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## Research article

# Medium-term outcomes of a program to upgrade the nursing faculty in Cambodia: A qualitative study

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## ABSTRACT

Continuous professional development is important for improving professional competencies, such as cognitive knowledge, technical skills, behaviors, and attitudes. Trainees who complete training programs can have a positive influence on their workplaces. However, it is challenging to establish a process that can facilitate individual learning and help achieve training outcomes in educational and clinical workplaces. In Cambodia, a tumultuous history has played a part in the deficit of adequately prepared nursing faculty. Since the faculty development is vital to ensuring the quality of education, the application of upgraded nursing programs has started in 2011. After the completion of upgraded program, an immediate post-training study was conducted in 2014. Results showed that some faculty members did not accept trainees because they lacked an understanding about nursing concepts.

The current study aimed to evaluate the medium-term outcomes of an established program that can improve nursing education and to identify relevant factors in light of the institutional development of educational and clinical facilities in Cambodia. A qualitative study incorporating focus group discussions, key-informant interviews, and teaching document reviews was performed with a thematic analysis using the four-level training evaluation model of Kirkpatrick. Finally, factors influencing outcomes were assessed based on the Bronfenbrenner's ecological system theory.

Five themes for *behavior* and three themes for *results* were identified as medium-term outcomes from an institutional development aspect. The major enabling factors for the above-mentioned themes were the support of institutional managers, continuous networking among trainees, and supportive national policy. Compared with the immediate post-training study findings, the perceived medium-term outcomes became more strategically focused. Then, the impact of training at a considerably broader scale within the workplace was discussed.

The findings highlighted the importance of medium-term program delivery and monitoring if one understands the role played in stimulating outcomes. Moreover, the importance of contextual factors including the influence of managers and policy environment were emphasized.

## 1. Introduction

The establishment of a competent health workforce is important in

accelerating the achievement of universal health coverage (Campbell et al., 2013). As improving the academic skills of nurses is essential in improving clinical outcomes (Audet et al., 2018), nursing education has

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focused on higher degree level programs (World Health Organization, 2009). Thus, previous studies on low- and middle-income countries have demonstrated that faculty development is vital in ensuring the quality of education (Evans et al., 2013; Frantz et al., 2015). Faculty development improves the level of skills learned and increases the confidence of participants, promoting interprofessional education that requires communication within healthcare teams (Bilal et al., 2019; Azad et al., 2020).

Moreover, to maximize the outcomes of higher education programs, the institutional development of educational and clinical facilities is crucial. These can provide an environment in which more educated nurses can work better. However, it is challenging to create a process that can facilitate individual learning and help achieve training outcomes in educational and clinical workplaces (Cilliers and Tekian, 2016). In Asia, due to several contextual factors, trained nurses cannot easily use their knowledge and skills immediately after returning to their workplaces, including educational and clinical facilities. Such factors include obedience to hierarchy, respect for seniority, lack of consensus on the utilization of learning among faculty members in the workplace, and dependency on personal commitment (Kim et al., 2017).

The effect of a program on nursing faculty members and clinical preceptors and the identification of factors influencing medium-term outcomes must be assessed to establish an effective post-training follow-up. To evaluate nursing training programs, the Kirkpatrick's model, which describes four levels of outcomes (*reaction* and *satisfaction*, *learning*, *behavior*, and *results*) is commonly used. The first level evaluates the immediate reaction of trainees to their training and the extent to which they found it favorable, engaging, and relevant to their jobs. The second level investigates the degree to which participants acquire relevant knowledge, skills, and attitudes. The third level assesses the degree to which participants apply what they learned in the workplace. The last level evaluates the degree to which targeted outcomes occur in the broader area of work after training (World Health Organization, 2010; Kirkpatrick and Kirkpatrick, 2016).

According to a systematic review of faculty development, the number of studies about *reaction* and *learning* was higher than that of *behavior* and *results* (Cilliers and Tekian, 2016). In particular, the evaluation of *results* such as changes in participants and organizational systems remains relatively unexplored (Steinert et al., 2016). Therefore, the latter two elements (*behavior*, changes in the practice and application of learning to working places among trainees and *results*, the effect of behavior on the organization or department of trainees) were investigated. Further, factors influencing medium-term outcomes were assessed using the Bronfenbrenner's ecological system theory (Bluteau et al., 2017).

### 1.1. Faculty development program in Cambodia

In Cambodia, a tumultuous history has played a part in the deficit of adequately prepared nursing faculty (Fujita et al., 2019; Matsuoka et al., 2021). In 2011, only ten nursing faculty members in public training institutions had a Bachelor of Science in Nursing (BSN) degree (Cambodia Ministry of Health, 2012). In 2011, the Cambodian Ministry of Health (CMoH) started to improve the program from an Associate Degree of Nurses to a BSN. It aimed to overcome the shortage of qualified nursing faculty members and clinical preceptors. The program had two types (in-country and foreign-country training), and both types were completed within 18–24 months.

The in-country upgraded program curriculum was developed by the CMoH and was delivered in collaboration with the University of the Philippines Manila and the World Health Organization. The course comprised 570 h of theory in professional subjects (e.g., nursing science, fundamental science, health promotion, nursing administration, and nursing research) and 735 h of clinical practicum (Cambodia Ministry of Health, 2015). To date, different developmental partners have continually facilitated in-country programs. More than 150 BSN students,

including nursing faculty members and clinical nurses, completed the upgraded program (personal communication with the CMoH 2018) between 2011 and 2017.

The foreign-country program was conducted for Cambodian nurses in Thailand. Thai curricular specialists customized the existing Thai curriculum (certified by the Thai Nursing Council) to supplement the additional educational needs of nurses in Cambodia. The course comprised 810 h of theory in professional foundations (e.g., anatomy and physiology) and subjects (e.g., nursing science, fundamental science, health promotion, nursing administration, and nursing research), and 810 h of clinical practicum (Cambodia Ministry of Health, 2015). It was delivered in an on-campus setting at St. Luis College, Bangkok, and was financially supported by the Japan International Cooperation Agency (JICA). In total, 32 nursing faculty members and clinical instructors in four cohorts were trained between 2011 and 2015 (Cambodia Ministry of Health, 2015).

In 2014, an immediate post-training study in which 34 (55.7 %) of 61 nurse trainees and 10 managers from 8 (57.1 %) of 14 participating agencies were interviewed was performed. This was conducted 6 months to 2 years after upgrading one of the two programs. Using the Kirkpatrick's model, the *learning* and *behavior* of trainees were assessed and the benefits of professional nursing practice and teaching after completing the upgraded courses were identified. However, the immediate post-training study focused only on individual behavior outcomes. We found that these trainees were not well accepted by their nursing colleagues and other health professionals at their workplaces due to the lack of understanding about nursing concepts among faculty members in the workplace (Koto-Shimada et al., 2016).

In this medium-term, post-training study, we aimed to evaluate *behavior* and *results*, which are considered the medium-term outcomes of the two training programs, and to identify influencing factors by emphasizing the institutional development of educational and clinical facilities in Cambodia.

## 2. Method

### 2.1. Design

This is a qualitative study that incorporated interviews and document reviews. First, key-informant interviews and focused group discussions (FGDs) were performed. Second, teaching documents were reviewed to triangulate the findings.

### 2.2. Participants

Two authors (KKS and SM) collected data from two different groups consisting 37 participants in total. To identify the medium-term outcomes from an institutional development aspect, FGDs were conducted with the first group and key-informant interviews with the second group. The first group comprised 26 trainees who are nursing faculty members and clinical preceptors from four schools and five hospitals. They completed the upgraded program from 2012 to 2014. Hence, data were collected 4–6 years after completing the training programs. All trainees who participated in the immediate post-training study in 2014 were included in this medium-term, post-training study. This group comprised 8 nursing faculty members who participated in an in-country program as well as 8 nursing faculty members and 10 clinical preceptors who attended a foreign-country program. The second group comprised 11 managers from 9 participating agencies. They held positions such as school directors, technical bureau chiefs, hospital directors, and nursing directors. Moreover, they supervised the faculty members and clinical preceptors described as the first group.

The authors (KKS and NF) knew participants through the faculty development program by JICA.

2.3. Data collection

First, three authors (KKS, NF, and SM) developed a topic guide for FGDs and key-informant interviews, then conducted interviews at the workplace of participants (April–May 2018). The two elements of the Kirkpatrick's model (*behavior* and *results*) were assessed. The interview topic guide highlighted post-training activities based on acquired skills (*behavior* evaluation), institutional outcomes (*results* evaluation), influencing factors (e.g., opportunities and challenges within and outside of the workplaces), and proposed mechanisms that can further enhance professional competencies.

Two authors (KKS and SM) conducted interviews with a native bilingual interpreter fluent in Khmer (the Cambodian language) and English from April to May 2018. Topic guide was pilot tested to confirm its face validity and accuracy of interpretation. All interviews were audio recorded. The authors and research assistants took field notes throughout the discussion with the participants' permission.

In the second step, the first author (KKS) and research assistants visited three public educational institutions. The nursing faculty member who was interviewed worked and collected teaching and learning documents from June to August 2019.

Table 1 shows the focus of topic guides.

This study was approved by the ethical review committee of CMOH (038 and 081NECHR), National Center for Global Health and Medicine in Japan (# 2443), and University of Tokyo (2018154NI). The interviewers obtained informed consent for data collection from each participant. All participants were informed that all personal data will be kept confidential, and they approved the audio recording of their responses.

2.4. Data analysis

To obtain validity, we followed the steps outlined by Nowell (Ettekal and Mahoney, 2017). The research assistants who performed the interview transcribed the audio recording in English. The authors (KKS and SM) as interviewers reviewed the transcripts to detect any discrepancies from the field notes. Then, the authors (KKS, NF, and SM) read the transcripts thoroughly and immersed themselves in the data, and analyzed the transcripts in the following manner by applying thematic analysis: First, we assigned codes to phrases and sentences that described the meaning of the text segment. Then, we assigned texts with similar meanings under the same code. Next, we gathered similar codes

**Table 1**  
The focus of topic guides.

Level in Kirkpatrick's model	Topic guide
Focus groups discussions for trainees (include review of teaching documents)	
Level 3 Behavior	Utilization of skill acquired from the course
Level 4 Outcome	Outcome of activities/contribution at their institution Outcome of activities/contribution outside of their institution Contribution for nursing professionals Gaps between expectation and challenges Influencing factors (support received: relationships/networks, mentoring/coaching, organization/system/culture) Collaboration between in and foreign-country bridging courses attendants
Key-informant interview for managers	
Level 3 Behavior	Utilization of bachelor nurses
Level 4 Outcome	Outcome of utilization of bachelor nurses and strategy (relationship and networks, mentoring and coaching, tasks and activities and organization, systems, and culture) Gaps between expectation and reality

into more conceptual categories corresponding to trainees' behavior, results, influencing factors, and further development, and finally, we identified themes by relating categories and subcategories. The whole process was repeated until saturation among authors (KKS, NF, SM, and AZ). Furthermore, using the same process, influencing factors were categorized based on the Bronfenbrenner's ecological system theory, which relates human development to the influences of different environmental systems (Bowen, 2009). This theory proposes four levels of outcomes: microsystem: individual factors, mesosystem: organizational or institutional factors, exosystem: local context or community, and macrosystem: national-level factors (Blutreau et al., 2017). After producing the themes, the themes between nursing faculty, clinical preceptors, and institutional managers were compared. The first author (KKS) presented the summary of findings to the participants' representatives and received valuable comments from the participants to refine further findings.

A data analysis was performed based on manual-coding with Microsoft Excel 16.3 (Redmond, Washington, the USA). The research team classified and coded the translated teaching documents. Then, they were triangulated and compared with the themes from the interviews (S2 Table Table) (Nowell et al., 2017).

The methods and reporting of results were in accordance with the Consolidated Criteria for Reporting Qualitative Studies (COREQ) guidelines and Standards for Reporting Qualitative Research. S1 Table Table shows a complete COREQ checklist.

3. Results

3.1. General characteristics of participants

The average years of teaching experience among the nursing faculty (NF) members who participated in the in-country program (ICP) was 5.5 years. Hence, they had more experience than those who attended the foreign-country program (FCP). The clinical preceptors (CPs) were commonly women. Table 2 shows the demographic characteristics of participants.

3.2. Evaluation of medium-term outcomes

A thematic analysis was performed, and results identified the five main themes for *behavior* and three themes for *results*. Fig. 1 shows the evaluation results for each level based on the type of participant.

3.3. Evaluation of behavior

3.3.1. Improved teaching and learning activities

The NF worked to improve the following teaching and learning

**Table 2**  
Demographic characteristics of participants.

Type of participants	Nursing faculty (NF)		Clinical preceptors (CP)	Managers of participating agencies (n = 11)
	In-country program (ICP) (n = 8)	Foreign-country program (FCP) (n = 9)	Foreign-country program (FCP) (n = 9)	
The upgraded program				–
Average age (range)	44.1 (34–58)	38.0 (31–49)	43.3 (38–49)	51.6 (43–59)
Female sex	2 (22.2 %)	3 (37.5 %)	6 (66.7 %)	0 (0.0 %)
Average Teaching experience <sup>a</sup> (years)	16.6	11.1	–	19.8

<sup>a</sup> Nursing faculty only.

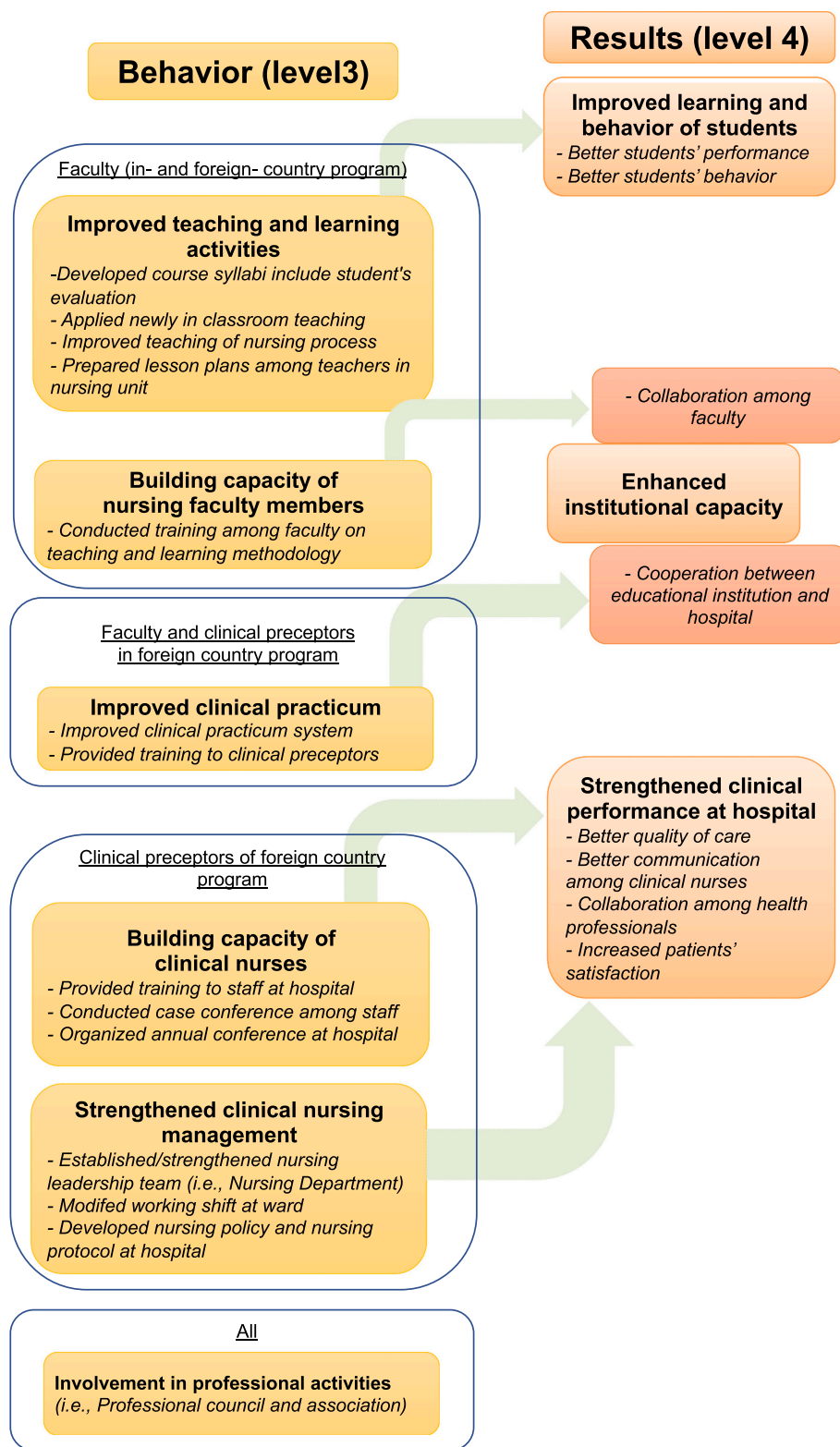


Fig. 1. Evaluation of each level according to the type of participants.

activities: developing course syllabi based on the evaluation criteria of students, preparing case scenarios to teach the nursing process, applying student-centered approaches to classroom teaching, and preparing lesson plans among the nursing unit of faculties.

*“Before, we only give lectures. Now, we offer more time for students to perform their activities and research and answer their assignments.”*

(NF-ICP 2)  
*“To ensure each course syllabus is appropriate for the school system, we have a technical working group to check and evaluate its contents.”*  
 (NF-ICP 8)



### 3.3.2. Building capacity of NF members and clinical nurses

The NF members and CPs contributed to building the capacity of their fellow faculty members and clinical nurses via educational activities such as training, conferences, and workshops.

*“The trainee conducted training and education to their colleague clinical nurses to the points when he observed during supervision at the hospital, such as hygiene and infection control”.*

(hospital manager 3)

*“The trainee takes leadership in improving technical skills, problem-solving, and teaching methodology because they are the trainer of the newly hired teachers”.*

(school manager 1)

*“The nursing process has been implemented in all wards under the supervision of the Nursing Department”.*

(CP-FCP 3)

### 3.3.3. Improved clinical practicum

The clinical practicum was improved by NF members and CPs who joined the foreign-country programs. Further, they developed a case assignment program for students and provided training about the nursing process to clinical preceptors.

*“The CMoH provides a workbook that focuses on clinical nursing techniques alone. We believe that this was not enough, and students must put the theory into practice. Therefore, case assignments were provided to students”.*

(NF-FCP 5)

*“I used what I learned from Thailand, like the pre-test and post-test for the students when they come to clinical practicum in the hospital”.*

(CP-FCP 1)

### 3.3.4. Strengthened clinical nursing management

Clinical preceptors contributed to improving nursing management, reinforcing the function of the nursing department, improving shift handover reports, and modifying the working shift at wards. Moreover, they developed the nursing policy and protocol of the hospital.

*“I was happy to be included in a team of nursing leaders. The hospital allowed us to establish activities in the nursing department. When we did not have the nursing department, the nurses did not know their supervisors”.*

(CP-FCP 2)

### 3.3.5. Involvement in professional activities such as professional council and association

Several NF members and clinical preceptors were involved in the professional development activities of the Cambodian Council of Nurses and Cambodian Association of Nurses (CAN). Professionals who joined the FCP established an alumni association from the CAN in 2019 and some also engaged in empowering women's leadership within the institution.

*“We now have a strong group of nurses and midwives who have discussed things very openly. Sometimes, in Cambodia, it was hard to talk about things openly. However, unlike in this group, we spoke the same language and understood the same things”.*

(CP-FCP 10)

## 3.4. Evaluation of results

### 3.4.1. Enhanced institutional capacity

By establishing the capacity of NF members and clinical preceptors, we identified the following outcomes: improved collaboration among

NF members and enhanced cooperation between educational institutions and hospitals in terms of clinical practicums.

*“The clinical preceptors were interested in providing case assignments to students during clinical practicum. We explained it to them via technical meeting”.*

(NF-FCP 5)

*“We worked together with other schools on developing questions, we proposed CMoH to keep in the national question bank”.*

(school manager 2)

### 3.4.2. Improved learning and behavior of students

The NF members and their managers reported that the performance and behavior of students had improved. The learning of students was enhanced by improving educational content as well as teaching and assessment methods.

*“The students were afraid to ask questions or answer the questions of faculty members. By encouraging students, they become more active and can learn more”.*

(NF-ICP 4)

*“After introducing a new teaching methodology, students started attending classes and going to the library to read the textbook and other references”.*

(NF-FCP 7)

### 3.4.3. Strengthened clinical performance at the hospital

The clinical preceptors and their managers reported improvements in clinical performance by reducing workload, providing a better quality of care, enhancing communication among nurses, and promoting collaboration among health professionals. Consequently, patient satisfaction was achieved.

*“Developing a nursing protocol was also beneficial to other departments. For example, a surgical department developed a nursing care protocol on wound care, and it was shared with the intensive care unit. Therefore, both departments followed the same protocol.”.*

(hospital manager 3)

*“After we introduced 12 hours working shift, the nurses can go home and relax. By reducing their workload, nurses can have more energy to take care of the patients”.*

(CP-FCP 2)

### 3.4.4. Factors influencing medium-term outcomes

According to the ecological system theory, factors influencing the medium-term outcomes were identified and categorized into micro-, meso-, exo-, and macro-systems (Fig. 2).

At the microsystem level, the NF members and clinical preceptors highlighted the motivation, initiative, leadership, and professional values of trainee, which can improve nursing education.

*“I spent my time and own money to continue studying. I registered as a member of another country's association and research online”.*

(CP-FCP 7)

At the mesosystem level, managers provided the following support: promoting a managerial position, supporting an activity financially, and providing encouragement. The NF members and clinical preceptors were given more responsibilities to improve teaching and learning activities. Then, they worked as a team.

*“I nominated trainees for promotion. They can contribute to the working group in terms of teaching and learning activities, and their salary also increases if they got promoted”.*

(school manager 3)

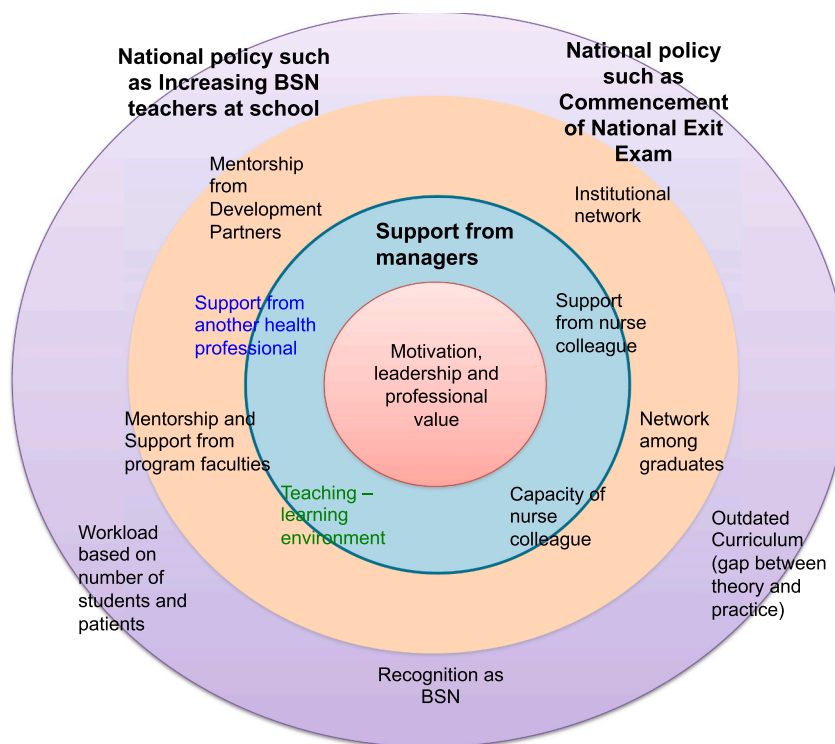


Fig. 2. Factors influencing medium-term outcomes. (For interpretation of the references to color in this figure, the reader is referred to the web version of this article.)

*“I encourage them to continue studying for a master’s degree abroad so that they could improve this training unit even better”.*

(hospital manager 1)

At the mesosystem level, recognition from other health professionals (particularly medical doctors) was a promoting factor among clinical preceptors (printed in blue in Fig. 2). The inhibiting factors were teaching and learning environment with defective materials and references (printed in green in Fig. 2) among NF members. In both the NF members and clinical preceptors, the inhibiting factors included lack of support from a nursing colleague and limited capacity.

*“We had a faculty who did not understand the nursing process well. In the unit, we discussed what nursing diagnosis means and how we could make a diagnosis. Moreover, we shared such information among faculty the members”.*

(FN-FCP 3)

*“We have a shortage of references in Khmer, this is one of the biggest challenges in teaching and learning”.*

(NF-ICP 2)

At the exo-system level, we identified external supports such as the technical support from development partners and continuous support from trainers who contributed to upgrading the programs. The NF members and clinical preceptors who learned from a FCP had more opportunities to subsequently go abroad for additional training or conferences. Moreover, collaborative networking among trainees was a strong enabler.

*“I consulted with the faculty in Thailand about reforming the nursing shift from 24 to 12 hours. It was a sound system, and it is continually practiced to date”.*

(CP-FCP 2)

*“We communicate with the other members through email or social media (Facebook groups) to share the new knowledge during the seminar or workshop”.*

(CP-FCP 6)

Finally, at the macrosystem level, strengthening the regulatory framework was a promoting factor. Some managers reported that the CMOH, who started the National Exit Exam in 2013, encouraged the school to pay more attention to education quality.

*“Because we focused on the quality of education, all my students need to pass the National Exit Exam”.*

(school manager 2)

*“It would be great if the government could get more support from donors for sending faculties to continue or develop their teaching skills following the national policy”.*

(school manager 3)

The inhibiting factors were as follows: inconsistencies in teaching content between educational institutions and hospitals, outdated curricula, and overburdened workload. Moreover, trainees commonly mentioned failure to recognize a BSN degree in the payroll of the public service system.

*“Although I obtained a BSN degree, I still receive a salary for Associate Degree level, which affects my motivation. The government did not give the value of our academic background”.*

(CP-FCP 5)

## 4. Discussion

### 4.1. Medium-term outcomes at the behavior level

We identified the following five outcomes at the behavior level: improved teaching and learning activities, building capacity of NF members and clinical nurses, improved clinical practicum, strengthened clinical nursing management, and involvement in professional activities, such as professional council and association. In the immediate post-training study, the observable outcomes were directly correlated

with the relevant professional's daily work, such as applying new knowledge to teaching and clinical practice and disseminating novel information to colleagues (Koto-Shimada et al., 2016). The *behavioral* outcomes became more strategically focused 4–6 years after completing the program. Knowledge and skills were applied more broadly and sustainably within the workplace. This supports recommendations in the literature that training participants must share their knowledge with others and initiate activities to establish their home institutions (Salajegheh et al., 2020). Moreover, nurses in a foreign setting should be educated to help identify novel working methods and develop collaborative working relationships between educational and clinical facilities (Evans et al., 2013).

#### 4.2. Medium-term outcomes at the result level

We identified the following three outcomes at the *result* level: enhanced institutional capacity, improved learning and behavior of students and strengthened clinical performance at the hospital. In the immediate post-training study, the managers had higher expectations toward these upgrading program outcomes. However, it was necessary to gain an understanding of colleagues at a workplace before taking up the new challenge of “turning learning into action.” Thus, the outcomes may not immediately meet the expectations of managers (Koto-Shimada et al., 2016). This finding supports the monitoring and evaluation of faculty development program designs to enhance accountability for subsequent implementation (Cilliers and Tekian, 2016) and to maximize the sustainable impact of health professional training from an institutional development aspect (Cancedda et al., 2015). As shown in our study, not only those who participated directly in the program but also others within their spheres of influence could benefit in such cases: the educational and clinical care programs in which they work, the colleagues and junior professionals with whom they have contact, and the institutions within which they operate.

#### 4.3. Major factors influencing the medium-term outcomes

The major enabling factor contributing to positive institutional benefit was managerial support operating at the mesosystem level. Strategic managers promoted trainees to their responsible positions. In the immediate post-training study, the trainees found it difficult to introduce new concepts and methods to their colleagues who had not attended trainings (Koto-Shimada et al., 2016). Support from managers is highly influential in the Cambodian society where obedience to hierarchy and respect for seniority are essential (Kim et al., 2017). This finding reinforces the importance and influence of the manager's strategy in determining the best way to utilize a personnel's improved knowledge (Rotem et al., 2010).

The second influential factor was continuous networking among trainees at the exosystem level. This provided a sense of connection with people who share similar passions and values. This finding supports the value of longitudinal programs extending beyond teaching efficacy, such as facilitating networks and collaborative meetings over time (Steinert et al., 2016). In the immediate post-training study, the trainees formed groups who can lead strategic improvements in nursing education (Koto-Shimada et al., 2016). Notably, the group started building a community of practice (Burdick et al., 2010) that evolved into a professional association. Professionals who take Master's and Ph.D. degrees play a crucial role in continuous professional development among the cohorts of nurse leaders. Moreover, they are an inspiration to the younger generation of nurses. Hence, trainees can contribute to advocacy activities and can promote the involvement of nurses in health policy development (Njie-Carr et al., 2016; World Health Organization, 2020).

The third crucial institution-supporting dimension was the policy direction at the macrosystem level, which was significantly influenced by the Association of Southeast Asian Nations mutual recognition arrangement (MRAs). This MRA stimulates the development of relevant

laws and regulations that can establish a mutually acceptable professional regulatory framework among member states (Matsuoka et al., 2021). In Cambodia, some policies were developed as a consequence of signing the MRA, starting the National Exit Examination, and increasing the number of BSN faculty members (Fujita et al., 2019). The number of faculty members with BSN degrees increased from 10 in 2010 (Cambodia Ministry of Health, 2012) to 68 in 2019 in public educational institutions (personal communication with educational institutions, 2019). Hence, NF members were encouraged to work as a team to improve teaching and learning activities. This post-training study reinforces the value of developing a regulatory framework that influences both quality of care and pre-service education (Bvumbwe and Mtshali, 2018).

#### 4.4. Implications for nursing and health policies

The CMOH continued upgrading in-country programs to meet the needs of most nurses. Moreover, they worked while simultaneously upgrading their competencies. Nevertheless, the foreign-country setting program ended in 2015. The trainees from foreign-country settings had enhanced English proficiency and were commonly given tasks to facilitate coordination and communication with foreign assistance at their institutions. The experiences provided not only opportunities for skill gain but also empowerment as nursing professionals as well as advocacy in the nursing profession itself. Gaining an understanding of nursing education and practice outside of the country was effective in promoting novel methods for working and in recognizing the role of collaborative working relationships between education and clinical practice (Cilliers and Tekian, 2016). In future, a hybrid program based on both in-country settings and foreign-country programs should be developed to effectively improve nurse professional development. For example, the lecture is provided at an in-country environment, and professionals can practice clinically at out-of-country locations.

Finally, nursing leadership must still be improved in Cambodia. Several trainees were core actors in the development of professional regulatory systems (Matsuoka et al., 2021). However, the number of trainees is still limited. The Nursing Education Partnership Initiative in multiple African countries developed nursing policies using a method currently used, thereby improving both nursing education and services (Michaels-Strasser et al., 2018). The expertise and capabilities of nursing policy makers and leaders may be significantly reinforced if a similar initiative to support interprofessional development can be developed at a regional level in Southeast Asia.

#### 4.5. Limitations

This study could have been affected by a certain degree of selection bias. NF members and clinical preceptors who were active in their workplaces might have been more willing to participate in the interview. Further, participants were likely to respond positively to anybody considered a donor. Simultaneously, long-term collaboration between the primary interviewer and nursing personnel in Cambodia strengthened and encouraged open engagement. Although we assessed the two elements of the Kirkpatrick's model (behavior and results), we only interviewed program trainees and their managers, but not their students. Nevertheless, the inclusion of this latter group as recipients of the teaching–learning activity can further provide nuance insights about the outcomes of these training programs.

### 5. Conclusion

NF development via an upgraded program in Cambodia yielded favorable outcomes based on the examination of medium-term outcomes with respect to the two key elements of the Kirkpatrick's model.

In addition, the medium-term outcomes of trainees became more strategically focused, and they exhibited knowledge and skills at a



considerably broader scale within the workplace. Institutional manager support, ongoing networking among trainees, and supportive national policies were the major driving factors that improved teaching and learning activities in different institutions. The identification of the most influential factors that enhanced the program's success indicates the need for ongoing support after completely upgrading programs if the benefits can be maximized within an institutional context (Cilliers and Tekian, 2016).

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.nedt.2022.105438>.

### Declaration of competing interest

No conflict of interest has been declared by the authors.

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### CRedit authorship contribution statement

Conceptualization: KKS, NF, AZ.  
 Study design: KKS, NF, SM, ST, AZ.  
 Data collection: KKS, SM.  
 Data analysis: KKS, NF, SM, AZ.  
 Manuscript drafting: KKS.  
 Review and editing: KKS, SM, NF, MJ, AZ.  
 Supervision: NF, AZ.

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