Original Article

The Effectiveness of Charge Nurse Role Development at Bangkok Hospital Headquarters

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Abstract

OBJECTIVES: To evaluate the efficacy of charge nurse (CN) role development at Bangkok Hospital Headquarters (BHQ) and to assess the satisfaction of other professional nurses who are working alongside registered nurses (RNs) enrolled in the advanced charge nurse development program (ACNDP) after one month training.

MATERIALS AND METHODS: This cross-sectional survey study selected participants through purposive sampling and specific criteria. Professional nurses from level 2 to level 4 of nursing staff attended the ACNDP at BHQ between 1st September 2023 to 30th April 2024. Data were collected using confidence questionnaires completed by participants' self-assessment to compare their confidence pre and post 20-hour of training and again one month after course completion. Additionally, one month after the training, other nurses assessed their satisfaction with the CN roles' performance of participants. Data were analyzed using descriptive statistics, One-Way ANOVA, and repeated measures ANOVA.

RESULTS: Of 109 participants who met the inclusion criteria, most were female (95.41%). Three-quarters of them were ≤ 35 years old (69.73%), and single (69.72%). The majority held a bachelor's degree (97.2%). Competency levels included RNs level 4 (48.62%), level 2 (26.61%), and level 3 (24.77%), respectively. Forty percent had ≤ 5 years of work experience at BHQ and 93.58% had ≤ 5 years of the CN role experience. Half of participants were affiliated with the Bangkok Hospital (54.13%), Bangkok International Hospital (27.52%), and Bangkok Heart Hospital (12.58%), respectively. Their work locations were the intensive care unit (ICU) and emergency department-ER (35.78%), in-patient department-IPD (34.86%), and out-patient department-OPD (29.36%). Post-training, participants' self-confidence in CN role significantly increased ($F = 19.59$, $p < .01$). Confidence scores varied by competency level, with significant differences observed ($F = 11.88$, $p < 0.01$). RNs level 4 had higher confidence than levels 3 and 2 ($p < 0.01$). Nevertheless, there was no significant difference between levels 3 and 2. Other nurses expressed high satisfaction with CN performance of participants after one month of training (mean ± SD = 2.75 ± 0.30).

CONCLUSION: The ACNDP training could increase nurses' self-confidence after they completed this training.

Keywords: charge nurse development, competency of charge nurse, charge nurse training, advanced charge nurse development program, ACNDP

The Bangkok Hospital Headquarters (BHQ) is Thailand's first private hospital. It includes four specialized hospitals: Bangkok Hospital (BGH), Bangkok Heart Hospital (BHT), Wattanosoth Hospital (WSH), and Bangkok International Hospital (BIH). As a tertiary care facility, BHQ holds international Clinical Care Program Certification (CCPC) from the Joint Commission International (JCI) in the USA, attracting complex cases globally.

The charge nurse (CN) is essential for maintaining clinical standards of patient care and managing nursing staff during shifts, particularly at night as the head of department (HOD) representative. They must supervise and support the team through crises and ensure efficient utilization management.[1] However, due to limited staffing, inexperienced registered nurses (RNs) often take on the CN roles without specific training, making the transition from RNs to CN both unique and challenging.

RNs are BHQ's largest group of employees, with the nursing staff organization (NSO) divided into 10 levels. Levels 1-4 are RNs-practical, levels 5-6 include HOD and deputy HOD, levels 7-8 are assistant nurse managers and nurse managers, and levels 9-10 are nurse directors and senior nurse directors. Typically, RNs levels 3-4 perform CN duties on 12-hour rotating shifts (07:00-19:00 or 19:00-07:00). However, due to a nursing shortage, RNs level 2 with less experience have occasionally been assigned CN roles. This can pose clinical and operational risks, especially during night shifts with fewer staff.[2] The CNs are responsible for all ward activities, including managing patient transfers to the ICU and coordinating with caregivers and multidisciplinary teams. These responsibilities can create stress and anxiety, particularly for CNs with limited clinical and managerial experience.[3]

This often results in higher work stress, this especially affects turnover of RNs level 2-3,[4] who are typically >25-29 years old and have 3-5 years of experience. These nurses, from late Generation (Gen) Z are currently employed at BHQ (Table 1).

There were also previous studies that showed that Gen Y nurses often leave due to limited growth opportunities and a desire for continued learning,[6] while Gen Z nurses prioritize quality of life and self-development.[7] According to current Human Resources Department reports, Gen Z nurses have the highest turnover rate, followed by Gen Y. Interviews with resigning nurses revealed that work pressure and stress are significant factors. This turnover leads to wasted time, money, resources, and staff shortages.[8] Therefore, hospital organizations should better prepare and support young nurses by developing their leadership and care readiness.[9] Most CN research in Thailand is conducted in public hospitals. An analysis of CN competencies in secondary care hospitals revealed six essential elements: 1) Technology and information, 2) Morality and ethics, 3) Leadership, 4) Professional expertise, 5) Communication and relationship skills, and 6) Management.[10]

Previous research indicated CN competency must include clinical expertise, critical thinking, organizational knowledge, and human relations[11]. Therefore, the NSO of BHQ applied Kramer and Davies' concepts to develop "The Advanced Charge Nurse Development Program (ACNDP)". Initially, the CN training at BHQ was a 2-hour lecture for level 1 RNs transitioning to level 2, which was insufficient. A new 20-hour training program was developed for level 2 RNs with 3-5 years of experience to enhance their competencies and readiness for complex roles. This training aims to increase RNs' confidence in CN roles, including developing CN responsibilities and providing comprehensive training.

Materials and Methods

A cross-sectional survey study was undertaken, after receiving IRB approval (Protocol ID: BHQ-IRB 2023-05-19, COA: dated 20 August 2023); nurses meeting the specified criteria were selected for clinical leadership training to prepare for the CN role. Nurses assessed their confidence in performing CN roles before training, immediately after completing 20 hours (5 weeks) of training, and again one month later. This assessment included collaboration with other nurses to evaluate the performance of trained CNs. A follow-up evaluation of satisfaction was conducted one month later.

Sample size calculation

The sample size was calculated concerning previous similar studies using the program G* Power Version 3.1.9.[13]

The statistic used for testing was based on an F-test, calculated as ANOVA: repeated measures; within factors, by the investigator choosing A priori: compute required sample size–given $\alpha = 0.05$, power (1-β err prob) = 0.8514, and a small effect sizes for Cohen's average mean comparison test at 0.1515. The number of samples in 1 group was repeated 3 times and the correlation between each measurement was set at 0.5.

Table 1: The Roadmap for RNs levels 1-4 based on work experience, compared with the generation group related in working age in BHQ.

Timeline of Generational Group by year of birth and aged group[5]	Gen Z (1995 - 2010) (14 - 29 years old)			Gen Y (1980 - 1995)/ (> 29-44 years old) Gen X (1960 - 1980)/ (> 44-64 years old)
Professional levels at BHQ (Work experience)	RN 1 (0 - 3 years)	RN 2 (> 3 years)	RN 3 (>5 years.)	RN 4 (> 7 years.)
Working Aged Group in 2024 at BHQ (years old)	22 - 25	> 25 - 27	> 27 - 29	> 29 - 44 > 44 - 64
Generational Group in 2024 at BHQ	Gen Z	Gen Z	Gen Z	Gen Y & Gen X

* Adjusting the level of expertise of nurses in Table 1 does not include annual and specific competency assessment scores

The result of the calculation of the sample size of 83 participants. To account for potential data loss, the number was increased by 20%, leading to a final sample size of 100 individuals. Purposive sampling specifically was selected, as follows:

Participants	The inclusion criteria:	The exclusion criteria:
Charge Nurse (CN)	1. RNs registered in BHQ's ACNDP. 2. RNs, operational level 2–4, according to criteria set by the BHQ's NSO committee.	1. RNs who refused to participate in the program. 2. RNs who can not participate in the ACNDP for the entire period 3. RNs whose training hours were less than 80% of the total 20 hours.
RNs at various levels work with research participants	1. RNs who are the head or deputy head working in the same department as the RNs partipating in this research project. 2. RNs level 1-4 working in the same department as the RNs partipating in this research project. 3. Case management (CM) nurse working with the RNs partipating in this research project.	1. RNs who declined to participate in the program. 2. RNs who find it inconvenient to complete the questionnaire may withdraw from this project at any time, without needing to inform the researcher of the reasons.

Research Methods

Phase 1: Training Phase

1. Preparatory period consisting of:

1.1 Team meetings to review study documents, examine literature on CN capability development, and determine qualifications and criteria for selecting nurses for training.

1.2 Brainstorming sessions with the research team to review the ACNDP, based on Kramer and Davies' concepts, including "The CN orientation and professional development assessment (CNOPDA)" curriculum that underwent a comprehensive literature review.[12] The team also applied CN training methods such as knowledge lectures, clinical simulations, and role-playing exercises.

1.3 The development of clinical leadership competencies for CN training encompasses 13 skills,[12] as follows: 1) Providing leadership, 2) Effective and timely communication, 3) Facilitating teamwork and conflict resolution, 4) Interdisciplinary collaboration, 5) My decision-making regarding patient care, 6) Creative problem solving, 7) Time management, 8) Management of organizational Resources, 9) Managing the stress of the staff, 10) Managing my work-related stress, 11) Maintaining a safe environment for patients, 12) Performance Management of staff, and 13) Monitoring quality and performance improvement, etc.

2. Development period details are as follows:

2.1 The research team formulated the CN confidence assessment based on Kramer and Davies' concepts covers 13 competency areas, align with BHQ's core values and NSO quality policies.

2.2 The questionnaire's quality was tested for content validity[16] by consulting three experts: a nursing professor, a director of nursing, and a human resource development manager. They evaluated the validity across the 13 competency areas. Items scoring 0.50 or higher on the item-objective congruence (IOC) index were considered good, while items below 0.50 were revised. The overall IOC score was 1.00. The questionnaire's reliability was assessed using a test-retest method with 30 eligible but non-participating individuals, conducted twice, two weeks apart. The resulting Cronbach's Alpha coefficient was 0.94, indicating high reliability16.

3. The ACNDP implementation period is divided:

3.1 The principal researcher invites eligible RNs to participate, providing information about the research, including benefits, risks, and the right not to participate. Participants have the option to attend during the first orientation day of the ACNDP.

3.2 Volunteers sign consent forms before assessing their confidence in the CN role (1st assessment).

3.3 Volunteers undergo a 5-week, 20-hour training program conducted by the NSO team and clinical specialists.

3.4 Volunteers re-assess their confidence in the CN role after completing the 20-hour training (2nd assessment).

Phase 2: Follow-up Phase (1-month after training).

1. The principal researcher provides a Participant Information Sheet (PIS) to invite other RNs who work with the volunteers and meet the specified criteria to participate.
2. Invitations are emailed to the BHQ NSO group (all RNs) to participate in the study. Participants must sign a consent form before evaluating satisfaction with CN roles after one month of training.
3. The effectiveness evaluation uses a 360-degree feedback approach17, assessing satisfaction levels from colleagues, including direct HOD, Deputy HOD, CM nurses, and Level 1-4 RNs, who observe the trained CN.
4. After one month, RNs who attended training will evaluate their confidence in performing the CN role (3rd assessment).

Questionnaire Form

Form 1: A self-assessment questionnaire to assess the confidence of RNs at BHQ in CN role, based on Kramer and Davies' concept. It is divided into 3 parts:

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- Part 1: A personal data questionnaire with 9 items on gender, age, educational level, professional expertise, work experience at BHQ, hospital affiliation, department, CN roles experience, and marital status (multiple-choice).
- Part 2: CN role confidence assessment measuring self-confidence levels before training, immediately after training, and one month post-training. This uses a three-option rating scale and consists of 15 questions covering 13 competencies.
- Part 3: Open-ended questions for other suggestions and feedback.

Form 2: A satisfaction questionnaire for RNs who work with other staff levels participating in the research, used for follow-up satisfaction assessment of CN roles one month post-training. It is divided into three parts:

- Part 1: A personal data questionnaire with 7 items on gender, age, education level, professional expertise, work experience at BHQ, hospital affiliation, and department (multiple-choice).
- Part 2: A satisfaction assessment for RNs working with research participants, using a three-option rating scale with 15 questions covering 13 competencies.
- Part 3: Open-ended questions for other suggestions and feedback.

Scoring criteria

Form 1: Assessment of the CN roles confidence for RNs who have attended ACNDP. The scoring criteria are divided into three levels using a rating scale: 3 = very confident, 2 = moderately confident, 1=less confident

Form 2: The Satisfaction Questionnaire is for RNs who work alongside other levels of staff participating in the research. The scoring criteria are divided into three levels using a rating scale: 3=very confident, 2=moderately confident, 1=less confident

Data collection process

1. After approval from the Human Research Ethics Committee, the principal investigator will select volunteers who meet the inclusion criteria and explain the research project's objectives, benefits, and risks to them. On the first orientation day of the ACNDP, an invitation to participate will be extended. Other RNs will receive a poster invitation by email, and interested participants will receive more details and sign consent forms
2. Training period: Research volunteers will evaluate their confidence in performing the CN role using the first data collection form before training (1st time) and after completing training (2nd time).
3. Follow-up period: After One month after training, volunteers will reassess their confidence in performing the CN role using the first data collection form (3rd time). Other RNs, including HOD, CM nurses, and Level 1-4 nurses, will evaluate satisfaction with CN performance of research volunteers.
4. All collected data will be anonymized, replacing personal identifiers with codes.

Outcome measurement

This research evaluates the effectiveness of developing the CN role at BHQ. Specific goals are:

1. To collect volunteers' personal information, including gender, age, educational level, professional expertise, work experience at BHQ, hospital affiliation, department, CN role experience, and marital status.
2. To compare confidence scores in performing CN role before training, after training, and one month post-training. Confidence levels will be interpreted using an average criterion calculated as follows: width of class interval = (highest score - lowest score) / (number of classes - 1), which is (3 - 1) / 3 = 0.67. The interpretation criteria are 2.34-3.00=high confidence, 1.67-2.33 = moderate confidence, and 1.00-1.66=less confidence.
3. To assess the satisfaction of other professional nurses with the CN roles performed by those trained, one month post-training. Satisfaction levels will be interpreted using the same average criterion. The interpretation criteria are: 2.34-3.00 = high confidence, 1.67-2.33 = moderate confidence, and 1.00 - 1.66=less confidence.

Statistical Analysis

1. Descriptive statistics will summarize the demographics of the study population, including gender, education level, working department, professional expertise, hospital affiliations, and marital status, as frequency and percentage. Age, work experience at BHQ, and CN role experience will be presented as mean and standard deviation.
2. Confidence scores from RNs will be compared pre-training, post-training, and one month post-training using repeated measures analysis of variance (One-Way Repeated Measures ANOVA).[18]
3. Satisfaction scores of other professional nurses regarding the CN role performance will be analyzed descriptively, presenting data as mean and standard deviation.

Results

Most of the participants were female 104 (95.4%). Almost 76 (69.7%) of the participants are younger than 36 years old, followed by those aged 36-40 years old 20.2%, and then those over 40 years old 10.1%. Similarly, in terms of marital status, 69.7% are single, followed by 29.4% who are married, and 0.9% who are divorced. The majority have a bachelor's degree, 97.2%, with 48.6% being nurses with professional expertise at level 4, followed by level 2 at 26.6% and level 3 at 24.8%. The data provides the following breakdown of work experience at BHQ: 40.4% of individuals have less than 5 years of experience, 30.3% have between 5 and 10 years, and 29.4% have over 10 years of experience. In terms of hospital affiliation, 54.1% are associated with BGH, 27.5% with BIH, and 12.8% with BHT Hospital. Regarding departmental distribution, 35.8% work in Critical Care and the Emergency Room (ER), 34.9% are in the Inpatient Department (IPD), and 29.4% are in the Outpatient Department (OPD), respectively. Additionally, more than 93.6% of individuals have less than 5 years of experience in the roles of CN. (Figure 1.)

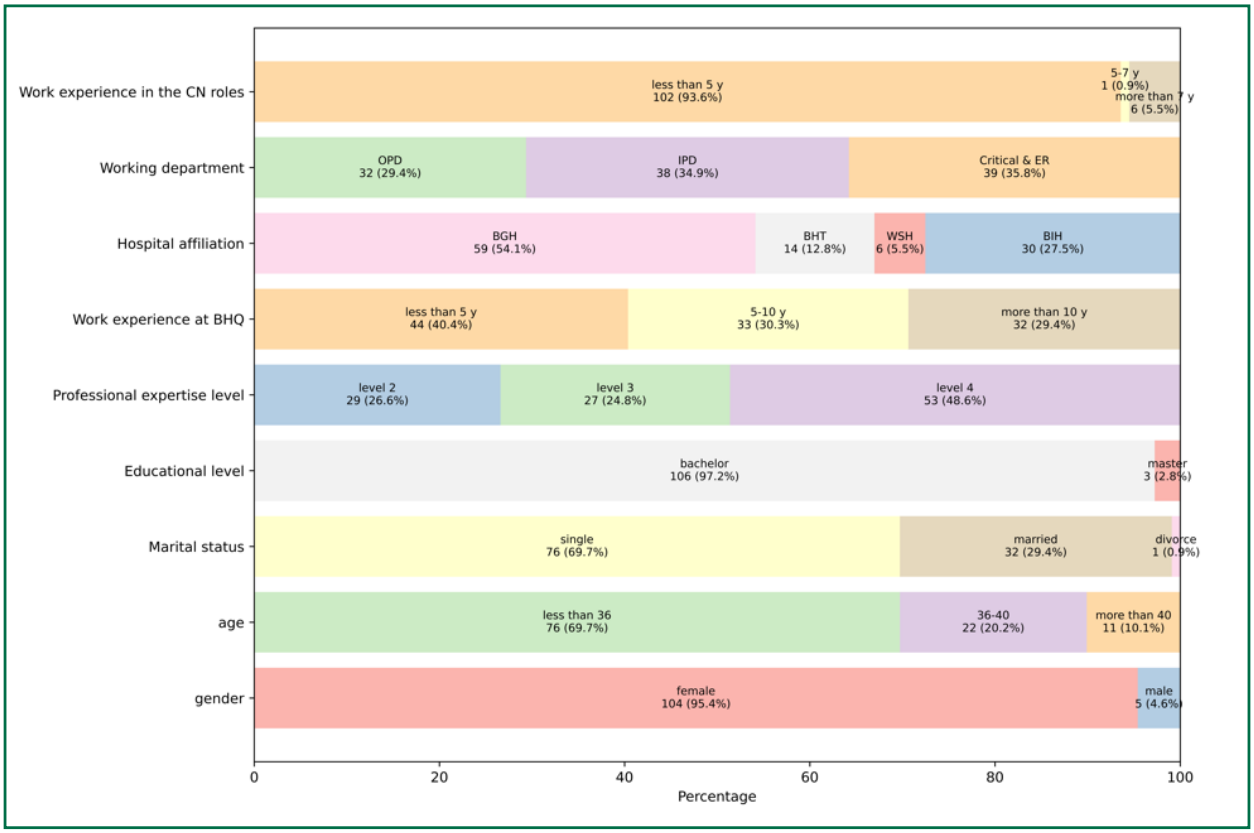


Figure 1: The demographics and characteristics of the participants (n = 109)

The comparison of participants' confidence in performing the roles of CN before training revealed that the lowest average score was for item 11, "Able to manage stress among team members", at 2.12. The second lowest was item 8, "Has creative ideas to solve problems" (2.21), followed by item 5, "Able to resolve conflicts within the team" (2.22).

After completing the 20-hour training, the confidence levels improved, but item 11, "Able to manage stress among team members," still had the lowest average score at 2.54. The second lowest was item 5, "Able to resolve conflicts within the team" (2.62). That were followed by item 2, "Can mentor and provide advice and guidance to team members," and item 14, "Can coach and evaluate team performance, such as conducting annual performance evaluations and assessing assigned duties," both at 2.72.

One month after the training, confidence levels continued to improve. However, item 11, "Able to manage stress among team members," remained the lowest, with an average score of 2.57. The second lowest was item 5, "Able to resolve conflicts within the team" (2.65), followed by item 10, "Can manage various resources in the organization, such as manpower, tools, and medical materials," at 2.67, respectively. (see details in Table 2.)

The overall confidence level in performing the CN roles of RNs level 2, 3, and 4 were compared. These were conducted before, immediately after the 20 hours training, and one month after training. Results indicated that the average confidence scores significantly increased at all levels, with a *p*-value of 0.01, as shown in Table 3.

A comparison of overall confidence in performing the CN roles one month after the training implementation among RNs level 2, 3, and 4 showed that the average confidence scores for RNs levels 2 and 3 were not significantly different from each other. However, level 4 nurses have the highest average confidence score and demonstrate a statistically significant difference from Level 3 nurses at the 0.01 level. (Table 4)

The overall satisfaction scores from other professional nurses who worked with the participants indicated that, one month after training, the other professional nurses felt highly satisfied with their performance in the CN roles. The highest mean satisfaction score was for Item 13: "The participant is able to maintain an environment that promotes patient safety" (2.90). This was followed closely by Item 6: "The participant is able to work collaboratively with the interdisciplinary team" (2.89), and Item 4: "The participant is able to facilitate and support the team" (2.82), respectively.

However, the lowest mean satisfaction score was for Item 5: "The participant is able to resolve conflicts that occur within the team" (2.64), followed by Item 8: "The participant has creative ideas to solve problems" (2.66), and Item 11: "The participant is able to manage stress among team members" (2.68), respectively. (Described in Table 5)

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Table 2: A comparison of the participants' confidence scores in performing the CN roles before, after, and after 1-month of training implementation with mean and standard deviation (SD) (n = 109).

Participants' confidence	Before (Mean ± SD)	After (Mean ± SD)	After-1 month (Mean ± SD)
1. Able to assign work and distribute it appropriately among team members.	2.40 ± 0.64	2.86 ± 0.35	2.81 ± 0.40
2. Can mentor and provide advice and guidance to team members.	2.26 ± 0.63	2.72 ± 0.45	2.72 ± 0.47
3. Possess strong communication skills and can provide accurate, correct, and timely information.	2.35 ± 0.57	2.83 ± 0.38	2.79 ± 0.41
4. Can facilitate and support the team.	2.57 ± 0.57	2.91 ± 0.29	2.87 ± 0.34
5. Able to resolve conflicts within the team.	2.22 ± 0.63	2.62 ± 0.49	2.65 ± 0.52
6. Can work collaboratively with interdisciplinary teams.	2.64 ± 0.52	2.97 ± 0.16	2.92 ± 0.28
7. Able to make decisions regarding patient care in various situations.	2.34 ± 0.60	2.82 ± 0.39	2.85 ± 0.38
8. Has creative ideas to solve problems.	2.21 ± 0.58	2.76 ± 0.43	2.71 ± 0.48
9. Able to manage work time effectively.	2.34 ± 0.66	2.80 ± 0.40	2.79 ± 0.43
10. Can manage various resources in the organization, such as manpower, tools, and medical materials.	2.25 ± 0.63)	2.76 ± 0.45	2.67 ± 0.51
11. Able to manage stress among team members.	2.12 ± 0.63	2.54 ± 0.50	2.57 ± 0.52
12. Able to manage the stress caused by work.	2.27 ± 0.66	2.77 ± 0.42	2.78 ± 0.42
13. Can maintain an environment that promotes patient safety.	2.68 ± 0.49	2.93 ± 0.26	2.93 ± 0.26
14. Can coach and evaluate team performance, such as annual performance evaluations and assessment of duties assigned to each team member.	2.30 ± 0.60)	2.72 ± 0.45	2.70 ± 0.46
15. Can follow procedures to improve quality and efficiency in operations.	2.37 ± 0.56	2.80 ± 0.40	2.80 ± 0.40

Table 3: A comparison of the participants' confidence scores in performing the CN roles before, after, and after 1-month of training implementation with One-Way Repeated Measures ANOVA among three competency levels of RNs. (n = 109)

Level	n	Before (Mean ± SD)	After (Mean±SD)	After 1 month (Mean±SD)	F-value	*p*-value
RNs level 2	29	2.06 ± 0.30	2.74±0.50	2.71±0.57	17.88	< 0.001**
RNs level 3	27	2.19 ± 0.56	2.71±0.53	2.66±0.35		
RNs Level 4	53	2.67 ± 0.32	2.67±0.55	2.86±0.39		
Overall Confidence	109	2.35 ± 0.45	2.79±0.22	2.77±0.28	11767.47	< 0.001**

Table 4: The average difference in the overall confidence scores in performing CN duties between different expertise levels after 1-month training implementation (n = 109).

Level	n	mean	RNs. Level 2	RNs. Level 3	RNs. Level 4
RNs level 2	29	2.501	2.501	2.516	2.768
RNs level 3	27	2.516	-	0.015	0.267**
RNs Level 4	53	2.768		-	0.252**
Levels	n	mean	RNs. Level 2	RNs. Level 3	RNs. Level 4

** $p < 0.01$

The overall satisfaction scores from other professional nurses who worked with the participants indicated that, one month after training, the other professional nurses felt highly satisfied with their performance in the CN roles. The highest mean satisfaction score was for Item 13: "The participant is able to maintain an environment that promotes patient safety" (2.90). This was followed closely by Item 6: "The participant is able to work collaboratively with the interdisciplinary team" (2.89), and Item 4: "The participant is able to facilitate and support the team" (2.82), respectively.

However, the lowest mean satisfaction score was for Item 5: "The participant is able to resolve conflicts that occur within the team" (2.64), followed by Item 8: "The participant has creative ideas to solve problems" (2.66), and Item 11: "The participant is able to manage stress among team members" (2.68), respectively. (Described in Table 5)

Discussion

CNs play a critical role in the healthcare system, supervising and assigning tasks to other nurses, overseeing patient care, and ensuring smooth processes until discharge.[19] However, less experienced nurses, particularly level 2 RNs and those

Table 5: To Compare the satisfaction scores among other professional expertise levels regarding the CN role performance by the participants who underwent a 1-month training with mean and Standard Deviation (n = 418).

Expert Satisfaction opinion	RNs Level 1 (n = 88) Mean ± SD	RNs Level 2-3 (n = 30) Mean ± SD	RNs Level 4 (n = 154) Mean ± SD	RNs Level 5, HOD, deputy head, CM (n = 146) Mean ± SD	Total (n = 418) Mean ± SD
1. Participant able to assign work and distribute it appropriately among team members.	2.77 ± 0.45	2.74 ± 0.52	2.82 ± 0.40	2.71 ± 0.49	2.76 ± 0.46
2. Participant can mentor and provide advice and guidance to team members.	2.78 ± 0.47	2.80 ± 0.49	2.76 ± 0.44	2.60 ± 0.54	2.71 ± 0.50
3. Participant able possess strong communication skills and can forward correct, accurate, and timely information.	2.80 ± 0.43	2.77 ± 0.44	2.77 ± 0.42	2.64 ± 0.56	2.73 ± 0.48
4. Participant can facilitate and support the team.	2.78 ± 0.45	3.00 ± 0.00	2.83 ± 0.41	2.83 ± 0.38	2.82 ± 0.41
5. Participant able to resolve conflicts that occur within the team.	2.75 ± 0.46	2.84 ± 0.38	2.70 ± 0.50	2.46 ± 0.55	2.64 ± 0.53
6. Participant can work collaboratively with interdis ciplinary teams.	2.86 ± 0.38	2.87 ± 0.35	2.93 ± 0.30	2.83 ± 0.37	2.89 ± 0.33
7. Participant able to make decisions regarding patient care in various situations.	0.85 ± 0.39	2.75 ± 0.46	2.80 ± 0.43	2.63 ± 0.51	2.75 ± 0.46
8. Participant has creative ideas to solve problems.	2.75 ± 0.46	2.79 ± 0.44	2.69 ± 0.48	2.55 ± 0.54	2.66 ± 0.49
9. Participant able to manage work time effectively.	2.80 ± 0.48	2.77 ± 0.49	2.82 ± 0.42	2.72 ± 0.47)	2.77 ± 0.46
10. Participant can manage various resources in the organization, such as manpower, tools, and medical materials.	2.82 ± 0.42	2.87 ± 0.55	2.74 ± 0.45	2.65 ± 0.51	2.72 ± 0.48
11. Participant able to manage stress among team members.	2.73 ± 0.52	2.84 ± 0.28	2.63 ± 0.55	2.62 ± 0.57	2.68 ± 1.59
12. Participant able to manage the stress caused by work.	2.81 ± 0.45	2.80 ± 0.41	2.77 ± 0.45	2.61 ± 0.54	2.73 ± 0.48
13. Participant can maintain an environment that promotes patient safety.	2.91 ± 0.33	2.90 ± 0.31	2.91 ± 0.29	2.86 ± 0.38	2.90 ± 0.32
14. Participant can coach and evaluate team per formance, such as annual performance evaluations and assessment of duties assigned to each team member.	2.84 ± 0.40	2.76 ± 0.42	2.75 ± 0.46	2.59 ± 0.52	2.71 ± 0.48
15. Participant can follow procedures to improve quality and efficiency in operations.	2.91 ± 0.29	2.80 ± 0.41	2.80 ± 0.42	2.69 ± 0.50	2.78 ± 0.44

from Gen Z, often face challenges in this role. As shown in Figure 1, 69.73% of participants were ≤ 35 years old and predominantly from late Gen Y[5], with 93.58% having ≤ 5 years of CN experience and 40.37% having ≤ 5 years of work experience at BHQ. Under pressure, CNs may experience diminished confidence, increased anxiety, and reduced job satisfaction[3]. This study revealed that stress management (mean = 2.41), conflict resolution within the team (mean = 2.50), creative problem-solving (mean = 2.56), and resource management (mean = 2.56) were among the lowest-scoring skills in CN role confidence (Table 2). Consistent with recent studies on the characteristics of Gen Z nurses, when they encounter problems at work, they may lack problem-solving skills and appropriate decision-making aptitude. It may affect their perspective on work and their performance.[5]

Nurses in competitive private hospitals must deliver rapid, high-quality care to meet the expectations of both Thai and international patients, especially when managing unstable patients and unit responsibilities. A previous study on Gen Z nurses in a Thai private hospital revealed that work motivation is influenced by team dynamics, family support, compensation, work-life balance, career path, and work environment.[20] Positive workplace factors enhance creative thinking[21] and autonomy, which in turn fosters new ideas.[22] Recent studies confirm that self-development, decision-making, and collaboration are crucial for improving patient health.[23] However, Gen Z employees are negatively affected by workload and job stress.[24] The BHQ should consider external factors like organizational structure, a healthy work environment, supportive resources, and nursing education programs.25 Internal factors such as competence development and

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self-confidence are also vital for effective clinical decision-making and patient outcomes.[26] The ACNDP was designed to enhance clinical skills for level 2 nurses and above. As shown in Table 3, there were significant improvements in confidence post-training ($F = 11767.47$, $p < 0.001$), with confidence increasing immediately after training (mean difference = 0.43, $p < 0.001$) and one month later (mean difference = 0.42, $p < 0.001$). However, confidence levels slightly decreased after one month. Continuous monitoring of CNs at 3-month, 6-month, and 1-year intervals is recommended to ensure sustained confidence and performance. Therefore, this development program could increase nurses' self-confidence because it can assist CNs to identify their weak skills and improve these when they completed the ACNDP. Likewise, an effective CN also can build positive relationships with other nurses and increase satisfaction.[27]

In addition, this training program can be adapted to enhance career advancement opportunities, which is crucial for retaining nursing staff and developing them into skilled professionals.[28] Previous studies indicate that effective training increases staff[29] competency and helps retain nurses, minimizing the loss of time and resources due to resignations. By offering continual learning and involving nurses in decision-making, teamwork can be improved, and retention rates can be increased.[9] Therefore, the researcher recommends that the organization boost the confidence of Gen Z and Gen Y nurses in clinical leadership roles, continually develop their CN competencies, and foster a supportive work environment. Moreover, given their familiarity with technology, incorporating systematic online e-learning could further enhance their specialized knowledge and skills.

The participants' confidence scores were analyzed by experience level, revealing statistically significant differences among RNs at levels 2, 3, and 4 ($F = 17.88$, $p < 0.001$; Table 3). Prior to training, confidence scores were highest among level 4 RNs, followed by levels 3 and 2. After 20 hours of training, the highest scores shifted to level 2, then 3, and 4 RNs. However, confidence slightly decreased after 1 month, with highest scores again among levels 4, 2, and 3 RNs (Table 3). Additional analysis showed significant differences in confidence between level 4 RNs compared to levels 3 and 2 ($P < 0.01$; Table 4). This may be due to level 4 RNs having more extensive experience and a deeper understanding of clinical situations. A study at Bangkok Hospital Rayong found that level 4 RNs with more experience had superior decision-making and problem-solving skills.[30] Consistent with prior studies, it was found that nurses with higher self-confidence had more positive behaviors, work environment and affecting positive patients' outcomes.[31] There was no significant difference in confidence between levels 3 and 2, likely due to their similar age, experience, and being predominantly Gen Z.[32]

Second, the satisfaction surveys of RNs at different levels working alongside participants were analyzed. This research result indicates that participants who completed the ACNDP showed high satisfaction scores in performing the CN roles one month after training. (Table 5). A recent study demonstrated that the CNs development can contribute to higher-quality patient care, and increased staff and patient satisfaction.[33] Among the multi-skills, their satisfaction with the CN roles performed by participants in item 13 that they can maintain an environment that promotes patient safety was the highest score (mean = 2.90). Certainly, the BHQ is continuously certified for hospital quality according to international standards from the JCI in the USA and hospital accreditation: HA in Thailand. Consequently, nurses at all levels prioritize standard patient care and maintain a safe environment for patients. In contrast, other RN satisfaction with participant conflict resolution was rated lowest (Item 5; mean = 2.64). Conflict within healthcare may arise between nurses, physicians, departments, or multidisciplinary teams, leading to ineffective care coordination if not managed properly. The researcher suggests that healthcare organizations should promote mentoring relationships between senior nurses, Gen Y, and Gen Z. This can be accomplished by sharing experiences and collaborating to identify and enhance nursing processes and patient outcomes. Prioritizing work-life balance for our nurses is crucial in preventing burnout and other mental health issues, thereby reducing work-related stress and enhancing satisfaction.

The researchers anticipate that this training program will enhance colleague satisfaction and improve patient care outcomes. The other nurses were satisfied with this program. This finding may be have been affected because effective CNs can also encourage positive relationships.[27] Participants demonstrated increased clinical leadership and management skills, better preparing new level 2 RNs for CN roles with greater confidence. This training program clarifies CN roles and responsibilities and fosters strong frontline leadership. The NSO should consider offering annual courses to maintain nurse performance and improve patient outcomes. Continuous training ensures nurses stay current with best practices, addresses knowledge gaps, and promotes a culture of ongoing improvement. Regular skill development supports high-quality patient care and can guide nursing executives in maintaining consistent CN standards. Aligning this training with the nursing career ladder development is vital for staff retention and moving to value base healthcare for patients.[27]

Our study has limitations. Although the focus was on developing the CN role for level 2 RNs, we could not recruit only level 2 RNs due to selection bias and the unavailability of level 2 RNs in some departments. Consequently, 48.62% of participants were level 4 RNs, who had the highest confidence levels before training (mean = 2.67). To ensure comprehensive representation, nurses from other levels also participated. Additionally, several factors may influence the confidence of CNs, including knowledge and understanding of the diseases treated. This may help provide more accurate results.

Despite these limitations, the findings provide a useful benchmark for other tertiary or network hospitals within the Bangkok Dusit Medical Services (BDMS) group.

Conclusion

The ACNDP increase participants' confidence and management skills as CN. The overall satisfaction scores from RNs across different levels who worked with the participants was high.

Conflict of interest

The authors declare no conflict of interest.

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