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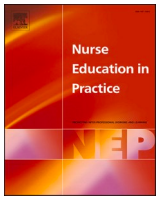

Effectiveness of simulation-based education on nursing students' professional knowledge, attitude and self-confidence in handling child abuse cases

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ABSTRACT

Aim: This study aimed to enhance nursing students' professional knowledge, attitudes and self-confidence in handling child abuse cases through a Child Abuse Simulation-Based Education (CASE).
Background: Given that nursing students seldom learn about child abuse case management in textbooks, simulation-based education could assist them in appropriately handling child abuse cases when they become nurses.
Design: Using a quasi-experimental design.
Methods: 190 nurses enrolled in a night school in-service program at a Taiwanese university were recruited for this study. Ninety-four nurses in the experimental group took a simulation-based education on child abuse while 96 nurses in the contrast group took a general nursing course. The pretest and posttest professional knowledge, attitudes and self-confidence of both groups were analyzed using generalized estimating equations in SPSS V22 software.
Results: Following the introduction of the CASE course, the experimental group's posttest professional knowledge, attitudes and self-confidence in handling child abuse cases were higher than those of the contrast group ($p < .001$). Further analysis showed that professional knowledge increased with tenure, positivity in attitude increased with clinical ladder rating and male nurses were more confident than female nurses when handling child abuse cases.
Conclusions: Based on the results, this study proposes recommendations for implementing child abuse simulation-based education for new nurses and those undergoing continuing education.

1. Introduction

In Taiwan, the reported number of reported child abuse cases rose from 40,705 in 2019–46,733 in 2021. Most child and adolescent abuse cases involve physical and sexual abuse (Ministry of Health and Welfare, 2022). In the 241 Taiwanese news reports published about child protection, 348 children suffered injuries and 54 had died, mostly from physical abuse (Taiwan Fund for Children and Families, 2018). Additionally, based on statistics from the United States Children's Bureau, about 16.7 % of children investigated were victims of abuse or neglect and data from 49 states showed that 70.3 % of these children were first-time victims. From 2017 to 2019, victims of child abuse accounted for 71–76 % of victims of child and adolescent abuse (Child Welfare Information Gateway, 2019). In the United Kingdom, 17 % of the 514 reported child abuse cases were caused by abuse within the family, while 8 % were related to extra-familial child homicide or fatal assault (National Society for the Prevention of Cruelty to Children, 2021).

Taiwan amended its Protection of Children and Youths Welfare and Rights Act in 2015 by increasing the number of articles from 75 to 115, reflecting the government's emphasis on child and adolescent protection-related issues. Compared with medical and surgical nursing, pediatric nursing comprises a small part of the nursing training and

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professional practice. National nursing examinations occasionally include questions regarding child abuse regulations.

Because nursing personnel are frontline workers in childcare, the Protection of Children and Youths Welfare and Rights Act (2012) stipulates that nursing personnel who are aware of child abuse or neglect are obligated to report these cases to the authorities or be fined for violating their obligations. However, a lack of clinical skills may lead to delayed reporting of child abuse cases. Thus, it is crucial for nursing students to be knowledgeable about existing child protection regulations and issues endorsed by the government. Moreover, the inclusion of more child abuse courses and issues in formative education will better enable healthcare professionals to detect, report and provide care to child abuse victims in a timely manner while on the job.

Simulation-based education has been implemented in many countries for over four decades and has been incorporated into medicine and nursing and clinical practice (Nehring and Lashley, 2009). Simulation refers to mirroring actual events or processes while presenting key features or behaviors and incorporating human simulation, roleplaying, standard patients and interactive videos, thereby enabling students to learn standard procedures for actual scenarios, gain clinical experiences and develop critical thinking and decision-making skills (Besar, 2018). In addition to providing students with a stress-free environment that is conducive for repeated and adequate learning and allows for mistakes, simulation-based education is also a practice-oriented teaching strategy that offers student-teacher interactions (Humphreys, 2013). In short, simulation-based education allows healthcare workers to practice identifying scenarios, proactively seek assistance, protect themselves and familiarize themselves with the relevant workflows when they encounter events in need of reporting (Wang et al., 2021).

2. Background

In general, Taiwanese nurses lack adequate education on how to identify and report child abuse cases, but are willing to undergo in-service training on this issue. Research has shown that the more competent nurses are in identifying and reporting suspected child abuse cases, the more likely the abused child can be rescued (Chen, 2010; Lee, Fraser, and Chou, 2007). Domestic and international surveys have found that clinical nurses significantly possess inadequate clinical knowledge about child abuse (Lin, 2020; Lines et al., 2020). Furthermore, according to these studies, several factors contribute to the nurses' low reporting rates of child abuse cases. These factors include the inability to immediately choose whether to report a child abuse case in a high-risk family due to the multitude of additional variables, lack of confidence due to incomplete evidence, the fear of making an incorrect report and the risk of retaliation and having their identity exposed afterwards. Also, the nurses are conflicted about upholding their responsibility to report a case based on their satisfaction with the subsequent measures taken by a child protection unit (Folger and Wright, 2013; Kuruppu et al., 2020). Porcerelli et al. (2017) noted that healthcare workers' professional sensitivity and knowledge about child abuse and trauma, vulnerability and recovery facilitate the development of secure medical environments and trustworthy relations with the abuse victim and the provision of adequate care.

As an approach that involves teaching techniques and teamwork, simulation-based education can enhance nursing students' knowledge and skills (Nguyen et al., 2016). Because child abuse cases are uncommon in clinical practice, it is difficult for students to use their imaginations to problem-solve based on the limited information they learned in the classroom. Therefore, simulation-based education provides an environment for effective classroom learning and enables students to flexibly enhance their clinical responsiveness while learning in a simulated medical setting where there is no risk of harming patients (Vukin et al., 2014). Indeed, simulation-based education improves nursing students' ability to report and respond to child abuse. Teaching students how to respond to child abuse in a timely manner provides them with an opportunity to effectively manage and cope with actual child abuse cases.

To date, several studies have applied simulation-based education to improve learning outcomes among nursing students or nurses. For example, Kim (2018) divided 76 nursing students into two groups; the first group role-played an emergency cardiac resuscitation situation and then underwent a lecture, while the second group underwent the lecture and then role-played the same situation. The results indicated that the second group of students had a better understanding of the course and improved their self-efficacy and critical thinking skills. This demonstrates that roleplaying is a more effective learning approach than attending lectures. Walsh and Strano (2018) suggested that simulated learning scenarios for nursing students to provide care to critically ill patients should cover lesson plan design, simulation equipment, instrument operations, human resource use and operational flow. Many scholars have concurred that the measurement instruments in simulation-based education should be diversified to evaluate their effectiveness. The validity of scale design can be evaluated based on items on the status of simulations, various options for determining solutions and performing in-depth interviews to understand a respondent's tacit knowledge (Herrick, 2001; Lievens et al., 2005). In nursing research, Crowe et al. (2018) designed a four-hour simulation course for Canadian internal medicine nurses that included lectures and four 40-minute simulation scenarios. The nurses' self-confidence and knowledge in providing nursing care were examined immediately and three months after the intervention. The course significantly enhanced nurses' self-confidence and professional knowledge in providing nursing care and this finding remained when assessed at the three-month follow-up period.

At present, child abuse remains excluded from formative nursing education in Taiwan. Most existing studies have focused on the incidence and management of child abuse and workers' willingness to report such cases; few have examined the design of simulation courses for identifying and responding to child abuse cases. Thus, the aim of this study was to explore the effectiveness of simulation-based education in enhancing the learning outcomes of nursing students regarding their awareness of and attitudes toward child abuse, as well as their self-confidence in handling these cases.

3. Method

3.1. Design

This study adopted the two-group quasi-experimental design. A computer lottery was used to assign four undergraduate classes to either the experimental or contrast groups.

3.2. Participants and setting

The study participants were in-service night school nursing students at a Taiwanese university. In Taiwan, 70 % of nursing graduates complete two-year nursing programs at the university. The inclusion criteria were: (a) Had completed more than three months of clinical work; (b) Had completed pediatric nursing and subjects on physical assessments; (c) Licensed as a registered nurse; (d) Was willing to participate in this study. We invited 190 participants from two classes in a night school's nursing students. Taiwan's clinical ladder system is divided into four levels of career advancement for nurses: N1, N2, N3 and N4. In Taiwan, most hospitals employ this system to evaluate different core competencies and abilities of clinical nurses (Taiwan Nurses Association, 2018). Participants in this study were all involved in this clinical ladder system.

3.3. The intervention of CASE

The intervention in this study was the compulsory Professional

Nursing Concepts course in the nursing program, a two credit, 36-hour course that was taught over 18 weeks. For many years, this course was taught in a traditional way such as lecture-based teaching and its effectiveness was rather limited for the nursing students being employed in hospitals or clinics on a full-time or part-time basis. Thus, this study incorporated a child abuse simulation-based education teaching plan into a quarter of the course length, during weeks 13–16. The plan consisted of two four-hour topical issues—physical child abuse and sexual child abuse, for a total of eight hours. The first author guided the CASE, the content of Child Abuse Simulation-based Education (CASE) for each topic included prerecorded videos on child abuse and roleplaying situations. The simulations were performed at the university's Objective Structured Clinical Examination (OSCE) Skills Center.

The content and self-reflection components of the teaching plan were designed based on the Taiwan Ministry of Health and Welfare's child abuse statistics by type and the recommendations from Feng et al. (2005). Many abused children tend to be very young and in rapidly deteriorating conditions. Most of them seek emergency or outpatient pediatric treatment accompanied by their family members; thus, treatment differs based on the needed emergency procedures and teamwork. Additionally, nursing students have relatively few opportunities to learn about child abuse because it is unlikely for them to handle these cases during their clinical placements, which typically do not take place in emergency or outpatient departments (Table 1).

Table 1
CASE intervention content.

Topical issue	Objectives	Simulation content
Physical abuse (including neglect)	1. Students get to apply their theoretical knowledge, leverage their physical and mental assessment skills and identify abnormal values. 2. Students use their communication skills and express empathy and concern while examining a patient. 3. Students get to identify children suffering from abuse or neglect and the subsequent reporting procedures.	**Pre-lesson preparation** 1. The students watched a prerecorded video on the simulation course online two weeks before the lesson. 2. Each class is divided into five groups beforehand (9 students per group). 3. Because of lesson time restrictions, a random group was chosen to do the role-play in each simulation for 30–40 min, while the remaining groups watched the role-playing. The process was recorded to facilitate subsequent discussion and reflection. **Situational simulation** 1. Act 1, 0–5 min: A child is accompanied by their family to the hospital and the staff was informed that the child is suffering from physical or mental discomfort. 2. Act 2, 6–15 min: The nurses queried the family members and the child about the process of abuse. 3. Act 3, 16–25 min: The child receives preliminary treatment and the nurses discuss the reporting procedure with their team. **Post-lesson reflection** 1. Engaging in group reflection. 2. Completing individual reflection worksheets.
Sexual abuse (including emotional abuse)	1. Students get to apply their theoretical knowledge and leverage their physical and mental assessment skills. 2. Students use their communication skills and express empathy and concern while examining a patient. 3. Students understand the subsequent reporting procedures for sexually or emotionally abused children.	

3.4. Measurement

Three scales were designed based on relevant studies and the curriculum goals. Three experts (the emergency room supervisor, head nurse of the pediatric department and a professor of nursing) were invited to provide recommendations for improving the completeness, appropriateness and importance of the scales, so as to determine their expert validity. The scales were then administered to 10 emergency room and pediatric nursing workers to validate the continuity and clarity of the items. This study used three scales developed by the first author.

1. Demographic variables: gender, age, marital status, job title, clinical ladder, tenure and department served.
2. The Child Abuse Professional Knowledge Scale: 16 items that measure students' professional knowledge and opinions of child abuse were designed by referring to relevant studies. The items were measured on a five-point Likert scale ranging from "strongly disagree" to "strongly agree." A higher score indicates a higher level of knowledge. The content validity index (CVI) was.88 and the internal consistency (reflected by the Cronbach's α) was.73.
3. The Child Abuse Reporting Attitude Scale: Six items that measure students' attitudes toward child abuse cases were designed by referring to relevant studies. The items were measured on a five-point Likert scale with answers ranging from "strongly disagree" to "strongly agree." Score ranged from 6 to 30 points, with a higher score indicating a more positive reporting attitude. The CVI was 1.0 and the Cronbach's α was.70.
4. The Self-confidence in Handling Child Abuse Cases Scale: 12 items that measure students' self-confidence in reporting and handling child abuse cases were designed by referring to relevant studies. The items were measured on a five-point Likert scale with scores ranging from 12 to 60 points and a higher score indicating higher self-confidence in reporting and handling child abuse cases. The CVI was 1.0 and the Cronbach's α was.75.

3.5. Data collection

The course instructor (the first author of this study) began by explaining the objectives of this study to the students. The students' written consent to participate in this study was obtained and then the data collection process began. The questionnaire was administered online, before and after the intervention and took 10–15 min to complete. Both groups completed the pretest questionnaire before the lesson on the 13th week and the posttest questionnaire on the 16th week. There was a four-week interval between the questionnaires. Data were collected from February 18 to June 28 2019. The first author provided a shopping store coupon to every participant as compensation.

3.6. Data analysis

The data were tabulated into Excel files and analyzed using SPSS for Windows V22.0 software. Demographic variables were analyzed for descriptive statistics, including the percentage, mean and standard error distributions; categorical data were expressed in terms of frequency distribution and percentage; and continuous variables (age, tenure) were expressed in terms of mean, standard error, frequency distribution, percentage, maximum value and minimum value. The significance of the inferential statistics was calculated through generalized estimating equations (GEEs) (Liang and Zeger, 1986). The factors included groups (experimental vs. contrast), measurements (pretest vs. posttest) and interactions (group × measurement). Also, the between-group and group-time interactions were also examined.

3.7. Ethical consideration

The participants were recruited after an institutional review board approved (IRB No.17-046-B1) this study. The students were sufficiently informed of the research objectives, methods and benefits conferred to them. Their grades or lesson-taking rights would remain unaffected even if they were unwilling to complete the questionnaire. The location of data collection was in classroom and data collection began after the students agreed to participate and signed informed consent forms. The data were coded and de-identified and were solely used for academic research. After collecting the data, written information and videos about the intervention were provided as a compensation to the control group to assist them in self-directed learning.

4. Results

4.1. Demographic variables

There were 190 participants in this study, 94 in the experimental group and 96 in the contrast group. Both groups agreed to complete the pre- and posttest questionnaires. Both groups were homogenous as there were no significant between-group differences in participants' gender, age, marital status, job title and department served ($p > .05$) (Table 2).

The variables with statistically significant differences (age and sex) were further analyzed and controlled using GEEs. Variations in the students' professional knowledge, attitude and self-confidence in handling child abuse cases were examined based on factors such as groups (experimental vs. contrast), measurements (pretest vs. posttest) and interactions (group × measurement).

Table 2
Distribution of demographic variables ($N = 190$).

Variable	Contrast (n = 96)		Experimental (n = 94)			
	n	%	*n*	%	x^2 or t	*P*
Gender					.072	.672
Male	6	6.3	7	7.5		
Female	90	93.7	87	92.5		
Mean age (SD)	22.0 (9.0)		22.0 (9.0)		.145	.665
Mean tenure (year) (M ±SD)	2.6 (6.5)		2.8 (6.7)		.210	.626
Marital status					1.225	.408
Single	90	93.8	91	96.8		
Married	6	6.2	2	2.1		
Divorced	0	0	1	1.1		
Job title[a]					.071	.961
Registered nurse	90	93.8	92	97.9		
Licensed practical nurse	6	6.2	2	2.1		
Clinical ladder system[b]					3.825	.171
N1	68	70.8	65	69.2		
N2	16	16.7	13	13.8		
N3	12	12.5	16	17.0		
N4	0	0	0	0		
Department					1.143	.725
Emergency room	10	10.4	10	10.6		
Internal medicine	22	22.9	22	23.5		
Intensive care unit	12	12.5	16	17.2		
Pediatric	18	18.7	13	13.9		
Surgery	24	25.1	15	15.6		
Others	10	10.4	18	19.2		

[a] Licensed practical nurse was accredited and named 10 years ago. Only one license named registered nurse exists in Taiwan.

[b] Nurse clinical level nationwide certification system in Taiwan. A higher number indicates more work experience.

4.2. Effectiveness of CASE on students' professional knowledge of child abuse

GEE analyses showed that the experimental group's professional knowledge was superior to that of the contrast group ($B = 3.531$, Wald $\chi2 = 38.210$, $p < .001$) and major differences were observed in work experience and clinical ladder rating. Nurses with more work experience scored higher ($B = 0.101$, $p = .018$). N3 nurses scored significantly higher than N1 nurses ($B = 2.080$, $p = .009$), but did not differ from N2 and N4 nurses (Table 3).

4.3. Effectiveness of CASE on students' child abuse reporting attitudes

GEE results showed that the experimental group's child abuse reporting attitude was better than that of the contrast group's ($B = 1.668$, Wald $\chi2 = 50.581$, $p < .001$) and a significant difference was observed between N3 and N1 nurses ($B = 1.713$, $p < .001$). This suggests that nurses felt positive about the reporting of child abuse and scored higher after the intervention. Nurses with higher clinical ladder ratings scored significantly higher than those with lower ratings with regard to their child abuse reporting attitudes ($p < .001$). No significant differences were observed between different departments, however (Table 4).

4.4. Effectiveness of CASE on students' self-confidence in handling child abuse cases

GEE results showed that the experimental group became more self-confident in handling child abuse cases compared with the contrast group ($B = 7.051$, Wald $\chi2 = 115.400$, $p < .001$) and significant differences were observed based on time of measurement (posttest higher than pretest, $B = 1.072$, $p = .004$) and gender (female nurses scored lower than males, $B = -4.235$, Wald $\chi2 = 10.892$, $p = .001$). Furthermore, another significant difference was observed between different departments (Table 4), as pediatric nurses scored lower than emergency room nurses ($B = -3.278$, Wald $\chi2 = 2.589$, $p = .042$). Male nurses scored higher than females ($p = .001$) while emergency room nurses scored higher than pediatric nurses ($p = .042$; Table 5).

5. Discussion

This study incorporated simulated child abuse scenarios into a professional nursing course to effectively enhance the professional knowledge, attitudes and self-confidence of nursing students in handling child abuse cases. This study contributes to nursing education by demonstrating that CASE effectively improves students' learning outcomes regarding child abuse issues. The inclusion of child abuse educational plans in professional courses remains uncommon in clinical practice

Table 3
Pretest and posttest differences in students' professional knowledge of child abuse ($N = 190$).

Variable	*B*	Standard error	Wald Chi-Square	*P*
Intercept	58.014	1.770	1001.663	< .001
Group (contrast group as baseline)	1.053	0.601	3.600	.046
Measurement (pretest as baseline)	-0.216	0.421	0.401	.420
Group × Measurement	3.521	0.511	38.210	< .001
Age	0.101	0.028	3.242	.018
Ladder (N1 as baseline)				
N2 vs. Nl	-0.129	0.889	0.044	.710
N3 vs. Nl	2.080	1.221	5.210	.009

Note: GEE = generalized estimating equations.

Table 4
Pretest and posttest differences in students' child abuse reporting attitudes *(N = 190)*.

Item	*B*	Standard error	Wald Chi-Square	*P*
Intercept	20.238	0.814	701.706	< .001
Group (contrast group as baseline)	-0.596	0.322	3.310	.031
Measurement (pretest as baseline)	-0.189	.0213	1.105	.202
Group × Measurement	1.668	0.255	50.581	< .001
Ladder (N1 as baseline)				
N2 vs. Nl	0.265	0.317	0.650	.403
N3 vs. Nl	1.713	0.431	15.484	< .001
Department (emergency room as baseline)	1.389	1.020	2.110	.126
ICU vs. emergency room	0.711	1.010	0.489	.471
Pediatrics vs. emergency room	0.398	1.122	0.116	.721
Surgery vs. emergency room	0.704	0.855	0.601	.430
Internal medicine vs. emergency room	0.311	0.909	0.111	.627
Others vs. emergency room				

Note: GEE = generalized estimating equations.

Table 5
Pretest and posttest differences in students' self-confidence in handling child abuse cases *(N = 190)*.

Item	*B*	Standard error	Wald Chi-Square	*P*
Intercept	46.389	1.441	630.860	< .001
Group (contrast group as baseline)	1.004	0.800	1.550	.177
Measurement (pretest as baseline)	1.072	0.330	6.434	.004
Group × Measurement	7.051	0.701	115.400	< .001
Gender				
Female vs. male	-4.235	1.213	10.892	< .001
Department (emergency room as baseline)	-2.101	2.281	0.891	.231
ICU vs. emergency room	-3.278	2.010	2.859	.042
Pediatrics vs. emergency room	-3.179	2.123	2.669	.055
Surgery vs. emergency room	0.389	2.588	0.108	.871
Internal medicine vs. emergency room	-2.189	2.137	2.981	.389
Others vs. emergency room				

Note: GEEs = generalized estimating equations.

because it is restricted to certain specialties. However, clinical nurses are often unprepared when they encounter child abuse cases in practice and similar topics are not necessarily covered in the in-service training programs of every specialty in the hospital. This study structurally included scenario-based education in a course undertaken by in-service nursing students and successfully enhanced their learning outcomes. The findings of this study were generalizable to other nursing schools.

The experimental group's posttest improvement in professional knowledge was higher than that of the contrast group. In particular, N3 nurses had the highest mean score, which differed significantly with that of N1 nurses, suggesting that tenure was positively correlated with knowledge. This finding is in line with that of Lin (2020), who surmised that clinical nurses with shorter tenures or trainee nurses who lack clinical experience are less capable of handling child abuse emergencies effectively. The results from this study showed that experienced nurses have better attitudes than inexperienced nurses. This could be because nurses gained more clinical experience after achieving N3 on the clinical ladder and were more capable of handling emergencies with a better attitude than N1 nurses.

In terms of self-confidence in handling child abuse cases, emergency room nurses scored better than pediatric, outpatient, internal medicine and surgical nurses and a significant pretest-posttest difference was observed between their score and that of pediatric nurses. A systematic review revealed that the emergency room and pediatric department are indeed more likely to encounter child abuse cases (Tung, 2018) than other departments. For this reason, a larger number of studies were based on these two departments. Therefore, the nurses in this study were more confident in their ability to handle child abuse cases and this finding is consistent with those of Salem et al. (2015) and Coyne et al. (2018).

This study results suggest that nurse students were more confident when confronting the occurrence of child abuse and, consequently, handled the case in a positive manner. Nursing curricula should reinforce students' knowledge of child abuse so that they have adequate prerequisite knowledge about this issue, which may be conducive to how they manage it in future clinical practice. Another notable finding is that male students were more confident in handling child abuse cases than female students; thus, subsequent studies could explore the reasons why this is the case. Additionally, Ming et al. (2016) found gender differences among nursing personnel when coping with violence. Because the nursing workforce remains female-dominated, simulation-based education should be offered to female clinical nurses.

In this study, simulation videos were broadcasted to the students beforehand to enhance the effectiveness of CASE. An Australian study found that nursing students improved their professional competence after watching situated simulation videos (Coyne, Frommolt, Rands, Kain, and Mitchell, 2018). These online videos are extremely beneficial for fresh graduates and nursing personnel with shorter tenures and could be used as teaching aids in the future. Salam, Saylor and Cowperthwait (2015) and Heckemann et al. (2015) achieved similar findings to those of our study and suggested that simulation-based education could improve students' professional attitudes, response capabilities, management skills and responding attitudes. This study's greatest contribution to the literature is its finding that scenario-based education on child abuse issues generated excellent learning outcomes among nursing students.

Nursing education in Taiwan consists of two educational systems: general education and vocational education. Vocational nursing graduates are the backbone of the nursing workforce (Ministry of Education, 2019). This study involved students from a two-year nursing program at the university. As over 70 % of nursing graduates in Taiwan are from the vocational educational system, CASE can be applied broadly to two-year nursing programs to help nurses develop practical knowledge and skills in handling child abuse cases.

Importantly, Hung et al. (2021) wrote that simulation-based education is the quickest approach for altering students' awareness and attitudes; hence, diverse learning strategies should be devised based on teaching objectives and students' backgrounds, so as to allow them to achieve effective learning.

5.1. Implications

We recommend that CASE program included in the pediatric nursing, professional topics and capstone courses undertaken by students with nursing experiences who are receiving continuing education at universities. Before the simulations are performed, situational videos should be broadcasted so that the students can focus on solving clinical problems during the actual simulation. However, because nursing students who are receiving basic formative education lack clinical experience, simulations should be systematic or contain an extensive educational

component to enhance student learning outcomes. Furthermore, several hours of simulation-based education training could be integrated into the nurse orientation programs at the pediatric or emergency departments, as this is conducive to real-life clinical application. Since female nurses may be relatively less confident in handling child abuse cases, special high-risk departments such as emergency departments and intensive care units should provide more encouragement or incentives for female nurses in their clinical continuing education programs, thereby mitigating their lack of self-confidence when facing clinical emergencies such as abuse or violence.

5.2. Limitations

The limitations of this study are: (a) Because of curriculum restrictions, the intervention could only be incorporated into a compulsory course for four weeks and therefore the long-term continuity of the learning effectiveness after the four-week interval could not be measured; (b) The instruments were all self-report questionnaires and therefore, it was not possible to objectively assess students' actual responsive skills toward clinical child abuse.

6. Conclusion

This study integrated CASE into a professional course and effectively improved the professional knowledge, attitudes and self-confidence of nursing students in handling child abuse cases. The study's results provide new evidence on how to enhance nurses' handling of and response toward child abuse cases, along with new information on nursing education. Going forward, this study recommends that nursing students with different backgrounds receive CASE. Moreover, with regard to clinical continuing education, more motivational measures should be implemented for female nurses who lack self-confidence, thus enabling them to respond more efficiently to cases of child abuse or violence against children.

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CRediT authorship contribution statement

Pei-Yu Lee: Study conception and design, Data collection, Data analysis and interpretation, Drafting of the article, Critical revision of the article. **Bih-O. Lee:** Study conception and design, Data analysis and interpretation, Drafting of the article, Critical revision of the article..

IRB

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Conflict of interest

No conflicts of interest to declare.

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