based scenarios for indirect cultural nursing experience. Furthermore, the nurses emphasized the importance of education to enhance their cultural competence. They found audiovisual materials beneficial for long-term retention of knowledge, while simulation-based learning was highlighted as an effective approach for understanding clinical applications in real-world contexts.

Moreover, we analyzed domestic and international literature, published in the last decade, on educational content, strategies and methods, period and time, and effects. The search was conducted using the Research Information Service of the Korean Ministry of Education, PubMed, and Google Scholar platforms, with the following keywords: "concept mapping and nursing," "multicultural education and nursing," "multicultural mother," "marriage migrant women," "cultural competence in nursing and nursing," "cultural competence and nursing," "multicultural acceptability and nursing," "concept map and nursing," "immigrant woman," "nursing cultural competency," and "multicultural acceptability." Out of the results, the studies that did not target nursing students or nurses were excluded.

2) Design

At the "Design" stage, learning goals were set based on the data collected during the analysis. Educational contents, strategies, and methods were extracted from previous studies, and deemed appropriate for the learning goals. An evaluation tool was selected to check the effectiveness of the concept mapping multicultural education program for MBU nurses and the program draft was created.

3) Development

At the "Development" stage, the details were selected based on the draft of the educational program. Furthermore, the educational contents were specified and lecture materials were designed to develop training program materials. Examples of concept mapping and simulations were developed. Then the content, methods, educational materials, concept mapping handouts, and simulation scenarios were evaluated by experts, using the content validity index (CVI). The group of experts comprised three nurses with a master's degree or higher who had been working in the MBUs for more than 5 years, three nursing professors, and one nurse teacher. The content validity for each item was calculated using the item-level content validity index (I-CVI), and for all the items using the scale-level content validity index (S-CVI). Consequently, an I-CVI of 0.78 or higher and an S-CVI of 0.9 or higher were considered to be valid [17]. Through revision and refinement, based on the CVI, the final concept mapping multicultural education program for MBU nurses was developed (Table 1).

4) Implementation and evaluation

The recruited participants were asked to complete the CCS-RN and the National Multicultural Acceptability Measurement Instrument, as well as a preliminary questionnaire for general characteristics. The experimental group participated in the concept mapping multicultural education program for MBU nurses for 5 weeks.

In the orientation before the start of the multicultural education program, the method for creating concept maps was explained. Since concept mapping requires focused thinking, nurses were allowed to choose a comfortable time and place to create the maps. Apart from the fifth session, which was conducted as a discussion, the multicultural education program was carried out using concept maps in each session. Cases that aligned with the learning objectives were presented, and after the education, participants were given ample time to think and create concept maps of necessary nursing interventions and assessments based on priorities.

For the "Evaluation" stage, the experimental group was assessed at the end of the program using the Cultural Competence in Nursing Scale and the National Multicultural Acceptability Scale. Meanwhile, the control group, which did not participate in the program, was assessed using the same methods 5 weeks after the pre-program survey.

Table 1. Content of multicultural education program using concept mapping

Session	Contents	Strategy
1	• Checking the stereotypes of multicultural mothers • The reality of multicultural acceptance in Korean society • Cultural differences in pregnancy, delivery and parenting by country • Importance of multicultural nursing • The role of nurses in caring for multicultural mothers	PPT, concept maps, knowledge education
2	• Watching interview and life videos of multicultural mothers • Cultural nursing competence for cultural nursing practice • Multicultural policy and use	PPT, concept maps, video
3	• Communication method for strengthening cultural nursing competency • Simulation learning through the case of a nurse taking care of a multicultural mother	PPT, concept maps, simulation
4	• Performing cultural nursing for multicultural mothers	Concept maps, self-directed learning
5	• Sharing experiences of participating in multicultural nursing education using concept maps	Discussion

5) Data collection and interventions

The was conducted with the approval of the IRB and the institutional authority, utilizing recruitment advertisements posted on the hospital's online bulletin board. Potential participants were provided with an explanation of the study's purpose and were asked to sign a consent form after carefully considering their willingness to participate. It was clearly communicated that participation was voluntary and that they could withdraw their consent at any time.

Given that the participants work in shifts, the researcher shared the training schedule and Zoom access address with the experimental group, so that they could participate once a week, according to their work and personal schedules. Available dates were researched ahead of time to ensure that no more than five participants per day were arranged at sessions. The experimental group consisted of three groups, with two to five participants per group. To prevent the diffusion of the treatment, the experimental group was asked to keep the contents of the training confidential until the end of the second survey. In the orientation, we explained how to complete the concept mapping, which required concentration. We allowed the participants to choose a comfortable time and place to complete it. Apart from the fifth session, the whole multicultural education program was conducted using concept mapping. Cases that met the learning objectives were presented, and the participants were given enough time to think about and create a concept map of the necessary nursing interventions and circumstances, according to priorities. The five sessions took 40–50 minutes each. In the fourth session, a foreign mother was selected from the ward where participants in the experimental group worked. A case study and concept map were made according to the nursing information of the selected foreign mother. If there were no migrant mothers admitted to the ward during the training, the nurses were asked to complete case studies and concept mapping with information from previously admitted foreign mothers. The experimental group was surveyed at the end of the education program, and the control group was surveyed 5 weeks after completing the pre-program survey.

5. Data Analysis

The general characteristics of the experimental and control groups were analyzed using the chi-square test. Cultural competence in nursing, using Fisher's exact test, and the preliminary homogeneity test of multicultural acceptance, using the independent t-test, were utilized. To test the hypothesis of the concept mapping multicultural education program for MBU nurses, the pre- and post-test mean differences of cultural competence in nursing and multicultural acceptability of the experimental and control groups were compared. To this end, independent t-tests were used, and differences in study variables between the experimental and control groups were analyzed using analysis of covariance (ANCOVA), after controlling for pre-scores.

RESULTS

1. Participants' General Characteristics

All participants in the experimental and control groups were female nurses, who had worked at MBUs for at least 3 months. For educational level, university graduates (4 years) were the most common, with 69.2% (n=18) in the experimental group and 85.2% (n=23) in the control group; while master's degree or higher accounted for 23.1% (n=6) in the

experimental group and 7.4% (n=2) in the control group. For the departments, those working in the obstetrics ward accounted for 23.1% (n=6) in the experimental group and 33.3% (n=9) in the control group, and those working in the pediatrics ward were 76.9% (n=20) in the experimental group and 66.7% (n=18) in the control group. For marital status, single participants comprised 65.4% (n=17) of the experimental group and 77.8% (n=21) of the control group, while married participants were 34.6% (n=9) of the experimental group and 22.2% (n=6) of the control group. For the nursing experience of multicultural mothers, 100.0% (n=26) of the experimental group and 85.2% (n=23) of the control group said that they did have it.

The homogeneity of the general characteristics and dependent variables between the experimental and control groups was tested (Tables 2–3). For cultural competence, no statistically significant differences were observed between the two groups in the subfactors of cultural ecology and family (t=1.76, p=.085), empowerment and mediation (t=0.64, p=.529), communication (t=1.92, p=.063), funeral rituals (t=1.38, p=.176), diet (t=0.30, p=.769), spirituality (t=0.45, p=.655), and the total score (t=1.56, p=.127), confirming overall homogeneity. However, the subfactor of equality showed a significant difference, with the control group scoring higher than the experimental group (t=2.16, p=.039), indicating non-homogeneity in this area. For multicultural acceptance, there were no statistically significant differences between the groups in subfactors such as cultural openness for diversity (t=1.22, p=.228), national identity (t=–0.31, p=.762), stereotyping and discrimination (t=0.35, p=.725), unilateral assimilation expectations (t=–0.40, p=.692), rejection-avoidance sentiment (t=0.25, p=.801), willingness to en-

Table 2. General characteristics of the participants and test for homogeneity

Characteristic	Experimental groups (n=26)	Control groups (n=27)	χ^2	p
Gender				
Male	0 (0.0)	0 (0.0)		
Female	26 (100.0)	27 (100.0)		
Age (yr)			4.56	.221[a]
20s	11 (42.3)	18 (66.7)		
30s	11 (42.3)	7 (25.9)		
40–49	2 (7.7)	2 (7.4)		
≥50	2 (7.7)	0 (0.0)		
Religion			1.58	.836[a]
Christianity	3 (11.5)	5 (18.5)		
Catholic	2 (7.7)	2 (7.4)		
Buddhism	0 (0.0)	1 (3.7)		
No religion	21 (80.8)	19 (70.4)		
Etc.	0 (0.0)	0 (0.0)		
Education level			6.87	.290[a]
Diploma	2 (7.7)	2 (7.4)		
Bachelor	18 (69.2)	23 (85.2)		
Master's degree or higher	6 (23.1)	2 (7.4)		
Department			0.69	.407[b]
Obstetrics ward	6 (23.1)	9 (33.3)		
Pediatrics ward	20 (76.9)	18 (66.7)		
Marital status			1.01	.317[b]
Single	17 (65.4)	21 (77.8)		
Married	9 (34.6)	6 (22.2)		
Acquaintance of a foreign nationality (family/relatives)			0.12	1.000[a]
Yes	3 (11.5)	4 (14.8)		
No	23 (88.5)	23 (85.2)		
Multicultural mother nursing experience			4.17	.111[a]
Yes	26 (100.0)	23 (85.2)		
No	0 (0.0)	4 (14.8)		
Experience in multicultural education			0.01	.928[b]
Yes	8 (30.8)	8 (29.6)		
No	18 (69.2)	19 (70.4)		

Values are presented as number (%).
[a]By Fisher's exact test. [b]By χ^2 test.

Table 3. Pre-program test of homogeneity for cultural competence in nursing and multicultural acceptance in experimental and control groups (N=53)

Subfactor	Experimental groups (n=26)	Control groups (n=27)	t	*p*
Cultural competence				
Cultural ecology and family	25.42±7.92	23.78±5.85	1.76	.085
Empowerment and mediation	17.85±5.71	18.67±3.49	0.64	.529
Communication	21.80±4.71	23.78±2.34	1.92	.063
Equality	17.31±5.16	19.63±1.92	2.16	.039
Funeral rituals	8.39±3.24	9.40±2.01	1.38	.176
Diet	10.69±2.92	10.89±1.83	0.30	.769
Spirituality	9.12±3.08	9.48±2.85	0.45	.655
Total	110.46±29.67	120.63±15.23	1.56	.127
Multicultural acceptance				
Diversity dimension	2.78±0.71	3.00±0.61	1.22	.228
National identity	3.11±1.09	3.02±1.00	–0.31	.762
Stereotyping and discrimination	3.52±1.00	3.31±0.65	0.35	.725
Unilateral assimilation expectations in relational dimension	3.24±0.98	3.14±0.87	–0.40	.692
Rejection-avoidance sentiment	3.54±1.32	3.62±0.89	0.25	.801
Willingness to engage in interaction behavior	2.81±1.03	3.08±0.63	1.18	.244
Dual evaluation of universality dimension	3.11±0.83	3.32±0.49	0.97	.335
Global citizenship behavior	3.32±1.01	3.46±0.49	0.67	.509
Total	4.43±0.83	4.09±0.86	–1.19	.119

Values are presented as mean±standard deviation.

gage in interaction behavior (t=1.18, p=.244), dual evaluation of universality (t=0.97, p=.335), global citizenship behavior (t=0.67, p=.509), and the total score (t=–1.19, p=.119), confirming homogeneity in multicultural acceptance.

2. Cultural Competency

The total score for cultural competency in nursing ranges from 35 to 175, with higher scores indicating higher cultural competency in nursing. The experimental group scored 110.46±29.67 points in the pre-program survey and 142.73±15.20 points in the post-program survey, increasing by 10.27±9.50 points. Meanwhile, the control group scored 120.63±15.23 points in the pre-program survey and 121.85±13.44 points in the post-program survey, increasing by 1.22±14.68 points. Therefore, the difference in the total pre- and post-program cultural competence scores between the experimental and control groups (t=–4.54, p<.001) was statistically significant.

Among the subfactors, equality showed a significant difference between the experimental and control groups in the pre-homogeneity test, indicating that homogeneity between the two groups was not achieved. Therefore, an ANCOVA was conducted using the pre-equality score (F=29.52, p<.001) as a covariate to statistically control for the difference between the two groups (Table 4).

3. Multicultural Acceptance

The total scores and subfactor scores of multicultural acceptances in nursing for the experimental and control groups are shown in the Table 5. In the experimental group, the total score for multicultural acceptability increased from 4.43±0.83 points to 4.73±0.98 points, by 0.95±0.95 points. Meanwhile, in the control group, it decreased from 4.11±0.86 points to 4.10±0.87 points, by 0.01±0.11 points between pre- and post-program surveys. There was a statistically significant difference in total pre- and post-program multicultural acceptance scores between the experimental and control groups (t=-5.39, p<.001).

The significant improvements observed in the diversity, relational, and universality dimensions of multicultural acceptance in the experimental group indicate the effectiveness of the concept mapping-based educational intervention. The program successfully enhanced participants' understanding and appreciation of cultural differences, likely facilitated by the structured reflection and critical thinking inherent in concept mapping.

DISCUSSION

As South Korea has become a multicultural society, MBU nurses must have a good understanding of cultural differ-

Table 4. The difference between the experimental group and the control group before and after cultural competency in nursing

Subfactor	Experimental groups (n=26)			Control groups (n=27)			t/F	*p*
	Pre	Post	Post–Pre	Pre	Post	Post–Pre		
Cultural ecology and family	25.42±7.92	34.50±4.64	9.08±8.37	23.78±5.85	29.22±5.72	5.44±4.73	–4.65	<.001
Empowerment and mediation	17.85±5.71	24.04±3.07	6.19±6.05	18.67±3.49	19.44±3.08	0.78±3.81	–3.92	<.001
Communication	21.80±4.71	25.15±2.82	3.35±5.13	23.78±2.34	23.40±2.32	–0.37±3.66	–3.05	.004
Equality	17.31±5.16	22.12±2.39	4.81±5.52	19.63±1.92	18.67±3.08	–0.96±2.49	29.52[a)]	<.001
Funeral rituals	8.39±3.24	11.85±1.74	3.46±3.35	9.40±2.01	10.00±1.54	0.59±2.06	–3.74	.001
Diet	10.69±2.92	12.92±1.85	2.23±3.24	10.89±1.83	11.07±1.24	0.19±1.88	–2.82	.007
Spirituality	9 12±3.08	12.15±1.57	3.04±3.00	9.48±2.85	10.04±1.89	0.56±2.94	–3.04	.004
Total	110.46±29.67	142.73±15.20	10.27±9.50	120.63±15.23	121.85±13.44	1.22±14.68	–4.54	<.001

Values are presented as mean±standard deviation.
[a)]F-value of analysis of covariance with pre-test value as covariate.

Table 5. The difference between the experimental group and the control group before and after multicultural acceptance

Category	Experimental groups (n=26)			Control groups (n=27)			t	*p*
	Pre	Post	Post–Pre	Pre	Post	Post–Pre		
Diversity dimension	2.39±0.62	3.89±0.54	1.51±0.65	2.48±0.42	3.24±0.52	0.77±0.32	–5.26	<.001
Cultural openness	2.78±0.71	3.30±0.64	0.52±0.83	3.00±0.61	2.85±0.46	–0.15±0.54	–3.50	.001
National identity	3.11±1.09	3.84±0.75	0.73±1.10	3.02±1.00	3.08±0.82	0.06±0.71	–2.67	.010
Stereotypes and discrimination	3.52±1.00	4.25±0.63	0.74±0.93	3.31±0.65	3.57±0.69	–0.03±0.55	–3.67	.001
Relational dimension	3.16±0.71	3.83±0.40	0.66±0.64	3.25±0.53	3.22±0.49	–0.04±0.34	–4.98	<.001
Assimilation expectation	3.24±0.98	3.83±0.79	0.59±0.88	3.14±0.87	3.18±0.78	0.04±0.65	–2.60	.012
Reject/avoid	3.54±1.32	4.09±0.63	0.55±1.28	3.62±0.89	3.58±0.91	–0.04±0.61	–2.15	.036
Intend to interact	2.81±1.03	3.64±0.71	0.83±1.03	3.08±0.63	2.98±0.58	–0.10±0.59	–4.06	<.001
Universality dimension	3.21±0.75	3.87±0.42	0.65±0.72	3.39±0.45	3.23±0.41	–0.14±0.38	–5.22	<.001
Dual evaluation	3.11±0.83	3.67±0.68	0.57±1.00	3.32±0.49	3.38±0.62	–0.19±0.43	–3.58	.001
World citizens' action	3.32±1.01	4.06±0.71	0.74±0.94	3.46±0.49	3.33±0.61	–0.14±0.64	–3.99	<.001
Total	4.43±0.83	4.73±0.98	0.95±0.95	4.09±0.86	4.10±0.87	–0.01±0.11	–5.39	<.001

Values are presented as mean±standard deviation.

ences to provide appropriate nursing for mothers of multicultural families [12]. To this end, it seems that MBU nurses need to be culturally competent when practicing and improve multicultural acceptance to help foreign mothers integrate into society without discrimination. Within this context, we developed a concept mapping multicultural education program for MBU nurses to enable them to improve cultural competence in nursing and multicultural acceptance.

Knowledge and skills that are simply memorized through repetition are not enough to build critical thinking [18]. Concept mapping can be used to develop critical thinking, train prioritization, and self-reflection [19]. In this sense, concept mapping is a suitable educational tool as it structures the complex health status of the care recipient, enabling self-reflection and understanding of the overall situation without a narrow view [20]. This study developed and applied a multicultural education program, using concept mapping, for MBU nurses, which illustrates the health problems of patients and nursing interventions. We conducted our multicultural education program online due to social distancing and avoidance of private gatherings at the time of the study, due to the pandemic. Adult learners, such as MBU nurses, identified goal orientation as a motivator for engagement in online education [13], which indicates that the needs of learners for goal orientation should be reflected in the program [13].

In this study, we used the ADDIE model for the development of the program. At the analysis stage, the educational needs of MBU nurses were investigated and analyzed through one-on-one interviews. This study was conducted through online Zoom meetings (Zoom Video Communications Inc.), which had the advantages of reducing travel time and improving knowledge, regardless of time and place [21]. As adult learners, MBU nurses have abundant experience and tend to learn based on their own experience—a tendency that is effective in achieving learning goals [13]. They attempt to achieve the learning goals by communicating with foreign mothers, sharing nursing experiences, and interacting with other participants to supplement the disadvantages of online education. Multicultural education is more effective if it is an ongoing process of building cultural competence in nursing,

rather than a one-time exercise [22]. A study that implemented multicultural education confirmed that two cultural nursing competency trainings improved clinical performance [23]. The study of MBU nurses by Je et al. [12] confirmed the effectiveness of four rounds of training. Based on these findings, we decided that five sessions, one per week, for a total of 5 weeks, was an appropriate timeframe to ensure that the training was continuous and effective, without overwhelming the participants. In multicultural education, lectures of 60 minutes or less have been proven to be effective [22]. Therefore, the appropriate time to show the effectiveness of multicultural education was determined to be 40–50 minutes, and the actual training time was within 50 minutes.

For online courses, the factors of satisfaction were reported as the available content, easy-to-understand instructor explanations, and short class lengths [13]. Watching videos has the advantage of creating long-term memories by stimulating the audiovisual senses, providing second-hand experiences, and exchanging perceptions through increased empathy [24]. Additionally, they are effective in developing critical thinking [9]. In this study, we selected video watching as one of the educational methods, which allowed the participants to have second-hand experience and sympathize with foreign mothers.

To address the difficulty of communication between MBU nurses and patients from diverse cultural backgrounds, we taught effective, nonverbal communication, used interpreters, and introduced participants to state-sponsored multicultural portal sites and call centers for foreign mothers to use. Recently, many simulation training programs have been developed for new nurses, as well as nursing students, and simulation training experiences have been highlighted for healthcare providers who need to react quickly in critical situations [25]. Simulation, using standardized patients to experience realistic communication with real people, is a training method that increases realism and immersion [26]. Simulation education can foster cultural competence in nursing through training to communicate with multicultural patients in advance [27]. Accordingly, this study aimed to improve communication skills with multicultural mothers through standardized patient and simulation education and to develop cultural nursing competence through second-hand experience.

In online classes, the importance of self-directed learning skills is emphasized due to lowered concentration and lack of sufficient interaction between instructors and learners [28]. Therefore, self-directed learning was selected as the educational method in this study. To complement this, case studies were added to the self-directed learning based on content validity assessments. Furthermore, the learners' understanding was checked through the presentations made by the participants on concept maps they created.

Participants can learn how to express themselves, listen to others, and sympathize with and respect others. While lectures are led by teachers, discussions are led by learners, improving their skills of communication and logical thinking [29]. Discussion was selected as the method of the final session.

In a multicultural society, MBU nurses must improve cultural competence in nursing and multicultural acceptance to provide appropriate cultural nursing for mothers of multicultural families [9]. This study is significant, as it provided an opportunity for self-reflection by creating concept mapping, based on prioritized cases. Nurses without cultural competence in nursing or lacking multicultural acceptance find it difficult to provide care to foreign mothers. In this study, we developed a concept mapping multicultural education program for MBU nurses to address the difficulties faced by MBU nurses, and to provide nursing with cultural sensitivity for foreign mothers. The concept mapping multicultural education program for MBU nurses, developed in this study, was confirmed effective in improving cultural competence in nursing and multicultural acceptance, through which this study is expected to contribute to MBU nurses' provision of cultural nursing for foreign mothers.

While our education program has shown positive effects, this study does have some limitations. It was conducted within a single university hospital located in one specific region, which means the results may not be widely applicable to other settings. Furthermore, the education was conducted online, allowing cultural experiences to be gained indirectly. In the future, it would be beneficial to include offline practicum sessions that offer opportunities for diverse multicultural activities and experiences.

CONCLUSION

This study is an unequal control pre-post design quasi-experimental study to develop a concept mapping multicultural education program for MBU nurses with an ADDIE model and evaluate the effect on the nurses' cultural competence and multicultural acceptance. The experimental group that participated in the multicultural education program using

concept maps for MBU nurses significantly increased both the total score and subfactor scores of cultural nursing competency and multicultural acceptance, compared to the control group. If the multicultural education program—using the concept map for MBU nurses, developed in this study—is modified, supplemented, and applied, MBU nurses will perform culturally sensitive nursing in the future, thereby reducing the difficulties in caring for foreign mothers and the difficulties these mothers face at hospitals. It is expected that inequality will also be reduced.

ARTICLE INFORMATION

Authors' contribution

Conceptualization: DK, SS. Overall direction and planning: DK, SS. Data collection: DK. Data analysis: DK, SS. Interpretation of data: DK, SS. Writing–original draft: DK, SS. Writing–review and editing: DK, SS. Final approval of published version: DK, SS.

Conflict of interest

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

Funding

This work was supported by the National Research Foundation of Korea (NRF) grant funded by the Korea government (MSIT) (No. 2020R1G1A1101810).

Data availability

Please contact the corresponding author for data availability.

Acknowledgements

This article was adapted from a thesis by Dahae Kang in partial fulfillment of the requirements for the master's degree at Keimyung University.

ORCID and ResearcherID

Dahae Kang https://orcid.org/0009-0005-2590-0173
https://researcherid.com/rid/MBW-2965-2025

Soonyoung Shon https://orcid.org/0000-0003-0571-2181
https://researcherid.com/rid/MCI-5983-2025

REFERENCES

1. Statistics Korea. Statistics of immigration and residence foreigners: status of marriage immigrants classified by nationality (region) [Internet]. Statistics Korea; 2020 [cited 2024 Dec 10]. Available from: https://kosis.kr/statHtml/statHtml.do?orgId=111&tblId=DT_1B040A16&vw_cd=MT_ZTITLE&list_id=A8
2. Nam JH, Hong DA. The effects of social support and acculturation perceived by marriage migrant women on parenting stress. Korean J Fam Welf. 2022;27(1):101-125. https://doi.org/10.13049/kfwa.2022.27.1.5
3. Cha E, Lee S, Kim GN, Kang BH, Jeon M. Developing a community-based, multicultural-friendly prenatal education pilot program. Res Community Public Health Nurs. 2024;35(3):226-239. https://doi.org/10.12799/rcphn.2024.00507
4. Cho MK, Kim MY. Factors affecting the global health and cultural competencies of nursing students. Int J Environ Res Public Health. 2022;19(7):4109. https://doi.org/10.3390/ijerph19074109
5. Ahn JW, Jang HY. Factors affecting cultural competence of nurses caring for foreign patients. Health Policy Manag. 2019;29(1):49-57. https://doi.org/10.4332/KJHPA.2019.29.1.49
6. Min J. Hospital nurses' multicultural patient care experience. J Korean Soc Multicult Health [Internet]. 2018 [cited 2024 Dec 10];8(1):31-43. Available from: http://ksmch.org/uploaded/board/collection/65303b570a20ee0933b2dff76341beb13.pdf
7. Jeong GH, Park HS, Kim KW, Kim YH, Lee SH, Kim HK. A concept analysis of cultural nursing competence. Korean J Women Health Nurs. 2016;22(2):86-95. https://doi.org/10.4069/kjwhn.2016.22.2.86
8. Byun HS, Park M. Impacts of multicultural acceptability, transcultural self-efficacy on the cultural competency among nurses. J Health Info Stat. 2020;45(1):91-99. https://doi.org/10.21032/jhis.2020.45.1.91
9. Lee M, Jang KS. Reflection-related research in Korean nursing: a literature review. J Korean Acad Nurs Adm. 2019;25(2):83-96. https://doi.org/10.11111/jkana.2019.25.2.83
10. Maryam A, Mohammadreza D, Abdolhussein S, Ghobad R, Javad K. Effect of concept mapping education on critical thinking skills of medical students: a quasi-experimental study. Ethiop J Health Sci. 2021;31(2):409-418. https://doi.org/10.4314/ejhs.v31i2.24
11. Novak JD, Cañas AJ. The theory underlying concept maps and how to construct and use them [Internet]. Florida Institute for Human and Machine Cognition; 2006 [cited 2024 Dec 10]. Available from: https://cmap.ihmc.us/publications/researchpapers/theoryunder-

lyingconceptmaps.pdf
12. Je M, Son HM, Kim YH. Development and effect of a cultural competency promotion program for nurses in obstetrics-gynecology and pediatrics. Child Health Nurs Res. 2015;21(2):151-159. https://doi.org/10.4094/chnr.2015.21.2.151
13. Kim KW, Kim SH, Kim YH, Kim HK, Park HS, Lee SH, et al. Development of the Cultural Competence Scale for Registered Nurses (CCS-RN). J Korean Acad Community Health Nurs. 2019;30(3):281-294. https://doi.org/10.12799/jkachn.2019.30.3.281
14. Ahn SS, Min MS, Kim ES, Lee MJ, Kim GM. National multicultural acceptance survey study [Internet]. Korean Women's Development Institute; 2012 [cited 2024 Dec 10]. Available from: https://www.kwdi.re.kr/publications/reportView.do?p=129&idx=123475
15. Kim ES, Choi YJ, Yoon JS, Lee JK, Moon HY, Lee MJ, et al. National multicultural acceptance survey study [Internet]. Korean Women's Development Institute; 2018 [cited 2024 Dec 10]. Available from: https://e-archive.bscf.or.kr/27_policy/download.php?idx=1002&file=1602636735_1039_f.pdf
16. Bamrara A. Applying ADDIE model to evaluate faculty development program. Issues Ideas Educ. 2018;6(1):11-28. https://doi.org/10.15415/iie.2018.61001
17. Polit DF, Beck CT. The content validity index: are you sure you know what's being reported?: critique and recommendations. Res Nurs Health. 2006;29(5):489-497. https://doi.org/10.1002/nur.20147
18. Choi KS, Lee WS, Park YS, Jun M, Lee SY, Park Y, et al. The effect of a teaching model for improving undergraduate nursing students' cultural competency. J Korean Acad Soc Nurs Educ. 2018;24(1):100-109. https://doi.org/10.5977/jkasne.2018.24.1.100
19. Mohamed AA, Garas AF, ElsawI KA. Effect of concept mapping on critical thinking skills of baccalaureate nursing students. Int J Res Appl Nat Soc Sci [Internet]. 2017 [cited 2024 Dec 10];5(11):59-76. Available from: https://ssrn.com/abstract=3090935
20. Jeong YW, Min HY. Effects of team-based learning using concept mapping on critical thinking disposition and metacognition of nursing students. J Korean Acad Soc Nurs Educ. 2019;25(3):277-288. https://doi.org/10.5977/jkasne.2019.25.3.277
21. Cho ES, Lee WJ. Case study on developing and applying the online instructional model of lifelong learning for adult learners in the era of COVID19. J Lifelong Educ HRD. 2022;18(1):37-62. https://doi.org/10.35637/klehrd.2022.18.1.002
22. Hwang J. Meta-analysis on the effect of multicultural nursing competency programs. J Learn Cent Curric Instr. 2020;20(3):431-446. https://doi.org/10.22251/jlcci.2020.20.3.431
23. Choi NY, Lee BS. Health inequality experience of female married immigrants. J Humanit Soc Sci. 2018;9(2):425-438. https://doi.org/10.22143/HSS21.9.2.35
24. Kim EH, Hong SJ. Effects of a multiplecultural experience-based program on the multicultural awareness, cultural competence, and empathy for nursing students. Asia Pac J Multimed Serv Converg Art Humanit Sociol. 2019;9(10):83-93. https://doi.org/10.35873/ajmahs.2019.9.10.008
25. Shin N. The effect of simulation-based training applying situation-background-assessment-recommendation (SBAR) on nurse shift handover on self efficacy and communication skills in new nurses. J Korean Soc Simul Nurs. 2018;6(2):57-68. https://doi.org/10.17333/JKSSN.2018.6.2.57
26. Yoon J, Kang IS, Son MS. Experience of simulation practice using a high-fidelity patient simulator and standardized patients of nursing students. Korean J Educ Res. 2021;59(5):31-56. https://doi.org/10.30916/kera.59.5.31
27. Parra-Giordano D, Rivera-Villablanca X, Faundez-Aedo M. Improving nursing training in cultural diversity with clinical simulation. Aten Primaria. 2018;50(10):649-650. https://doi.org/10.1016/j.aprim.2018.04.005
28. Kim EI. The influence of the self-directed learning ability of adult learners in life-long learning centers upon perceived learning achievement: the mediating effect upon creativity. J Learn Cent Curric Instr. 2021;21(9):149-167. https://doi.org/10.22251/jlcci.2021.21.9.149
29. Jeong MH, Seo YH, Ryu HS. The effect of online group discussion and presentation activities on self-directed learning ability, academic self-efficacy, and communication ability of nursing students. J Saramdaum Educ. 2021;15(3):85-100. https://doi.org/10.18015/edumca.15.3.202108.85

ORIGINAL ARTICLE

Child Health Nurs Res Vol.31, No.1, January 2025;31(1):63-77
https://doi.org/10.4094/chnr.2024.030

pISSN 2287-9110
eISSN 2287-9129

CHNR

The parent-doctor-child triangle: a structural equation modeling-based study in pediatric outpatient clinics in Indonesia

Areta Idarto[1,2], Ferdi Antonio[2]

[1]School of Medicine, Universitas Ciputra Surabaya, Surabaya, Indonesia
[2]Department of Hospital Administration, Post Graduate School of Management, Universitas Pelita Harapan, South Jakarta, Indonesia

Corresponding author
Areta Idarto
School of Medicine, Universitas Ciputra, Surabaya, CitraLand CBD Boulevard, Surabaya, East Java, 60219, Indonesia
Tel: +62-317451699
Fax: +62-62317451699
E-mail: areta.idarto@ciputra.ac.id

Received: July 18, 2024
Revised: January 6, 2025
Accepted: January 10, 2025

Purpose: Parental satisfaction is essential for evaluating pediatric care quality and influences healthcare practices and performance. Pediatric patients frequently experience anxiety, affecting their and their parents' satisfaction. Nurses play a key role in reducing anxiety and improving care interactions. Meeting parents' expectations shapes long-term outcomes and impacts the hospital's reputation. While instruments such as the Child ZAP (Zufriedenheit in der Arztpraxis) provide comprehensive measures of satisfaction, their use in Indonesia has not been explored. This study aimed to validate the Child ZAP and offer insights to improve pediatric care quality in Indonesia.
Methods: A cross-sectional study was conducted with 139 mothers whose children were older than 5 years and received treatment at private hospitals. Structured questionnaires were analyzed using partial least squared-structural equation modeling in SmartPLS 4, and a disjoint two-stage method was used to test dimensionality.
Results: All hypotheses were significant (p<.05), demonstrating strong support. All Child ZAP dimensions, treated as lower-order constructs, effectively measured parents' satisfaction as a higher-order construct. Overall parental satisfaction significantly influenced behavioral intention and mediated its relationship with Child ZAP. The mother's and the child's age served as moderating factors. The research model exhibited strong predictive power, underscoring pediatric nurses' pivotal role in improving communication among parents, physicians, and children to ensure quality care.
Conclusion: The Child ZAP instrument effectively evaluates parental satisfaction by examining how children interact and communicate with medical staff. It assesses doctors' engagement with children and their communication skills, highlighting nurses' essential role in providing family-centered pediatric care.

Keywords: Parent-child relationship; Patient satisfaction; Pediatric nursing; Pediatrics clinic; Professional-family relations

INTRODUCTION

Previous research has documented parents' satisfaction levels regarding the anticipation and assessment of pediatric care quality, which in turn influences regulatory or operational practice changes [1-13]. On average, pediatric patients visit outpatient medical centers or primary care providers 31 times between birth and age 21 for basic pediatric development and growth assessments [14]. Because children's intellectual and emotional development varies by age, their interactions with healthcare professionals can cause nervousness and possible trauma–especially if they undergo repeated

This is an Open Access article distributed under the terms of the Creative Commons Attribution NonCommercial License (https://creativecommons.org/licenses/by-nc-nd/4.0/) which permits unrestricted noncommercial use, distribution, and re-production in any medium, provided the original work is properly cited.
© 2025 Korean Academy of Child Health Nursing

hospital visits, treatment procedures, and hospitalizations. Such experiences can lead to fear, pain, and helplessness, making pediatric patients feel defenseless. Furthermore, this emotional sequence may delay diagnostic and treatment procedures, subsequently affecting both patient and parental satisfaction.

Healthcare professionals should find ways to address these emotional and psychological challenges to improve patient outcomes and to prevent future mental health issues [14-16]. According to research, healthcare-induced anxiety in children may lead to serious mental health problems later in life [17]. Meanwhile, hospital staff have considerable influence yet sometimes overlook patients' points of view. Hospital management, responsible for enhancing quality, recognizes that patients' and parents' views on care quality are an essential component of providing excellent healthcare. Therefore, patients' experiences in medical centers should be evaluated and integrated into all phases of the healthcare process, as only patients can accurately report their own views on care procedures and outcomes.

Patient feedback is a critical source of information for a patient-centered healthcare institution. Patients' primary concern is receiving treatment and care that meet their needs; thus, healthcare providers seek to enhance service quality, especially under market competition and accountability pressures. Patient satisfaction is often used as a proxy for existing quality management and certification methods in healthcare industries [2,14]. It has also become a recognized indicator for measuring the delivery of quality care from the patient's perspective. However, the methods or instruments used to measure patient satisfaction may not be fully applicable to certain populations—such as children who may have difficulty expressing their views.

It is important to distinguish overall patient satisfaction—which includes all aspects of care and facilities—from satisfaction with examinations performed by pediatricians, focusing on the care provided during clinical visits. Such a distinction helps identify specific areas in need of improvement. Although pediatricians are the primary providers, they usually examine children with a nurse present. Therefore, this study also provides insights into how the caring behavior of healthcare workers can be improved when delivering child health services. In pediatric outpatient clinics, nurses are critical for creating a supportive environment during medical consultations. While pediatricians conduct examinations, nurses contribute to care quality and patient interactions. This study aims to provide insights into how to improve nurses' roles as intermediaries between doctors, children, and parents, as nurses help foster a calming atmosphere that reduces children's anxiety and increases their comfort during visits and examinations.

From the hospital management perspective, patient satisfaction at the pediatric clinic–often represented by the mother–must be well managed. This satisfaction affects hospital performance, especially in private hospitals. The attitudes and intentions these parents exhibit can yield favorable outcomes for the hospital, including the willingness to recommend the hospital and intentions to revisit when needed, both of which are particularly crucial for private institutions. Hospitals influence patients' future healthcare choices through the satisfaction they provide. In academic contexts, a favorable outcome for the hospital is often described as positive behavioral intention on the part of patients. Positive behavioral intentions among hospital staff can also enhance performance and improve patient outcomes. Studies have shown that mothers have specific expectations regarding nurses' attitudes toward both patients and themselves, such as tolerance for maternal stress and collaboration in caring for their child [18,19], all of which support hospital performance. In this study, behavioral intention serves as the dependent variable, with relevant independent variables explaining it.

Several tools exist for assessing parents' satisfaction with care. These tools generally demonstrate good psychometric properties and are sensitive to various hospital-site variables. Collaboration among medical professionals, children, and parents is central to successful Family Centered Care (FCC). Assessing parental satisfaction helps identify critical areas for improving care standards [6]. Buchanan and Brock [20] in 1989, an ethics specialist focusing on pediatric issues, notes that adults play a role in providing children more opportunities to make healthcare decisions as they grow in their judgment, thereby improving their ability to act independently as adults. Successful interactions between healthcare providers and pediatric patients lay the groundwork for children to take greater responsibility for themselves. Dokken and Sydnor-Greenberg [21] in 2000 suggests that healthcare workers should communicate more frequently with children and actively seek their input. However, young patients are rarely asked about their own medical experiences. Most research on pediatric patients' experiences relies on parents' evaluations of their children's care, with only a few studies examining

children's or adolescents' own ratings [22].

Recent studies have explored various dimensions of patient satisfaction, including collaborative decision-making between parent, child, and clinician. The German ZAP (German for "Zufriedenheit in der Arztpraxis") outpatient satisfaction questionnaire was introduced in 1999 as a standardized tool for measuring process-related patient satisfaction in outpatient settings. Child ZAP, specifically used in pediatric care, evolved into a psychometrically sound instrument for capturing patients' perspectives on care processes. It includes two perspectives: the parent's appraisal of the child-physician interaction (proxy report) and the parent's assessment of their own interaction with the physician (self-report). Child ZAP has also been adapted for use in multiple languages (with Polish, Arabic, Croatian versions) and different clinical settings, such as ambulatory care, pediatric outpatient post–heart transplantation, and dental care clinics [2]. Having the mother assess the physician's interaction with her child (aged 5 years and older) provides a valuable measure of overall care quality.

In Indonesia, no specific methods have been identified or employed to assess parental or child engagement in pediatric and adolescent healthcare settings. Medical professionals continue to rely on parents to act on behalf of their children and evaluate the quality of care. Further research is needed to determine how accurately parents capture and represent children's and adolescents' anxieties, needs, preferences, and satisfaction during healthcare encounters. Child ZAP was chosen from among various tools because it examines both how parents perceive the physician's interaction with the child and how parents assess their own relationship with the pediatrician. This approach should also be recognized by nurses assisting the pediatrician, as their attention may help put pediatric patients at ease. Consequently, nurses must understand their active role during pediatric assessments.

The proposed framework in this study, developed using the Child ZAP instrument, consists of seven elements (child interaction, child-information, child-decision making, parents-information, parents-decision making, parents-organization facilities, professional attitude) and investigates their relationships with behavioral intention and overall parental satisfaction. This study examines how parental satisfaction with a child's examination relates to overall parental satisfaction, behavioral intention, and potential moderating factors. First, we aim to determine whether parental satisfaction with the child's examination, as measured by Child ZAP, positively influences overall parental satisfaction. Second, we explore whether parental satisfaction with the child's examination affects behavioral intention, with possible implications for future healthcare decisions. Additionally, we seek to determine whether overall parental satisfaction mediates the relationship between parental satisfaction with the child's examination and behavioral intention.

Furthermore, we investigate whether overall parental satisfaction mediates the relationship between parental satisfaction with the child's examination and behavioral intention. We also examine whether the child's age moderates the relationship between parental satisfaction with the child's examination and overall parental satisfaction. Finally, we explore whether the mother's age moderates the relationship between parental satisfaction with the child's examination and behavioral intention.

This study makes two key contributions that could improve healthcare administration. First, because it is the first study to validate Child ZAP in an Indonesian context, the tool can be applied to other pediatric healthcare services in Indonesia. Second, integrating Child ZAP's seven dimensions into a behavioral intention model demonstrates that effectively implementing Child ZAP domains can positively influence pediatric clinic performance.

METHODS

Ethical statements: This study was approved by the Ethics Committee of the Universitas Pelita Harapan (approval number: 012/M/EC-Oct/X/2023). Informed consent was obtained from all participants.

1. Study Design

This study was a cross-sectional descriptive study using structural equation modeling (SEM) with data from respondents in a pediatric clinic at a private hospital. It focuses on parental satisfaction with pediatric patient examinations. Empirical data from the survey results were used to test the proposed research model, which was developed based on previous research. The study was conducted in two stages: first, by validating the ZAP instrument for children, and second, testing the structural model with several hypotheses, where parental satisfaction with child examinations is the independent variable and behavioral intention is the depen-

dent variable. Parents' overall satisfaction, which may stem from other hospital services, acts as a mediator while being moderated by the child's and the mother's age. The conceptual framework of the research model, along with the eight hypotheses, is shown in Figure 1. This study followed the guidelines established by Strengthening the Reporting of Observational Studies in Epidemiology [23].

2. Population

The study population consisted of mothers of pediatric outpatients at two private hospitals in Indonesia. The target population was mothers with children aged 5–18 years. This study used a purposive sampling method based on several criteria. First, the respondent had to be the biological mother of a pediatric patient and be over 20 years old in 2023. Second, the respondent had to be fully conscious, cooperative, and willing to complete the questionnaire. Third, the respondent must have visited the hospital's outpatient clinic at least once. Fourth, the respondent was a mother of children aged 5–18. Fifth, the children brought to the outpatient clinic had an acute condition and were not diagnosed with a catastrophic illness or psychiatric disorder.

The minimum sample size in this study was determined according to recommendations for multivariate research using the partial least square–structural equation modeling (PLS-SEM) approach and was calculated by power analysis. The minimal number of samples needed was confirmed using G*Power ver. 3.1.9.4 (Heinrich-Heine-Universität Düsseldorf), with a significance threshold of 0.05, an effect size of 0.15, and a power of 0.90. This calculation indicated a minimum sample size of 108. However, after distribution of the questionnaire, 139 respondents met the requirements, so all were included.

3. Measurements

This research design assessed the indicators of latent variables using a 6-point Likert scale. Questionnaire items for overall parent satisfaction and behavioral intention were adapted from previous studies, while items for parent satisfaction with the child's examination were adopted from the ZAP-Child instrument. Question items in English were translated by professional linguists and verified by academics experienced in conducting surveys. Specifically for the adopted Child-ZAP instrument, face and content validity were per-

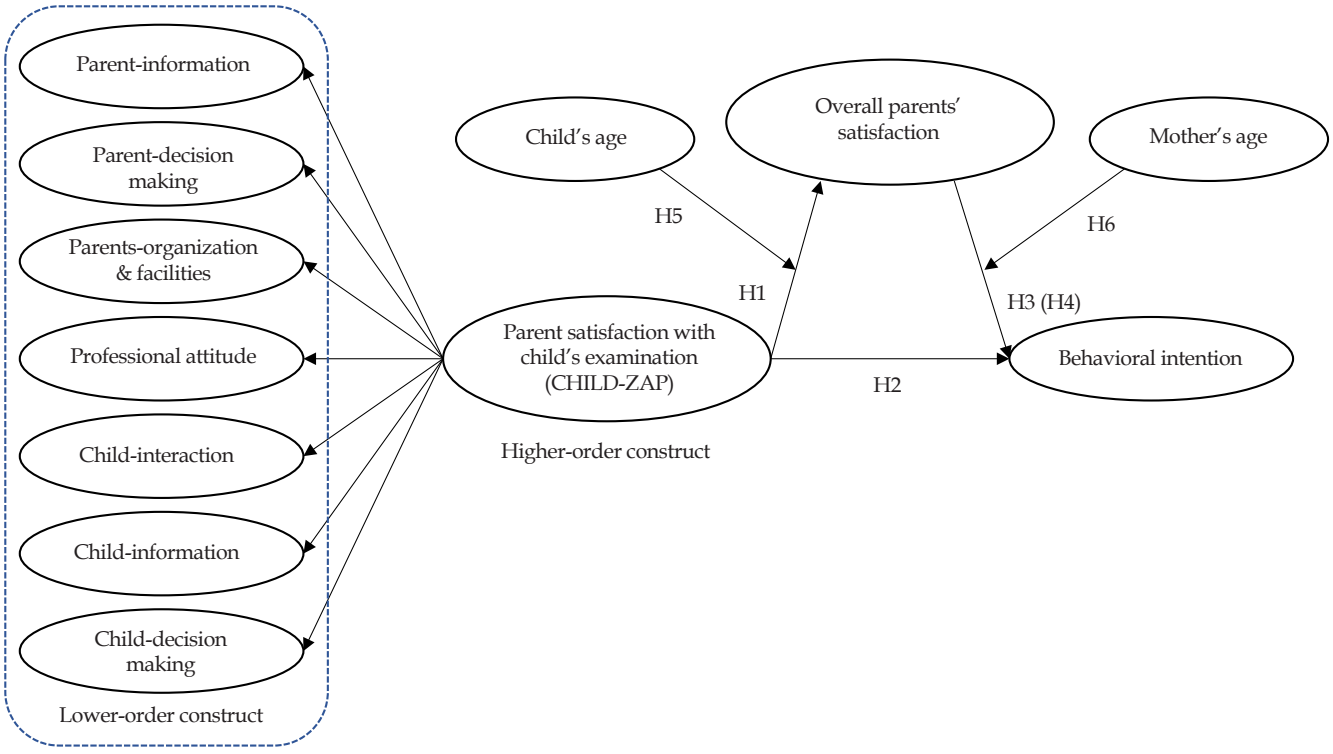

Figure 1. Conceptual research framework.

formed by an expert panel comprising academicians, pediatricians, and survey experts.

4. Data Collection

Data were obtained directly from respondents via online self-administered questionnaires distributed from September to October 2023. Before distribution, potential respondents were given an explanation of the study. This research was conducted at pediatric clinics in two leading private hospitals in Surabaya, Indonesia's second-largest city. These hospitals were chosen because they provide a variety of sub-specialist services, have a capacity of more than 300 beds, are accredited, and frequently receive referrals from smaller hospitals and healthcare facilities. They also attract higher volumes of patients due to their advanced facilities, state-of-the-art equipment, and a notable pool of qualified pediatricians.

5. Data Analysis

PLS-SEM analysis was conducted using SmartPLS 4 software (SmartPLS GmbH), which offers several advanced analysis features. The initial step in statistical testing involves assessing dimensions to identify the seven reflective dimensions of parental satisfaction regarding the child's examination as a higher-order construct (HOC). A confirmatory factor analysis (CFA) should be performed on these lower-order constructs (LOCs). The CFA report will include factor loadings and correlations among the dimensions. If the correlation between dimensions exceeds 0.6, the LOCs are interrelated dimensions of the HOC. This process is crucial for validation. Data processing primarily produces two types of outputs: the outer model (or measurement model) and the inner model (or structural model). The outer model describes the relationship between indicators and their variables, confirming the reliability and validity of each indicator used. The inner model, analyzed via bootstrapping (a non-parametric technique), provides the standard deviation, significance, and coefficient values for each hypothesized path. It also evaluates the overall quality of the research model [24,25].

This study employed a multivariate analysis technique, specifically PLS-SEM, to test a complex framework model involving multiple latent variables (constructs) and HOCs. PLS-SEM is especially advantageous in quality-of-care research, as it enables a detailed examination of relationships within a model containing several variables. SmartPLS 4.0.9.6 was selected for its ability to conduct bootstrap analyses for significance testing in PLS-SEM and for generating latent variable scores, which are essential for evaluating the disjoint two-stage method. This two-stage method, considered superior to the conventional repeated-indicator method, assesses the HOC at a more abstract level while including multiple LOCs representing different characteristics of the HOC. The approach allows a direct and reliable evaluation of the validity and reliability of both the LOC and HOC, which can then be incorporated into a structural model [26-28].

RESULTS

1. Participant Demographics and Characteristics

In total, 139 respondents met the inclusion criteria, and their profiles are presented in Table 1. Nearly 59% of the mothers were in the 31–40 age group, and most held permanent jobs. Only 7.91% had a high school education, while almost 60% had bachelor's degrees. The study included 65.47% of children aged 5–7, which aligns with the research objectives (Table 1).

The behavior of the respondents is detailed in Table 1, showing that 74.10% reported visiting the outpatient clinic once in the past 3 months. Concerning their most recent visit, 36.69% occurred within 1–3 months, while 37.51% took place more than 3 months before they completed the questionnaire. The respondent profile indicates that 58.27% were self-paying, and 21.58% used healthcare insurance to offset medical costs. Table 1 also highlights that the most common reason for bringing children to the clinic was acute conditions (e.g., cough, runny nose, fever).

2. Descriptive Statistics of Study Variables

In describing the independent variable—parent satisfaction with the child's examination (Child-ZAP)—most respondents selected "agree" or "strongly agree." Out of 36 indicators, only two yielded "somewhat agree" in the parents-organization facilities dimension, specifically POrgF1 ("I feel that the time from when I registered to sitting in the waiting room was under 30 minutes") and POrgF8 ("In the doctor's waiting room, there are entertainment and play facilities for children [for example books, building blocks, balls]"). "Strongly agree" was most common in the child-interaction and information dimensions. The highest mean val-

Table 1. Demographic profile of respondents

Description	Category	No. (%)
Age of mother (yr)	< 30	19 (13.67)
	31–40	82 (58.99)
	41–50	33 (23.74)
	> 50	5 (3.60)
Age of child (yr)	6–7	91 (65.47)
	8–12	31 (22.30)
	13–18	17 (12.23)
Mother's education	Postgraduate	31 (22.30)
	Bachelor	83 (59.72)
	Diploma	14 (10.07)
	High school	11 (7.91)
Mother's occupation	Permanent employment	80 (57.55)
	Part-time employment	13 (9.35)
	Housewife	46 (33.10)
No. of visits in the past 3 months	1	103 (74.10)
	2–5	36 (25.89)
Last visit to pediatric care	< 1	36 (25.89)
	1–3	51 (36.69)
	> 3	52 (37.41)
Child's complaints when brought to clinic (respondent may choose more than one answer)	Fever	85 (61.15)
	Cough	87 (62.58)
	Runny nose	87 (62.58)
	Diarrhea	22 (15.83)
	Abdominal pain	14 (10.07)
	Vomiting	21 (15.11)
	Others	37 (26.62)
Payment method	National health insurance	15 (10.80)
	Private insurance	30 (21.58)
	Reimbursement	11 (7.91)
	Self-payment	81 (58.27)
	Others	2 (1.44)

ue (5.432) appeared for the CHINT7 and ParInfo5 indicators ("I can clearly understand the information provided by the doctor"). These findings suggest that respondents gave a positive assessment of the child's examination by the pediatrician.

The descriptive results for overall parent satisfaction showed that two indicators were rated "agree" and only one was rated "strongly agree." The highest mean value was for ParSat3 ("I am satisfied with the outcome of my child's treatment at this hospital's pediatric clinic"). Only ParSat2 had a minimum value of 1, with a standard deviation of 0.932, indicating variation in responses about whether the outpatient clinic's service met parental expectations. For behavioral intention, two of four indicators—BevInt1 and BevInt2—were rated "strongly agree," while BevInt3 and BevInt4 were rated "agree." The highest mean was for BevInt1 ("If my child is sick, I will come back to this hospital's pediatric clinic for treatment"), followed by BevInt2 ("I will choose this hospital if my child needs healthcare services in the future"). These data show that most respondents indicated favorable intentions to continue supporting the hospital where their child received care.

3. Assessment of Dimensions

The first step in statistical testing was identifying the seven reflective dimensions of parent satisfaction with the child's examination as an HOC. Consequently, CFA was conducted on the seven dimensions (LOCs). The CFA report included factor loadings and correlations among the dimensions. Correlations among the seven dimensions exceeded 0.6, indicating that these LOCs are indeed linked as dimensions of the HOC. This process is essential for validation. A correlation of 0.686 was observed between child interaction with doctors

and child decision-making, which is relatively low compared to correlations explained by other indicators. This may indicate that a more comprehensive perspective is needed to fully understand doctor–child interactions, especially since most children in this outpatient setting have acute conditions. The study did not measure condition severity in detail, which may have contributed to this lower correlation value.

4. Reliability and Validity

1) First stage outer model analysis

In the first stage, only LOC indicators were included in the reliability assessment, and they met the specified requirements. As shown in Table 2, the 43 indicators in this research model had outer loading values greater than 0.7. Cronbach's α values for all variables were above 0.7, and composite reliability values ranged between 0.7 and 0.95, suggesting no redundancy. For convergent validity, all average variance extracted (AVE) values were above 0.50, with the largest at 0.878 and the smallest at 0.626. Discriminant validity was confirmed, as all indicators in this model were well differentiated. Although one variable had an heterotrait-monotrait (HTMT) ratio above 0.9, it remained within the acceptable confidence interval range following the inference test. Therefore, the indicators in this research model accurately measured their respective constructs.

2) Second stage outer model analysis

In the second stage (outer model analysis), latent variable scores were used: the LOC scores served as indicators for the HOC. The dimension of parent satisfaction with the child's examination was thus measured as an HOC. Reliability and validity tests were repeated; all indicators were retained because their outer loadings were above 0.708. Construct reliability in this second stage was verified through Cronbach's α, composite reliability, and rho_a values, which all ranged between 0.7 and 0.95, confirming reliability.

The AVE values also met the required thresholds, indicating solid construct validity. Discriminant validity based on HTMT showed no concerns, fulfilling all measurement model requirements. The standardized root mean square residual of 0.061 was below 0.08, indicating no model misfit. Figure 2 depicts the first-stage outer (measurement) model, where each yellow box represents an outer loading value linked to a latent variable (blue circle). The seven ZAP dimensions demonstrated adequate reliability and validity, and each dimension (LOC) relates to other variables, including the dependent variable, via its coefficient. Professional Attitude had a notably higher coefficient than the other dimensions, offering insights into evaluating pediatric care at the hospital.

All questionnaire items in this study passed reliability and validity tests in Indonesian and, for international publication, have been rewritten in English, as presented in Table 2.

5. Structural Model

The main analysis in this study was the structural (inner) model. A bootstrapping approach was carried out at this stage, using a parametric pound test to assess significance. The first step was to check for multicollinearity issues. All variables' inner variance inflation factor values were less than 5. Therefore, multicollinearity problems were absent in the research model for all variables in the second stage, thereby avoiding the risk of common method bias.

The output from bootstrapping provides an image of the inner model with coefficients and significance (*p*-value), as shown in Figure 3. The relationship between constructs and the latent variable score from LOC indicates that it is a HOC. This figure shows the coefficient values and *p*-values (in brackets). It also shows the role of mother's age and child's age as moderating variables that strengthen the relationship.

The R^2 value for behavioral intention was .737, which can be classified as having moderate to strong explanatory power, while overall parents' satisfaction (with an R^2 of .732) as a mediating variable can be classified similarly. This shows that 73.7% of behavioral intention can be explained by the independent variables, while the remaining 26.3% can be explained by factors outside this research model. It can be concluded that this research model can serve as an additional reference in empirical studies related to satisfaction with the child's examination and overall parental satisfaction.

Predictive relevance was assessed through Q^2_predict with the out-sample approach, revealing that both behavioral intention and overall parent satisfaction have large predictive relevance (0.617 and 0.714, respectively, both above 0.5). The newest approach in PLS-SEM to assess predictive capability is the cross-validated predictive ability test. The calculation indicates that the construct and overall average values are negative, confirming the loss difference compared to the indicator average and the linear model, with a $p < .05$. Therefore, it can be concluded that this research model already possesses predictive capability. In this second stage, the cal-

Table 2. Constructs validity and reliability

Variable	Code	Construct	Outer loading	Result	Cronbach α	Composite reliability	AVE
Child-interaction	CHINT1	I feel that the doctor understands my child.	0.876	Reliable	0.965	0.971	0.826
	CHINT2	I feel that the doctor shows empathy when examining my child.	0.924	Reliable	0.965	0.971	0.826
	CHINT3	I feel that the doctor takes enough time to examine my child.	0.896	Reliable	0.965	0.971	0.826
	CHINT4	I feel that the doctor listens and examines my child seriously.	0.924	Reliable	0.965	0.971	0.826
	CHINT5	I feel that the doctor provides encouragement and support for my child.	0.921	Reliable	0.965	0.971	0.826
	CHINT6	I feel that the doctor patiently examines my child.	0.927	Reliable	0.965	0.971	0.826
	CHINT7	I feel that the doctor treats my child in a humane manner.	0.892	Reliable	0.965	0.971	0.826
Child-information	CHINFO1	I feel that the interactions the doctor displays are appropriate for any child's age.	0.928	Reliable	0.920	0.950	0.863
	CHINFO2	I feel that the doctor provides information that is suitable for my child's developmental condition.	0.907	Reliable	0.920	0.950	0.863
	CHINFO3	I feel that the doctor gives information that matches my child's ability to understand.	0.951	Reliable	0.920	0.950	0.863
Child-decision making	ChDM1	The doctor has presented treatment options to my child (for example, the child is given a choice between powdered medicine and syrup).	0.871	Reliable	0.868	0.909	0.715
	ChDM2	I feel that the doctor has provided information about the benefits and limitations for various treatment options available (for example, underarm thermometer is more accurate than forehead thermometer).	0.867	Reliable	0.868	0.909	0.715
	ChDM3	The doctor asked my child about their preference for treatment (for example, "Would you prefer grape or orange flavored syrup?").	0.832	Reliable	0.868	0.909	0.715
	ChDM4	I feel that the doctor has involved my child in the decision-making process.	0.811	Reliable	0.868	0.909	0.715
Parents-information	ParInfo1	The doctor has provided information about my child's illness.	0.867	Reliable	0.943	0.945	0.779
	ParInfo2	The doctor has provided information about the treatment plan for my child (for the doctor explained about the antibiotic that should be taken until finished).	0.914	Reliable	0.943	0.945	0.779
	ParInfo3	The doctor has explained the benefits of each prescribed medication for my child (for example, there is medicine for fever reduction, there is medicine for allergies).	0.910	Reliable	0.943	0.945	0.779
	ParInfo4	The doctor has given advice to parents on how to help in the child's recovery process (for example, drinking water more frequently).	0.866	Reliable	0.943	0.945	0.779
	ParInfo5	I can clearly understand the information provided by the doctor.	0.895	Reliable	0.943	0.945	0.779
	ParInfo6	The doctor has explained information about the side effects of the prescribed medication for my child (for example, taking medicine X will make the child drowsy).	0.843	Reliable	0.943	0.945	0.779

(Continued on next page)

Table 2. Continued

Variable	Code	Construct	Outer loading	Result	Cronbach α	Composite reliability	AVE
Parents-decision making	ParDM1	The doctor has provided me with information about the need for additional tests for my child (for example, blood test, X-ray examinations).	0.923	Reliable	0.926	0.945	0.817
	ParDM2	The doctor has explained to me about the benefits and limitations of the treatment (for example, explaining the reasons why my child needs to be nebulized).	0.931	Reliable	0.926	0.945	0.817
	ParDM3	The doctor has asked me about treatment options that align my preferences.	0.910	Reliable	0.926	0.945	0.817
	ParDM4	I feel that the doctor has involved me in the treatment decision-making process.	0.851	Reliable	0.926	0.945	0.817
Parents-organization facilities	POrgF1	I feel that the time from when I registered to sitting in the waiting room was under 30 minutes.	0.704	Reliable	0.914	0.923	0.626
	POrgF2	I feel that the time from waiting in the waiting room to being called is within my tolerance limit.	0.806	Reliable	0.914	0.923	0.626
	POrgF3	I feel that the administrative staff is friendly.	0.848	Reliable	0.914	0.923	0.626
	POrgF4	I feel that the nurse is friendly.	0.809	Reliable	0.914	0.923	0.626
	POrgF5	I feel comfortable with the atmosphere in the doctor's practice room in the pediatric clinic.	0.797	Reliable	0.914	0.923	0.626
	POrgF6	The doctor's practice schedule aligns with the schedule I prefer.	0.730	Reliable	0.914	0.923	0.626
	POrgF7	I feel comfortable while waiting for the doctor's call in the waiting room.	0.864	Reliable	0.914	0.923	0.626
	POrgF8	In the doctor's waiting room, there are entertainment and play facilities (for example, books, building, blocks, balls).	0.759	Reliable	0.914	0.923	0.626
Professional attitude	ProfAtt1	I feel that the doctor has collaborated with other service units in the hospital (for example, the laboratory).	0.722	Reliable	0.858	0.886	0.705
	ProfAtt2	I feel that the doctor has conducted a thorough and comprehensive examination of my child	0.934	Reliable	0.858	0.886	0.705
	ProfAtt3	(If necessary) I feel that the doctor is willing to provide immediate referrals for my child to see another doctor.	0.795	Reliable	0.858	0.886	0.705
	ProfAtt4	I have confidence in the pediatric specialist at this hospital.	0.903	Reliable	0.858	0.886	0.705
Parents satisfaction	Parsat1	I am satisfied with the overall service provided for my child at this hospital pediatric clinic.	0.951	Reliable	0.930	0.935	0.878
	Parsat2	I feel that the service provided for my child at this hospital's pediatric clinic met my expectations.	0.915	Reliable	0.930	0.935	0.878
	Parsat3	I am satisfied with the outcome of my child's treatment at this hospital pediatric clinic	0.945	Reliable	0.930	0.935	0.878
Behavioral intention	BevInt1	If my child is sick. I will come back to this hospital's pediatric clinic for treatment	0.951	Reliable	0.899	0.925	0.774
	BevInt 2	I will choose this hospital if my child needs healthcare services in the future	0.954	Reliable	0.899	0.925	0.774
	BevInt3	I will recommend my relatives/family/other people to bring their children for treatment to this hospital	0.890	Reliable	0.899	0.925	0.774
	BevInt4	I will share positive things about this hospital's pediatric clinic on my social media	0.702	Reliable	0.899	0.925	0.774

AVE, average variance extracted.

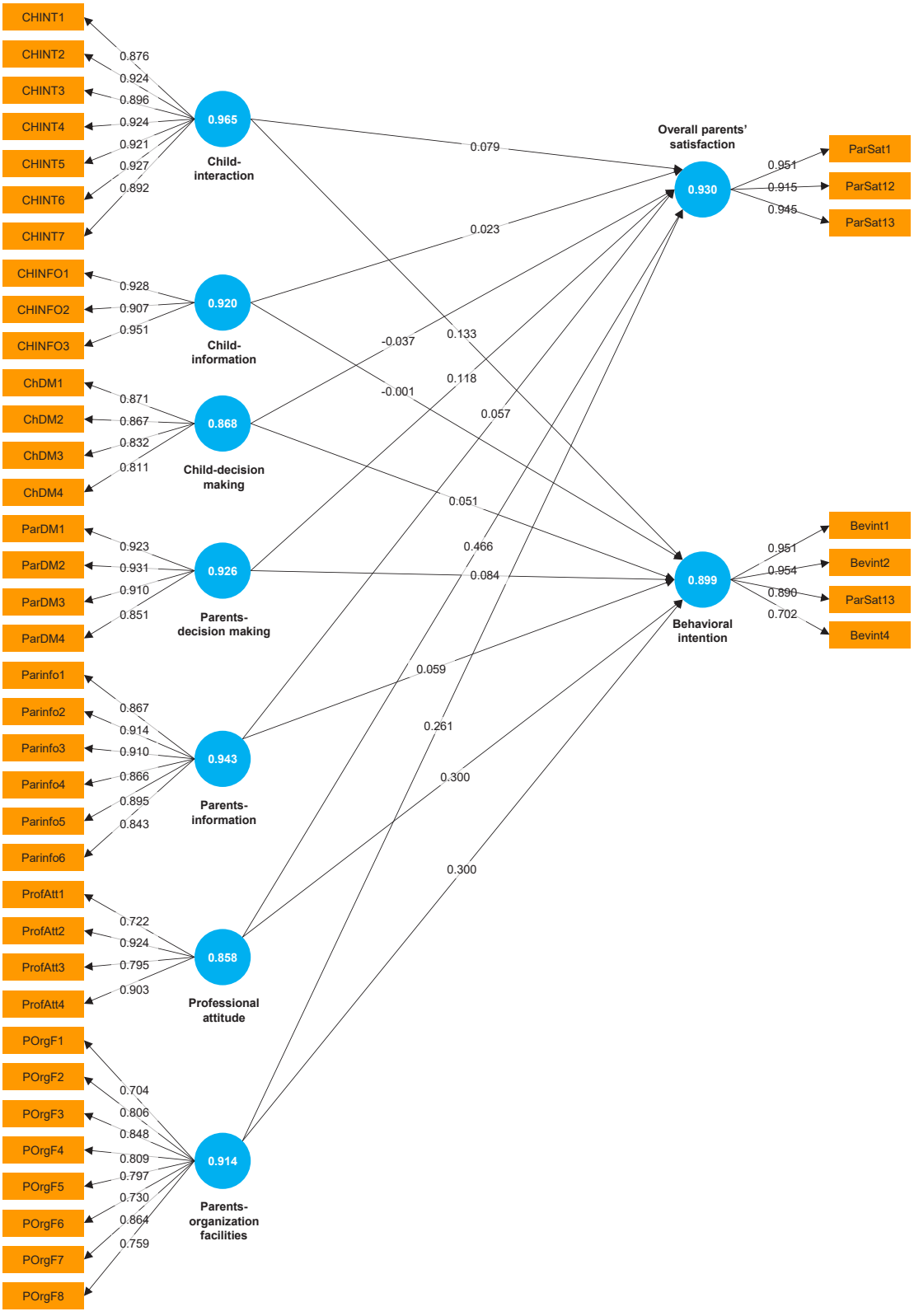

Figure 2. First stage outer model.

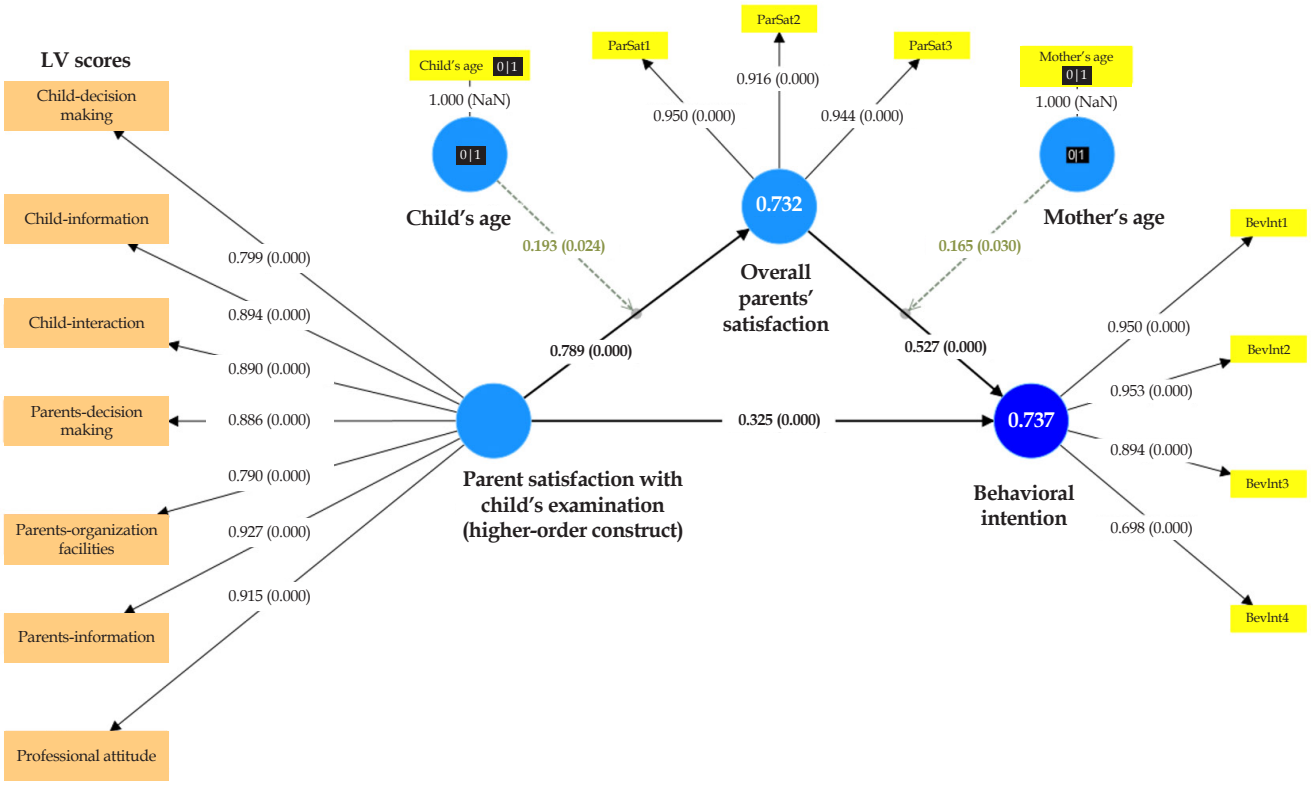

Figure 3. Second stage inner model. LV, latent variable.

Table 3. Hypothesis analysis

Hypothesis	Standardized coefficient (95% CI)	*p*	Result
H1. Parents satisfaction on child's examination (HOC) → overall parents' satisfaction	0.789 (0.707–0.865)	< .001	Supported
H2. Parents satisfaction on child's examination (HOC) → behavioral intention	0.325 (0.183–0.482)	< .001	Supported
H3. Overall parents' satisfaction → behavioral intention	0.527 (0.350–0.685)	< .001	Supported
H4. Parents satisfaction on child's examination (HOC) → overall parents' satisfaction → behavioral intention	0.416 (0.269–0.566)	< .001	Supported
H5. Child's age × parents' satisfaction on child's examination (HOC) → overall parents' satisfaction	0.193 (.050–0.367)	.024	Supported
H6. Mother's age × overall parents' satisfaction → behavioral intention	0.165 (.032–0.319)	.030	Supported

CI, confidence interval; HOC, higher order construct.

culations reveal that both the construct and overall average values are negative ($p < .05$). Consequently, it can be inferred that this model demonstrates strong predictive validity and may be replicated in another study with a different population.

The final analysis was the hypothesis test, shown in Table 3. The results indicate that all six hypotheses had positive coefficient values and were significant ($p < .05$); thus, all are supported. These findings show that overall parent satisfaction and parent satisfaction with the child's examination (HOC) had a positive relationship: if the mother's perception of these variables increases, her intention to support the hospital also increases.

The strongest relationship was found between parents' satisfaction with a child's examination (HOC) and overall parent satisfaction ($\beta = 0.789$). Overall satisfaction is thus largely formed by satisfaction with the child's examination. Overall satisfaction can mediate the pathway by which parent satisfaction with the child's examination relates to behavioral intentions. This means that once the mother is satisfied with the child's examination, she will likely also show satisfaction with other service aspects beyond the children's clinic.

Table 3 shows that mother's age was a moderating factor strengthening the relationship between overall parent satisfaction and behavioral intention. Older mothers tended to have stronger behavioral intentions. The other moderating factor, the child's age, strengthened the relationship between parent satisfaction with the child's examination and overall parent satisfaction. Thus, for older children, the effect of the child's examination on overall parent satisfaction is stronger.

DISCUSSION

This research aimed to test and evaluate six hypotheses in the model, all of which were supported. The results indicate that parental satisfaction with a child's examination (as HOC) is positively and significantly related to overall parent satisfaction and behavioral intention. The parent's satisfaction with the child's examination is adapted from the Child ZAP or Kinder ZAP in German. This study reinvents the concept of child examination by Bitzer et al. [2] in 2012 and is the first to adopt the original ZAP in pediatric outpatient settings in Indonesia. The preliminary version of the Child ZAP included six scales (24 items) for parent assessment of parent-physician interaction (self-report), three scales (14 items) for parent assessment of child-physician interaction (proxy report), and three global items (overall physician satisfaction, trust in the physician, and quality of care). The findings of this study confirm that the Child ZAP is valid for measuring parental satisfaction with children's examinations in the Indonesian context.

Over time, the doctor-patient interaction has evolved into a more equal collaboration, shifting from compliance to cooperation. This change can validate patients' needs while empowering them to take responsibility for their health improvement journey. Meanwhile, doctors can better understand their patients on physical, psychological, and sociological levels. Children should be included in and benefit from this movement toward strengthening doctor-patient communication, as their societal roles and positions have changed. Amid these advancements, children also want to participate in decision-making.

Most studies have not sufficiently examined the perspectives of children and parents regarding satisfaction with patient care and service. Their focus has often positioned the parent, rather than the child, as the primary patient. This study addresses that gap by highlighting the importance of child interaction and child information.

This study was found to align with a Polish study conducted by Krzywdzińska et al. [28] in 2017, which involved 362 parents of children up to 18 years of age. The correlation between scales in the child models showed similar results in both the Polish research and the present study, specifically a low correlation value for child interaction with decision-making [29]. These findings underscore the importance of child interaction and child communication dimensions in the examination process. Previous evidence indicates that communication skills in pediatrics must effectively involve healthcare providers, children, and/or their caregivers. Pediatric patients require a distinct approach tailored to their developmental milestones at every step, making pediatric care more challenging than adult care.

The study highlights the vital role of nurses in pediatric care by facilitating interactions between pediatricians and children, alleviating fear, building rapport, and engaging children during examinations. Nurses ensure child-centered care by preparing the child, managing equipment, and supporting examinations through observations that complement pediatricians' findings. They also reinforce follow-up care, address parental concerns, and enhance continuity of care, thereby fostering trust and improving long-term outcomes. In addition, nurses implement techniques aligned with child-centered principles to ensure children feel understood and comfortable. This approach aligns with the American Academy of Pediatrics' stance that excellent communication is the cornerstone of care, addressing the needs of the patient and family while focusing on patient- and family-centered care [30]. In pediatric care, communication is uniquely challenging because it involves the interplay between parents, children, and doctors, requiring nurses to act as critical facilitators who bridge gaps and ensure effective collaboration. By emphasizing the multidimensional role of nurses in pediatric outpatient settings, this study underscores their significance in creating a supportive environment for children and families while validating the Child ZAP dimensions that capture these relational dynamics during medical examinations by pediatricians.

This study shows that there are three key components to effective physician-parent-child communication: (1) accuracy in the pediatrician's delivery of health information, in both quantity and quality; (2) interpersonal awareness and sensitivity to emotional attitudes, reflecting the physician's attention to and involvement in the emotions and concerns of caregivers and pediatric patients; and (3) partnership-build-

ing, demonstrated by the ways the doctor encourages parents/caregivers. According to this study, "information" showed the highest path coefficient toward overall satisfaction. This finding is consistent with a study conducted in Romania on children and their parents, which highlights the value of pediatricians' soft communication skills. Although communication is perhaps the most prevalent technique in medicine, it is often overlooked in medical schools, where the focus is typically on healthcare procedures. Thus, communication abilities must be cultivated and practiced to improve doctors' capacity to interact effectively with patients, especially younger ones [30].

Involvement in the examination differs from shared decision-making. Because children are still developing their autonomy and interpersonal skills, they are not equal decision-makers. However, children learn, practice, and develop these skills through clinical interactions, gradually leading to greater participation over time [31]. In this study, most children were between 5 and 7 years old, a stage when they are developing communication capabilities. Although the Child ZAP questionnaire includes categories that evaluate parental and child involvement in decision-making processes, it may lead to missing data, particularly for younger children. This study demonstrates that a child's age increases the moderating effect of parent satisfaction on the child's evaluation of overall parental contentment. This finding aligns with earlier research showing a positive correlation between ease of understanding and child age, reinforcing the recommendation to use this questionnaire scale primarily for children aged 5 or 6 and older.

While this research model demonstrates strong explanatory and predictive capabilities, it has certain limitations. Because the study was conducted in a private hospital, most parents had high incomes and education levels, enabling them to seek private care for mild symptoms. Therefore, the model needs testing in public pediatric clinics. In addition, respondents were not categorized by their children's disease types. Some conditions require more complex examinations (e.g., use of a spatula or vaccinations), suggesting a need for further research based on specific disease types. Furthermore, 65% of participants were preschool children, whereas only 12% were 13 or older. Since preschoolers and adolescents may differ significantly in their perspectives and responses, grouping all children under 18 together could skew the results. Future studies should consider stratifying participants by age group to better capture these developmental differences and their impact on outcomes.

CONCLUSION

The findings of this study affirm that parental satisfaction in pediatric examination and treatment can predict behavioral intentions within a private hospital's pediatric clinic. Parental satisfaction can be distinguished between satisfaction with the child's examination by a pediatrician and overall satisfaction generated by other service factors. Satisfaction during child examinations needs to be measured dimensionally because it offers more precise insights into how doctors interact with children, considering their emotional state. Both types of satisfaction serve as valuable input for hospital management, supporting improvements that benefit from positive behavioral intentions. These findings are also useful for pediatricians and nurses, guiding them toward a more comprehensive understanding of child healthcare services. They highlight how pediatric nurses enhance communication and interaction during examinations by assisting pediatricians and acting as key intermediaries between children, parents, and the medical team. Nurses ensure children's emotional and psychological needs are met during clinical interactions. Their efforts to create a positive, supportive environment directly affect parental satisfaction, underscoring their significance in achieving the favorable behavioral intentions identified in this study.

This research also demonstrates that ZAP, with its seven dimensions, is valid for comprehensively measuring satisfaction during pediatric examinations. The ZAP domain can serve as an independent variable in a structural satisfaction model to predict behavioral intention. Following empirical testing and validation, this study aligns with Patient-Centered Care (PCC) principles by advocating for stronger child engagement during examinations. Consequently, the Indonesian version of ZAP can be employed in future studies to assess interactions among doctors, pediatric patients, and parents in Indonesia, thereby improving the delivery of quality care.

ARTICLE INFORMATION

Authors' contribution

Conceptualization: AI, FA; Data collection: AI, FA; Formal analysis; AI, FA; Interpretation of data: AI, FA; Writing–orig-

inal draft: AI, FA; Writing–review and editing: AI, FA; Final approval of published version: AI, FA.

Conflict of interest

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

Funding

None.

Data availability

Please contact the corresponding author for data availability.

Acknowledgements

The authors express their thanks and appreciation to the hospital management who supported this study, and the respondents who voluntarily filled out the research questionnaire.

ORCID and ResearcherID

Areta Idarto https://orcid.org/0000-0002-1281-666X
https://researcherid.com/rid/MCK-4064-2025
Ferdi Antonio https://orcid.org/0000-0002-1319-3732
https://researcherid.com/rid/HSH-9588-2023

REFERENCES

1. Alemu AT, Walle AA, Atnafu DD. Quality of pediatric healthcare services and associated factors in Felege-Hiwot comprehensive specialized hospital, North-West Ethiopia: parental perception. Patient Prefer Adherence. 2020;14:1649-1658. https://doi.org/10.2147/PPA.S264106
2. Bitzer EM, Volkmer S, Petrucci M, Weissenrieder N, Dierks ML. Patient satisfaction in pediatric outpatient settings from the parents' perspective: the Child ZAP: a psychometrically validated standardized questionnaire. BMC Health Serv Res. 2012;12:347. https://doi.org/10.1186/1472-6963-12-347
3. Chesney M, Lindeke L, Johnson L, Jukkala A, Lynch S. Comparison of child and parent satisfaction ratings of ambulatory pediatric subspecialty care. J Pediatr Health Care. 2005;19(4):221-229. https://doi.org/10.1016/j.pedhc.2005.02.003
4. Hoodbhoy Z, Rasheed MA, Sherali F, Hussain S, Hassan R, Hameed A, et al. A framework for improving parent satisfaction with the inpatient pediatric admission process: experience from a low-resource setting. J Patient Exp. 2020;7(6):1029-1035. https://doi.org/10.1177/2374373520916325
5. Jones E, Kurman J, Delia E, Crockett J, Peterson R, Thames J, et al. Parent satisfaction with outpatient telemedicine services during the COVID-19 pandemic: a repeated cross-sectional study. Front Pediatr. 2022;10:908337. https://doi.org/10.3389/fped.2022.908337
6. Loureiro F, Antunes V. Instruments to evaluate hospitalised children parents' satisfaction with nursing care: a scoping review. BMJ Paediatr Open. 2022;6(1):e001568. https://doi.org/10.1136/bmjpo-2022-001568
7. Schaffer P, Vaughn G, Kenner C, Donohue F, Longo A. Revision of a parent satisfaction survey based on the parent perspective. J Pediatr Nurs. 2000;15(6):373-377. https://doi.org/10.1053/jpdn.2000.16713
8. Solheim E, Garratt AM. Parent experiences of inpatient pediatric care in relation to health care delivery and sociodemographic characteristics: results of a Norwegian national survey. BMC Health Serv Res. 2013;13:512. https://doi.org/10.1186/1472-6963-13-512
9. Weissenstein A, Straeter A, Villalon G, Luchter E, Bittmann S. Parent satisfaction with a pediatric practice in Germany: a questionnaire-based study. Ital J Pediatr. 2011;37:31. https://doi.org/10.1186/1824-7288-37-31
10. Ygge BM, Arnetz JE. A study of parental involvement in pediatric hospital care: implications for clinical practice. J Pediatr Nurs. 2004;19(3):217-223. https://doi.org/10.1016/j.pedn.2004.02.005
11. Byczkowski TL, Kollar LM, Britto MT. Family experiences with outpatient care: do adolescents and parents have the same perceptions? J Adolesc Health. 2010;47(1):92-98. https://doi.org/10.1016/j.jadohealth.2009.12.005
12. Ygge BM, Arnetz JE. Quality of paediatric care: application and validation of an instrument for measuring parent satisfaction with hospital care. Int J Qual Health Care. 2001;13(1):33-43. https://doi.org/10.1093/intqhc/13.1.33
13. Ygge BM, Arnetz JE. A study of non-response in a questionnaire survey of parents' views of paediatric care. J Nurs Manag. 2004;12(1):5-12. https://doi.org/10.5409/wjcp.v5.i2.143
14. Lerwick JL. Minimizing pediatric healthcare-induced anxiety and trauma. World J Clin Pediatr. 2016;5(2):143-150. https://doi.org/10.5409/wjcp.v5.i2.143
15. Peterson L. Coping by children undergoing stressful medical procedures: some conceptual, methodological, and therapeutic issues. J Consult Clin Psychol. 1989;57(3):380-387. https://doi.org/10.1037//0022-006x.57.3.380

16. Tiedeman ME, Clatworthy S. Anxiety responses of 5- to 11-year-old children during and after hospitalization. J Pediatr Nurs. 1990;5(5):334-343.
17. Rask CU, Duholm CS, Poulsen CM, Rimvall MK, Wright KD. Annual research review: health anxiety in children and adolescents-developmental aspects and cross-generational influences. J Child Psychol Psychiatry. 2024;65(4):413-430. https://doi.org/10.1111/jcpp.13912
18. Lim SJ, Bang KS. The perceptions and performance of family-centered care among pediatric nurses at a children's hospital in South Korea: a descriptive study. Child Health Nurs Res. 2023;29(3):207-217. https://doi.org/10.4094/chnr.2023.29.3.207
19. Fidanci BE, Arslan F, Fidanci K. Parents' expectations and satisfaction on pediatrics clinic. Transl Med (Sunnyvale). 2014;4(137):1000137. https://doi.org/10.4172/2161-1025.1000137
20. Buchanan AE, Brock DW. Deciding for others: the ethics of surrogate decision making. Cambridge University Press; 1989.
21. Dokken D, Sydnor-Greenberg N. Exploring complementary and alternative medicine in pediatrics: parents and professionals working together for new understanding. Pediatr Nurs. 2000;26(4):383-390.
22. Naar-King S, Siegel PT, Smyth M, Simpson P. A model for evaluating collaborative health care programs for children with special needs. J Child Serv. 2000;3(4):233-245. https://doi.org/10.1207/S15326918CS0304_3
23. von Elm E, Altman DG, Egger M, Pocock SJ, Gøtzsche PC, Vandenbroucke JP, et al. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement: guidelines for reporting observational studies. PLoS Med. 2007;4(10):e296. https://doi.org/10.1371/journal.pmed.0040296
24. Hair JF, Risher JJ, Sarstedt M, Ringle CM. When to use and how to report the results of PLS-SEM. Eu Bus Rev. 2019;31(1):2-24. https://doi.org/10.1108/EBR-11-2018-0203
25. Hair JF, Hult GT, Ringle CM, Sarstedt M. A primer on partial least squares structural equation modeling (PLS-SEM). 3rd ed. Sage; 2022.
26. Becker JM, Cheah JH, Gholamzade R, Ringle CM, Sarstedt M. PLS-SEM's most wanted guidance. Int J Contempt Hosp Manag. 2023;35(1):321-346. https://doi.org/10.1108/IJCHM-04-2022-0474
27. Sarstedt M, Hair JF, Cheah JH, Becker JM, Ringle CM. How to specify, estimate, and validate higher-order constructs in PLS-SEM. Australas Mark J. 2019;27(3):197-211. https://doi.org/10.1016/j.ausmj.2019.05.003
28. Van Riel AC, Henseler J, Kemény I, Sasovova Z. Estimating hierarchical constructs using consistent partial least squares: the case of second-order composites of common factors. Ind Manag Data Syst. 2017;117(3):459-477. https://doi.org/10.1108/IMDS-07-2016-0286
29. Krzywdzińska A, Bitzer EM, Gładysz D, Kozłowska A, Hozyasz KK. Evaluation of the psychometric properties of the Polish adaption of the questionnaire for assessment of parental satisfaction in pediatric outpatient care. Pediatria Polska. 2017;92(3):271-280. https://doi.org/10.1016/j.pepo.2017.03.003
30. Mărginean CO, Meliț LE, Chinceşan M, Mureşan S, Georgescu AM, Suciu N, et al. Communication skills in pediatrics: the relationship between pediatrician and child. Medicine (Baltimore). 2017;96(43):e8399. https://doi.org/10.1097/MD.0000000000008399
31. Ruhe KM, De Clercq E, Wangmo T, Elger BS. Relational capacity: broadening the notion of decision-making capacity in paediatric healthcare. J Bioeth Inq. 2016;13(4):515-524. https://doi.org/10.1007/s11673-016-9735-z

Instructions to Authors

CHNR
Child Health Nursing Research

Child Health Nursing Research
Enacted in April 2006, and most recently revised in November 2024 and, applied from Vol. 31, No. 1 (2025 January)

I. Aim and Scope

Child Health Nursing Research (CHNR) aims to promote the health, development, and well-being of children and their families in Korea and all over the world by disseminating research on evidence-based practices.

Its scope includes the most recent clinically and academically relevant topics in health care and nursing from the beginning of life to young adulthood, including both children and their families. The journal publishes articles that address research, theory, and practice in a wide range of child health nursing areas and relevant cultural issues.

The primary readers of this journal include healthcare professionals, administrators, educators, caregivers, researchers, and various specialists dedicated to serving newborns, infants, children, adolescents, young adults, and their families. The ultimate goal of CHNR is to build a robust body of knowledge that will help improve clinical practice and community care to promote the health of children and families worldwide.

II. Research and Publication Ethics

CHNR is committed to ensuring ethics in scientific research and publishing. For the policies on research and publication ethics that are not stated in these instructions, the Recommendations for the Conduct, Reporting, Editing, and Publication of Scholarly work in Medical Journals by International Committee of Medical Journal Editors (ICMJE) or the COPE Guidelines (https://publicationethics.org/guidance/Guidelines) can be applied. Furthermore, all processes of handling research and publication misconduct will follow the applicable COPE flowchart (https://publicationethics.org/resources/flowcharts).

1. Statements of Human and Animal Rights and Protection

CHNR endorses and follows international standards of ethical practice in human rights and protection and the principles described in the Declaration of Helsinki (Medical Research Involving Human Participants; https://www.wma.net/what-we-do/medical-ethics/declaration-of-helsinki/). According to the Bioethics and Biosafety Act of Korea and in order to meet international standards for ethical practice in human rights and protection, any research involving human subjects must be approved by an Institutional Review Board (IRB). When animals are used as research subjects, the study must be conducted in compliance with related regulations, such as those of the Institutional Animal Care and Use Committees (IACUCs, https://ori.hhs.gov/education/products/ncstate/iacuc.htm) or National Institutes of Health (NIH) Guide for the Care and Use of Laboratory Animals (https://grants.nih.gov/grants/olaw/guide-for-the-care-and-use-of-laboratory-animals.pdf). Any treatment methods in conflict with the regulations must be described and may be grounds for rejection.

2. Statements of Informed Consent

The researcher(s) must also obtain written voluntary informed consent from the participants or their parents or legal guardians. If the research involves a child or any vulnerable subject in any way, special and sensitive protection is needed to ensure the safety and protect the human rights of the subject. When necessary, the editor of CHNR may ask the author(s) to present the relevant document(s) on human rights and protection issues related to the manuscript, such as the informed consent form or documentation of the IRB approval of the study.

3. Originality and Duplicate Publications

Duplicate publication or duplicate submission is prohibited in accordance with the ICMJE recommendations (https://www.icmje.org/recommendations/browse/publishing-and-editorial-issues/overlapping-publications.html). Manuscripts that have been published or are being submitted to other journal(s) should not be submitted to CHNR. Manu-

scripts that have been published or are currently under consideration for publication in CHNR must not be submitted to another journal. If a duplicate submission is detected, submission privileges to CHNR will be suspended for 2 years.

1) **Originality and plagiarism:** Authors must submit original manuscripts and confirm that they have cited or quoted others' ideas and texts appropriately and accurately. Plagiarism refers to the appropriation of another person's ideas, research processes, results, or texts as one's own. This includes using previously published material of oneself or any other author without citing the references. The editorial board of CHNR uses the Crossref Similarity Check tool to check for plagiarism. If plagiarism is discovered in a manuscript, it will not be published.

2) **Multiple, simultaneous, or duplicate submission:** The author(s) should not submit the same research to more than one journal and should not publish the manuscript in different languages. If authors wish to pursue a secondary publication of the manuscript in another language, they should obtain approval from the editor-in-chief of both related journals.

3) **Determination of duplicate publication:** The editorial board will review and assess the manuscript to determine any instances of duplicate submission or publication.

4. Authorship

Authorship is limited to those who have contributed substantially to the manuscript in terms of conception and design, as well as the collection, analysis, and interpretation of the data. All authors should be involved in drafting and reviewing the manuscript and must approve the final version of the manuscript. The corresponding author is required to confirm that all appropriate persons are listed as authors in the manuscript. All authors must agree to be accountable for all aspects of their work and to ensure that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. Chatbots or other AI-assisted technologies cannot be listed as authors.

1) **Authorship taxonomy:** The corresponding author is responsible for ensuring that the descriptions are accurate and agreed upon by all authors. Each author's role(s) should be listed using the relevant categories mentioned above. It is possible for authors' contributions to span multiple roles. The CRediT taxonomy does not alter the journal's criteria for authorship qualification. Authors are requested to select the appropriate CRediT statements (https://credit.niso.org/) during the submission process. This information will appear above the references section of the published paper, as illustrated in the example below.

Table 1. Authorship Taxonomy (https://credit.niso.org/)

Term	Definition
Conceptualization	Ideas; formulation or development of overarching research goals and aims
Methodology	Development or design of methodology; creation of models
Software	Programming, software development; designing computer programs; implementation of the computer code and supporting algorithms; testing of existing code components
Validation	Verification, whether as a part of the activity or separate, of the overall replication/ reproducibility of results/experiments and other research outputs
Formal analysis	Application of statistical, mathematical, computational, or other formal techniques to analyze or synthesize study data
Investigation	Conducting a research and investigation process, specifically performing the experiments, or data/evidence collection
Resources	Provision of study materials, reagents, patients, laboratory samples, animals, instrumentation, computing resources, or other analysis tools
Data curation	Management activities to annotate (produce metadata), scrub data, and maintain research data (including software code, where it is necessary for interpreting the data itself) for initial use and later reuse
Writing–original draft	Preparation, creation, and/or presentation of the published work, specifically writing the initial draft (including substantive translation)
Writing–review & editing	Preparation, creation, and/or presentation of the published work by those from the original research group, specifically critical review, commentary, or revision—including pre-or post-publication stages
Visualization	Preparation, creation, and/or presentation of the published work, specifically visualization/data presentation
Supervision	Oversight and leadership responsibility for the research activity planning and execution, including mentorship external to the core team
Project administration	Management and coordination responsibility for the research activity planning and execution
Funding acquisition	Acquisition of financial support for the project leading to the publication

2) **Changes to authorship:** CHNR does not correct authorship after publication unless the editorial staff has made a mistake. After submission and before publication, any changes in authorship—including adding or removing authors, or rearranging the order of authors—must be detailed in a letter to the editor from the involved authors. This letter must be signed by all authors of the paper. Additionally, every author must complete a copyright assignment.

3) **Corresponding author and first author:** CHNR does not allow multiple first authors or corresponding authors for a single article. Only one author for each article should correspond with the editorial office and reviewers.

4) **Contributors:** Any researcher who does not meet all four ICMJE criteria for authorship discussed above but contributes substantively to the study in terms of idea development, manuscript writing, conducting research, data analysis, and financial support should have their contributions listed in the Acknowledgments section of the article.

5. Conflict of Interest

Authors are required to disclose commercial or similar relationships to products or companies mentioned in the article being submitted or related to its subject matter. The corresponding author must notify the editor of any potential conflicts of interest that might have affected the study's findings or the way the data were interpreted. Even if the authors are certain that their respective judgments were unaffected when producing the article, any potential conflict of interest should be stated on the title page and at the ending section of the manuscript. Conflicts of interest can include ties to pharmaceutical corporations on a personal or financial level, political pressure from special interest organizations, or issues in the classroom.

Before evaluating a particular paper, CHNR requests that referees notify the editor if they have any conflicts of interest. All article submissions from editors, staff members, or editorial board members are handled in the same manner as unsolicited submissions. They will not participate in the decision-making or reviewer selection process. Even for commissioned manuscripts, editors will not handle their own work.

1) **Disclosure form:** The ICMJE Disclosure of Interest (https://www.icmje.org/disclosure-of-interest/) should be used as the model for the disclosure form.

2) **Role of the funding source:** The author is requested to identify who provided financial support for the conduct of the research and/or preparation of the article and to briefly describe the role of the sponsor(s), if any, in study design; in the collection, analysis and interpretation of data; in the writing of the report; and in the decision to submit the article for publication. If the funding source(s) had no such involvement, then this should be stated.

6. Reporting Standards

Authors should report their work accurately and objectively without inappropriate manipulation. Authors should describe their methods and procedures in enough detail and present sufficient references so that others can replicate the work. Authors should not produce, record, or report nonexistent data and results and should not change or omit data. Authors should also avoid producing multiple publications ("salami slicing") from content that should be only one substantial manuscript. Manuscripts that do not follow the international ethical standards of research and publication (i.e., those that involve fabrication, falsification, salami slicing, plagiarism, or simultaneous/duplicate submission) will not be considered for publication in CHNR. The editorial board will adjudicate the specific reasons for rejection.

1) **Data access and retention:** Authors should retain research data and be prepared to allow access to the data in case the editorial board asks them to provide the raw data in connection with the editorial review.

7. Clinical Trials Registration

This journal follows the data sharing policy described in "Data Sharing Statements for Clinical Trials: A Requirement of the International Committee of Medical Journal Editors (ICMJE)" (https://doi.org/10.3346/jkms.2017.32.7.1051).

Registration with an accredited primary registry is essential for clinical research to ensure transparency and accountability. In Korea, the Korea Clinical Research Information Service (CriS, https://cris.nih.go.kr/) serves as an accredited primary registry recognized by the World Health Organization (https://www.who.int/clinical-trials-registry-platform).

ClinicalTrials.gov (https://clinicaltrials.gov), managed by the United States National Institutes of Health, is also a widely accepted registry.

However, registration may be waived if the study involves an educational intervention that poses no harm to participants. In such cases, authors are encouraged to discuss the need for registration with the editor, considering the specific nature of the educational intervention.

8. Fundamental Errors in a Manuscript

If authors find a fundamental error in a published manuscript, they should immediately inform the editor and cooperate with the editor to correct or withdraw the manuscript.

9. Process for Managing Publication Malpractice

If reviewers or readers suspect publication malpractice such as fabrication, falsification, salami slicing, plagiarism, or simultaneous/duplicate publication; inappropriate changes in authorship, an undisclosed conflict of interest, ethical problems with a submitted manuscript, a reviewer who has appropriated an author's idea or data, complaints against editors, and so on, the resolution process will be initiated following the flowchart provided by the COPE (https://publicationethics.org/guidance/Flowcharts). The ethics committee will discuss and adjudicate cases of suspected publication malpractice, as well as complaints and appeals against editors. CHNR will not hesitate to publish errata, corrigenda, clarifications, retractions, apologies, and expressions of concern when needed.

10. Disclosure of Artificial Intelligence (AI)–Assisted Technology

CHNR follows the Artificial Intelligence (AI)–Assisted Technology policy described in Recommendations of ICMJE (https://www.icmje.org/icmje-recommendations.pdf).

Authors must disclose if they used AI-assisted technologies (e.g., LLMs, chatbots, image generators) in their work. The use of AI should be described in the cover letter and relevant sections of the manuscript, acknowledging writing assistance in the acknowledgment section and data-related uses in the Methods section. For instance, writing assistance should be noted in the Acknowledgments section, while uses in data collection, analysis, or figure generation should be detailed in the Methods section. AI tools such as chatbots should not be listed as authors, as they cannot be held responsible for accuracy or integrity. Authors are responsible for ensuring the work's quality, reviewing AI-generated content for errors or bias, and avoiding plagiarism, including proper attribution for AI-generated text or images.

III. Guidelines for Manuscript Preparation

1. Types of Manuscripts

CHNR publishes original articles, review articles, and editorials on health care and nursing for birth to young people and their families.

1) **Original articles:** CHNR publishes original articles that fit the journal's aims and scope. These are comprehensive papers that present novel research findings. They include reports of empirical data from top-notch scientific and clinical research studies that are relevant to nursing and health care for people from the beginning of life to young adulthood and their families. Original articles cover children's health issues, with topics encompassing nursing theory, practice, and education, among others. The articles published in CHNR present significant research results obtained using a variety of methodologies, including mixed-method designs, observational, quasi-experimental, and experimental investigations, as well as qualitative methods and measurements, including the development and evaluation of instruments. The appropriate standards should be followed when writing research papers.

2) **Review articles:** Critical presentations on themes of interest and importance to child health nursing theory, practice, and education are included. A review article's body should consist of a thorough evaluation of the literature that is supported by academic research, critical analysis, and reasoned conclusions. CHNR publishes comprehensive literature reviews, as well as systematic reviews that target specific research problems, such as scoping reviews. It also issues discussion papers, which are academic works with a discursive or argumentative tone. All articles must contain a discussion and critical evaluation of a significant body of research or other scholarship.

3) **Editorials:** Editorials are by invitation only and feature re-

marks made by institutional representatives or individual authors on topics of current interest. Authors should contact the manager in the editorial office if they have any suggestions for editorials that deal with topics that are critically important to the discipline, especially those that are contentious or closely related to recent or upcoming journal articles.

2. Authors of Manuscripts

Anyone may submit a manuscript for publication in CHNR. If the manuscript is derived from a dissertation, the author must disclose that the manuscript is the product of a dissertation for an academic degree program. The first author must be the author of the dissertation.

3. General Information

1) Language and style: Every manuscript should be written in English. The author can submit the manuscript as a Microsoft Word file or HWP file with an A4 paper size layout. The margins of the paper should be set as follows: top 30 mm, bottom 25 mm, left 25 mm, and right 25 mm. A 10-point font size should be used, and the text should be double-spaced.

2) Manuscript length: Abstracts, texts, references, tables, and figures included in the manuscript have different limits depending on the type of manuscript submitted, but all submissions must comply with the contents of Table 3. The number of references is recommended to be 30 or fewer for an article. However, authors may include additional references depending on the type of article, such as meta-analyses, systematic reviews, or structural equation models.

Table 3. Recommended maximums for articles submitted to *Child Health Nursing Research*

Publication type	Word count of abstract	Word count of main text	Numbers of tables & figures
Original article	250	6,000	5
Review article	250	8,000	5
Editorial	N/A	2,500	5

3) Abbreviations used: If authors choose to use an English abbreviation, the complete spelling must be used upon first mention, and the abbreviation may be used after that. The title should not include any abbreviations.

4) Samples and participants: Authors should confirm the correct use of the words "sex" (when reporting biological factors) and "gender" (identity, psychosocial, or cultural factors), and report the sex or gender of study participants. Authors should define how they determined race or ethnicity and justify its relevance. If a study was done involving an entire population, the authors should explain the reason.

5) Prior approval for the use of psychosocial questionnaires (survey tools): Authors must obtain permission for the utilization of any psychosocial questionnaire from the tool's copyright holder.

6) Describing machinery or technical equipment: When identifying machinery and equipment, the following should be included in parentheses: the model and manufacturer. Brand names are identified by ™, ®, etc. Brand names should be used only when necessary.

7) Reference and citation style: References and citations follow National Library of Medicine [NLM] style. The submitting authors are responsible for ensuring adherence to NLM guidelines.

8) Inclusive language: Authors are encouraged to use inclusive language that acknowledges diversity, respects all individuals, and promotes equal opportunities. Assumptions about the reader's beliefs or identities should be avoided, and authors must refrain from language that implies superiority based on factors such as age, gender, race, ethnicity, culture, sexual orientation, disability, or health condition. Writing should be free of bias, stereotypes, and cultural assumptions. Gender neutrality is encouraged by using plural nouns (e.g., "patients") instead of gendered pronouns ("he/she"). Descriptors of personal attributes should only be used if relevant and valid.

4. Reporting Guidelines for Specific Study Designs

Research reports frequently omit important information. Therefore, reporting guidelines have been developed for a number of study designs. Authors are encouraged to adhere to relevant reporting guidelines when describing their study. A good source of reporting guidelines is the EQUATOR Network (https://www.equator-network.org/) and the United

States National Institutes of Health/ National Library of Medicine (https://www.nlm.nih.gov/services/research_report_guide.html)

1) Observational cohort, case-control, and cross-sectional studies: Strengthening the Reporting of Observational Studies in Epidemiology (STROBE)

2) Qualitative studies: Consolidated Criteria for Reporting Qualitative Research (COREQ), Standards for Reporting Qualitative Research (SRQR)

3) Quasi-experimental/non-randomized trials: Transparent Reporting of Evaluations with Non-randomized Designs (TREND)

4) Randomized (and quasi-randomized) controlled trials: Consolidated Standards of Reporting Trials (CONSORT)

5) Study of diagnostic accuracy/assessment scale: Standards for the Reporting of Diagnostic Accuracy Studies (STARD)

6) Systematic review and meta-analysis: Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA), Meta-analysis of Observational Studies in Epidemiology (MOOSE)

7) Quality improvement studies: Standards for Quality Improvement Reporting Excellence (SQUIRE)

5. Sequence of Headings in an Original Article

The manuscript should be organized as follows. Each section should be clearly delineated. Instructions for each appear below the list.

Beginning section	- Cover letter - Title page - Abstract and keywords
Middle section (main text)	- Introduction - Methods - Results - Discussion - Conclusion
Ending section	- ORCID and ResearcherID - Authors' contributions - Conflict of interest - Funding resource - Data availability - Acknowledgements - Declaration of generative AI and AI-assisted technologies in the writing - Supplementary materials - References
Other elements	- Tables and Figures

1) Beginning section

(1) Cover letter

The authors should include a cover letter to the editor in which they summarize the main components of the manuscript and what makes its contribution original and relevant to the Aims and Scope of CHNR. The author(s) should also address any other matters associated with authorship and publication they wish the editors to consider.

(2) Title page

① The content of the title page should appear as follows in this order: Title, running title, type of manuscript, author(s), corresponding author, conflict of interest, IRB approval, Medical Subject Headings (MeSH, https://www.ncbi.nlm.nih.gov/mesh/) keywords, number of references, and number of words of the English abstract. More specific requirements for these components are detailed below.

② Type of manuscript: One of the following should be noted: original article, review article, editorial, or invited paper.

③ Author(s): This section should list the names of all authors, each with their position and affiliation including title, department, and location of institutions to which the work should be attributed. It should also present each author's ORCID number, ResearcherID and describe the author's role in this study.

④ Corresponding author: The corresponding author should be identified with their address (including zip code), email, telephone number, fax number, and ORCID number or ResearcherID.

⑤ Conflict of interest: Any matter pertaining to the research should be noted here, such as the source of research funds, conflicts of interest, or indication that the manuscript is derived from a dissertation or thesis for an academic degree program.

⑥ IRB approval: The author should provide information about the institution that provided IRB approval, in-

cluding the approval number, and informed consent. However, if the study did not involve humans or animals, a statement should be made about IRB exemption.

⑦ MeSH Keywords: The keywords are drawn from the MeSH list (not more than five).

⑧ Number of references: It is recommended that an article include no more than 30 references. However, for articles that have no reference restriction, such as meta-analyses, systematic reviews, or structural equation models, authors are free to provide more references.

⑨ Number of words in the abstract: The number of words in the abstract should be noted. The total should be no more than 250 words.

(3) Abstract and keywords

An abstract of up to 250 words for articles (including reviews) should be on a separate page. It should cover the main factual points, including statements of the purpose, methods, results, and conclusions. The abstract should be accompanied by a list of three to five keywords for indexing purposes. The keywords should be as specific as possible and drawn from the list of MeSH keywords.

2) Middle section

The text should be composed in the following order: Introduction, Methods, Results, Discussion, and Conclusion.

(1) Introduction: The introduction should clearly state the need for this study and the main question or hypothesis of the study. A literature review or summary of background information related to the study should be presented.

(2) Methods: This section should describe the study design, setting and samples, ethical considerations, measurements/instruments, data collection/procedure, and data analysis used. If the study is qualitative, the research instrument can be omitted. An "Ethics statement" should be provided after the "Methods" heading in a text-box format.

Example 1:
Ethics statement: This study was approved by the Human Ethics Committee of the University of XXX (IRB No. 202104-0002-03). Informed consent was obtained from all participants (or their parents/legal guardians).

Example 2:
Ethical statements: This study is a literature review of previously published studies and was therefore exempt from Institutional Review Board approval.

(3) Results: The main results should be summarized in concise paragraphs. Levels of statistical significance and confidence intervals should be noted where appropriate.

(4) Discussion: The discussion should be based only on the reported results. The discussion is recommended to reflect advances in nursing practice and nursing knowledge development.

(5) Conclusion: Conclusions and recommendations for further study should be presented here, but the study results should not be summarized again.

3) Final section

(1) ORCID and ResearcherID: The authors should provide the ORCID number and ResearcherID.

(2) Authors' contributions: Authors' contributions should be based on the authorship taxonomy.

(3) Conflict of interest: Authors are required to disclose commercial or similar relationships to products or companies mentioned in or related to the subject matter of the article being submitted. If there are no conflicts of interest, the following is an example of a sentence that can be used: "No existing or potential conflict of interest relevant to this article was reported."

(4) Funding resource: Funding institutions' policies should acknowledge sources of funding for the manuscript. If there is no funding resource, the following is an example of a sentence that can be used: "None".

(5) Data availability: Based on the plan for data sharing, authors should deposit their data after de-identification and report the DOI of the data and the registered site. The corresponding author should be contacted to confirm the availability of data.

Example 1:
The data cannot be publicly disclosed due to the Data Use Agreement with the Society for OOO (OOO). For the research data, contact the OOO (URL) / or the corresponding author's name (abcde@gmail.com).
Example 2:
Data files are available from Harvard Dataverse: https://doi. org/10.7910/OOO/3OOO9O Dataset 1. Raw data of responses from South Korean nursing students in 202X.

(6) Acknowledgments: Any persons who contributed to the study or the manuscript but did not meet the authorship requirements can be listed here. Written permission should be obtained from any person or organization mentioned in this section.

(7) Declaration of generative AI and AI-assisted technologies in the writing: Authors are required to disclose the utilization of generative AI and AI-assisted technologies in the writing process by including a statement after their work within the main text file, before the References list. The declaration must be positioned in a new section headed "Declaration of Generative AI and AI-assisted Technologies in the Writing Process."

Example:
During the preparation of this work the author(s) used [NAME TOOL/SERVICE] in order to [REASON]. After using this tool/service, the author(s) reviewed and edited the content as needed and take(s) full responsibility for the content of the published article.

This declaration excludes using basic tools to check grammar, spelling, references, etc. A statement is unnecessary if there is no information to provide.

(8) Supplementary materials: If there are supplementary materials to help the understanding of readers or too much data to be included in the main text, they may be presented as supplementary data.

(9) References: Manuscripts submitted must adhere to the NLM citation style, with authors responsible for ensuring compliance with NLM guidelines and the accuracy of all references. Authors are responsible for the accuracy of the references. The use of DOIs is highly encouraged.

(10) Tables and Figures: The total number of tables and figures in a manuscript is no more than 5. All tables and figures should be easy to understand, even when presented separately from the rest of the manuscript, and should present information relevant to the study.

6. References Format

A description of the References section is provided below. The references are formatted according to *Citing Medicine: The NLM Style Guide for Authors, Editors, and Publishers* (https://www.ncbi.nlm.nih.gov/books/NBK7256/) if not mentioned below. The references should be numbered serially in the order of appearance in the text, with numbers in brackets [ ]. The original reference number should be used if a reference is cited more than once. If there are 7 or more authors of a cited work, the first 6 should be listed, followed by "et al."

1) Journals

The name of the journal should be written in full. For 6 or fewer authors, all authors should be listed. For more than 6 authors, the first 6 should be listed, followed by et al.

- Lee SJ, Han YR. The influencing factors of pediatric nurses' perception of patient safety culture and partnership with patients' parents on patient safety nursing activities in South Korea: a descriptive study. Child Health Nurs Res. 2024;30(4):255-265. https://doi.org/10.4094/chnr.2024.008
- Kang HK, Kim TB, Kim KH, Kim MJ, Kim JH, Kim HY, et al. Development and effect of a metabolic syndrome prevention program for university students using mobile application. Child Health Nurs Res. 2014;20(3):205-214. https://doi.org/10.4094/chnr.2014.20.3.205
- Cesare M, Cocchieri A. Can an increase in nursing care complexity raise the risk of intra-hospital and intensive care unit transfers in children? A retrospective observational study. J of Pediatr Nurs. 2024 Nov 28 [Epub]. https://doi.org/10.1016/j.pedn.2024.11.015
- Cho CU. Stem cell windpipe gives Korean toddler new life. The Korea Herald. 2013 May 2;Sect. 01.

2) Books & Book chapters

- Brown B. Braving the wilderness: the quest for true belonging and the courage to stand alone. Random House: 2017.

- Peate I. The student's guide to becoming a nurse. 2nd ed. John Wiley & Sons; 2012.
- Min KA, Kim CG. Nursing management. Knowledge & Future; 2012.
- Bochner BH. Identification of nodal metastases: the role of iron oxide enhanced MRI. In: Lee CT, Wood DP, editors. Bladder cancer. Humana Press; 2010.
- Radley DC, How SK, Fryer AK, McCarthy D, Schoen C. Rising to the challenge: results from a scorecard on local health system performance, 2012 [Internet]. Commonwealth Fund; 2012 [cited 2017 Feb 8].

Available from: https://www.commonwealthfund.org/sites/default/files/documents/___media_files_publications_fund_report_2012_mar_local_scorecard_1578_commission_rising_to_challenge_local_scorecard_2012_finalv2.pdf

3) Scientific and technical reports

- Korean Women's Development Institute. 2015 National multicultural family survey report. Ministry of Gender Equality & Family; 2016. Report No.: MOGEF2016-3.
- Won YJ, Shin HR, Jeong GW, Shin AS, Gong HJ, Oh CM, et al. Cancer registration & statistics branch, division of cancer registration & surveillance. National Cancer Control Institute Annual Report. National Cancer Center; 2012. Report No.: 2012.11-13520000010145-10.

4) Unpublished theses or dissertations

- Lee YH. Development and effects of nocturnal emission and menstruation education program using CAI for Korean elementary school children [dissertation]. Ewha Womans University; 2010.
- Choi JW. Clinical characteristics and treatment outcomes of pediatric neurofibromatosis type 2: Neurosurgical series [master's thesis]. Seoul National University; 2013.

5) Conference proceedings

- Bell JM. Highlights from the 10th international family nursing conference. 10th International Family Nursing Conference; 2011 June 24-28; Kyoto. Sage Publications; 2012. p. 135-139.

6) Web

- Statistics Korea. Cause of death statistics in 2023 [Internet]. Statistics Korea; 2024 [cited 2024 Dec 10]. Available from: https://kostat.go.kr/board.es?mid=a20108100000&bid=11773&act=view&list_no=433679

7. Tables and Figures Format

1) Table formatting

① All lines should be single. Vertical lines should not be used.

② The title of a table should appear above the table. Only capitalize the first letter of table titles. Ex) Table 1. Responses to question types

③ Tables should be numbered consecutively, e.g., Table 1, Table 2, and so on.

④ Table data should be explained in the footnotes. All abbreviations used in the tables should be defined in the footnotes of every table in which they appear. Ex) HR, heart rate; T, temperature.

⑤ In a table, use a superscript lowercase letter to indicate each footnote. The tables should be placed beneath the footnotes. Ex) [a]Surviving case; [b]Deceased case.

⑥ If the value of a decimal can possibly exceed 1, a 0 should appear before the decimal point; otherwise, nothing should appear before the decimal point. Ex) $t = 0.26$, $F = 0.92$ Example: $p < .001$, $r = .01$, $R^2 = .61$

⑦ The statistical significance (p-value) should be written without a footnote and should be rounded to three decimal places. Ex) $p = .003$. If p is 0.000, then indicate that p is less than 0.001 ($p < .001$). If p is 1.000, then indicate that p is greater than 0.999 ($p > .999$).

2) Illustration and photograph format rules

① The title should appear below an image. Only the first letter of the first word should be capitalized (sentence case). Ex) Figure 1. Mean responses to questions by student grade categories.

② Acceptable figure file formats are BMP, JPG, PSD, TIF, AI, EMF, EPS, WMF, DOC, XLS, PPT, and PDF.

③ The size of the image should be 102×152 mm (4×6 inches). Larger images may be permitted; however, each image should not exceed 203×254 mm (8×10 inches).

④ If one figure contains 2 or more images, consecutive alphabetical letters should be used to distinguish among the images. Ex) Figure 1A, Figure 1B

⑤ The photomicrograph of a tissue sample, the region from which the tissue was extracted, and the staining

method should be noted. The magnification scale must be included.

3) Quotations from other sources

Citations may follow any style, such as NLM, APA, or others.

IV. Submission and Peer Review

1. Submission

Manuscripts must be submitted through the CHNR website (http://www.e-chnr.org/) or CHNR peer review system (http://www.chnr-submission.org/). Authors may review the submission instructions and access all submission forms, including the author checklist. During submission, information on the authors' ORCIDs and the ResearcherID will be requested. All required forms are available on the journal's website (https://www.e-chnr.org/) and the Korean Academy of Child Health Nursing's website (https://www.child-nursing.or.kr).

2. Peer Review

1) Policy: All papers, including those invited by the editor, are subject to peer review. Two or more reviewers and the editor will conduct a **double-blind** peer review of each manuscript. The Editorial Board selects reviewers based on expertise, publication history, and past reviews. During the peer review process, reviewers can interact directly or exchange information (e.g., via submission systems or email) with only an editor, which is known as "independent review." An initial decision will normally be made within two weeks after the reviewers agree to review a manuscript. No information about the review process or editorial decision process is published on the article page.

2) Preview: The editorial committee initially evaluates each submission. The main goal is to quickly determine which papers should not be sent for peer review and which ones should. To prevent delays for authors who may wish to submit their work elsewhere, papers that do not meet basic standards or are unlikely to be published, even with a favorable peer review—such as those with insufficient novel contributions or unclear relevance to the field—may be rejected at this stage.

3) Peer review process and the author's response to the reviewers' comments

There is a two-week peer review period, and the first decision is made after the evaluation is finished. Following the review, the Editorial Board will decide between the options: acceptable options include minor revision, major revision, or rejection. The Editorial Board may request authors to make changes to the manuscript in response to reviewers' comments. The author should reasonably indicate if the reviewer's opinion is unacceptable or if the reviewer is thought to have misinterpreted the data. The authors should try their best to comply with any requests made by the reviewers to modify the manuscript.

After making changes to the manuscript, the author should upload the updated files along with a response to each reviewer's comment. Revisions from the author must be finished within 15 days of the request. The Editorial Board will inform the author if it is not received by the deadline. The author should discuss an extension with the Editorial Board if they want to prolong the revision window past 15 days. Up to two rounds of the manuscript evaluation process may be offered. The Editorial Board may consider further review upon the author's request. The Editorial Board will ultimately decide whether to approve the submitted manuscript for publication and may, if necessary, ask for additional alterations, edits, and deletions to the article text. Statistical editing is also done if a statistician needs to review the data professionally.

The editor-in-chief of CHNR will make the final decision regarding the manuscript's publication based on the reviewers' comments and the scientific merits of the manuscript. Any potential or existing conflict and issues in the manuscript must be discussed in detail with the Editorial Board.

4) Submission by editors: All manuscripts from editors, employees, or editorial board members are processed the same way as other unsolicited manuscripts. Editors will not handle their own manuscripts even if they are commissioned. During the review process, they will not engage in the selection of reviewers and the decision process.

More details on other pertinent regulations are available on the journal's website. If there are any questions regarding the use of the online submission system, authors may contact the editorial office of CHNR.

5) **Appeals of decisions:** Any appeals against the editorial decision must be made within 2 weeks of the date of the decision letter. Authors who wish to appeal against a decision should contact the Editor-in-Chief, explaining in detail the reasons for the appeal. All appeals will be discussed with at least one other associate editor. If consensus cannot be reached thereby, an appeal will be discussed at a full editorial meeting. The process of handling complaints and appeals follows the guidelines of COPE available from (https://publicationethics.org/appeals). CHNR does not consider second appeals.

V. Final Preparation for Publication

1. Final Version

After the paper has been accepted for publication, the author(s) should submit the final version of the manuscript. The names and affiliations of the authors should be double-checked, and if the originally submitted image files were of poor resolution, higher-resolution image files should be submitted at this time. Symbols (e.g., circles, triangles, squares), letters (e.g., words, abbreviations), and numbers should be large enough to be legible on reduction to the journal's column widths. All symbols must be defined in the figure caption. If references, tables, or figures are moved, added, or deleted during the revision process, renumber them to reflect such changes so that all tables, references, and figures are cited in numeric order.

2. Manuscript Corrections

Before publication, the manuscript editor will correct the manuscript so that it meets the standard publication format. The author(s) must respond within 48 hours when the manuscript editor contacts the corresponding author for revisions. If the response is delayed, the manuscript's publication may be postponed to the next issue.

3. Proofs and Reprints

The author(s) will receive the final version of the manuscript as a PDF file. Upon receipt, the author(s) must notify the editorial office of any errors found in the file within 48 hours. Any errors found after this time are the responsibility of the author(s) and will have to be corrected as an erratum.

4. Correction

To correct errors in published articles, the corresponding author should contact the journal's editorial office with a detailed description of the proposed correction. Corrections that seriously affect the interpretation or conclusions of the article will be reviewed by the editors. Corrections will be published as an author correction or a publisher correction in a later issue of the journal.

Minor errors will be corrected directly in the online version of the article. An indication of the correction, along with the date it was made, will be added to the article information in both the HTML and PDF versions. A separate correction note will not be published.

VI. Article Processing Charge

After the acceptance of a manuscript, the author is responsible for the following fees: the publication fee, the special typesetting fee, and the printing fee for each volume of the paper. Upon acceptance, an article-processing charge (APC) of 600,000 Korean won per article is requested from the corresponding author.

Authors in developing countries (https://www.un.org/development/desa/dpad/wp-content/uploads/sites/45/publication/ldc_list.pdf) may be exempt from author fees after negotiation with the Editorial Board.

If at least one of the authors is a member of the Korean Academy of Child Health Nursing, the paper qualifies for a discounted submission.

VII. Copyright, Open Access Policy

1. Copyright

All manuscripts published in CHNR are protected by copyright. The copyright and the transfer right of the digital content of the published paper and journal are owned by the Korean Academy of Child Health Nursing. All authors should agree to the copyright transfer during the submission process.

After the acceptance of the manuscript, the author must submit the copyright transfer agreement to the Korean Academy of Child Health Nursing. All authors should print their names and sign the copyright transfer agreement.

2. Open Access Policy

CHNR is an open-access journal. Articles are distributed under the terms of the Creative Commons Attribution-Non-Commercial-NoDerivatives 4.0 (CC BY-NC-ND 4.0) license, which permits copying and distributing the material in any medium or format in unadapted form only, for noncommercial purposes only, and only if attribution is given to the CHNR. This is in accordance with the Budapest Open Access Initiative definition of open access. It also follows the open access policy of PubMed Central at United States National Library of Medicine (http://www.ncbi.nlm.nih.gov/pmc/).

All articles published in the journal are freely available through open access for everyone to read and download from the CHNR website (http://www.e-chnr.org/) immediately and permanently after publication.

VIII. Other Editorial Policy

1. Data Sharing Policy

To verify study accuracy and reproducibility, authors are encouraged to deposit raw or analyzed data in a public repository, such as Harvard Dataverse (https://dataverse.harvard.edu/dataverse/), Open Science Framework (https://osf.io/), etc. upon acceptance of the manuscript. Submission of raw or analyzed data is highly recommended. Authors should provide the relevant website URL or sources if data are already public. Authors may discuss options with the editor if data cannot be publicized. Based on the degree of the sharing plan, authors should deposit their data after de-identification and report the DOI of the data and the registered site. Authors with questions about data deposition are encouraged to contact the editorial office.

2. Archiving Policy

All manuscripts published in CHNR are freely available through open access to read and download from any electronic link, including those found on the CHNR website (http://www.e-chnr.org/) immediately and permanently after publication. In the event CHNR is no longer published, previously published articles will continue to be available via the National Library of Korea (http://nl.go.kr), PubMed Central (https://www.ncbi.nlm.nih.gov/pmc/journals/4129/), and Science-Central (https://www.e-sciencecentral.org/journals/169/).

3. Preprint Policy

A preprint can be defined as a version of a scholarly paper that precedes formal peer review and publication in a peer-reviewed scholarly journal. CHNR allows authors to submit preprints to the journal. Preprints are not treated as duplicate submissions or duplicate publications. CHNR recommends authors to disclose preprint status with a DOI in the letter to the editor during the submission process. Otherwise, the submission may be flagged by a plagiarism check program—Similarity Check (Crosscheck) or Ithentificate, etc.. Preprint submissions will be processed through the same peer-review process as usual submissions. If a preprint is accepted for publication, authors are recommended to update the information in the preprint with a link to the published article in CHNR, including the DOI in CHNR. It is strongly recommended that authors cite the article in CHNR instead of the preprint in their next submission to a journal.

Publisher

Korean Academy of Child Health Nursing

President

Hyun Young Koo, RN, PhD Professor

Daegu Catholic University College of Nursing 33, Duryugongwon-ro 17-gil, Nam-Gu, Daegu, Republic of Korea, 42472

Tel: +82-53-650-4829, Homepage: https://www.childnursing.or.kr/, E-mail: childnursing@childnursing.or.kr

Editorial Office

Child Health Nursing Research

Editor-in-Chief

Yunsoo Kim, RN, PhD Associate Professor

Department of Nursing, Catholic Kwandong University, Gangneung 25601, Republic of Korea

Tel: +82-33-649-7614, Fax: +82-33-649-7620, E-mail: agneskim@cku.ac.kr

Manuscript Editor

Hyun Joo Kim

Infolumi, Seoul, Korea

Jihye Jang, RN

Department of Nursing, Catholic Kwandong University, Gangneung 25601, Korea

Tel: +82-33-649-7614, Fax: +82-33-649-7620, E-mail: jjpluh@gmail.com

Layout Editor
In A Park
M2PI, Seoul, Korea

English Editor
Andrew Dombrowski
Compecs Inc., Seoul, Korea

Website and JATS XML File Producer
Min Young Choi
M2PI, Seoul, Korea

Author Checklist

CHNR
Child Health Nursing Research

Title of the Manuscript : _____

Please check the items below (if indicated) before submission of the manuscript:

1. GENERAL CONSIDERATION

□ This article has not been published elsewhere and will not be published elsewhere.
□ The manuscript is typewritten and double-spaced in a file formatted for A4-sized paper.
□ The number of pages including tables and figures is no more than 20.
□ The parts of the manuscript are presented in the following order: title page, English abstract, introduction, methods, results, discussion, conclusions, conflicts of interest, acknowledgments, references, tables, and figures.
□ Page numbers appear at the bottom of each page.

2. TITLE PAGE

□ The title, a separate running title (if the main title exceeds 40 characters in English), author names, their affiliations, research design type, number of words in the English abstract and number of references, keywords (English), and any relevant statements of related funding or conflicts of interest, or mention of an associated graduate thesis are all presented.
□ At the bottom of the title page, the email address, telephone, fax, and ORCID number, ResearcherID, plus the full postal address of the corresponding author, are provided.

3. ENGLISH ABSTRACT

□ The abstract contains no more than 250 words with 5 or fewer keywords at the bottom.
□ The abstract section contains the following in this order: title, author names with affiliations, body of abstract (Purpose, Methods, Results, and Conclusion), and keywords.
□ The keywords are drawn from the MeSH list.
□ The abstract does not include abbreviations, references, or diagrams.

4. MAIN TEXT

□ The main text consists of an introduction, methods, results, discussion, conclusions, conflicts of interest, and acknowledgments.
□ This article has not been published elsewhere and will not be published elsewhere.

5. REFERENCES

□ Every article in the reference list has been cited in the proper location(s) within the main text.
□ References and citations may follow any style, for example, NLM, APA, etc. However, after the manuscript is accepted, all references and citations must follow Citing Medicine: The NLM Style Guide for Authors, Editors, and Publishers, 2nd Edition (2007).
□ The number of references is recommended to be 30 or fewer for an article.

6. TABLES AND FIGURES

□ The titles should be placed above tables and below figures.
□ Non-standard abbreviations should be defined below tables and figures.
□ When using numbers, the units should be specified.

7. RESEARCH AND PUBLICATION ETHICS

□ Research involving humans that is submitted to CHNR should comply with the principles addressed in the Declaration of Helsinki (Ethical Principles for Medical Research Involving Human Subjects, https://www.wma.net/wp-content/uploads/2016/11/DoHOct2013-JAMA.pdf).
□ The publication and research ethics of CHNR strictly follow the ICMJE guidelines (http://www.icmje.org), which

state that authorship requires "substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work; AND drafting the work or revising it critically for important intellectual content; AND final approval of the version to be published; AND agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. All other contributors should be credited in the acknowledgments."

□ Duplicate publication or duplicate submission is prohibited. Manuscripts that have been published or are being submitted to other journal(s) must not be submitted to CHNR. Manuscripts that have been published or are currently under consideration for publication in CHNR must not be submitted to other journals.

□ Manuscripts that do not follow international ethical standards of research and publication (i.e., those involving fabrication, falsification, salami slicing, plagiarism, or simultaneous/duplicate submission) will not be considered for publication in CHNR. The editorial board will adjudicate the specific reasons for rejection.

□ Institutional Review Board (IRB) approval
- Approved by an IRB ( )
- Non-human or animal research ( )

• The authors of this article understand and confirm the abovei nstructions.

• Name of corresponding author: _____ Date: _____/_____/_____ Signature: _____

Copyright Transfer Agreement and Disclosure of Conflict of Interest

CHNR
Child Health Nursing Research

• Manuscript Number: _____

• Title of the Manuscript: _____

COPYRIGHT TRANSFER AGREEMENT

We the undersigned authors have all made significant contributions to this manuscript and agree to its submission to *Child Health Nursing Research* and, if accepted, to its publication in this journal. We warrant that this article is original, does not infringe on any copyright or other proprietary right of any third party, is not under consideration by another journal, and has not been previously published.

DISCLOSURE OF CONFLICT OF INTEREST

Each author is responsible for disclosing to the publisher all potential conflicts of interest regarding this manuscript (any financial support or benefits that have been received by the author(s) that could affect the work reported in the article) and whether the author regards them to be actual conflicts of interest.

List any potential conflicts of interests of this manuscript or indicate "None"

_____

_____

Please sign below to indicate that the necessary copyright transfer and disclosure of conflicts of interest have been completed.

Date :

Name	Signature	Name	Signature