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Analysis of the Current Situation and Influencing Factors of Career Adaptability of Intern Nursing Students

[1]Yingying Miao, [2]Zeyuan Li, [3]HuiliLiu

[1]Teaching assistant Nursing school, Pingdingshan University, Pingdingshan, Henan, 4567000 China,
[2]Undergraduate student, Nursing school, Pingdingshan University, Pingdingshan, Henan, 4567000 China
[3]Undergraduate student, Nursing school,Pingdingshan University, Pingdingshan, Henan, 4567000 China

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Abstract

Objective To explore the current situation and factors influencing the career adaptability of nursing students in practice, and to provide a theoretical basis for career education of clinical nursing students.

Methods: From October to December 2023, 189 nursing students from colleges and universities who were interning at a Class III, Grade A general hospital in Henan Province were selected as survey participants. The General Information Questionnaire and the Career Adaptability Questionnaire for College Students were used to investigate these nursing interns. Factors affecting the career adaptability of nursing interns were analyzed using single-factor and multiple linear regression analyses.

Results: The career adaptability score of nursing interns was 132.77 ± 22.49. Single-factor analysis showed that whether parents were engaged in medical or nursing-related occupations and the reasons for choosing nursing had statistically significant effects on the career adaptability scores of nursing interns in future planning ($p < 0.05$). Multiple linear regression analysis revealed that whether parents were engaged in medical or nursing-related occupations and the reasons for choosing a nursing major were influencing factors of career adaptability among nursing interns.

Conclusions: The career adaptability of nursing students is at a medium level. Specifically, whether their parents are engaged in medical or nursing-related occupations and the reasons for choosing a nursing major are influencing factors of career adaptability among nursing interns. It is recommended that nursing educators and clinical supervisors consider various factors to improve career resilience.

Keywords: Nursing student; Career adaptability; Investigation of the current situation; Analysis of influencing factor

Introduction

In the context of the sustainable development of our country's health, nursing education should adhere to the concept of demand-oriented and nursing needs should be planned regionally and professionally, there is an urgent need to establish a balance mechanism between personnel training and needs[1].

Corresponding Author: YingyingMiao, Nursing school, Pingdingshan University, Pingdingshan, Henan, 4567000 China

E-mail: 20230033 @pdsu.edu.cn

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As an indispensable part of health human resources, nursing human resources plays an important role[2]. According to the World Health Organization (WHO-R Nursings Reportport 2020[3], the shortage of nursing staff has become a core problem hindering the development of global nursing.

In future nursing work, the clinical practice of nursing staff is an indispensable backbone. Clinical practice is the transition period from students to nursing staff, which is not only an important step to combine theory knowledge with practice, but also an indispensable step to career development, it is also the starting point of Nursing Students' careers and an important transition period for nursing students' professional adaptation[4]. and is of great significance for the cultivation of a professional and vocational outlook[5].Currently, undergraduate schools develop an average of 860.4 hours of internships in primary and tertiary care settings[6]. The high-intensity clinical nursing work presents several challenges for nursing students: the unfamiliar clinical environment, the difficulty in transforming theoretical knowledge into clinical practice, and the unclear role localization. These factors subject nursing students to continuous and significant pressure during their practice[7]. If they cannot adapt to these challenges, nursing students will experience emotional exhaustion. This problem may affect their future as nursing professionals, not only in the physical and mental health of nursing students will have a negative impact, but also in their clinical practice will have a serious negative impact, it also affects their willingness to continue care[8],Therefore, clinical teaching should incorporate various methods, such as special lectures and scenario simulations, to enhance nursing students' awareness and interest in the profession and to provide stronger social support, thereby improving their career adaptability.

Career adaptability is crucial for individuals to cope with career role changes and maintain balance, significantly impacting career development and job satisfaction [910]. While occupational adaptability has been shown to predict clinical practice behaviors and role changes in medical students[1112], research on nursing interns in China is limited and inconclusive[13]. To meet rising patient demands and medical advancements, nursing students must develop career adaptability through pre-practice education, including career planning. This is crucial for their success and for enhancing healthcare efficiency and quality.

The purpose of this study is to explore the current status of the vocational adaptation of nursing students and analyze its influencing factors, the aim is to provide a valuable reference for the reform of the nursing education system and the formulation of targeted intervention measures. Through systematic investigation and analysis, we hope to reveal the challenges and problems faced by nursing students in the process of vocational adaptation, provide a scientific basis for improving the quality and effect of nursing education, and promote the sustainable and healthy development of the nursing profession.

Object and Method

Subjects

From October 2023 to December 2023,192 nursing students were selected from Grade III, Class A hospital by convenience sampling. The inclusion criteria were as follows: 1 internship before graduation; 2 all participants must volunteer to participate in this study; 3 clinical internship time ≥2 months—exclusion Conditions: nursing students who were off-duty during the investigation period. The preset sample size was 175 to 350 cases, determined through a power analysis to ensure sufficient statistical power for detecting significant effects in the study. This range was selected to balance the feasibility of data collection with the need for robust results. A total of 192 questionnaires were distributed, and 189 were recovered, yielding an effective response rate of 98.44%. Given that approximately 10% of the questionnaires might be invalid, the actual number of valid questionnaires collected (189) falls within the preset range, thereby supporting the reliability of the findings

Research Tools

General Data Questionnaire

The questionnaire, designed by the researchers, includes basic information such as gender, age, whether the respondent is an only child, whether the parents are in the medical profession, whether the first choice was a nursing major, reasons for choosing nursing, whether any career-related courses have been taken, and plans for the future, comprising a total of 8 items.

College Students' Career Adaptability Questionnaire

A questionnaire on college students' career adaptability was developed by Yuhe Xiang[14]. The questionnaire has 35 items and includes six dimensions, they are career control (5 questions), career curiosity (6 questions), career concern (6 questions), career confidence (6 questions), career adjustment (6 questions), and career interpersonal relationship (6 questions). The method was a 5-point scoring system. 1 means no, 2 means no, 3 means no, 4 means yes, 5 means yes. Higher scores indicate higher career fitness. The Cronbach's α coefficient of the scale was 0.944.

Survey Methodology

Create an informed consent form outlining the study's purpose, significance, and content, and obtain consent before distributing the questionnaire. The questionnaire was distributed to nursing students in hospitals via WeChat. Respondents received barcodes or links through convenient sampling. To prevent duplicate responses, the online survey limited responses to one per IP address. Out of 192 collected questionnaires, 3 were invalid, resulting in 189 valid responses, with an effective rate of 98.44%.

Data Analysis

SPSS20.0 statistical software was used to analyze the data, the measurement data were expressed as ($x \pm s$), the mean between groups was compared by t-test or one-way ANOVA, and the counting data were calculated as percentages. A linear regression model was used to analyze the influencing factors of career adaptability. $P < 0.05$ was statistically significant.

Results

Student Nurse Intern General Data Score

There were 33 male students (17.50%), 156 female students (82.50%), 67 only-child students (35.45%), 60 parents engaged in medical and nursing-related occupations (31.75%-RRB-, 110 first-choice nursing majors (58.20%), 110 students (31.75%) The reasons of choosing nursing care: 38 patients (20.10%) liked themselves, 80 patients (42.30%) were recommended by their parents and relatives, 50 patients (26.5%) were transferred, and 21 patients (11.10%) were others There were 148 students (78.3%) who had studied career-related courses, 47 students (24.90%) in graduate school, 95 students (50.30%) in hospital and 14 students (7.40%) in multi-specialty, 10(5.30%) went abroad and 23(12.10%) hadno plans to go abroad. See Table 1.

Table 1. general information of nursing students (N = 189)

	General information	Example number (N = 189)	%
Sex	male	33	17.50
	famale	156	82.50
Only child	yes	67	35.45
	No	122	64.55

Whetherthe parents are engaged in medical care-related occupation	yes	60	31.75
	No	129	68.25
Whether the first volunteer was a nursing major	yes	110	58.20
	No	79	41.80
Reasons for choosing a nursing major	I like it	38	20.10
	Recommended by parents and friends	80	42.30
	Dispensing	50	26.50
	Other	21	11.10
Have you taken a career planning course	yes	148	78.30
	No	41	21.70
Planning for the future	Graduate School	47	24.90
	Hospital employment	95	50.30
	Multi-disciplinary employment	14	7.40
	Go abroad	10	5.30
	Not yet	23	12.10

The Score of Career Adaptability of Nursing Students

The results showed that the average total score of career adaptability was (132.77 ± 22.49). All itemsscores were (3.79 ± 0.64). See Table 2 for details.

Table 2. The scores of career adaptability of nursing students (N = 189)

Items	Number of entries	Score	Average
Total career resilience	35	132.77 ± 22.49	3.79 ± 0.64
Career adjustment dimension	6	23.48 ± 4.50	3.91 ± 0.75
Career Curiosity Dimension	6	22.57 ± 4.59	3.76 ± 0.76
Career Focus Dimension	6	23.35 ± 4.23	3.89 ± 0.70
Career interpersonal dimensions	6	23.06 ± 4.35	3.84 ± 0.73
Career confidence dimension	6	22.66 ± 4.29	3.78 ± 0.72
Career control dimension	5	17.65 ± 3.74	3.53 ± 0.75

Single Factor Analysis of Career Adaptability of Nursing Students

The results of single factor analysis showed that whether parents engaged in medical and nursing-related occupations and the reasons for choosing nursing had significant differences in the scores of career adaptability of future nursing students ($p < 0.05$). See Table 3.

Table 3. Single factor analysis of career adaptability of nursing students (N = 189)

	General information	Examples	Score (x ± s)	T/F values	P value
Sex	male	33	132.94 ± 31.39	0.037	0.971
	famale	156	132.73 ± 20.24		
Only child	yes	67	136.13 ± 21.24	1.531	0.127
	No	122	130.92 ± 23.02		
Whether the parents are engaged in medical care-related occupation	yes	60	138.72 ± 24.48	2.516	0.013 *
	No	129	130.00 ± 21.03		
Whether the first volunteer was a nursing major	yes	110	135.18.18.16	1.644	0.103
	No	79	129.41 ± 27.17		
Reasons for choosing a nursing major	I like it	38	141.16 ± 13.55	5.448	0.001 *
	Recommended by parents and friends	80	133.49 ± 19.87		
	Dispensing	50	131.68 ± 22.73		
	Other	21	117.43 ± 34.68		
Have you taken a career planning course	yes	148	132.82 ± 21.07	0.066	0.947
	No	41	132.56 ± 27.30		
Planning for the future	Graduate School	47	132.36 ± 22.78	2.778	0.028 *
	Hospital employment	95	135.78 ± 12.73		
	Multi-disciplinary employment	14	115.71 ± 35.96		
	Go abroad	10	137.50 ± 27.09		
	Not yet	23	129.48 ± 35.12		

Note: * : P < 0.05;

Multi-Linear Regression Analysis On Adaptability of Nursing Students

Taking the scores of career adaptability of nursing students as dependent variables, the factors with statistical significance in single-factor analysis were used as independent variables for multivariate linear regression analysis. Descriptions of the assignment of the independent variables are shown in Table 4. The results of multiple linear regression analysis showed that whether parents engaged in medical and nursing-related occupations and the reason for choosing a nursing specialty were the influencing factors of career adaptability (p < 0.05), see Table 5.

Table 4. The assignment of independent variables

Independent variables	A description of the assignment
Whether the parents are engaged in medical care-related occupation	Is = 1, No = 2
Reasons for choosing a nursing major	I like = 1, parents and friends recommend = 2 adjustment = 3, other = 4
Planning for the future	Graduate School = 1, hospital employment = 2, inter-professional employment = 3, going abroad = 4, no plans to = 5

Table 5. Regression analysis of adaptability of nursing students

Variable	β	Se	Right	t	P
Constant	167.385	8.125	–	20.601	< 0.001 *
Whether the parents are engaged in medical care-related occupation	–9.273	3.472	–0.192	–2.671	0.008 *
Reasons for choosing a nursing major	–6.162	1.715	– 0.25	–3.592	< 0.001 *
Planning for the future	– 2.148	1.298	– 0.119	–1.655	0.1

Note: R2 = 0.109, adjusted R2 = 0.094; F = 7.523, p = 0.000

Discussion

Status Quo of Career Adaptability of Nursing Students

The study found that the average total score of the student nurses' career adaptability was (132.77 ± 22.49) points, and the average score of the items was (3.79 ± 0.64) points. See Table 1. The results were similar to those of Yuhe Xiang[14]et al.. The average score of career adaptability of nursing students was (3.76 ± 0.65), which was above the middle level. The reasons are as follows: During the clinical practice stage, nurses have more practice opportunities, which significantly enhances their career adaptability and job performance. This, in turn, increases their interest in career planning. Single-factor analysis results showed that scores were higher among students whose parents were engaged in medical/ nursing occupations, those recommended by parents and friends, and those planning for graduate school or hospital employment. Conversely, scores were lower for those choosing multi-specialty employment compared to those planning to study abroad. See Table 3.

The results showed that the score of the career adjustment dimension was the highest (3.91 ± 0.75). See Table 2. The reason is: that nursing students from school to clinical transition, will encounter some special pressure, such as job skills, theory, and practice there is a certain distance[15]. Therefore, it is suggested that nursing educators should pay attention to the curriculum of career counseling, which can include some nursing management content, or some self-reflection-based teaching methods[16], improving interns' ability to adapt to their careers by improving their abilities.

The study found that career adaptability and career control had the lowest scores (3.53 ± 0.75). This is attributed to two main factors: First, the current clinical nursing environment presents challenges such as role transition difficulties, high work pressure, and significant psychological stress. Second, some nursing students lack clear career goals due to insufficient understanding and motivation regarding career value. Therefore, it is recommended that nursing schools enhance practical nursing education to improve students' ability to handle clinical work. Additionally, research indicates that new nurses' intention to leave increases with higher levels of stress, anxiety, fatigue, and work adjustment difficulties, and that the turnover rate at the new entry stage is much higher than at any other time[17]. Clinical practice is pre-employment work, it has a profound impact on students' professional identity, which has an important significance for their future career choice[18].

Influencing factors of career adaptability of nursing students whether or not their parents engaged in medical care-related occupations.

Multivariate analysis revealed that parental involvement in medical or nursing occupations significantly influenced career adaptability scores, as shown in Table 5. Nursing students whose parents were engaged in medical or nursing occupations

had higher career adaptability scores (138.72 ± 24.48) compared to those whose parents were not (130.00 ± 21.03). This suggests that parental occupation may affect both the learning ability and professional value judgment of nursing students. The reasons include: (1) Parental engagement in medical or nursing occupations likely influences students' learning ability and professional value judgment. (2) Nursing students with parents in these fields may have enhanced learning capabilities and greater professional confidence.

Therefore, the influencing factors of the career adaptability of nursing students whose parents are engaged in medical and nursing-related occupations are analyzed. It is suggested that: (1) the practice course time should be added to the theory teaching to enhance the students' self-confidence; (2) pay close attention to the psychological changes of the practice nursing students in the employment work, and give them effective guidance and communication[19]. Maintaining an optimistic attitude helps student nurses rapidly self-adjust and actively manage stress and difficulties, thereby effectively addressing clinical issues and resolving conflicts. This also encourages them to diligently study professional knowledge, understand future career directions, and develop informed plans.

Reasons for Choosing A Nursing Major

The results of multivariateanalysis indicated that the reason for choosing a nursing specialty influenced career adaptability scores. Self-liking had the highest score (141.16 ± 13.55), followed by recommended (133.49 ± 19.87), adjustment (131.68 ± 22.73), and other reasons (117.43 ± 34.68). The reasons are: (1) Personal interest positively impacts students' learning adaptability and career value judgment. (2) Nursing students who choose the specialty out of personal interest have a strong desire to learn about the industry. (3) These students also show higher enthusiasm in job hunting and are more positive about their future career choices.

Therefore, the reason for choosing a nursing specialty is the influencing factor of nursing students' career adaptability. This ability not only contributes to their academic and career success and development but also increases their professional well-being and satisfaction. It is suggested that:①nursing educators should pay enough attention to the student nurses who choose other reasons, pay high attention to the psychological state of the student nurses[20], and carry out relevant training promptly, to make them adapt to the role change in clinical practice as soon as possible, and then improve their career adaptability.②in theoretical teaching, more practical lessons should be taken to help them participate in clinical practice more quickly, to enhance their career adaptability. A survey of senior nursing students at Turkish universities shows that the inclusion of nursing management in teaching programs can improve the professional values and identity of nurses, it can also promote nurses' time management and enhance nurses' self-control and confidence in their profession[13].

Conclusion

The results of this study showed that the career adaptability of nursing students was above the middle level. It was suggested that nursing staff should take relevant measures to improve the career adaptability of nursing students. This study only investigated part of the region, the future can further study different areas, and different schools of student nurses' career adaptability differences. At the same time, we can also carry out a national survey and research, in addition, we can conduct an in-depth study and analysis on the status quo of the career adaptability of nursing students in our country, and provide references and suggestions for the formulation of relevant policies.

Conflict of interests

The authors declare that they have no competing interests.

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Ethics Approval and Consent To Participate

The studies involving human participants were reviewed and approved by the Institutional Ethics

Committee of Pingdingshan University. Ethical clearance for this study was obtained on August 5, 2023, with reference number PDSU2023-37. The study was also registered in the Chinese Clinical Trial Registry (ChiCTR). Written informed consent was obtained from all patients/participants to participate in this study.

Clinical trial number

Not applicable.

Author Contributions

Authors'contributionsHuiliLiucontributed to the concept and design, data collection, conducting consultationsessions and drafting of the manuscript. Yingying Miao, Zeyuan Licontributed to theconception and design, data collection, data interpretation, and writing of thismanuscript, All authors gave their final approval for publication of this manuscript.

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Evaluating the Impact of A Nurse-Led Sexual Violence Prevention and Health Promotion Intervention: A Quasi-Experimental Study in Northern Myanmar Camps

[1]Chit Pyae Pyae Han, [2]Montakarn Chuemchi

[1]MD Phd Student College of Public Health Sciences, Chulalongkorn University, Bangkok, Thailand, [2]PhD Assistant Professor College of Public Health Sciences, Chulalongkorn University, Bangkok, Thailand

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Abstract

Objective: To evaluate the impact of a nurse-led sexual violence prevention and health promotion intervention on improving the knowledge, attitudes towards sexual violence, and awareness of help-seeking services among internally displaced people living in northern Myanmar camps.

Background: Sexual violence is a widespread violation of human rights, especially affecting internally displaced persons, who are more vulnerable in such situations. Nurses are an important frontier in service delivery, and nurse-led interventions in their daily routine, such as health education, promotion, counselling, and treatment, are essential in preventing violence.

Methods: A quasi-experimental study, pre-posttest design, with 154 men and women aged 18 to 49 from two camps in Kachin State, Myanmar. Participants were enrolled into two groups: intervention and control. The intervention group received nurse-led intervention integrated into their routine health promotion activities. Paired t-tests were analysed to find within-group changes, and independent t-testswere used to assess between-group differences.

Results: The intervention group showed improvement from pre-intervention to post-intervention compared to the control group, knowledge (mean difference = 3.16, $p < 0.001$), attitudes toward sexual violence (mean difference = 1.72, $p < 0.001$), and help-seeking knowledge and service awareness (mean difference = 17.00, $p < 0.001$). Between-group analysis found no significant differences at baseline. However, post-intervention scores of the intervention group were higher than the control group for knowledge ($p = 0.023$), attitudes ($p < 0.001$), and help-seeking service awareness ($p < 0.001$), confirming the effectiveness of the intervention.

Conclusion: The findings suggest nurse-led interventions significantly improve knowledge, attitudes, and help-seeking service awareness related to sexual violence among conflict-affected settings. The nurse-led study highlights the necessity of policy support, integration into routine health services, and more research to improve long-term and sustainability in various humanitarian settings.

Keywords: nurse-led, sexual violence, internally displaced people, conflict, Myanmar

Corresponding Author: Montakarn Chuemchit, Ph.D., College of Public Health Sciences, Chulalongkorn University, 12th floor, Sabbasastravicaya Building, Soi Chulalongkorn 62, Phayathai Road, Pathumwan, Bangkok, 10300, Thailand.

E-mail: Montakarn.Ch@chula.ac.th

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Introduction

Sexual violence is one of the most common types of violence and has resulted in serious human rights violations against millions of people worldwide, especially among Internally Displaced People (IDPs). IDPs are encountering high levels of vulnerability and interconnected risks due to unstable living conditions, social structure breakdown, and trauma exposure.[1] Survivors frequently suffer social, psychological, and physical consequences and struggle to disclose and get help due to stigma, limited knowledge, and restricted access to resources.[1, 2]

In Myanmar, there were an estimated 346,600 IDPs before the military coup in February 2021. However, this number increased to 1,105,100 in June 2022, particularly in ethnic and conflict-affected areas. Widespread displacement has exacerbated violence and increased the risk of sexual violence for women and girls from ethnic communities.[3] The investigation and accountability for these crimes are made more difficult due to conducting research in unsafe settings, underreporting, and data inaccuracy.[4]

Health service providers are essential in addressing these issues by educating, counselling, and supporting patients. Nurses are key frontline providers and have close relationships with patients. Additionally, nurse-delivered interventions to prevent and raise awareness of sexual violence are often tailored to meet the different needs of each survivor.[5]

The role of nurses who facilitate interventions is clearly demonstrated that improvequality of life, reduce symptoms of post-traumatic stress disorder (PTSD), and address health concerns related to sexual and intimate partner violence (IPV). The iHEALnurse-delivered health promotion program, as discussed by Ford-Gilboe et al. (2024)[6],showed improved quality of life, reduced PTSD depression symptoms, and increased confidence in managing daily activities, indicating empowerment through the intervention.

According to an experimental study, trained nurses integrated IPV prevention and health promotion into their daily practice. While the original nursing curricula included basic sexual health content, they often lack practical training in IPV prevention and counseling.In response to this limitation, the intervention provided twelve nurses with hands-on training in IPV screening, counseling, and referral. After practical training, nurses reported the significant improvement that practical approach enhanced their confidence, ability to engage with patients on sensitive topics and reinforcing their competence and their role as trusted caregivers. Furthermore, participating patients reported improvement in their awareness of IPV risks and increase access to service following the nurse-led intervention. Additionally, they believed that nurses were trusted counsellors and felt comfortable discuss sensitive topics.[7]

The community-based intervention included participatory awareness-raising sessions for women's groups in refugee camps in Zambia, demonstrating the importance of community collaboration in preventing sexual violence and addressing the health problems of vulnerable populations. The study examined the medical records of health service providers and found an increase in community knowledge after awareness-raising, improved utilization of medical care, and treatment completion rates.[8]

According to quasi-experimental research assessing the effectiveness of a community-based participatory health promotion intervention aimed at addressing intimate partner violence-related knowledge, attitudes, and behaviours, the findings revealed the positive impact of community-based intervention. The study suggested that primary intervention was delivered by mother support groups,health workers would be more capable of managing and engaging with the community when violence occurs in similar situations.[9]

Sexual violence training for registered nurses and an educational intervention program provided the effectiveness of training and educational interventions in enhancing nurses' skills in managing sexual violence cases and supporting survivors. The positive outcome of the program suggested that the improvement of nurses' capacity and confidence had

promoted a better understanding of sexual violence issues among survivors and increased access to care and treatment.[10]

This study aims to evaluate the impact of sexual violence prevention and health promotion intervention delivered by trained nurses on improving knowledge, attitude of sexual violence and awareness of help seeking services among IDPs living in northern Myanmar camps.

Materials and Method

The quasi-experimental study used a two-group,pre-posttest intervention design. Participants were men and women of reproductive age (18–49), who had lived in the selected study camps in Kachin state, Myanmar for at least one month and had no plans to relocate within in the next five months. The required sample size was154,included an additional 10% for expected dropout rate. The sample size was determined using G*Power analysis to identify differences between two means and formula for comparing two proportions, a statistical power of 80% (Z1-β = 0.8416), a medium effect size of 0.48[11], and a significance level of 5%.Standardized questionnaires were used to assess outcomes. The pilot testing was conducted prior to test the instruments' reliability and validity. Among 154, six participants from both groups were lost to follow-up. Therefore, the post-intervention analysis included 148 participants.

Two camps in Kachin State, northern Myanmar (97,002 IDPs), were selected through convenience sampling. Selection was based on feasibility of collaboration with an existing implementation organization and the availability of permission from camp authorities. Camps were selected to ensure the safety precaution of participants by avoiding active armed forced fighting.

The intervention group received a nurse-led intervention given through health education activity, total eight sessions and each lasting 30–45 minutes. The intervention contents were designed to improve knowledge and attitudes towards sexual violence and increasing awareness of help-seeking services. The author, an experienced and certified professional in sexual violence and gender-based violence (GBV), developed intervention packages, job-aid materials, and a facilitator's guideline. Three technical experts reviewed and revised the final sexual violence preventive guideline. Four nurses received five days of facilitator training and conducted interventions from May to October 2023. The control group did not receive the nurse-led intervention but had access to regular, routine health education sessions, which included general health topics and were provided by clinic nurses of the control area's camps.

Quantitative data were analysed using SPSS software version 28.0. Categorical variables were described usingfrequency and percentage, while continuous variables were reported as mean and standard deviation (SD). Paired t-test for were used to detect within-group changes, and independent t-test were used to compare post-test scores between groups,ap-value of <0.05 was considered the significant threshold.

Results

Demographic Characteristics

In table 1, there were 154 participants with mean age of 31.94 (SD±8.30). The majority of participants were female (90.3%), of Kachin ethnicity (94.2%), and Christian (95.5%). Participants possessed various educational backgrounds and had different levels of access to formal education, but all had basic literacy, and most of them had completed middle (37.7%) or high school (26.7%). 81.2% actively seeking information, and 44.2% responded they knew available services in camps. Half of the participants had displaced one or two-times relocation, the remaining had been displaced 3–4 times (34.4%) and five or more times (15.6%). Due to living conditions and displacement, many participants (77.9%) experienced stress from being without food, not having income, restrictions on travel, and witnessing or experiencing violence.

Table 1. Baseline demographic characteristics of participants (n = 154)

Variable	Number	Per cent
Age (years) Mean ± SD	31.94 ± 8.30	
Sex		
Male	15	9.7
Female	139	90.3
Ethnicity		
Shan	9	5.8
Kachin	145	94.2
Religion		
Buddhist	7	4.6
Christian	147	95.5
Education		
Read & write	16	10.4
Primary Education	26	16.9
Middle Education	58	37.7
High Education	41	26.6
Higher Education	13	8.4
Search for getting information related to sexual violence		
Yes	125	81.2
No	29	18.8
Do you know what type of services you can receive if sexual violence occurs?		
Yes	68	44.2
No/Not sure	86	55.8
Total time of displacements		
≤ 2 times	77	50.0
3 – 4 times	53	34.4
≥ 5 times	24	15.6
Feeling stress due to displacement		
Yes	120	77.9
No/Not sure	34	22.1

Within-group Changes: Paired t-test Analysis

Table 2 presents the paired t-test results. For the intervention group, knowledge mean scores significantly increased from pre-intervention (mean ± SD = 7.55 ± 1.27) to post-intervention (mean ± SD = 10.72 ± 0.71) with a mean difference of 3.16, t (73) = –20.07, and p <0.001. Attitude toward sexual violence also notably improved from pre-intervention (mean ± SD = 4.11 ± 1.05) to post-intervention (mean ± SD = 5.82 ± 0.56) with a mean difference of 1.72, t(73) = –12.68, and p <0.001. Similarly, help-seeking knowledge and service awareness showed improvement from pre-intervention (mean ± SD = 31.39 ± 3.30) to post-intervention (mean ± SD = 48.39 ± 4.01) with a mean difference of 17.00, t(73) = –32.20, and p <0.001.

For the control group, there was a small but statistically increased in knowledge scores from pre-intervention (mean ± SD = 7.24 ± 1.35) to post-intervention (mean ± SD = 7.84 ± 0.95) with a mean

difference of 0.61, t(75) = –3.59, and p = 0.001. However, no significant changes were found for attitude (mean difference = 0.03, p = 0.865), and help-seeking service awareness (mean difference = 0.33, p = 0.566. Therefore, within-group findings suggest that the intervention was effective in improving knowledge, attitudes, and help-seeking service awareness related to sexual violence.

Table 2. Knowledge, attitudes towards sexual violence, and help-seeking service awareness within intervention and control groups (pre-intervention and post-intervention): Paired t-test results

Variable	Group	Pre-intervention Mean(SD)	Post-intervention Mean(SD)	Mean Difference	t (df)	p-value
Knowledge	Control	7.24 (1.35)	7.84 (0.95)	0.61	3.59(75)	**0.001***
	Intervention	7.55 (1.27)	10.72 (0.71)	3.16	20.07(73)	**<0.001****
Attitude	Control	3.92 (1.22)	3.95 (1.17)	0.03	0.17(75)	0.865
	Intervention	4.11 (1.05)	5.82 (0.56)	1.72	12.68(73)	**<0.001****
Help-seekingawareness	Control	31.39 (3.23)	31.72 (3.94)	0.33	0.58(75)	0.566
	Intervention	31.39 (3.30)	48.39 (4.01)	17.00	32.20(73)	**<0.001****

Paired t-test is used. The reported t-values are absolute values.
*Mean Difference is calculated as Post-intervention Mean minus Pre-intervention Mean. *Significant at p < 0.05. **Significant at p < 0.001.*

Between-group Comparisons: Independent t-test Analysis

Table 3 presents independent t-test results, revealing no significant baseline differences between the intervention and control groups for knowledge (p = 0.745), attitude (p = 0.271), and intention to seek help (p = 0.943). After post-intervention, the intervention group showed significantly higher scores in knowledge (mean ± SD = 10.72 ± 0.71, mean difference = 2.88, p = 0.023), attitude (mean ± SD = 5.82 ± 0.56, mean difference = 1.87, p < 0.001), and help-seeking service awareness (mean ± SD = 48.39 ± 4.01, mean difference = 16.67, p < 0.001) compared to the control group. These between-group findings suggest that the intervention was effective in improving knowledge, attitudes, and help-seeking service awareness outcomes related to sexual violence.

Table 3. Between intervention and control groups difference in knowledge, attitudes towards sexual violence, and help-seeking service awareness: Independent t-test results

Variable	Time Point	Control Mean (SD)	Intervention Mean (SD)	Mean Difference	t (df)	p-value
Knowledge	Pre-intervention	7.26 (1.35)	7.51 (1.29)	0.25	0.32(148)	0.745
	Post-intervention	7.84 (0.95)	10.72 (0.71)	2.88	2.31(148)	**0.023***
Attitude	Pre-intervention	3.92 (1.21)	4.08 (1.05)	0.16	0.9(148)	0.271
	Post-intervention	3.95 (1.17)	5.82 (0.56)	1.87	3.49(148)	**<0.001****
Help-seeking awareness	Pre-intervention	31.25 (3.47)	31.29 (3.29)	0.04	0.07(148)	0.943
	Post-intervention	31.72 (3.94)	48.39 (4.01)	16.67	4.97(148)	**<0.001****

Independent t-test is used. The reported t-values are absolute values.
Mean Difference is calculated as Intervention group Mean minus Control group Mean at each time point.
**Significant at p < 0.05. **Significant at p < 0.001.*

Discussion

In this study, the intervention group showed significant improvement in knowledge, attitudes, and awareness of help-seeking services following the nurse-led intervention, compared with the control group. These findings are consistent with existing literature that highlights the importance of healthcare providers' training and capacity building. A quasi-experimental study in Tanzania demonstrated that trained healthcare professionals had better knowledge and better clinical practices in serving the community.[12]In Kenya, multisectoral training resulted in high knowledge scores and promoted multisector collaboration among service providers responding to sexual and gender-based violence.[13]Furthermore, a blended training program in Italy provided a positive impact on professionals' knowledge, expanded case management, and particularly documentation practice in sexual violence cases.[14]Therefore, building the competence and strengthening the capacity of healthcare professionals can improve community access to and availability of essential services. Continuing education and training programs are essential for healthcare professionals to maintain and update their skills.

Previous community-based experimental studies[15-18] have reported that strategies delivered by health care providers can significantly improve the prevention of sexual violence. A nurse-delivered, clinic-based intervention randomized controlled trial study demonstrated short-term improvements in safety planning, mental quality of life, and utilization of help-seeking community resources, however, the long-term impact study requires to be observed.[15] In rural Tanzania, a community-based intervention using a controlled before-and-after design showed that skilled and trained healthcare workers at local facilities improved community awareness regarding the health consequences of sexual violence and available treatments.[16]

The nurses who participated in a small-scale educational project played a vital role in increasing public awareness and understanding of the serious consequences, and health risks of domestic violence.[17]. A similar quasi-experimental study involving midwives' educational programs showed trained service providers were better at IPV case detection and clinical practice following the intervention, helping people in their communities.[18]

Integrated interventions addressing both violence issues and HIV have demonstrated significant public health benefits across diverse settings. Several studies confirmed that strengthening service delivery and community-level mobilization by healthcare workers contributed to approximately a lower rate of violence exposure and changes in attitudes, social norms, and violent behaviours.

The SASA project in Kampala, Uganda, reported a 52% reduction in the prevalence of violence, decreased society acceptance of violence culture, increased support for women's sexual decision-making, and a decrease in the reported rate of multiple sexual partners among men.[19] A study in Tanzania evaluated the impact of integrated GBV prevention into HIV/AIDS care, leading to more gender-equity norms, improved community knowledge, and increased use of services. However, some important outcomes, such as IPV prevalence, were not statistically significant.[20]

Wagman et al. studied the effectiveness of an integrated intimate partner violence and HIV prevention intervention in Rakai, Uganda indicated that strengthening service delivery by healthcare workers and community-level mobilization changed attitudes, social norms and violent behaviours. The intervention group experienced lower rates of physical, sexual, and forced sexual exposure after being stimulated with messages raising awareness of IPV and its negative consequences. Additionally, intervention group's participants showed increased in HIV disclosure, counselling and testing services.[21]

A key strength of this study is a quasi-experimental design which included a control group and before-and-after immediate impact evaluation. Despite the short period, the intervention showed outcomes difference following the intervention and a long-term study would offer more opportunity to observe the sustainability of the study. One limitation of the

study is that it was conducted in conflict-affected camps, and focused only heterosexual population, so findings may not be generalized. Additionally, there is a possibility of selection bias, and consistent outcomes could be difficult to observe in different contexts and settings.

Conclusion

The study indicates that nurse-led interventions are an effective approach for enhancing knowledge, attitudes, and help-seeking behaviour related to sexual violence among IDPs. Nurses are mainly frontline healthcare providers and often the primary focal point of contact for survivors. Therefore, nurses play an essential role in case identification, documentation, prevention, health promotion and advocacy. Strengthening health systems through investment in nurse education, GBV prevention and response integrated into nursing curricula is crucial. Furthermore, nurses' routine education and health promotions activities have to include sexual violence prevention messages. The findings highlight the need for survivor-centered policies and accessible one-stop services within health clinics and facilities to provide comprehensive care and support for survivors.[22]

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Availability of Data and Materials

The corresponding author can provide the data upon reasonable request.

Ethical Clearance

The study was approved by the Ethics Review Committee of Chulalongkorn University, Thailand (COA No. 071/2022) in April 2023. The research followed the Declaration of Helsinki and the ethics committee's approval. All participants provided written informed consent, confirming their voluntary participation. Trained research team performed face-to-face interviews, after obtaining informed consent and interview duration was around 1 hour. Interviews were conducted in private settings to maintain confidentiality, and the participants' responses were audio-recorded with their consent. All data was kept confidential and ensured participants identities were not disclosed.

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Conflicts of interest: The authors declare that they have no conflicts of interest.

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Original Article

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Experiences of Sexual Harassment Among Lesbian, Gay, Bisexual, Transgender, and Queer University Students in Bangkok, Thailand

[1]Jiratchaya Rungrote, [1]Nyan Linn, [1,2]Montakarn Chuemchit

[1]College of Public Health Sciences, Chulalongkorn University, Phayathai Road, Pathumwan, Bangkok, Thailand, [2]Excellence Centre for Health and Social Sciences and Addition Research, Chulalongkorn University, Phayathai Road, Pathumwan, Bangkok, Thailand

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Abstract

Background: Lesbian, gay, bisexual, transgender, and queer (LGBTQ) people are vulnerable to experience sexual harassment because of inequality and discrimination. This study investigated the experience of sexual harassment and associated factors among LGBTQ university students in Bangkok, Thailand.

Methods: A cross-sectional was conducted among 355 undergraduate students from universities in Bangkok, Thailand, through snowball sampling using self-administered standardized questionnaires. Associated factors were examined using binary logistic regression.

Results: The participants had an average age of 20 ± 2 years, and the majority consisted of gay men (30.7%) and lesbian women (18.6%). Nearly all participants (99.4%) had experienced one or more forms of sexual harassment in their lifetime, with 48.2% at a moderate level and 22.3% at a high level. Transgender individuals, higher monthly income, and frequent posting of pictures and occasional chatting with strangers on social media were more likely to experience sexual harassment while having fewer sexual partners, a moderate tolerant attitude, and a moderate perception of sexual harassment were less likely to experience it.

Conclusions: In this study, LGBTQ students experienced sexual harassment. Institutions and student welfare organizations should urgently implement policies and programs for preventing and responding to sexual harassment among this group. Future research should focus on LGBTQ students across diverse socioeconomic backgrounds and various social/sexual behaviors.

Keywords: Sexual harassment, Perception, Experience, Attitude, LGBTQ, Thailand

Introduction

Sexual harassment is defined as unwelcome sexual advances, demands for sexual favors, or other verbal behaviors that create a hostile environment.[1,2,3] Lesbian, gay, bisexual, transgender, and queer (LGBTQ) individuals face higher rates of harassment than heterosexual/cisgender individuals,

Corresponding Author: Montakarn Chuemchit, Ph.D., College of Public Health Sciences, Chulalongkorn University, 12th floor, Sabbasastravicaya Building, Soi Chulalongkorn 62, Phayathai Road, Pathumwan, Bangkok, 10300, Thailand.

E-mail: Montakarn.Ch@chula.ac.th

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with prevalence ranging from 15% to 81%.[4–9] LGBTQ students in academic environments face various forms of harassment, with studies showing rates as high as 47% for verbal harassment in the past year.[10–12]Among different gender identities/sexual orientations, a higher rate of harassment in academic institutions was observed among boys and those with nonconforming gender identities.[13]

In Thailand, sexual harassment is prevalent across various settings, including academic institutions, public spaces, and workplaces.[14,15] LGBTQ youth are more than twice as likely to experience harassment compared to their non-LGBTQ peers.[16] A study among LGBTQ undergraduates indicated that some students felt unsafe in university settings,[17] while others reported dropping out or skipping school due to harassment, with school absences being significantly higher among victimized LGBTQ students (33%) compared to non-victimized students (15%).[18,19]

Survivors of sexual harassment often suffer long-term negative consequences, including mental health issues, physical impairments, academic and career setbacks.[20,21] LGBTQ individuals are four times more likely to experience violent victimization, however, many prefer not to report due to fear of reprisal or lack of support.[22,23] Several factors contribute to sexual harassment, such as sociodemographic characteristics, personal behaviors, attitudes, and perceptions toward harassment.[24–29] The sexual harassment in academic settings in Thailand has been explored by some studies.[15,30,31] However, it is limited to LGBTQ university students. Therefore, this study investigated sexual harassment experiences and related factors among LGBTQ university students in Bangkok, Thailand. The findings could inform policies to address sexual harassment and to promote a supportive, harassment-free environment in academic institutions for LGBTQ individuals.

Methods

Study area and population

This study applied a cross-sectional design and involved LGBTQ undergraduate students among universities in Bangkok, Thailand. As they are vulnerable and hard-to-reach group, their population size was unknown. Hence, the sample size was calculated using Cochran's formula,

$$n = \frac{P(1 - P)Z^2}{d^2}$$

where P = proportion of the population who experience sexual harassment (0.7) based on previous research,[8] Z is the reliability coefficient at the 95% confidence interval (CI) (1.96), and d is the acceptable sampling error (0.5). There were 355 participants in this study, including 10% for incomplete answers or missing data. Criteria for inclusion were (1) Thai nationality, (2) LGBTQ students from public or private universities in Bangkok, (3) studying undergraduate degree programs in any faculty, (4) can read and write in Thai language, and (4) willing to participate in the study. Meanwhile, participants who provided incomplete answers were excluded.

Research Instruments

Self-administered structured questionnaire was used with five sections: (1) sociodemographic factors, (2) sexual and risky behaviors, (3) tolerant attitude toward sexual harassment, (4) perception of sexual harassment, and (5) experiences of sexual harassment.

Section 3 – Sexual Harassment Attitude Scale,[32] a 19-item tool evaluates participants' attitudes toward sexual harassment, consisting five response categories scored as strongly agree = 5, agree = 4, undecided = 3, disagree = 2, and strongly disagree = 1, with items 4 and 7 reverse-coded. Total scores range from 19 to 95, higher scores mean a higher tolerance to sexual harassment. This instrument had demonstratedhigh internal consistency;[32]and Cronbach's alpha in this study was 0.81.

Section 4– Sexual Harassment Definitions Questionnaire,[33] contains 16 items that assess participants' perceptions of sexual harassment. It implements a dichotomous response (yes = 1, no = 0) for simpler administration and to encourage respondents to decide whether respondents perceived an occurrence as constituting sexual harassment. Scores range from 0 to 16, higher scores

mean that respondents defined more incidences as sexual harassment.[33] After the pretest, the Kuder–Richardson score was0.8.

Section 5 – This study developed 12-item self-report questionnaire about lifetime experiences of sexual harassment based on previous instruments;[32,33] nonverbal: staring up and down, leering with sexual undertones, blocking paths, mocking gestures (winking, blowing kisses, licking lips), verbal: sexually suggestive jokes, whistling, intrusive questions about sexuality, propositions for sex, and physical: unwanted massages, touching clothing/hair/body, non-consensual hugs/kisses, involuntary petting. There were five-point Likert scale: never = 1, rarely (monthly or less) = 2, sometimes (2–4 times per month) = 3, often (2–3 times per week) = 4, and always (4 or more times per week) = 5with total scores range = 12 to 60.Higher scores indicate more experiences of lifetime sexual harassment. Three experts examined the content validity of this questionnaire, which achieved an item objective congruence of 0.67 or higher. After the pretest, its Cronbach's alpha score = 0.82.

Sampling Procedure and Data Collection

This study employed snowball sampling due to the target group's hard-to-reach, vulnerable nature and unknown population parameter. Researchers met Rainbow Sky Club leaders—an LGBTQ university student group—at each university to explain the study and questionnaire. Leaders distributed envelopes containing consent forms and questionnaires to the first eligible LGBTQ students, who provided informed consent and forwarded them to peers via chain referral. To ensure confidentiality, envelopes were numerically sorted, uniquely coded, and excluded participant names. Respondents returned sealed envelopes upon completion.

Data Analysis

Data analysis was conducted using SPSS 28.0 (IBM, Chulalongkorn University license). Categorical variables were summarized as frequencies and percentages, while continuous variables were assessed for normality (Shapiro–Wilk test) and described as mean ± SD or median ± IQR. Attitude, perception, and experience scores, being non-normally distributed, were categorized into three levels: low (≤25%), moderate (>25% to ≤75%), and high (>75%). Sexual harassment experience was dichotomized (0 = low, 1 = moderate/high) for inferential analysis. Pearson's chi-square test identified factors associated with sexual harassment, with variables meeting $p < 0.1$ included in multiple logistic regression.[34] Statistical significance was set at $p < 0.05$, and results were reported as odds ratios (OR) with 95% CIs.

Table 1. Lesbian, Gay, Bisexual, Transgender, and Queer students' sociodemographic factors and sexual and risky behaviors (n = 355)

Sociodemographic Factors and Sexual and Risky Behaviors	Frequency	Percentage (%)
Sociodemographic Factors		
LGBTQ identity		
• Lesbian	66	18.6
• Gay	109	30.7
• Bisexual	39	10.9
• Transgender (transmen or transwomen)	43	12.1
• Queer	39	10.9
• Others (questioning, intersex, asexual, or any other gender or sexual orientation)	59	16.6

Continue....

Age (Years)		
– Median ± IQR		20 ± 2
– Mean ± SD		20.67 ± 1.48
– Minimum–Maximum		18–26
• 18–20	187	52.7
• 21–26	168	27.3
Type of University		
• Government	197	55.5
• Private	158	44.5
Faculty		
• Science/Business	91	25.6
• Social Science/Education	100	28.2
• Arts/Humanities	164	46.2
Faculty		
• Art	141	39.7
• Education	59	16.6
• Health Science	47	13.2
• Social Science	41	11.6
• Science and technology	35	9.9
• Philology	23	6.5
• Business administration	9	2.5
Year Level In University		
• First year	64	18.1
• Second year	146	41.1
• Third year	60	16.9
• Fourth year or higher	85	23.9
Monthly Income		
• No	216	60.8
• 11,500 baht or less	139	39.2
• Above 11,500 baht	46	13.0
Living Arrangement		
• Alone	115	32.4
• Partner	120	33.8
• Parents	63	17.7
• Others	57	16.1
Sexual and Risky Behaviors		
Alcohol Drinking		
• Never	57	16.1
• 1 time in 6 months	119	33.5
• 1–4 times a month	97	27.3
• More than 1 time in a week	82	23.1

Continue....

Nightlife (Per Week)		
• Less than 1 time	181	60.0
• 1–2 times	84	23.7
• 3 or more times	90	25.3
Number of Sexual Partners in Lifetime		
• None	32	9.0
• 1 person	73	20.6
• 2 persons	205	57.7
• 3 persons or more	45	12.7
Use Of Condoms During Sex		
• Not used	94	26.5
• Not necessarily	45	12.7
• Used	216	60.8
Posting or Sharing Pictures on Social Media		
• Never	70	19.7
• Sometimes	162	45.6
• Frequent	123	34.3
Engaging in Sex Chats on Social Media		
• Never	62	17.5
• Sometimes	176	49.6
• Frequent	117	32.9
Chatting with Strangers on Social Media		
• Never	72	20.3
• Sometimes	128	36.1
• Frequent	155	43.6

Table 2. Sexual harassment characteristics among Lesbian, Gay, Bisexual, Transgender, and Queer students (n = 355)

Sexual Harassment Characteristics	Frequency	Percentage (%)
Tolerant Attitude Toward Sexual Harassment		
– Median ± IQR	66 ± 12	
– Minimum–maximum	19–95	
• Low	94	26.5
• Moderate	185	52.1
• High	76	21.4
Perception of Sexual Harassment		
– Median ± IQR	14 ± 12	
– Minimum–maximum	4–16	
• Low	99	27.9
• Moderate	199	56.1
• High	57	16.0

Continue....

Verbal Form of Sexual Harassment		
• Never experienced	15	4.2
• Experienced	340	95.8
Nonverbal Form of Sexual Harassment		
• Never experienced	20	5.6
• Experienced	335	94.4
Physical Form of Sexual Harassment		
• Never experienced	27	7.6
• Experienced	328	92.4
Experience of Any Sexual Harassment		
• Never experienced	2	0.6
• Experienced	353	99.4
– Median ± IQR	24 ± 15	
– Minimum–maximum	12–58	
• Low	105	29.6
• Moderate	171	48.2
• High	79	22.2

Table 3. Bivariate associations with sexual harassment among Lesbian, Gay, Bisexual, Transgender, and Queer students (n = 355)

Independent Variables	Experience of Sexual Harassment			
	Low (%)	Moderate to High (%)	χ^2	*p*-value [a]
LGBTQ identity			9.369	**0.095**
• Lesbian	40.9	59.1		
• Gay	32.1	67.9		
• Bisexual	30.8	69.2		
• Transgender (transmen or transwomen)	18.6	81.4		
• Queer	28.2	71.8		
• Others (questioning, intersex, asexual, or any other gender or sexual orientation)	20.3	79.6		
Age (Years)			13.355	**<0.001**
• 18–20	38.0	62.0		
• 21–26	20.2	79.8		
Type of University			0.763	0.382
• Government	31.5	68.5		
• Private	27.2	72.8		
Faculty			2.591	0.274
• Science or Business	23.1	76.9		
• Social Science or Education	33.0	67.0		
• Arts and Humanities	31.1	68.9		

Continue....

Year Level in University			11.296	**0.010**
• First year	39.1	60.9		
• Second year	34.9	65.1		
• Third year	21.7	78.3		
• Fourth year or higher	18.8	81.2		
Monthly Income			13.878	**0.001**
• No	31.9	68.1		
• 11,500 baht or less	35.5	64.5		
• Above 11,500 baht	6.5	93.5		
Living Arrangement			3.414	0.332
• Alone	25.2	74.8		
• Partner	33.3	66.7		
• Parents	34.9	65.1		
• Others	24.6	75.4		
Alcohol Drinking			1.776	0.620
• Never	31.6	68.4		
• Less than 1 time per month	32.8	67.2		
• 1–4 times per month	28.9	71.1		
• More than 1 time in a week	24.4	75.6		
Nightlife per Week			6.029	**0.049**
• Less than 1 time	29.8	70.2		
• 1–2 times	38.1	61.9		
• 3 or more times	21.1	78.9		
Number of Sexual Partners in Lifetime			20.557	**<0.001**
• None	6.3	93.7		
• 1 person	42.5	57.5		
• 2 persons	32.2	67.8		
• 3 persons or more	13.3	86.7		
Use of Condoms during Sex			4.582	0.101
• Not use	30.8	69.2		
• Not necessarily	42.2	57.8		
• Use	26.4	73.6		
Posting or Sharing Pictures on Social Media			18.956	**<0.001**
• Never	41.4	58.6		
• Sometimes	35.2	64.8		
• Frequent	15.5	84.5		
Engaging in Sex Chats on Social Media			1.522	0.467
• Never	33.9	66.1		
• Sometimes	30.7	69.3		

Continue....

• Frequent	25.6	74.4		
Chatting with strangers on social media			9.095	**0.011**
• Never	38.9	61.1		
• Sometimes	20.3	79.7		
• Frequent	32.9	67.1		
Tolerant Attitude toward Sexual Harassment			18.719	**<0.001**
• Low	21.3	78.7		
• Moderate	39.5	60.5		
• High	15.8	84.2		
Perception of Sexual Harassment			12.957	**0.002**
• Low	18.2	81.8		
• Moderate	37.2	62.8		
• High	22.8	77.2		
[a] Bivariate analysis (chi-square test) and p-value < 0.1 are in bold.				

Table 4: Significant predictors of sexual harassment among Lesbian, Gay, Bisexual, Transgender, and Queer students (n = 355)

Independent Variables	Experience of Sexual Harassment		
	OR	95% CI[a]	*p*-value *
LGBTQ identity			
• Lesbian	0.96	(0.42, 2.15)	0.913
• Gay	1 (reference)		
• Bisexual	1.33	(0.51, 3.47)	0.558
• Transgender (transmen or transwomen)	3.21	(1.13, 9.17)	**0.029**
• Queer	1.68	(0.61, 4.60)	0.311
• Others (questioning, intersex, asexual, or any other gender or sexual orientation)	1.31	(0.52, 3.29)	0.570
Monthly Income			
• No	1 (reference)		
• 11,500 baht or less	0.91	(0.48, 1.73)	0.764
• Above 11,500 baht	5.52	(1.49, 20.48)	**0.011**
Number of Sexual Partners in Lifetime			
• 3 or more persons	1 (reference)		
• 2 persons	0.38	(0.13, 1.10)	0.075
• 1 person	0.29	(0.09, 0.92)	**0.036**
• None	2.81	(0.47, 16.80)	0.257
Posting or Sharing Pictures on Social Media			
• Never	1 (reference)		
• Sometimes	1.36	(0.66, 2.83)	0.406
• Frequent	2.62	(1.05, 6.51)	**0.039**
• Chatting with Strangers on Social Media			

Continue....

• Never	1 (reference)		
• Sometimes	2.31	(1.05, 5.09)	**0.038**
• Frequent	0.77	(0.33, 1.83)	0.562
Tolerant Attitude toward Sexual Harassment			
• High	1 (reference)		
• Moderate	0.25	(0.11, 0.56)	0.001
• Low	0.57	(0.23, 1.40)	0.219
Perception of Sexual Harassment			
• Low	1 (reference)		
• Moderate	0.37	(0.18, 0.77)	**0.008**
• High	0.56	(0.21, 1.47)	0.237
Abbreviations: [a]CI = confidence interval; OR = odds ratio. [*]< 0.05 are in bold.			

Results

The majority were gay men (30.7%) and lesbian women (18.6%), with a mean age of 20 ± 2 years. Over half (55.5%) attended government universities, 44.5% private. Nearly half (45%) studied arts/humanities, and 41.1% were second-year students. Most had two lifetime sexual partners (57.7%) and used condoms (60.8%; Table 1).

Regarding sexual harassment attitudes, 26.5% had low tolerance, 52.1% moderate, and 21.4% high. Perception was low for 27.9%, moderate for 56.1%, and high for 16.0%. Nearly all (99.4%) experienced harassment, with 29.6%, 48.2%, and 22.2% reporting low, moderate, and high levels, respectively. Verbal harassment (95.8%) was most common, followed by nonverbal (94.4%) and physical (92.4%; Table 2).

Chi-square testidentified associations of sexual harassment ($p < 0.1$) with gender, age, university year, income, nightlife, sexual partners, social media use (posting/sharing pictures, chatting with strangers), tolerance, and perception (Table 3).

Multivariable analysis (Table 4) showed transgender students had higher odds of sexual harassment than gay students (OR = 3.21, 95% CI = 1.13–9.17). Those earning >11,500 baht/month faced higher odds than those with no income (OR = 5.52, 95% CI = 1.49–20.48). Students with one partner had lower odds than those with three or more (OR = 0.29, 95% CI = 0.09–0.92). Posting/sharing pictures (OR = 2.62, 95% CI = 1.05–6.51) and chatting with strangers (OR = 2.31, 95% CI = 1.05–5.09) increased harassment likelihood.Tolerance significantly influenced harassment reports. Moderate-tolerance students were less likely to report harassment than high-tolerance students (OR = 0.25, 95% CI = 0.11–0.56). Similarly, those with moderate perception were less likely to report than those with low perception (OR = 0.37, 95% CI = 0.18–0.77).

Discussion

This study examined sexual harassment experiences among LGBTQ university students in Bangkok and influencing factors. Nearly all (99.4%) reported harassment, significantly higher than previous studies. A 2019 Thai survey found 53% of LGBTQ respondents experienced verbal harassment, while U.S. studies reported rates of 38.5%–72% within the past year.[8,18,35]The high prevalence here may stem from snowball sampling bias and a broad definition of harassment assessed through 12 items covering verbal, nonverbal, and physical forms, each exceeding 90%. This surpasses the 82% verbal harassment rate among female undergraduates in Bangkok.[36]Findings highlight the lack of comprehensive anti-discrimination laws and ongoing stigma against LGBTQ students in education.[31]Hence, ensuring a safe, inclusive environment for LGBTQ students is essential.

Most participants exhibited moderate to high tolerance for sexual harassment, potentially reflecting their parents' attitudes or as a coping mechanism resulting from repeated victimization.[7,37] Nearly three-fourths had moderate to high perception, suggesting strong recognition of harassment. Cultural, gender, educational, and socioeconomic factors may contribute. [15,38,39] Transgender students reported the highest levels of sexual harassment (81.4% moderate to high), consistent with prior studies.[8,40,41]In Thailand, they often face harassment linked to pressure to conform to birth-assigned sex.[42] Future research should explore harassment types and underlying causes based on gender identity.

Students with higher monthly incomes were more likely to report harassment, contrasting with studies linking poverty to sexual violence.[43] High-income individuals may face greater visibility due to openness about their identity, while societal biases against affluent LGBTQ individuals may also play a role.Frequent social media users—posting pictures or chatting with strangers—had higher odds of sexual harassment, while those with one sexual partner had lower odds. This suggests a link between risk behaviors and victimization, but the responsibility for harassment lies solely with the perpetrator, and everyone has the right to live free from harassment.[44]

Lower tolerance for harassment correlated with reduced experiences, while higher perception was linked to lower victimization, possibly due to proactive avoidance.[24,25]However, the relationship between perception and actual experience is complex, influenced by factors such as beliefs and profession.[25] Another study found no association between risk perception and sexual victimization.[26] Indeed, these associationsare complex, multifaceted, and cannot be generalized.

Health equity implications for community nursing

Findings highlight the need for community nursing initiatives to address high lifetime harassment rates, particularly verbal, nonverbal, and physical forms. Nurses should focus on at-risk groups, such as transgender students and those with high tolerance for harassment, promoting awareness and resilience. Interventions should encourage safer online behaviors, challenge tolerant attitudes, and advocate for support systems addressing vulnerabilities linked to sexual behaviors, socioeconomic factors, and harassment perception. Creating an inclusive environment is crucial.

Limitation

Generalizability was constrained as findings are limited to Bangkok, and nonprobability sampling reduces representativeness. The cross-sectional design prevents causal inferences. Self-reported data may introduce recall and reporting bias. Additionally, to respect gender identity, assigned sex at birth was not recorded, limiting insights into related differences.

Conclusion

Nearly all LGBTQ university students in Bangkok experienced sexual harassment, with most reporting moderate to high levels. Key associated factors include gender, income, number of sexual partners, social media activity, tolerance, and perception of harassment. Future research should integrate qualitative and quantitative approaches to explore harassment within specific socioeconomic and behavioral contexts.

Declarations

Funding: *This study did not use any funding.*

Conflict of interest: *The authors declare no conflicts of interest.*

Ethical approval: *This study obtained approval from the Ethics Review Committee for Research Involving Human Research Subjects, Health Sciences Group, Chulalongkorn University (COA.No.250/2020), Thailand.*

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Enhancing Healthcare Quality through Connected Care Monitoring: A Survey on Nurses' Knowledge, Attitude, and Practice in Wards

[1]K Hima Bindu, [2]Sai Praveen Haranath, [3]Snigdha Banerjee, [4]Rahul Khandelwal, [5]Rajkumar Jupally, [6]Sunitha Domingo

[1]MBBS, MD, FNB (Critical Care), Consultant critical care, Apollo Hospitals, Jubilee Hills, Hyderabad, [2]MBBS, AB (Pulmonology & Critical Care Medicine) Senior consultant Pulmonologist & Critical Care Specialist, Medical Director, Apollo eACCESS TeleI CU Service, Apollo Hospitals, Jubilee Hills, Hyderabad, India, [3]Pharm. D and MPH, Manager Public Health, Apollo Health Axis, [4]MBBS, PGPM, COO Special Projects, Apollo Hospitals Enterprise Ltd, [5]MBBS, MD, FNB (Critical Care), Consultant critical care, Apollo Hospitals, Jubilee Hills, Hyderabad, [6]Nursing Director, Apollo Hospitals, Telangana Region, Hyderabad

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Abstract

Background: Enhanced Connected Care (ECC) monitoring, which fuses medical devices with continuous monitoring of patient vitals captured by a nursing dashboard, offers a better way to address patient safety and improve clinical outcomes. Nurses are the key players involved in the implementation of ECC, while their KAP towards the technology in place decides the success and efficacy of this innovation. The purpose of this study is to determine the level of knowledge among nurses regarding ECC, perceptions regarding its benefits/challenges, and drivers/inhibitors of its implementation in a hospital environment.

Methods: A two-month cross-sectional study was conducted at Apollo Hospital – Jubilee Hills. Nurses with a minimum of six months of practice experience were invited to complete a structured questionnaire via Survey Monkey. A total of 125 Nurses participated voluntarily in the survey. Descriptive statistics using SPSS and thematic analysis for qualitative answers were used. The significant variables were nurses' knowledge of ECC, confidence level, time saving per shift and the perceived barriers for implementation of ECC.

Results: Sixty-one percent of nurses expressed high confidence in ECC usage, with increased comfort in ECC evident among younger (18–34 years) than older nurses. Time saved was substantial, with 47.2% saving 5–10 min per shift. There was a strong correlation between levels of knowledge and confidence ($p = 0.009$). The main cited benefits were enhanced patient safety (24%) and increased early deterioration detection (22.4%), although alarm burden and technical integration challenges constrained uptake.

Conclusion: ECC monitoring can improve our patients and workflow but to be successful we need better training, tailored mid-career nurse support, and the right systems in place to drive alarm fatigue down. The solution to these challenges will enable wider adoption and better clinical outcomes.

Keywords: Enhanced Connected Care (ECC), Continuous Patient Monitoring, Healthcare Technology Adoption, Nursing Workflow Efficiency, Patient Safety

Corresponding Author: K Hima Bindu, Consultant Critical Care, Apollo Hospitals, Hyderabad.

E-mail: himabindukotamarthy@gmail.com

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Introduction

With advancements in health tech, connected care[1]— or the integration of patient care through more coordinated communication and technology — is reshaping healthcare. Apollo Hospital, being a leading healthcare provider, is poised to adopt these advancements. Enhanced Connected Care monitoring (ECC) in wards provides continuous monitoring of patients in wards using medical devices.[2,3] They record the vital signs of patients like Heart rate, Blood Pressure, Oxygen saturation, Temperature and Respiratory rate. Captured vitals are transmitted to the nursing station dashboard, enabling immediate nurse response while being continuously monitored by a command center nurse. Continuous patient monitoring enhances patient safety and clinical outcomes in hospital wards.[4–6] This practice mainly involves the nurse's role and responsibility for establishing the connection as it provides ongoing assessment of patients' vital signs and other clinical parameters to detect early signs of deterioration and to facilitate timely intervention[7]. The successful implementation of these systems largely depends on the knowledge, attitudes, and practices (KAP) of nursing staff who are at the forefront of patient care.[8,9] The extent to which nurses are willing and able to incorporate ECC into their daily practice is influenced by several factors, including their familiarity with ECC, their perceived benefits and challenges associated with ECC and the training to support nurses to deliver ECC in practice.

The primary objective of this prospective observational study is to understand to what extent Apollo Hospital nurses understand, perceive and use enhanced connected care in professional settings. The secondary objective includes exploring nurses' attitudes toward connected care, identifying barriers to implementation, assessing training and resource needs, analyzing the relationship between knowledge and practice, and collecting feedback for system improvement.

This study explores barriers to ECC implementation, identifies training and resource needs, and gathers feedback for system improvements. Understanding the dynamics between physicians and nurses is crucial to optimizing ECC use, enhancing patient care, and addressing nursing challenges.

This study examines how nurses' confidence and experience impact ECC adoption, providing insights into training efficacy and areas for intervention. Similar to research on alarm burden, workflow integration, and ECC's impact on patient outcomes, these findings will help refine training, improve system usability, and support nurses in adapting to digital healthcare.

Material and Methods

This prospective observational study was conducted in the Apollo Hospital – Jubilee Hills for a period of 2 months.The study was done after getting clearance from Institutional Ethics Committee with IEC Application No: AHJ-C-S-015/08-24 on 30th August 2024.Nurses in wards working with Enhanced Connected Care monitoring in wards were enrolled in the study. Volunteer sampling was taken and 125 Nurses participated in the study. A structured questionnaire was designed using Google Forms. The Google forms Questionnaire was share with all study participants.

The inclusion and exclusion criteria of the study is mentioned below.

Inclusion Criteria

1. *Employment Status:* Nurses currently employed at Apollo Hospital at the time of the study.
2. *Experience:* Nurses with a minimum of 6 months of experience in Apollo Hospital to ensure they have had some exposure to the hospital's systems and protocols.

Exclusion Criteria

1. *New Recruits:* Nurses with less than 6 months of experience at Apollo Hospital to eliminate the learning curve bias.

Data Analysis

Quantitative data from the questionnaires will be analysed using statistical software like SPSS or

R. Qualitative data from open-ended questions or interviews will be analysed thematically.

The questionnaire was designed to assess the following parameters from all the staff working with ECC.

1. *Knowledge:* Identify the percentage of nurses familiar with the principles and protocols of enhanced connected care.
2. *Attitude*: Highlight areas of enthusiasm, resistance, or indifference toward connected care practices.
3. *Practice*: Evaluate how many nurses actively integrate enhanced connected care in their daily routines and the efficacy of their practices.
4. *Recommendations*: Based on the feedback from the front line workers, suggest actionable steps so that Apollo Hospital can take to improve its connected care training and implementation.

Results

Confidence in Using ECC Technologies

Sixty-one percent of participants expressed high confidence (rated 10 on a 10-point scale) in using ECC technologies.Confidence levels were associated with experience, even though the relationship was not statistically significant (Chi-square = 62.575, p = 0.491).The data showed higher confidence levels among younger participants (18–34 years) compared to older groups (35–44 years). Participants in the 35–44 age group exhibited lower confidence levels, suggesting the need for additional training or targeted support. Although a visible trend was identified between age and confidence, the Pearson Chi-square value indicated no statistically significant correlation between age and confidence levels (Chi-square = 6.061, p = 0.640).

The younger workforce (18–34 years) appears more confident in using ECC tools, while participants aged 35–44 age group show lower confidence levels. Older employees may need tailored support through workshops or additional training to enhance their comfort with technology. This insight can help healthcare facilities design age-specific interventions to boost user confidence across all age groups (Fig. 1).

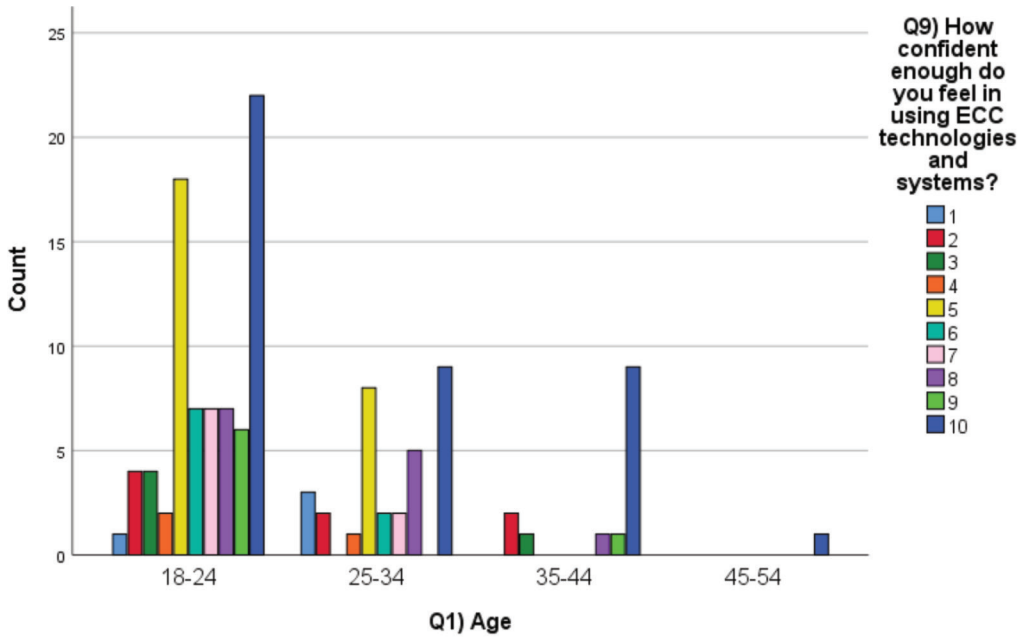

Figure 1: Age group wise distribution of Confidence in Using ECC Technologies

Time Savings per Shift

As presented in Table 1, 59 (47.2%) respondents reported saving 5–10 minutes per shift due to continuous patient monit oring. Moreover, 13.6% (17), 26.4%(33) of respondents reported of saving time >10 min and <5 min respectively.However, 12.8% (16) stated no time was saved during their shifts.

Table 1. Time saved per shift due to the use of technology of continuous patient monitoring

Time Saved per Shift	Frequency	Percent	Valid Percent	Cumulative Percent
Less than 5 minutes per shift	33	26.4%	26.4%	26.4%
More than 10 minutes per shift	17	13.6%	13.6%	40.0%
5–10 minutes per shift	59	47.2%	47.2%	87.2%
No time saved during any shift	16	12.8%	12.8%	100.0%
Total	**125**	**100.0%**	**100.0%**	**100.0%**

Correlation between Confidence Level with Experience

This result shows a significant association, suggesting that there may be a linear relationship between confidence level and experience when considering them as ordinal variables. Where 1 (0–24), 2(24–48), 3(48–72), 4(72–96), 5(96–120), 6(120–144), 7(144–168), 8(168–192) experience in months has been grouped. (p-value: 0.024) (Fig. 2)

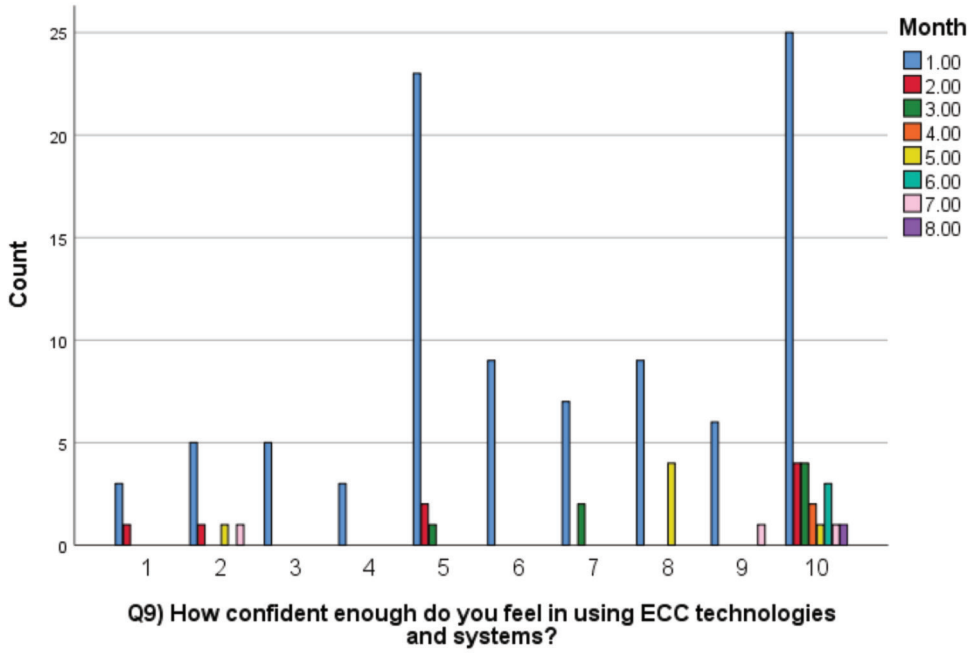

Figure 2: Association of Confidence Level and Experience

Correlation between Time Saved and Shifts

As shownin Fig. 3, 56.8% of participants who saved 5–10 minutes per shift reported savings during the morning shift.No time saved cases were also higher in the morning shift

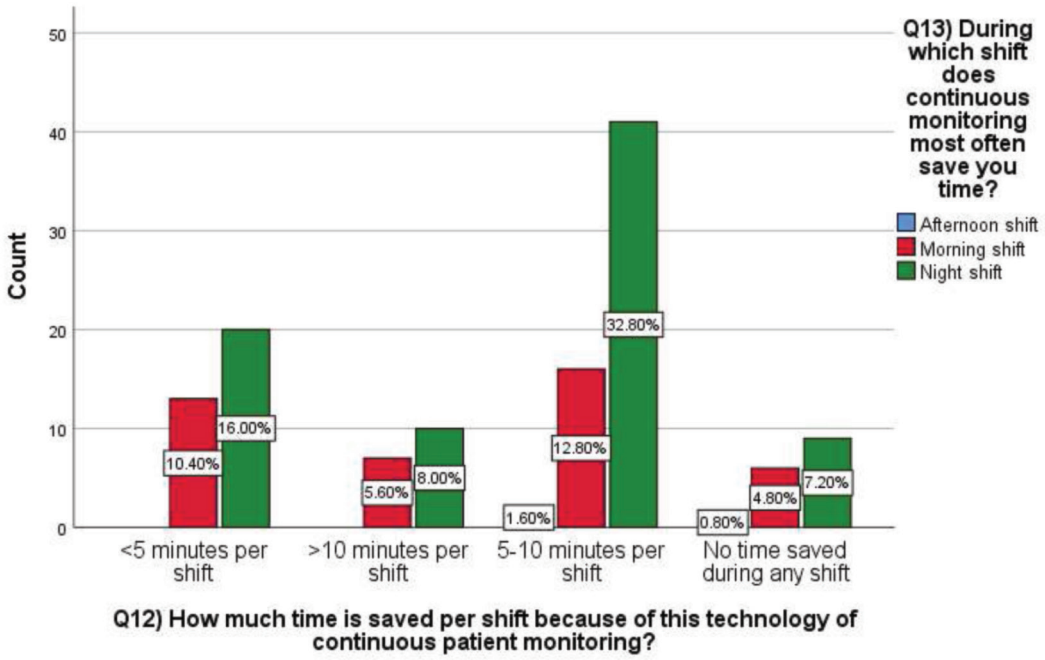

Figure 3: Association between Time saved and shifts of the duty

(6.3%).Time savings during the afternoon shift were less frequent, with only 2.4% of participants reporting any benefit. Most participants who reported >10 minutes saved per shift (around 13.6%) indicated these savings occurred during the night shift.This aligns with the increased need for continuous patient monitoring during non-peak hours. Chi-square Test: Pearson Chi-square Value = 12.272, p = 0.092. This indicates a marginal relationship between the amount of time saved and the shift, though the correlation was not statistically significant at a 5% level.There is a slight association suggesting that greater time savings (>10 minutes) are more likely during night shifts, possibly due to reduced workload and increased reliance on ECC tools. In conclusion, Morning shifts demonstrated moderate time savings, while afternoon shifts saw the least benefit from ECC technologies.

Training and Usage Frequency

As reported in Table 2, 66.4% of participants reported receiving training on ECC tools weekly, ensuring frequent reinforcement of skills. ECC tools were used daily by 56.8% of participants, and 37.6% used them multiple times a day. Fig. 4 reports how often ECC tools or systems were used in day-to-day work and responses fell into four main domains: a system for patient billing, an integrated system that allows for better connectivity within the patient experience through technology and communication, the burden on nurses to answer calls, and confusion over the new technology.

The survey results reveal a heavy dependence on an integrated system to tie patient care together, with most respondents reporting using it daily or more than once a day. The figure also showed differences in the frequency of use for systems related to patient billing and nurse response burdens, and the segment of respondents who were unsure about the new technology. Be it real-time patient data or analytics, these are all part of integrated systems that are crucial in augmenting the connected care and minimizing the load on healthcare professionals.

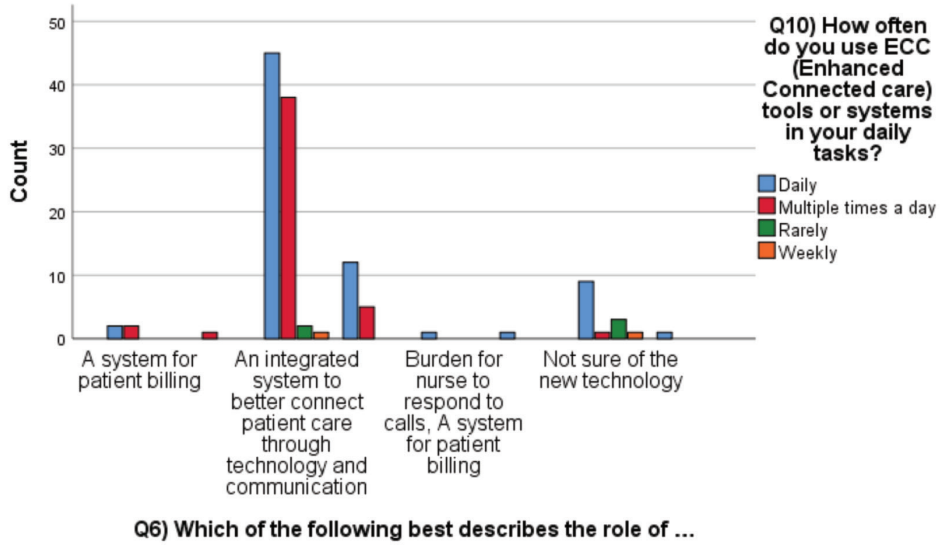

Figure 4: Tasks performed in ECC monitoring tool and their frequency

Table 2. Training and usage frequency of ECC tool

Frequency	Number of Responses	Percent	Valid Percent	Cumulative Percent
Fortnightly	3	2.4%	2.4%	2.4%
Monthly	21	16.8%	16.8%	19.2%
Quarterly	9	7.2%	7.2%	26.4%
Rarely	9	7.2%	7.2%	33.6%
Weekly	83	66.4%	66.4%	100.0%
Total	**125**	**100.0%**	**100.0%**	**100.0%**

Benefits of ECC Monitoring

The top benefits cited wereimproved patient care quality (32.80%), improved Patient Safety (24.00%), early detection of patient deterioration (22.40%), reduction in nurses' time spent on recording vitals (4.00%) (Fig. 5).

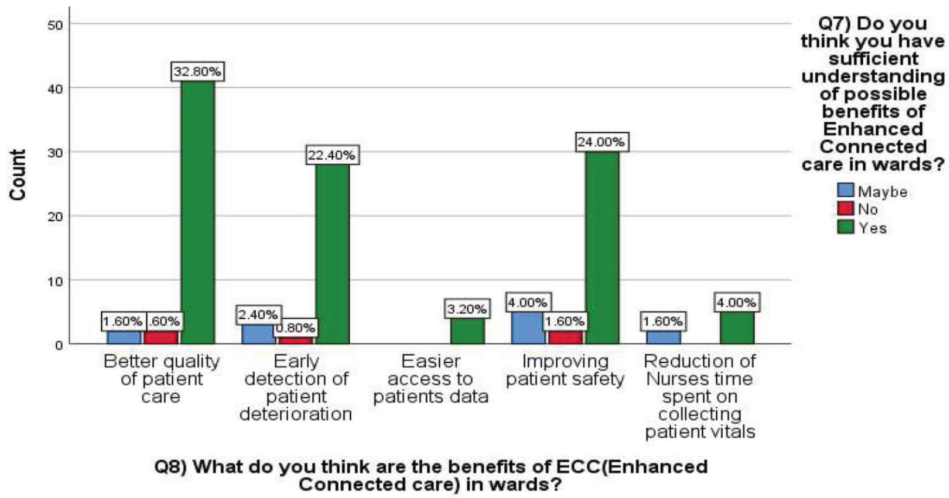

Figure 5: Benefits of ECC monitoring

Ease of use of ECC

According to Fig. 6, 17 nurses reported a score of 10 suggesting that ECC strongly benefits them for early detection of deterioration and 20 nurses reported a score of 10 suggesting ECC strongly helps them capture vitals easily.

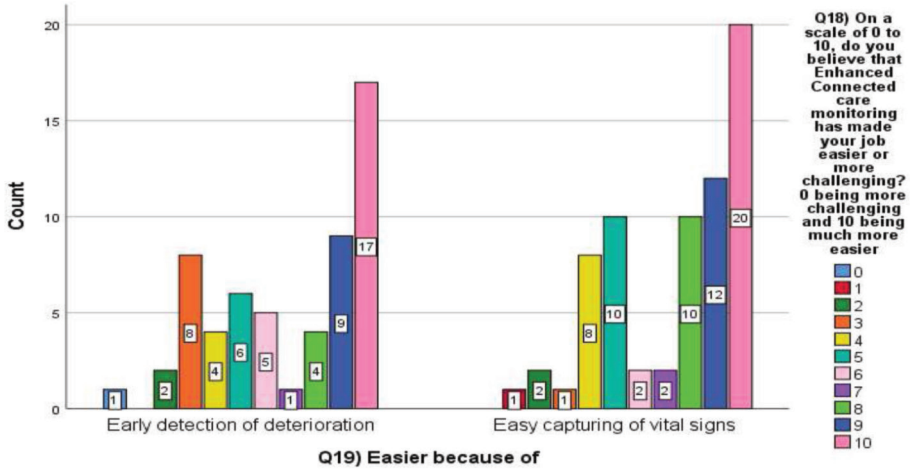

Figure 6: Ease of use of ECC monitoring as reported by nurses

Challenges in ECC Implementation

As Fig. 7 shows, 67.2% of participants encountered challenges using ECC tools. Primary difficulties included frequent alert calls, device installation and patient on boarding issues.

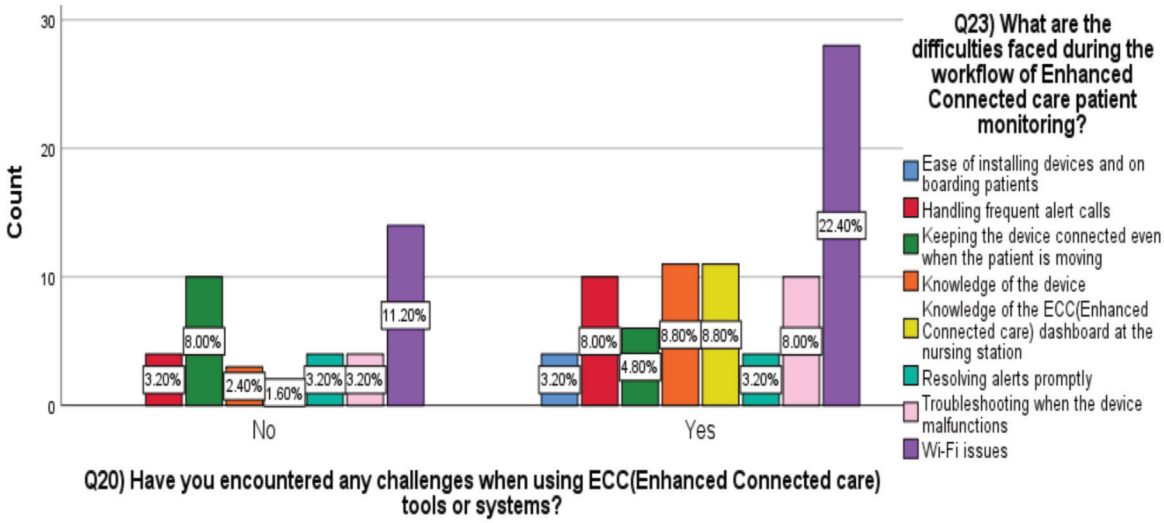

Figure 7: Challenges encountered while using ECC tools

The assessment of impact on patient outcomes and staff workflow was performed on a scale of 0 to 10. The average rating for ECC's impact on patient outcomes was 7.02.ECC monitoring was perceived as improving job efficiency, with participants assigning it a mean score of 7.26 for making tasks easier. The Pearson Chi-square suggest that there is no significant correlation between knowledge and practice frequency among the respondents.

Co-relation between Confidence level and Knowledge.

There is a statistically significant association between knowledge and confidence level.

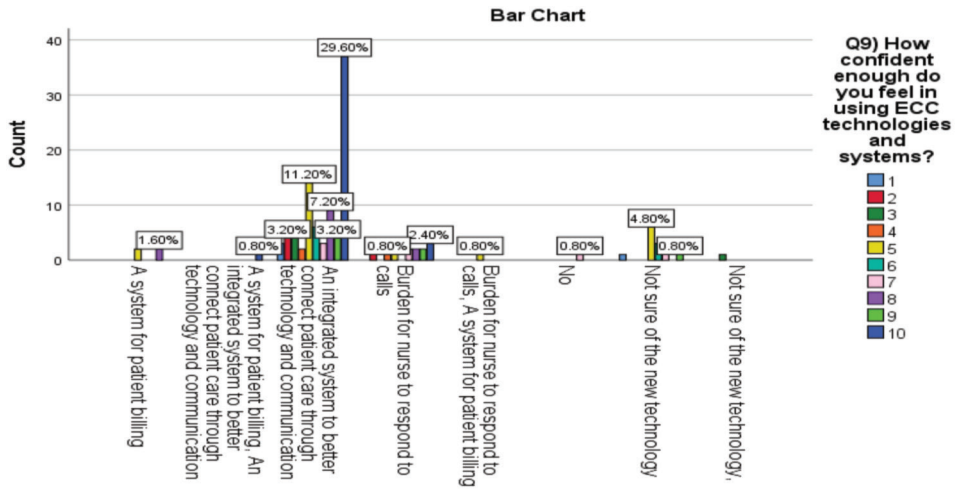

Figure 8: Association between confidence level and knowledge in performing different tasks

Impact of Alarm Burden on Daily Workflow

Table 3 presents the distribution of responses regarding the impact of alarm burden from the monitoring system on work. The results show 43.2% of nurses agreed that the alarm burden impacts their daily workflow. Where 16% of suggests maybe the alarm burden impacts their daily workflow.

Table 3. Impact of alarm burden

Response			Frequency	Percent	Valid Percent	Cumulative Percent
Maybe			20	16.0%	16.0%	16.0%
No			51	40.8%	40.8%	56.8%
Yes	54	43.2%	43.2%	100.0%		
Total	**125**	**100.0%**	**100.0%**	**100.0%**		

Additional Resource Needs

Respondents reported various needs on how to better implement ECC in their clinical practice when asked what supplementary resources would be beneficial. (Fig. 9)

Largest numbers of respondents thought Hands-on training sessions, chosen by 37.60%, is the most beneficial additional resource for proper implementation ECC monitoring. The second preference was updated manuals or guides chosen by 22.40% of participants. The need for access to a dedicated support team was recognized by 14.40% of respondents, as it facilitates fast and specialized assistance in troubleshooting and optimizing how the system is used. Other preferences were online tutorials and webinars, group led workshops as well as newer, digital-focused offerings that can aid in continuous learning and development.

These findings highlight the importance of diverse and broad educational materials in improving the uptake and efficacy of ECC technologies for use in clinical environments.

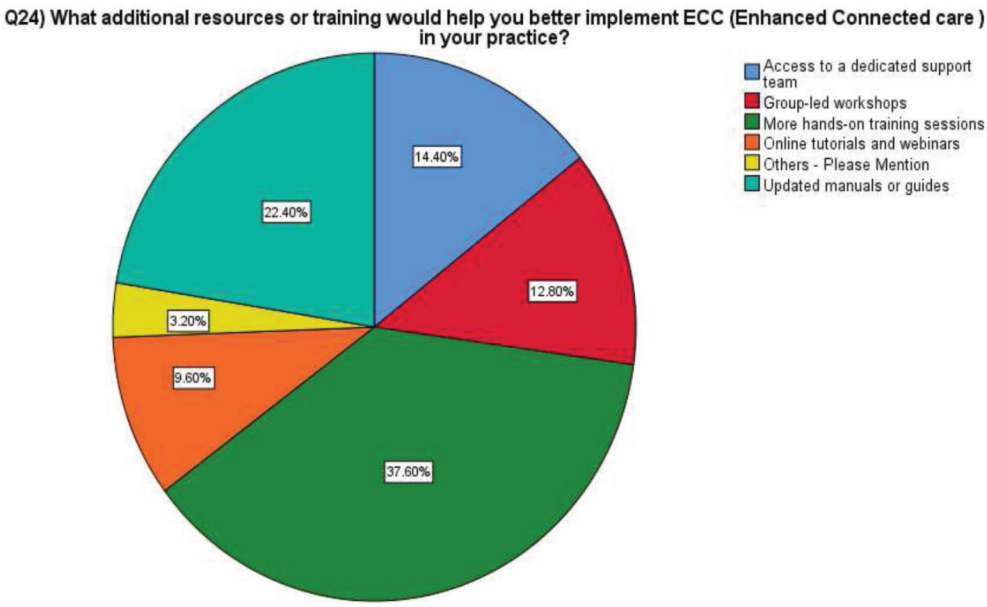

Figure 9: Need for additional resources to implement ECC

Discussion

The present cross-sectional study provides valuable insights into the knowledge, attitudes, and practices of nursing staff regarding Enhanced Connected Care (ECC) monitoring systems. Our findings reveal several key patterns in technology adoption, workflow integration, and perceived benefits, while also highlighting important challenges that need to be addressed for optimal implementation.

The study found that 61% of participants reported high confidence in using ECC technologies, with younger staff members (18–34 years) demonstrating greater comfort with the technology compared to their older colleagues (35–44 years). This age-related digital divide, though not statistically significant ($p = 0.640$) was reported before[10]. This finding suggests the need for age-specific training approaches, particularly for mid-career nurses who may require additional training and support in adapting to new monitoring technologies.

In another study by Kooij et al (2022) it was reported that Nurses' personal characteristics may also affect the uptake of technology in clinical practice. eHealth literacy, "the ability to seek, find, understand, and appraise health information from electronic sources and apply the knowledge gained to addressing or solving a health problem" requires skills[11] and access to digital tools[12].

A notable finding in our study was the significant correlation between knowledge levels and confidence levels among the study participants (Chi-square = 92.846, $p = 0.009$), indicating that increased understanding of ECC systems directly contributes to higher confidence level in their use of ECC. Previous studies have shown that with increase experience also affects the digital competencies among nurses[10].

The time-saving benefits of ECC monitoring emerged as a significant advantage in our study, with 47.2% of respondents reporting 5-10 minutes saved per shift. On a similar note, Femke L. Becking-Verhaar et al (2023) reported that automated monitoring reduced the time spent on manual vital sign measurements, freeing up nurses for other tasks[13].

However, this finding contrasts with previous research where the majority of nurses (74%) did not perceive continuous monitoring as time-saving[14]. This discrepancy might be attributed to differences

in system implementation and integration with existing workflows, highlighting the importance of proper infrastructure and training in realizing efficiency benefits.

The benefits of ECC monitoring in our study emphasized that ECC improved patient care quality (32.80%) and enhanced patient safety (24.00%), followed by early detection of patient deterioration (22.04%). These results align with previous research that identified early detection of clinical deterioration and increased feelings of safety as positive outcomes of continuous monitoring implementation[15].

Continuous monitoring for the early detection of deterioration and prevention of adverse events at general wards was also considered by Khanna et al (2019). They have also recognized the limitations of the current monitoring protocols, which only involve intermittent recording of vital sign leading to delayed detection of life-threatening events[16]. According to Downey et al., 2022 the recognition of deterioration in patients on surgical unit can be improved by using continuous monitoring. While they did indicate that the technology itself is a fixed resource, and the results depend on how staff respond to this resource in specific contexts. An example of this would include the presence of active senior colleagues engaging with nurses in using continuous devices effectively and improved recognition of deteriorating patients[17]. Kooij et al. (2022) also resonate with present study finding[15]. The specific reported benefits of improved monitoring of patients, safer procedures, efficient handling of patient loads, and increased comfort resonate with previous studies such as Becking-Verhaar et al. (2023)[13]. These consistent findings underscore the transformative potential of continuous monitoring in enhancing patient care through the timely identification of deterioration and alleviating nursing workload.

However, the literature also suggests that these benefits come with potential trade-offs, particularly in terms of patient contact and clinical assessment. Becking-Verhaar et al (2023) identified that potential challenges such as occasional device malfunction and connectivity problems can disrupt the workflow and required troubleshooting. They have also identified concerns about the visibility of the monitoring devices and potential privacy implications by the patients[13].

A significant challenge identified in our study was the impact of alarm burden, with 43.2% of nurses reporting that alarms affected their daily workflow. This finding resonates with previous research that identified technical integration and workflow compatibility as crucial factors for successful implementation[13,14]. The literature emphasizes that the complexity of continuous monitoring systems, including procedural steps and technical requirements, can significantly impact their effectiveness and adoption.

The high frequency of training (66.4% receiving weekly sessions) and regular usage (56.8% daily use) observed in our study appears to be a positive implementation factor. Previous research has highlighted the importance of proper integration with work processes and the need for clear role definitions when implementing new monitoring technologies[18]. This is particularly relevant given the concerns raised in the literature about changes in traditional nursing roles and the potential impact on patient-nurse relationships[19].

Our study identified the need for additional resources, particularly hands-on training sessions (37.6%) and updated manuals (22.4%). This aligns with previous findings emphasizing the importance of robust infrastructure support, including reliable Wi-Fi networks and proper integration with existing hospital information technology systems. The literature specifically notes that technical issues, such as Wi-Fi reliability and data accuracy, can significantly impact the successful implementation of continuous monitoring systems[15]. Pavithra et al (2024) also pointed out that the large volume of data generated by monitoring systems required efficient management and analysis[20].

Existing studies have focused on nurses impressions of continuous monitoring; however Kooij et al., (2022) provided more of a qualitative

auxiliary to the circumstantial challenges to implementation of wireless wearable sensors specifically[15]. This focus on the practical aspects of using wearable technology offers valuable insights for optimizing the implementation and adoption of RCM systems.

A limitation of our study was the lack of significant correlation between knowledge and practice frequency ($p = 0.243$). The literature suggests that successful implementation requires not only technical proficiency but also careful consideration of how new monitoring systems integrate with existing clinical practices and nurse-patient relationships.

The present study findings collectively suggest that while ECC monitoring systems show promise in improving patient care and workflow efficiency, their successful implementation requires careful attention to several key factors: technical infrastructure, workflow integration, training support, and preservation of essential nurse-patient interactions. In addition to that acceptance of technology and costs also represents additional crucial factors for any successful implementation and consequently are important findings.

However, the study also noted a number of challenges to ECC adoption. A notable proportion of mid-career nurses (35-44 years) reported lower confidence in using ECC tools than younger nurses. It also indicates that there is a gap in digital literacy among experienced nurses that requires specific training programs. The study indicated also the need for more resources to support ECC implementation.

Additionally, although ECC technologies bring many benefits, their successful implementation requires a comprehensive approach that takes into account both technological infrastructure as well as human aspects. The integration of ECC tools in clinical workflows should not come at the expense of patients-nurses interactions and must be accessible and easy to use via the hospital administrators.

Conclusion

To summarize, this study is a step forward in providing an important overview of the current state of play in ECC monitoring at Apollo Hospital.These clear results show an awareness of the improvements in patient care that ECCs can facilitate, but also expose essential areas for improvement. Future research should explore ECC technology advancements, cost-effectiveness, and long-term impact. Addressing challenges and enhancing training can improve patient-centered monitoring, care quality, and clinical outcomes while maintaining nursing standards.

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The Effectiveness of Foot and Back Massage to Stabilize Hemodynamics in Patients Undergoing Hemodialysis: A Quasy Experiment

[1]Maulida Nurliza, [2]Cut Husna, [3]Marlina

[1]Master Program of Nursing Science Student, Faculty of Nursing, UniversitasSyiah Kuala, Banda Aceh, Indonesia, [2,3]Faculty of Nursing, Universitas Syiah Kuala, Banda Aceh, Indonesia

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Abstract

Objective: To determine the effect of foot and back massage on hemodynamic stability in chronic kidney disease (CKD) patients undergoing hemodialysis. Hemodynamic stability is essential for patients undergoing hemodialysis, as electrolyte disturbances and hypertension significantly impact their clinical outcomes. This study hypothesizes that foot and back massage could serve as effective non-pharmacological interventions to improve hemodynamic parameters, addressing an area with limited research evidence and aiming to enhance patient care.

Material and Method: This study used pre-test and post-test method with non-equivalent control-group design, involving 46 patients divided into 2 groups, intervention group and control group (received routine care). The intervention began with a screening process and pre-test in both intervention and control groups. After the initial assessment, the intervention group began to receive the first intervention session. Foot and back massage interventions were carried out 6 times for 6 days with a duration of 13-15 minutes. Respondents in the control group received routine care.After completing six intervention sessions,post-test was conducted to assess changes in hemodynamics (systolic and diastolic blood pressure, heart rate, respiratory rate, and oxygen saturation).

Results: There was a significant difference after the foot and back massage intervention on hemodynamics stability (Systolic and diastolic blood pressure, heart rate (HR), respiratory rate (RR), oxygen saturation (SPO2) before and after the intervention, with $p < 0.05$.

Conclusion: There is a significant effect of foot and back massage interventions on hemodynamic stability (Systolic and diastolic blood pressure, heart rate, respiratory rate, oxygen saturation) in CKD patients undergoing hemodialysis.

Keywords: Hemodynamic, foot, back, massage, hemodialysis.

Introduction

Chronic Kidney Disease (CKD) is a condition in which kidney function decreases significantly for more than 3 months. The kidneys play a crucial role in the elimination of water-soluble waste products [1]. CKD can disrupt the renin-angiotensin-aldosterone system, which regulates blood pressure and fluid balance in the body. Increased activity of this system may lead to hypertension [2]. Hemodialysis

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(HD) plays a crucial role as a lifeline for patients withCKD. Patient with CKD often experience alterations in hemodynamic parameters [3]. One aspect of hemodynamics is vital signs. Vital signs are fundamental yet highly significant elements in the physiological evaluation of patients. They are used as a means to monitor how the body's systems are functioning and to assess the clinical status of patients [4].The prevalence of hypertension among patients with CKD ranges between 76% and 90%[5].

HD facilitates the removal of metabolic waste—urea, creatinine, phosphate—and excess fluid via a dialyzer, stabilizing blood pressure and correcting electrolyte and acid-base imbalances in patients with kidney failure[6]. HDalters electrolyte levels, including sodium, potassium, and calcium, and influences vascular dynamics during dialysis[7,8].

Massage therapy effectively stabilizes hemodynamic parameters in hypertensive patients by inducing muscle relaxation, promoting vasodilation, and sustaining blood pressure reduction[9]. Studies highlight its role in modulating cardiac autonomic function through hormonal mechanisms, directly influencing heart rate, systolic and diastolic blood pressure, and enhancing heart rate variability, indicating increased parasympathetic activity[10]. Current research on hemodynamic instability in CKD emphasizes pharmacological and lifestyle interventions, with limited focus on massage therapy. Evidence remains inconclusive, necessitating robust trials to validate its efficacy in hemodialysis and support clinical integration.

Materials and Methods

Research Design and Setting

The research design selected for the study was quasi-experimental, pre-test and post-test with non-equivalent control-group design, atthe General Hospital of Aceh. This studywas conducted after completing the ethical review process, which was approved by the Health Research Ethics Committee at dr. Zainoel Abidin General Hospital, Banda Aceh, under approval number 255/ETIK-RSUDZA/2024. All respondentsprovided written informed consent to participate in this study.

Population and Sample

All patients with CKD undergoing hemodialysis inthe provincial hospital of Aceh Indonesia. Based on calculations using Cohen's table and considering a 95% confidence interval with an alpha value of 0.05, the required sample size is estimated to be around 46 patients.

The study involved a total of 46 respondents, evenly divided into two groups, with 23 respondentsin the experimental group and 23 in the control group. Inclusion criteria required respondentsto be CKD patients undergoing hemodialysis for at least three months, experiencing fatigue confirmed through screening, fully conscious (compos mentis), cooperative, able to communicate effectively, and free from hearing or visual impairments. Patients were excluded if they had impaired consciousness, tested positive for HbsAg, or had wounds, secondary infections, or fractures affecting the extremities and spine.

Procedure of Study

Before implementing the intervention, the preparation of enumerators in this study was conducted meticulously through training sessions on massage techniques, provision of relevant guidelines, and practical demonstrations to ensure the successful implementation of the foot and back massage intervention. Three professional nurses, graduates of the Bachelor Program, were hired as enumerators, possessing basic knowledge of massage techniques. They then participated in training sessions, which included both theory and practice on massage techniques, conducted over four sessions. During the first to third sessions, the enumerators were trained to understand effective methods and ways to interact appropriately with patients. The fourth session focused on evaluating massage techniques to ensure the enumerators could apply them correctly. Additionally, mutual understanding regarding the procedural implementation of massage techniques

was emphasized and discussed, ensuring all enumerators shared the same perspective.

The preparation of equipment for this study involved several essential steps. The tools used included a stethoscope, sphygmomanometer, and oximeter, all of which were calibrated to ensure accurate measurements of patients' hemodynamic parameters. The intervention began with a screening process and initial measurements (pre-test) for both the intervention and control groups. Following the initial assessment, the intervention group began their first session of foot and back massage therapy. In this study, the intervention was conducted six times over a period of six days for the intervention group. Respondents in the foot and back massage group received massage sessions lasting 13-15 minutes each. Meanwhile, respondents in the control group continued to receive routine care. Upon completing the six intervention sessions, a final measurement (post-test) was carried out to evaluate changes in hemodynamic parameters.

Results

The systolic blood pressure of the intervention group decreased from an average of 155.48 mmHg before the intervention to 135.00 mmHg after the intervention, while the control groupdecreasedfrom 144.00 mmHg to 143.22 mmHg. For diastolic blood pressure, the intervention group decreased from an average of 94.87 mmHg to 82.39 mmHg, while the control group increased from 85.87 mmHg to 89.65 mmHg.

The intervention group's heart rate decreased from 85.65 bpm to 75.52 bpm, while the control group increased from 85.65 bpm to 87.65 bpm. The intervention group's breathing rate decreased from 25.65 to 23.39, while the control group increased from 23.70 to 24.70. The oxygen saturation of the intervention group increased from 97.61% to 98.22%, while the control group did not experience significant changes, remaining at 97.83%, See Table 1.

Table1. Differences in Hemodynamic Parameters of Hemodialysis Patients Before and After the Foot and Back Massage Intervention in the Intervention and Control Groups.

Variable	Intervention Groups (n = 23) Mean/SD		Control Group (n = 23) Mean/SD			*Mann-Whitney* U-test		
	Pre-test	Post-test	*Wilcoxon test*	Pre-test	Post-test	*Wilcoxon test*		
Systolic blood pressure	155.48 (19.503)	135.00 (12.881)	Z = –4.049 p<0.001	144.00 (20.629)	143.22 (13.460)	Z = –0.122 p = 0.903	Pre-test: Z = –1.962 p = 0.050	Post-test: Z = –2.044 p = 0.041
Score different	20.48		0.78					
Diastolic blood pressure	94.87 (8.761)	82.39 (9.277)	Z = –3.834 p<0.001	85.87 (11.589)	89.65 (8.731)	Z = –1.895 p = 0.058	Z = –2.537 p = 0.011	Z = –2.424 p = 0.015
Score different	12.48		–3.78					
Heart rate	85.65 (12.029)	75.52 (7.372)	Z = –3.790 p<0.001	85.65 (12.029)	87.65 (8.788)	Z = –1.794 p = 0.073	Z = 0.000 p = 1.000	Z = –4.198 p<0.001
Score different	10.13		–2.00					
Respiration rate	25.65 (2.328)	23.39 (1.803)	Z = –3.768 p<0.001	23.70 (2.721)	24.70 (1.845)	Z = –1.928 p = 0.054	Z = –2.612 p = 0.009	Z = –2.535 p = 0.011

Continue....

Score different	2.26		–1.00					
Oxygen saturation	97.61 (0.583)	98.22 (0.671)	Z= -3.500 p<0.001	97.83 (0.650)	97.83 (0.576)	Z= 0.000 p=1.000	Z= -1.138 p= 0.255	Z= -2.002 p= 0.045
Score different	–0.61		0.00					

Discussion

Vital signs are essential indicators for nurses to monitor patients' health conditions. These include blood pressure, measuring blood flow force through arteries, systolic during heartbeats, diastolic when heart rests; pulse rate, heartbeats per minute; respiratory rate, breaths per minute; and oxygen saturation, oxygen bound to hemoglobin[4]. Patients undergoing hemodialysis often experience changes in hemodynamic parameters due to various factors. Declining kidney function in CKD impacts blood pressure regulation, blood volume, and glomerular filtration, often leading to fluid and electrolyte imbalances that affect circulation[8].

The hemodynamic changes observed in this study, particularly in relation to blood pressure, are described as follows.CKD can lead to imbalances in the renin-angiotensin-aldosterone system, a critical regulator of blood pressure and fluid homeostasis in the body[2]. In patients undergoing regular hemodialysis, fluid and salt retention, as well as electrolyte fluctuations, can occur, leading to an increased volume load on the cardiovascular system [11]. This aligns with the statistical test results, which demonstrated a highly significant decrease in systolic and diastolic blood pressure in the intervention group following the foot and back massage intervention.

Massage therapy can serve as an integral part of a comprehensive hypertension management strategy, aimed at enhancing patient well-being [12]. A study has reported that foot massage intervention during hemodialysis sessions resulted in a significant reduction in systolic and diastolic blood pressure [13]. Back massage interventions have also been shown to influence blood pressure in clients with hypertension, contributing to its regulation and overall cardiovascular health [14].

Massage is one of the most effective therapies for reducing blood pressure in hypertensive patients. It induces a relaxing effect on tense muscles, promoting vasodilation, which leads to a stable decrease in blood pressure[9]. In addition to its significant impact on lowering blood pressure and relieving fatigue, massage also plays a vital role in reducing psychological stress, promoting overall mental well-being [15].

In addition to providing positive effects for patients with intradialytic hypertension, massage also helps relieve complaints of headaches, enhancing overall comfort and well-being [16]. Overall, massage therapy enhances relaxation, reduces physiological stress responses, and strengthens the adaptability of the autonomic nervous system, contributing to improved physical and mental well-being [17].

The changes in heart rate (HR) observed in this study affect HD patients as it reflects the balance between sympathetic and parasympathetic nervous system activity, contributing to cardiovascular health and overall circulatory system function [18] HR can fluctuate due to various factors, including hormonal influences. Hormones such as catecholamines, released in response to stress, play a role in modulating sympathetic and parasympathetic activity. This, in turn, affects HR and HRV, highlighting the intricate connection between the endocrine system and autonomic nervous regulation [19].

The statistical test results indicated a significant decrease in heart rate within the intervention group following the intervention. Patients receiving effleurage back massage were able to maintain their heart rate within the normal range, reflecting its potential in supporting cardiovascular stability and relaxation[20].

Another study explained that sports massage and reflexology are also effective in reducing heart rate and blood pressure[21]. The relaxation effects and enhanced circulation induced by massage therapy can effectively reduce stress and promote a sense of comfort, contributing to both physical and mental stability[22]. Massage affects the autonomic function of the heart through hormonal mechanisms, as described in previous studies that highlight its effects on heart autonomic functions. This underscores how massage therapy can support the balance of the autonomic nervous system and contribute to cardiovascular health [10]. A 30-minute foot massage has been shown to result in a significant improvement in hemodynamic stability, highlighting its potential as an effective non-pharmacological intervention for enhancing cardiovascular function[23].

Massage can stimulate parasympathetic nerve, leading to the release of acetylcholine and a reduction in depolarization frequency, ultimately slowing the heart rate. Furthermore, the combination of foot massage and aromatherapy enhances relaxation, contributing further to heart rate reduction and overall autonomic stability[24]. Through autonomic nervous system stimulation, foot massage induces vasodilation and improves peripheral blood flow, thereby supporting more stable hemodynamic status and enhancing overall cardiovascular function [25].

The RR changes in this study,observed alterations in RR may be associated with the effects of hypoxemia. Hypoxemia in hemodialysis patients can lead to decreased blood oxygen levels. During hemodialysis, PaO2 may drop by 10-20 mmHg, potentially triggering cardiac or pulmonary issues, which are often exacerbated by alveolar hypoventilation. This underscores the importance of monitoring oxygen saturation and managing respiratory function in patients undergoing HD to prevent complications [26]. The results of this study showed that the intervention group experienced a significant reduction in respiratory rate following the intervention. This finding emphasizes the potential benefits of the therapy in improving respiratory function and promoting relaxation.

Effleurage back massage positively impacts respiratory rate by enhancing relaxation, reducing anxiety, and improving blood circulation and oxygenation. This highlights its potential as a therapeutic intervention for promoting both physical and mental well-being[20]. In addition, foot massage also stimulates the release of acetylcholine. This mechanism slows down the heart rate, enhancing overall relaxation and supporting improved autonomic function and bodily restoration [27]. By improving the body's physiological balance, this therapy plays a crucial role in supporting asthma management and enhancing the efficiency of lung function in patients. Its impact highlights the potential for integrating such approaches into comprehensive respiratory care strategies [28]. Thus, foot massage can be utilized as an effective non-pharmacological intervention in managing clinical conditions with a holistic approach. Its benefits extend beyond relaxation, supporting both physical and psychological well-being through improved physiological balance [29].

The SPO2 changes inHemodialysis (HD) can lead to a decrease in oxygen saturation due to ischemic injury in organs, which is triggered by a reduction in circulating blood volume[30]. Changes in blood oxygenation levels (SpO2) due to the effects of the hemodialysis (HD) process are influenced by hemoglobin, blood pH, and lung function. Somes issues such as pulmonary edema, and pulmonary calcification also affect oxygen levels[31].

Massage has a significant effect on the improvement of oxygen saturation and other physiological parameters. The results of the statistical test showed that the intervention group experienced a significant decrease in oxygen saturation after the intervention. Research shows that deep tissue massage (DTM) significantly increases oxygen saturation by 2.67% and vital capacity [32]. Foot massage can also improve oxygen saturation in CKD patients undergoing hemodialysis[33]. This effect is associated with the stimulation of peripheral blood circulation. Massage directly enhances oxygen delivery to tissues [25]. Massage activities enhance relaxation effects and

reduce anxiety, which support peripheral blood flow and oxygen delivery to tissues[34].

Another type of massage, such as back massage administered for 15 minutes daily over a four-day period, has been shown to reduce anxiety. The relaxation effects produced contribute to enhanced pulmonary function and improved blood circulation, which can enhance oxygen saturation levels [35]. Massage also helps reduce anxiety. This effect contributes to improved oxygen saturation by enhancing parasympathetic nervous system activity and enhancing blood flow. Additionally, effleurage back massage provides a significant reduction in pain levels[20].

Conclusion

The intervention demonstrated a significant impact on hemodynamic parameters in CKD patients undergoing hemodialysis, with notable reductions in systolic and diastolic blood pressure, HR, and RR compared to the control group. These findings highlight the effectiveness of foot and back massage in enhancing hemodynamic parameters for patients undergoing hemodialysis.

Limitations of The Study

The study's pharmacological limitations include uncontrolled medication use, such as routine and conditional amlodipine administration, which may influence blood pressure. Hemodynamic assessments were conducted after six intervention sessions rather than immediately following each session, potentially affecting measurement accuracy.

Future Research Recommendations

Future research should also explore the effects of various other therapeutic techniques, such as aromatherapy, acupuncture, or reflexology, that enhances hemodynamic stability in hemodialysis patients. Evaluating these synergistic effects may reveal greater therapeutic benefits.

Ethical Consideration

The research approval was given by the Health Research Ethics Committee at dr. Zainoel Abidin General Hospital, Banda Aceh, under approval number 255/ETIK-RSUDZA/2024.

Conflict of Interest

All the authors declared that no have conflicts of interest in this study.

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None

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Perception of Nursing Teachers Regarding The Effect of Covid-19 On Clinical Training at Government Nursing College - Khartoum State – Sudan (2022)

[1]Mohammed Khalid Hussein Khalid, [2]Mahassin Almahi Balla Fadilalla

[1]Assistant Professor of MSN, Department of Nursing, College of Nursing and Health Science Technology, Karary University, Sudan, [2]Assistant Professor in Medical-Surgical Nursing, Department of Nursing, College of Nursing and Health Science, Jazan University, KSA.

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Abstract

Background: COVID-19 has impacted the nursing education system worldwide, especially clinical practicum for teachers and learners. To solve this problem, courses in nursing schools across the globe, including those in Khartoum, had to close their doors and meet the World Health Organization and the local guidelines for safety and continuity of Education during the pandemic.

Objective: This research seeks to establish the effect of COVID-19 on the delivery of clinical nursing education in the Khartoum government nursing colleges.

Methodology: A cross-sectional analytical study design was used, and the study's participants comprised only 27 medical-surgical nursing teachers at the governmental nursing colleges in Khartoum. Data was collected using a self-administered online questionnaire created using Google Forms. The data was analyzed using the Statistical Package for Social Services (SPSS) Version 26. Frequency and relationship analyses were estimated using descriptive statistics and non-parametric and chi-square tests.

Results: The study observed that COVID-19 had an adverse effect on the clinical exposure of nursing students, whereas teachers and students were also affected negatively. Teachers were highly concerned about getting infected during clinical training, though a significant association existed between concern about infection and teaching experience.

Conclusion: Accordingly, this study finds that COVID-19 disrupted clinical practices for nursing students in Khartoum. Virtual simulations and hybrid models should be used in future pandemics to prevent discontinuity and decline in the quality of nursing education programs.

Keywords: COVID-19 Pandemic, Nursing Education, Clinical Training, Khartoum Nursing Colleges, Health care Education, Online Education.

Corresponding Author: Mohammed Khalid Hussein Khalid.

E-mail: Dr.mohammedkhalidhusseinkhalid@outlook.com

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Introduction

COVID-19 was first detected in December 2019 in Wuhan, Hubei Province, China; the virus causes the disease and features pneumonia-like symptoms. It grew out of proportion and affected the whole world. On March 11, 2020, in response to the outbreak of COVID-19, the World Health Organization (WHO) made it a world health emergency[1]. COVID-19 infected over 34.3 million people across the world by October 2, 2020, and officially killed over 1 million people, whereas it affected over 180 countries[2, 3]. COVID-19 has impacted almost all sectors of everyone's life, especially healthcare facilities and medical Education, forcing institutions to adopt an unconventional system of teaching[4].

New threats that came with COVID-19 infection and transmission made it difficult for medical and nursing students to follow the regular teaching model of lectures and patient-centered clinical experiences[5]. Nursing education, in particular, encountered several challenges, as more than 50% of the delivery exposes students to clinical practical content[5].The lockdowns and social distancing measures limited students' access to clinical wards or restricted it to specific simulation exam formats, reducing the time dedicated to knowledge transmission and teaching fundamental behavioral and clinical skills[6]. As a result, nursing schools globally adopted other learning approaches, such as electronic learning, virtual reality, and simulation, to address the clinical practice void[7].

In Sudan, like other countries, the pandemic slowed down medical schools, including government nursing colleges, and escalated the difficulties of offering quality clinical education. Students and faculty find it challenging to adapt to sudden changes in the environment, and many students complain about the lack of simulation equipment and little or no access to actual patients.[8].

Since clinical practice training is a significant training model in nursing education and the COVID-19 pandemic had a massive influence, it is crucial to undertake a comprehensive review of the problems experienced by educators and learners[9].This would allow for determining the direct impacts of the pandemic on clinical training in nursing, assessing different transitional approaches used during this period, and indicating key recommendations for enhancing the future readiness of nursing educational systems[10, 11].

This research aims to evaluate the effects of COVID-19 on clinical training in government nursing colleges in Khartoum State in 2022. More specifically, it seeks to examine the extent of the impact of COVID-19 on the performance of nursing educators, determine the performance of nursing students during the pandemic, analyze the influence of the pandemic on clinical training courses, and assess the alternative approaches that have been used in offering clinical training during the current circumstances.

Methodology

Research Design

This study applied a descriptive cross-sectional research design to assess the effects of COVID-19 on clinical nursing education in the government nursing colleges in Khartoum State-Sudan. Data was obtained from 20 participants of medical-surgical nursing educators at Karary University, Khartoum University, Nilein University Islamic University, Bahri University, and Al-Zaeim University. The primary research site for this study was Karary University, a public university founded in 1996 and supported by the Ministry of Higher Education & Scientific Research.

Data Collection

A close-ended questionnaire structured by the researcher and pre-tested by a supervisor was used in this study. The survey was conducted online using Google Forms to reach the participants during the pandemic restrictions. The sampling technique used was total coverage, and the research involved 27 nursing educators.

Data Analysis

Data was analyzed using Statistical Package for Social Sciences (SPSS) Version 26. Therefore,

non-parametric tests were used, and chi-square tests were used to establish the correlation between participants' responses and demographic data. Descriptive findings were summarized in tables and figures.

Ethical Consideration

Given the delicate nature of the financial information, ethical measures were implemented to guard participant identification. Every participant provided their informed permission, and all the organizational data was anonymized to guarantee their anonymity, thereby safeguarding their privacy. Furthermore, the relevant research complies with the ethical principles for research ethics on projects involving human participants.

Results

1. ***Demographic Characteristics of Nursing Educators:***
   The study targeted several qualified educators in Khartoum's governmental nursing colleges. Hence, the sample size of 27 nursing educators was calculated. The study is reliable and relevant because, despite its size, the sample offers insightful opinions from seasoned teachers **(Table 1).**

Table 1. Demographic and Professional Characteristics of Participants (n = 27)

sociodemographic data		Frequency	Percent
Age	less than 25	1	3.7
	26 -31	8	29.6
	32-37	9	33.3
	more than 38	9	33.3
Education qualification	B.Sc.	1	3.7
	M.Sc.	16	59.3
	PHD	10	37.0
Experience	1-3	4	14.8
	4-6	5	18.5
	7-10	9	33.3
	more than 10	9	33.3

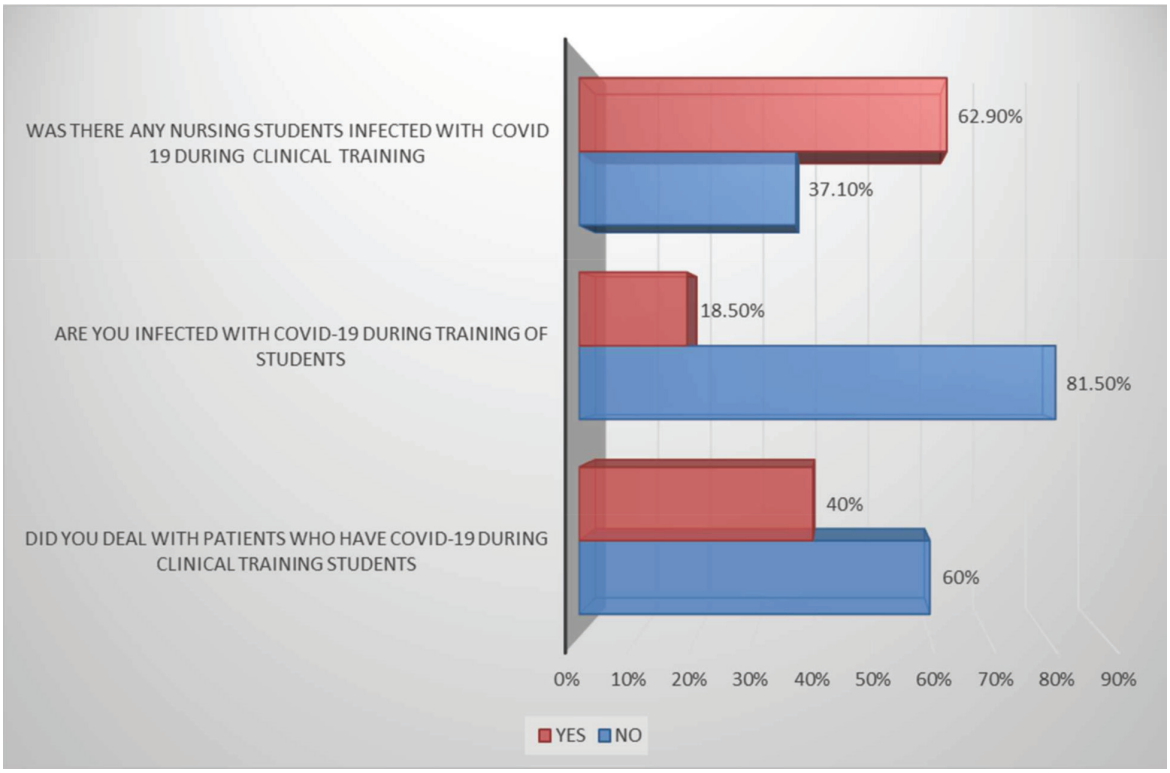

Figure 1: COVID-19 Exposure and Infection during Clinical Training

2. **COVID-19 Impact on Teacher's Performance**
The participants' level of agreement was relatively high; the number one fear was getting infected, scoring a mean of 1.74 (SD = 0.71). The students strongly agreed that there were increased absences, with a mean score of 2.52 (SD = 1.48) and decreased motivation, with a mean of 2.44 (SD = 1.45), as shown in **Table 2**.

Table 2. Impact of COVID-19 on Nursing Educators' Performance (n = 27)

	Mean	Std. Deviation	Overall response
Effect of covid-19 on teachers performance			
fear of being infected with COVID-19 during clinical training of nursing students	1.7407	.71213	agree
increase the number of absences of teachers in clinical training	2.5185	1.47727	Strongly agree
decrease motivation in clinical training	2.4444	1.45002	Strongly agree

3. **COVID-19 Impact on Students' Performance**
To analyze the impact of COVID-19 on nursing students' performance, Participants agreed that the pandemic influenced students' stress levels positively by mean = 1.59, SD = 0.84, more absenteeism during clinical training by mean = 1.63, SD = 0.88, delayed graduation timelines by mean = 1.56, SD = 0.89 and academic results by mean **(Table 3).**

Table 3. Impact of COVID-19 on Nursing Students' Performance

Effect of COVID-19 on students' performance	Mean	Std. Deviation	Overall response
the performance of clinical training during COVID-19 increases the stress on students	1.5926	.84395	Strongly agree
the number of absences of the students increase in clinical training	1.6296	.88353	Strongly agree
COVID-19 delays the time of graduation students	1.5556	.89156	Strongly agree
the COVID-19 affects the grades of students	2.2593	1.34715	Strongly agree

4. **COVID-19 impact on clinical training course**
COVID-19 had implications for clinical training courses. Participants firmly disagreed that the training period was adequate and the course aims and goals were met (mean = 3.04; SD = 1.48) and disagreeable mean = 3.44; SD = 1.12). The reaction to the statement of having an adequate number of patients for training purposes was another set of neutral responses (mean = 3.33, SD = 1.07), as shown in **Table 4.**

Table 4. Impact of COVID-19 on clinical training course

Effect of COVID-19 on clinical training course	Mean	Std. Deviation	Overall response
the period of the clinical training course was enough	3.0370	1.48016	Strongly disagree
There is the appropriate number of patients for clinical training	3.3333	1.07417	neutral
The objective of the clinical training course during COVID-19 was achieved	3.4444	1.12090	disagree

5. **Alternate methods for clinical training**
These paradigmatic shifts to patient care include using many other approaches to clinical training during COVID-19. Participants also agreed to use skills labs (mean = 1.37, SD = 0.49) and reduce hospital training times (mean = 1.70,

SD = 0.99). Putting off clinical training (mean = 2.44, SD = 1.45) and stopping the hospital training (mean = 2.00, SD = 1.21) were also reported. **(Table 5)**

Table 5. An alternative method used for clinical training of students

An alternative method used for clinical training of students:	Mean	Std. Deviation	Overall response
Training students in the skills lab	1.3704	.49210	Strongly agree
Decrease the period of training students in hospital	1.7037	.99285	Strongly agree
Postponed the time of clinical training of students	2.4444	1.45002	Strongly agree
Stop clinical training of students in hospital	2.0000	1.20894	Strongly agree

6. **Demographics and Fear of COVID-19 Infection**

A positive, moderate, and significant correlation between teaching experience and perceived risk of contracting COVID-19 during clinical practice ($t = 4.46$, $p = 0.001$) revealed that the more senior the teacher, the higher the perceived risk of COVID-19 infection. It was further observed that there were no correlations between the patient's age and the disease duration ($p = 0.07$) or education level ($p = 0.07$), as illustrated in **Table 6.**

Table 6. Association between Demographic characteristics and Teachers' responses on the impact of COVID-19 on Clinical Education

	Demographic characteristic	p-value
fear of being infected with COVID-19 during clinical training of nursing students	age	P-value (.07)
	Experience	P-value (.001)
	Educational Qualification	P-value (.07)

Discussion

This paper aims to reveal the emergent risks, anxiety, and disruptions of clinical training experienced by nursing educators and students enrolled in the Khartoum government nursing colleges during the COVID-19 pandemic[12]. Consequently, the research results shed light on various ways COVID affected nursing education and enlighten the aspects that need to be addressed or enhanced.

Regarding age, 33.3% of the nursing educators in the study fell under 32–37 years while 33.3% were more than 40 years of age[13]. These age groups are considered to be at a higher risk of COVID-19 morbidity and mortality because infection with the virus tends to be more severe in older adults. Therefore, there is a need to employ more significant protective measures when implementing this new system[14].

The academic qualification of the educators revealed that 59.3% possessed a master's degree in nursing, while 37% possessed a PhD[15]. These figures show that academic professionals in the teaching staff are at a high level and essential for curriculum implementation and change during emergencies.

The study also highlighted that 56.5% of the educators observed nursing students get infected with COVID-19 during the interphase of clinical training, out of which 62.9% of the educators claimed nursing students were infected while training in clinical facilities[17]. This paper directly captures the challenges of clinical training in a pandemic learning environment since students have to engage with the patients as part of their practice, and they are bound to come across patients who may be favorable for COVID-19[18]. The possibility of passing the virus to family members and other loved ones also reinforces this anxiety, making teaching and even learning very difficult for both teachers and learners[19].

The dangers to the educators were also apparent, as 18.5% of tutors mentioned that they contracted COVID-19 while undertaking clinical practice. This statistic highlights the direct threat to hospital educators, especially during a pandemic. Infection

among educators is detrimental to their health andimpacts the delivery of Education because of the many cases of teacher absenteeism[20].

Another issue noted in the study was the challenging Burden on educators, especially with 40% being forced to work as COVID-19 caretakers during the pandemic. Infection controls during the pandemic were scarce during the study period, and even the essential workers barely had enough personal protective equipment (PPEs)[21]. The lack of PPE exposure added to the challenges experienced by educators and students as basic precautionary measures like wearing face masks were ineffective in high-risk areas of hospitals.

According to the study findings, COVID-19 reduced teaching performance by impacting how educators teach; hence, it had a negative influence. The mean response scores of 1.7, 2.5, and 2.44 proved that educators agreed that the pandemic hurt teaching performance. This result supports other studies in countries like Ethiopia, where Anguso et al., (2021) revealed that 59.9% of nursing educators believed COVID-19 negatively affected clinical learning[22].

COVID-19 was also evaluated regarding its effects on student performance, and the results were negative[23]. It is worth pointing out that all mean response scores are >1.5, where educators agreed that the pandemic negatively impacted students'Clinical Education. Clinical practice is the most essential requirement of nursing education because it helps students learn practical lessons expected of them[24]. However, the pandemic upset this crucial learning segment; numerous students could not accomplish the training or attain the goal set by their clinical courses.

The challenges in clinical training were further amplified by the realization that the duration of the clinical training courses was inadequate during the pandemic. The respondents stated that the goals of clinical training courses are unfulfilled, insinuating that students fail to learn and equally acquire clinical skills[25]. These findings emphasize the importance of better ideas to maintain and enhance clinical Education during crises.

Conclusion

This study finds that the COVID-19 pandemic negatively affected the government college nursing education in Khartoum state regarding teachers' performance, students' performance, and clinical practicum. Teachers were at a higher risk of stress and disruption of personal training, and the students received fewer practical sessions, thereby having poor learning outcomes and developing expertise. Duties of clinical training courses were reduced, and all-important goals were not achieved, which proves the presence of several deficiencies in practical knowledge[28]. It is concluded that there is a desperate need for strategies, enhancing safety measures, and courses of action to sustain and improve the quality of nursing education in the face of future health emergencies and their long-term repercussions.

Limitations of Study

Despite the useful information supplied by this study, significant limitations should be acknowledged:

1. ***Small Sample Size:*** The study only included 27 nursing educators, which limits how broadly the results can be applied to other nursing faculty members. A larger sample might improve the results' robustness.
2. ***Limited Geographic Scope:*** The research used only government nursing schools in Khartoum, Sudan. As a result, the results could not accurately reflect teachers' experiences working in private schools or other areas with distinct educational and healthcare systems.
3. ***Online Data Collection:*** A self-administered online questionnaire was used to collect the data, which might have resulted in response bias. The accuracy of the data may have been affected by variables like restricted interaction, internet accessibility, and the potential for socially acceptable answers.
4. ***Cross-Sectional Design:*** Data was collected simultaneously using a cross-sectional approach. This approach's inability to analyze

changes over time restricts the capacity to evaluate the COVID-19 pandemic's long-term effects on clinical training.

5. ***Lack of Student Views:*** The study did not include direct feedback from nursing students; instead, it only looked at the opinions of educators. Students' opinions could offer a more thorough assessment of the impact because disruptions to their clinical training directly impacted them.
6. ***Potential Selection and Response Bias:*** A non-random sample of respondents may have been obtained because participation was voluntary. Teachers who faced major difficulties during the epidemic would have been more inclined to participate, which could have skewed the results in favor of more negative conclusions.

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Perceived Stress and Social Support Among Nurses Working in University Hospital During Covid-19

[1]Roshani Gautam, [2]Gita Kumari Satyal (Dahal)

[1]Assistant Prof, Maharajgunj Nursing Campus, TU IOM,Kathmandu, Nepal, [2]Deputy Nursing Controller of Nursing, Tribhuvan University, Teaching Hospital, Kathmandu, Nepal

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Abstract

Background: Nurses are considered a vulnerable group to experience stress and anxiety during the COVID-19 pandemic because of feelings of inadequate protection and high risks of infection. Being isolated from family, and dealing with the challenges including stigma and discrimination at the workplace and surroundings also increase the risk for such problems. Hence, this study aimed to find out nurses' perceived stress and their social support for the personal and professional quality of life.

Methods: A descriptive cross-sectional study was conducted among 224 nurses directly involved with caring of COVID-19 patients in university hospitals. A simple random sampling technique was applied to select the eligible participants and a self-administered structured questionnaire was used to collect data.Descriptive statistics (Percentage, mean, median, standard deviation) and inferential statisticswere calculated by using IBM SPSS software version 21.

Results: Out of 224 participants, 75.3% and 16.2% of the nurses perceived moderate and high levels of stress, respectively. Similarly, 65.6% perceived moderated and 31.3% had a high level of social support during the period of COVID-19 pandemic.

Conclusions: Almostall nurses, who are providing direct patient care during the COVID-19 pandemic, had experienced moderate to high levels of stress, and all of them perceived a moderated to high level of social support during the pandemic.

Keywords: **COVID-19, Perceived Stress, Social Support, Nurses**

Introduction

The emergence and re-emergence of pandemic diseaseshave unprecedented challenges to the healthcare system including healthcare providers mainly emergency nurses and physicians [1]. In the initial period, lack of resources such as personal protective equipment, inadequate practices on infection prevention(IP) and very long hour shift have put them on the frontline of vulnerability to COVID-19 and reports about frontline workers being infected are rapidly increasing and witnessing the loss of co-worker and relatives which have the negative impact on their psychological health[2,3]. Health care professionals, particularly nurses, are

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considered a vulnerable group to experience stress and anxiety during the COVID-19 pandemic due to feelings of inadequate protection from contamination and high risks of infection, isolation from family, and fear of being carriers of disease in family[4,5]. On top of this, they are discriminatedby staff at hotels and are facing difficulties finding food and shelter. There have been similar incidences with healthcare providers in other countries as well including India, the USA, Australia[6,7].COVID-19 stigma labels and isolates healthcare workers, causing loss of status and discrimination. Protecting nurses' mental health is essential for a sustainable, high-performing workforce and overall well-being [8,9.]

Frontline nurses require routine mental health screenings to monitor distress and detect secondary stressors[10]. Social support is the belief and reality of receiving care from important people like family or friends, manifesting as emotional, instrumental, or professional help [11].Study has provided evidence that perceived social support could effectively relieve perceived stress[12]. Very little evidence is available on this issue among nurses during the COVID-19 pandemic. Therefore, this study examined nurses' perceived stress and social support in a Nepalese COVID-19 hospital, exploring their relationship to inform targeted interventions during the pandemic.

Materials and Methods

Research Design: This was a descriptive cross-sectional study conducted in Tribhuvan University Teaching Hospital (TUTH) at Kathmandu, a dedicated tertiary level hospital for COVID- 19 pandemic management and recognized as third level COVID-19 special hospital by Ministry of Health and Population(MOHP).

Population, Sample size and Sampling Procedure: A total of 700 nurses are working in the different inpatient units of TUTH. Though there was a dedicated ward and intensive care units(ICU) for isolation and treatment for COVID-19 cases but all the nursing staff were posted on rotation basis during pandemic. Sampling frame was collected from hospital administration and total of 248 research participants were selected in the study through random selection. Considering the prevalence of perceived stress in health care provider in Southern Ethiopia[13], sample size was calculated as;

$z^2 * p (1-p)$

$$\text{Sample} \quad (n) = \frac{e^2}{1 + \left(\frac{z^2 * p (1 - p)}{e^2 N} \right)}$$

Where, n = minimum required sample size

Z = 1.96 at 95% Confidence Interval (CI)

p = 51.6% [6]

q = 1-p

e = margin of error, 5%

N = 700

The calculated sample size was 248. Total of 273 samples was selected with 10%non-response and were total of 224 research participants participated in the study with a response rate was 82.05%.

Inclusion/Exclusion Criteria: All the nurses who were frontline and bedsidecare providers to the COVID-19 infected patients, working for more than six months, available during the period of data collection and willing to participate in the study were included in the study. Nurses who were in administrative roles were excluded in the study.

Data collection Tools: Self-administered instrument was used in the study which contained three parts.

Demographic and Professional Information: Demographic and professional information included participants' age, educational status, working experiences, and COVID-19 related training.

Perceived Stress Scale (PSS): PSS is a classic stress assessment instrument, developed by Cohen et al. Contains ten item with 5- point Likert scale in which 0 = Never 1 = Almost Never, 2 = Sometimes 3 = Fairly Often 4 = Very Often). The scores are obtained by reversing responses (e.g., 0 = 4, 1 = 3, 2 = 2, 3 = 1 & 4 = 0) to the four positively stated items (items 4, 5, 7, & 8) and then summing across all scale items, yielding a totally original score ranging from 0 to 40. A score of 0–13 was considered as low stress, 14–26 as moderate and 27–40 was considered as high perceived stress[14.]

As the PSS is not a diagnostic instrument, there are no cut-off scores.

Multidimensional Scale of Perceived Social Support (MPSS): Multidimensional Scale of Perceived Social Support was used to find out the individual's perceived social support. developed by Zimmet et al is a 12-item,7-point Likert-type scale, ranging from 1 = very strongly disagree) to 7 = very strongly.The MSPSS was divided into three factors which are significant others family (scale = 3, 4, 8, 11), and friends (scale = 6, 7, 9, 12).This scale has total 12–84 score in which score 12–35 considered as low perceived support, 36–60 as medium support and 61–84 as high perceived support[15]. Nepali version of MSPSS-N, pilot tested among Nepali resident in Hong kong, shows good construct validity and high internal reliability[16,17].

Ethical Considerations. Approval was granted by the Institutional Review Committee (IRC) of Tribhuvan University, Institute of Medicine [Ref35/(6-11) E2/077/078], and administrative permission was obtained from the study sites. Participants were informed about the study's purpose, procedures, and their rights, including voluntary participation and the option to withdraw without consequence. Ethical standards were maintained to protect their rights.

Data Collection and Analysis Procedure: After administrative approval, data were collected from September 15 to December 25, 2020. Self-administered questionnaires were distributed to randomly selected nursing staff during morning and evening shifts and collected the next day. Data were checked daily for completeness and duplicates. IBM SPSS version 21 was used to perform descriptive and inferential analyses, including Pearson correlation to assess the relationship between perceived stress and social support.

Results

Out of 224 study participants, two-third (67%) of them were 21–30 years of group, all were female. Regarding professional qualification, 75.9% had completed the bachelor level, 96% were working as staff nurses and 50.4% had 1–5 years of working experience. During COVID-19 pandemic, more than two-thirds provide care to the COVID-19 infected patients. Only 5.4% had got an opportunity to participate in COVID-19 related training (table 1).

Table 1. Socio-demographic and Professional Characteristics of Participants (n = 224)

Characteristics	Number	Percentage
Age (in years)		
Less than 20	3	1.3
21–30	150	67.0
31–40	56	25.0
41–50	10	4.5
Above 50	5	2.2
Academic Qualification		
PCL nursing	54	24.1
B.Sc. Nursing/BNS/BN	170	75.9
Job Experience(in years)		
1–5	113	50.4
6–10	68	30.4
11–15	22	9.8
Above 15	21	9.4
Job Title		
Staff Nurse	215	96.0
Sister	9	4.0
Experience of caring COVID-19 Positive Patients		
Yes	157	70.1
No	67	29.9
History of Psychiatric Illness		
Yes	4	1.8
No	220	98.2
RT-PCR test to identify COVID-19		
Yes	197	87.9
Not yet	27	12.1
Status After RT-PCR test		
Positive	50	25.4
Negative	147	74.6
Training Received		
Yes	12	5.4
No	212	94.6

Perceived stress scale (10 items) was used to find out the perceived stress among nurses (table 2). Regarding perceived stress during COVID-19 pandemic, 44.2% got upset very often, 26.8% frequently felt that they are unable to control important things in life, one –third of them ((33.9%) occasionally felt that they could not overcome the difficulties due to pandemic. Similarly, 18.3% of them felt angered due to the situation is not under their control and 38.3% had been able to control irritations in their life due to pandemic situation frequently.

Table 2. Perceived Stress of the Study Participants' (n = 224)

Statements	Perceived Stress					
	Never n (%)	Almost Never n (%)	Sometimes n (%)	Fairly Often n (%)	Very Often n (%)	Mean±SD
Got upset because of COVID-19 situation	1(.4.0)	8(3.6)	42(18.8)	74(33)	99(44.2)	3.16± 0.88
Felt unable to control the important things in my life due COVID-19 pandemic situation	21(9.4)	24(10.7)	70(31.3)	60(26.8)	49(21.9)	2.41±1.20
Felt nervous and "stressed"	6(2.7)	16(7.1)	78(34.8)	77(34.4)	47(21.0)	2.63±0.97
Felt confident about my ability to handle my personal problems in COVID-19 pandemic	7(3.1)	26(11.6)	76(33.9)	79(35.3)	36(16.1)	2.49±0.99
Felt that things were going in my way	29(12.9)	49(21.9)	78(34.8)	51(22.8)	17(7.6)	1.90±1.12
Felt that I could not cope with all the things that I had to do due to COVID-19 pandemic	26(11.6)	31(13.8)	91(40.6)	56(25.0)	20(8.9)	2.05± 1.10
Able to control irritations in my life	8(3.6)	30(13.4)	72(32.1)	87(38.8)	27(12.1)	2.42±0.98
Felt that I was in control and aware of all the situations and changes in my life	4(1.8)	30(13.4)	70(31.3)	93(41.5)	27(12.1)	2.48±0.93
I felt angered because of things that were outside of my control	21(9.4)	32(14.3)	69(30.8)	61(27.2)	41(18.3)	2.30±1.19
Felt that difficulties were piling up so high that I could not overcome them due to COVID-19 pandemic.	24(10.7)	44(19.6)	76(33.9)	41(18.3)	39(17.4)	2.12±1.23

To find out the perceived social support during COVID-19 pandemic, the Multidimensional Scale of Perceived Social Support ("MSPSS") was used (table 3). Form the significant person's support, 13.8% of participants strongly agreed that they had special person's support when they need, 34.8% can share their joy and sorrows with special person and 34.8% agreed that the special person is the real source of comfort for them. Regarding family support, nearly half (47.3%) of them somewhat agreed that their families tries to help them and equal percentage agreed that they received emotional support from them. Similarly, 24.6% disagreed that their friends really try to help them, 5.8%very strongly agreed that they can seek support from their friends and16.5% very strongly agreed that they can talk their problems with friends.

Table 3. Participants' Perceived Social Support (n = 224)

Statements and subscale	Multidimensional Perceived Social Support							
	very Strongly Disagree (%)	strongly agree (%)	Mildly Disagree n (%)	Neutral n (%)	Mildly Agree n (%)	Strongly Agree n (%)	Very Strongly Agree n (%)	Mean±SD
Significant Person								
There is a special person who is around when I am in need of support	9(4.0)	12(5.4)	32(14.3)	57(25.4)	53(23.7)	31(13.8)	30(13.4)	4.54±1.55
There is a special person with whom I can share joys and sorrows.	7(3.1)	11(4.9)	18(8.0)	73(32.6)	78)(34.8)	22(9.8)	15(6.7)	4.47±1.29
I have a special person who is a real source of comfort to me	5(2.2)	8(3.6)	30(13.4)	65(29.0)	78(34.8)	24(10.7)	14(6.3)	4.47±1.26
There is a special person in my life who cares about my feelings.	6(2.7)	6(2.7)	29(12.9)	47(21.0)	77(34.4)	43(19.2)	16(7.1)	4.67±1.33
Family								
My family really tries to help me.	4(1.8)	3(1.3)	12(5.4)	63(28.1)	106(47.3)	24(10.7)	12(5.4)	4.71±1.07
I get the emotional help & support from my family.	2(0.9)	3(1.3)	12(5.4)	61(46.4)	104(46.4)	23(10.3)	19(8.5)	4.81±1.07
I can talk about my problems with my family.	4(1.8)	6(2.7)	13(5.8)	52(23.2)	88(39.3)	44(19.6)	17(7.6)	4.84±1.21
My family is willing to help me for decisions making.	4(1.8)	3(1.3)	16(7.1)	54(24.1)	88(39.3)	36(16.1)	23(10.3)	4.87±1.22
Friends								
My friends really try to help me.	2(0.9)	6(2.7)	55(24.6)	92(41.1)	46(20.5)	16(7.1)	7(3.1)	4.11±1.09
I can seek support from my friends	2(0.9)	11(4.9)	43(19.2)	95(42.4)	45(20.1)	15(6.7)	13(5.8)	4.19±1.19
I have friends with whom I can share my joys and sorrows.	3(1.3)	5(2.2)	27(12.1)	86(38.4)	61(27.2)	33(14.7)	9(4.0)	4.48±1.15
I can talk about my problems with my friends.	3(1.3)	6(2.7)	28(12.5)	71(31.7)	52(23.2)	27(12.1)	37(16.5)	4.75±1.41

Table 4 depict that 75.3% of the study participants perceived moderate level of stress and 65.6% of them perceived moderate level social support during the period of COVID-19 pandemic

Table 4. Participants' Perceived level of Stress and Social Support (n = 244)

Variable	Number	Percentage	Mean	SD
Level of Perceived Stress			21.45	5.68
Mild stress(0–13score)	19	8.5		
Moderate Stress(14–26 score)	168	75.3		
Severe Stress(27–40 score)	37	16.2		
Level of Perceived Social Support			54.96	9.13
Low level Support(12–35 score)	7	3.1		
Moderate level Support(36–60 score)	147	65.6		
High level Support(61–84 score)	70	31.3		

Table 5 depicts the relationship between perceived stress and social support during the pandemic, there is a negative relationship between perceived stress and support from significant others(r = –0.176), family (r = –0.140) and overall multidimensional support score(r = –0.135), while there is positive relationship with friends(r = 0.001). However, the relationship between friends and total multidimensional support score is statically insignificant at 95% confidence level(p = 0.977).

Table 5. Correlation between Perceived Stress and Social Support

Variables		Significant others	Family	Friends	Multidimensional Support
Perceived stress	R	–0.176	–0.140	0.001	–0.135
	p-value	0.008	0.035	0.977	0.043
Significant others	R		0.604	0.482	0.876
	p-value		0.000	0.000	0.000
Family	R			0.458	0.821
	p-value			0.000	0.000
Friends	R				0.764
	p-value				0.000

Discussion

It is widely accepted that the nursing profession is one of the highly stressful professions and nursing staff may be more psychologically susceptible to the COVID-19 pandemic's pressure[18]. High levels of psychological stress significantly reduce nursing staffs' commitment to their profession and careers [19]. In the present study, more than ninety percent of the study participants perceived moderate to high levels of stress, which is similar with the study conducted among healthcare worker in Nepal during the early phase of COVID-19 pandemic[20]. This finding is also comparable with the study conducted in other different countries[10,13,21.] However, a similar study conducted during second wave of COVID-19

pandemic revealed a lower percentage of nurses had moderate to severe stress [22]. It might be because of the availability of information on disease and personal protective equipment.

Social support is perceived as the accessibility of resources provided through family, friends, spouses, and co-workers[23]. Family and social support may help reducethe levels of stress by decreasing the perception of the threat and inappropriate behaviour that can result from stress. Ultimately, that leads to improved self-efficacy and a sense of professional success and avoidance of burnout in nurses [24,25]. Moreover, high perceived social support has a positive impact on mental and physical well-being[26]. In our study, almost all study participants have sense of greater support from family, friends and significant others which is quiet similar with the findings of a study conducted in Nepal and China[27,28]. This could be recognised to the absolute necessity of nursing care and the significant contribution of the nursing profession during the COVID-10 pandemic[29].A Nepal study in early COVID-19 found nearly half of healthcare workers felt unsupported, with only a few experiencing strong support [30]. This study suggest that perceived support from family is higher compared to others which is similar with the findings of previous study conducted in Nepal[31].

The perception of available support has a greater impact on the psychological wellbeing of an individual than received support[26]. Another study evidenced that social supportimpacts on perceived stress and family and significant other's support significantly reducesstress [27]. The present study showed negative relationship between perceived stress and support from family and significant others. During the pandemic, nurses experienced less stress when supported by family and significant others, aligning with previous studies from diverse cultural and demographic backgrounds[26,32,33].

This study was conducted among nurses in a single COVID-19 dedicated tertiary hospital, limiting its generalizability to other settings. Therefore, its limitations should be considered before applying the results.

Conclusions

The study concludes that almost all nurses who provide bedside care to the COVID-19 infected cases have perceived moderate to severe levels of stress. However, all have greater support from family members, friends, and significant others. Support from family and significant persons has an important role in decreasing perceived stress in nurses. There is a great need for stress reduction programs including the cultivation of social support networks for alleviating perceived stress in nurses working in the COVID-19 dedicated hospitals.

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Original Article

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Nurses' Empowerment Behaviors and its Impact on Job Satisfaction, Occupational Stress and Professional Commitment Among Staff Nurses

[1]S. Ani Grace Kalaimathi

[1]Registrar, Tamilnadu Nurses & Midwives Council, Chennai

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Abstract

Administrators play a pivotal role in empowering staff and influencing staff nurse's work engagement and intent to stay in their organization to ensure positive organizational and patient outcomes. A study was done to find out the relationship between nurse's empowerment behaviour with their job satisfaction, occupational stress and professional commitment among staff nurses (N=428) in selected hospitals, Coimbatore, Tamilnadu, India by using nonexperimental design. The findings of this study revealed that majority 319 (74.5%) had adequate nurses empowerment behavior, 224 (52.3%) had moderate satisfaction, 218 (50.9%) of subjects had mild stress and 243 (56.8%) of them had moderate professional commitment. It was observed that the calculated correlation value between nurse empowerment behavior and job satisfaction is r=0.386 shows a positive correlation, nurse empowerment behavior and occupational stress value was r=-0.150 shows a negative correlation, nurses empowerment behavior and professional commitment value was r=-0.041 shows a no correlation, job satisfaction and occupational stress value was r=-0.432 shows a negative correlation, job satisfaction and professional commitment value was r=-0.055 shows a no correlation, occupational stress and professional commitment value was r=0.296 shows a positive correlation. This study concluded that the nurse administrator should take a holistic approach in their endeavor to increase job satisfaction & professional involvement and reduce occupational stress among staff nurses which will enable better patient outcome.

Key words: empowerment, job satisfaction, occupational stress and professional commitment

Introduction

The nurse's empowerment and patient quality care are both sides of coin. Nursing empowerment means the ability to effectively motivate and mobilize self and others to accomplish positive outcomes in nursing practice and work environment. The empowered team influences staff morale, productivity, staff retention and associated costs, patient care quality, and patient safety. Enhancing leadership skills, being a positive change agent, education upgradation and being an Evidence Based Practice (EBP) cheerleader abilities are required for nurses to become an empowered professional to render quality care. Administrators play a pivotal role in empowering staff and influencing staff nurse's work engagement and intent to stay in their organization to ensure positive organizational and patient outcomes. According to Kindipan, I. (2017)[9] most of the staff nurses perceived their leader as one who was empowering and demonstrated strong leader empowering behaviours. A study done by Salman

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Taie, 2022[5], reveals that empowering behaviour gives head nurses the opportunity to autonomy, showing trust in nurses' potential and giving them the freedom to act and perform according to the current situation. A descriptive study was conducted by Eman Salman Taie[5], 2022**,** assess the nurse manager empowering leader behaviour during COVID – 19 at Benisuef University Hospital. This study reveals that two-thirds of staff nurses perceived high levels of their nurse manager's empowering behavior during COVID-19, in comparison to only 3.9% who perceived low levels

Work-related stress is the response of people that exists when work stressors are unmatched with their knowledge, skills, or abilities which challenge their coping mechanisms. Nurses faced with severe illness and the death of patients that makes nursing as highly stressful profession. It promotes organizational incompetence, high staff turnover, sickness, absenteeism, decrease in quality of care, increased costs of health care, and reduced job satisfaction. Professional commitment is an important predicting factor in nurses' professional performance and a facilitating factor in reducing nurses' emotional fatigue due to work overload."But today, nursing is different from those days. The responsibility, hence, is greater to provide more complex nursing care. So, it is important for a nurse to be empowered and have the empowerment on her duty. This can improve health care and patient outcome. (Business Bliss Consultants, 2020).

Statement of the Problem

A study to assess the nurse's empowerment behavior and its impact on job satisfaction, occupational stress and professional commitment among staff nurses working in selected hospitals, Coimbatore.

Objectives of the Study

- To assess nurse empowerment behavior among staff nurses.
- To assess job satisfaction, occupational stress and professional commitment among staff nurses.
- To correlate the nurse's empowerment behavior with their job satisfaction, occupational stress and professional commitment among staff nurses.
- To associate the nurse's empowerment behavior of staff nurses with their selected demographic variables.
- To associate job satisfaction, occupational stress and professional commitment of staff nurses with their selected demographic variable.

Method

The research design adopted for this study was co-relational design which comes under non-experimental research design. The study was conducted in selected hospitals, Coimbatore. Prior permission wassought from the CNO by the investigators after explaining the purpose of the study. Staffnurses were assured that no emotional harm would be done during the study.Convenience sampling technique was used to select the sample depending on the availability and willingness to participate.

The investigator prepared the questionnaire to seek information from the staff nurses. Five-point Likert's scales were used to assess the level of NAEB-SN, Job Satisfaction, Occupational Stress and Professional Commitment.

Section-I: Assessment of Demographic Variables

Demographic variables consist of age in years, gender, professional qualification, years of experience, marital status, working wards, monthly income in rupees, type of health care setting, residence and previous knowledge about nurse empowerment

Section -II: Tool to assess the Nurse Administrator Empowerment Behaviour

A standardized tool is being used to assess the Nursing Administrative Ethical Behavior of Staff Nurses (NAEB-SN), Job Satisfaction, Occupational Stress, and Professional Commitment. A pilot study was conducted with 30 nurses, and the tool was found

to be reliable. It consists of 55items. The total possible minimum score was 55 and maximum score was 275. The total score for each subject was calculated, converted into percentage and interpreted as follows:

Table 1. Scoring Interpretation for Nurse Administrator Empowerment Behaviour Tool

S. No	Scoring Interpretation	Score
1	Strongly Agree	5
2	Agree	4
3	Neutral	3
4	Disagree	2
5	Strongly disagree	1

Section-III: Tool to assess Job Satisfaction

It consists of 15 items. The total possible minimum score was 15 and maximum score was 75. The total score for each subject was calculated, converted into percentage and interpreted as follows.

Table 2. Scoring Interpretation for Job Satisfaction Tool

S. No	Scoring Interpretation	Score
1	Very dissatisfied	1
2	Dissatisfied	2
3	Neither satisfied nor dissatisfied	3
4	Satisfied	4
5	Very satisfied	5

Section-IV: Tool to assess Occupational Stress

It consists of 24 items. The total possible minimum score was 24 and maximum score was 120. The total score for each subject was calculated, converted into percentage and interpreted as follows.

Table 3. Scoring Interpretationfor Occupational Stress Tool

S. No	Scoring Interpretation	Score
1	No pressure	1
2	Slight pressure	2
3	Moderate pressure	3
4	Considerable Pressure	4
5	Extreme pressure	5

Section V: Tool to assess the Professional Commitment

It consists of 10 items. The total possible minimum score was 10 and maximum score was 50. The total score for each subject was calculated, converted into percentage and interpreted as follows

Table 4. Scoring Interpretation for Professional Commitment Tool

S. No	Scoring Interpretation	Score
1	Never	1
2	Seldom	2
3	Sometimes	3
4	Often	4
5	Very often	5

The tool for this study consisted of the above five sections andplaced it in a Google forms and link is shared to the staff nurse and they were instructedto tick the response by accessing Google form link. A total of 428 staff nurses from various hospitals participated in the study and provided their responses accessing Google form link. The sample size is determined after the power analysis of the sample size.

Resultsand Discussion

The study examined the demographic profile, empowerment behaviour, job satisfaction, occupational stress, and professional commitment among staff nurses. The majority of nurses (88.5%) were aged between 20 to 29 years, and 90.9% were female. Most nurses (68.2%) held a bachelor's degree, with 85% having less than 5 years of work experience, and 84.1% were single. A significant portion (59.4%) worked in areas other than the primary focus of the study, while nearly half (48.1%) earned between Rs. 10,001 to 15,000 per month. Most nurses (94.4%) were employed in private healthcare settings, and 70.1% resided in urban areas.

Regarding empowerment behaviour, the majority demonstrated adequate behaviour across all domains: providing meaning to work (72.2%), supporting autonomy (71.5%), overcoming obstacles (75.2%), recognizing work (72%), and respecting them as professional staff nurses (74.8%), with 74.5% showing overall adequate empowerment behaviour.

In terms of job satisfaction, 52.3% reported moderate satisfaction, 40.7% had high satisfaction, and 7% reported poor satisfaction. Occupational stress levels were mostly mild (50.9%), with 43% experiencing moderate stress and 6.1% experiencing severe stress. Professional commitment was moderate for 56.8%, while 32.7% had low commitment, and only 10.5% reported high commitment. The statistical analysis showed a positive and significant correlation (r=0.386, p<0.001) between nurses' empowerment behaviour and job satisfaction, indicating that greater empowerment is associated with higher satisfaction.

Conversely, empowerment behaviour was negatively correlated with occupational stress (r=-0.150, p<0.01), indicating that empowered nurses experienced lower stress levels. There was no significant correlation between empowerment behaviour and professional commitment (r=-0.041, p>0.05). Job satisfaction and occupational stress were significantly negatively correlated (r=-0.432, p<0.001), indicating that higher satisfaction was linked to lower stress. No meaningful correlation was found between job satisfaction and professional commitment (r=-0.055, p<0.05). Interestingly, occupational stress and professional commitment showed a positive correlation (r=0.296, p<0.001), indicating that even under stress, some nurses maintained professional commitment. Overall, the findings highlight the importance of empowerment behaviour in enhancing job satisfaction and reducing stress, while professional commitment may be influenced by factors beyond empowerment and satisfaction.

A similar study conducted by Rajalakshmi Ramu & BV Kathyayani (2019)[14]at NIMHANS, Bengaluru, assessed nurses' empowerment in hospital settings using a self-administered questionnaire. The findings indicated that most nurses perceived themselves as moderately empowered. The study emphasized that nursing administration must recognize the importance of empowerment to enhance leadership capabilities and facilitate the delivery of high-quality, safe patient care. Overall, the present study highlights the critical role of empowerment behavior in improving job satisfaction and reducing occupational stress, while professional commitment appears to be influenced by additional factors beyond empowerment and satisfaction. These insights underscore the need for targeted strategies in nursing administration to strengthen empowerment, enhance job satisfaction, and effectively manage stress among nurses.

Table 5. Correlation between nurses' empowerment behavior, job satisfaction, occupational stress and professional commitment among staff nurses (N=428)

S. No.	Variables	Mean	SD	Correlation coefficient (r)
1	Nurses' empowerment behavior	78.16	8.74	r = 0.386
	Job Satisfaction	69.97	11.85	(p=0.000) ***
2	Nurses' empowerment behavior	78.16	8.74	r = – 0.150
	Occupational Stress	48.38	16.92	(p=0.002) **
3	Nurses' empowerment behavior	78.16	8.74	r = –0.041
	Professional Commitment	53.4	17.23	(p=0.393)
4	Job Satisfaction	69.97	11.85	r = - 0.432
	Occupational Stress	48.38	16.92	(p=0.000) ***
5	Job Satisfaction	69.97	11.85	r = – 0.055
	Professional Commitment	53.4	17.23	(p=0.252)
6	Occupational Stress	48.38	16.92	r = 0.296
	Professional Commitment	53.4	17.23	(p=0.000) ***

Note: ** - P<0.01 and * - p<0.001 Level of Significant**

Conclusion

The present study was conducted to assess nurses' empowerment behavior and its impact on job satisfaction, occupational stress, and professional commitment among staff nurses working in selected hospitals in Coimbatore. The findings revealed that the majority of nurses perceived adequate empowerment behavior from their nurse administrators. The study concluded that nurse empowerment behavior significantly correlates with job satisfaction, occupational stress, and professional commitment among staff nurses.

A key limitation of the study was that the data collection tool was administered via Google Forms, with the link shared with staff nurses, making it challenging to verify the authenticity of responses. Future research could explore this topic through an experimental study, incorporating an intervention on empowerment behavior, or as a comparative study based on the qualification of staff nurses. Nurse administrators should adopt a holistic approach to enhance job satisfaction, professional commitment, and reduce occupational stress among staff nurses, ultimately leading to better patient outcomes.

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Exploring the Relationship between Perceived Professional Benefits and Self-Efficacy Among Nursing Students: A Correlational Study

[1]Zhanglin Wang, [2]MengMeng Du, [3]Mengxin Tian, [4]Ruonan Li, [5]Xiangxiang Li, [6]Ru Xiao, [7]Yongxin Lian

[1]Lecturer, Pingdingshan University, Xinhua District, PingdingshanCity, Henan Province, China,
[2]Student, Pingdingshan University, Xinhua District, PingdingshanCity, Henan Province, China,
[3]Student, Pingdingshan University, Xinhua District, Pingdingshan City, Henan Province, China,
[4]Student, Pingdingshan University, Xinhua District, Pingdingshan City, Henan Province, China,
[5]Student, Pingdingshan University, Xinhua District, Pingdingshan City, Henan Province, China,
[6]Student, Pingdingshan University, Xinhua District, Pingdingshan City, Henan Province, China,
[7]Student, Pingdingshan University, Xinhua District, Pingdingshan City, Henan Province, China

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Abstract

Background: As global healthcare demand rises, the nursing profession faces critical challenges like staff shortages and high turnover, threatening service quality and team stability. Recent focus on positive psychology has highlighted Perceived Professional Benefits (PPB) - nurses' positive gains and personal growth through work, enhancing professional identity and self-worth.

Simultaneously, self-efficacy - one's belief in successfully performing tasks - significantly influences nursing interns' performance and career decisions. Those with higher self-efficacy manage workplace stress better, leading to greater job satisfaction and retention.

Objective: Through the investigation of the current situation of the sense of occupational benefit and self-efficacy of nursing interns, the data were analyzed to explore the relationship, to provide reference for self-efficacy of nursing interns.

Methods: 175 intern nursing students were selected as the research subjects through convenience sampling method, and relevant scales were used for investigation.

Results: The results of the study show that the intern nursing students scored (114.21±13.18) points in the sense of professional gain and (27.48±4.85) points in the sense of self-efficacy. There was a statistical significance in the scores of their academic qualifications, reasons for choosing nursing, degree of liking nursing, thought of engaging in nursing industry after graduation, and the sense of professional gain of interns who were satisfied with their teachers (P<0.05). The results showed that there was a positive correlation between the sense of occupational benefit and self-efficacy of nursing interns (P<0.05).

Conclusions: The study found that the sense of occupational benefit and self-efficacy of nursing interns are at a medium level and in direct proportion. Therefore, colleges and hospitals can take targeted measures to improve the sense of professional benefit of nursing interns, so as to enhance the level of self-efficacy and stabilize the nursing team.

Key words: Nursing student; Professional sense of benefit; Self-efficacy;Job satisfaction

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Introduction

At present, the nursing workforce in China is inadequate and excessive turnover is common, a situation that is not unique to China but is also prevalent in the global nursing industry [1]. In recent years, positive psychology has gradually gained attention, and the concept of career access for professionals is one of its key components. This refers to the ability of nursing staff to recognize the benefits and advantages associated with their positions, realizing that working in the nursing profession can contribute to their overall development [2].The concept of occupational benefit applies equally to both practicing nurses and nursing interns. The clinical internship represents a formative period for nursing students' professional development [3]. However, the intense clinical environment often generates significant stress that can weaken interns' confidence and reduce their work motivation [4], potentially leading to early career attrition. Research indicates that positive professional experiences help strengthen interns' emotional connection to nursing, reinforce their professional identity, and promote career commitment [5].

Self-efficacy is about whether someone believes they can do something using their own skills and abilities[6]. It is defined as the capacity to cope with life's stressors through a sense of self-confidence [7]. Nursing interns' psychological experiences in the clinical environment directly impact their self-efficacy. Successful task performance and positive work attitudes consistently correlate with higher self-efficacy levels [8].A strong sense of occupational benefit serves as a positive psychological resource, helping nursing interns better manage work frustrations, stressful situations, and negative emotions while boosting their self-efficacy. As self-efficacy grows, interns develop greater confidence in handling clinical challenges. This increased confidence motivates more active professional engagement, enabling them to effectively apply their knowledge and skills to solve practical problems.

This study investigates the current status of occupational benefits and self-efficacy among nursing interns. By analyzing the data, it aims to explore the relationship between these two factors and provide a reference for improving the self-efficacy of nursing interns. The findings may serve as a basis for universities and hospitals to implement measures that enhance the self-efficacy of nursing interns, thereby improving their motivation and contributing to the stability of the nursing workforce in the future.

Objects and Methods

Subjects of the Study

A convenience sampling method was used to conduct a survey in December 2022 among 175 nursing interns at a tertiary hospital in a specific region.

This study used convenience sampling to recruit participants from a tertiary hospital in a specific region, ensuring easy access to potential subjects. Internship nursing students who met the inclusion criteria were sequentially numbered (1 to 175) and invited to complete the questionnaire. Factors such as educational background, gender, and family environment were not controlled during selection. Sampling continued until 175 valid responses were collected, forming the final sample. While this method enabled efficient data collection given time and resource constraints, its non-random nature may limit the generalizability of the findings.

The inclusion criteria were as follows: ① Nursing students graduating in 2023; ② Internship duration of ≥ 3 months; ③ Voluntary participation.

The exclusion criterion were nursing interns who were not on duty at the time of the survey.

Research Instruments

General Information Questionnaire

The questionnaire was developed by the researcher based on a review of relevant literature. It included items such as gender, age, reasons for choosing the

nursing profession, personality traits, whether they had served as student cadres, whether they intended to pursue a career in nursing after graduation, and their satisfaction with clinical instructors.

Career Benefit Scale for Nursing Interns

The scale, revised by Hu Chuanjiao and et al. [9], consists of 29 items across 5 dimensions. It uses a 5-point Likert scale, ranging from "strongly agree" (5 points) to "strongly disagree" (1 point). Higher total scores indicate a stronger sense of career benefit. The scale demonstrated good reliability and validity, with a Cronbach's α coefficient of 0.944.

General Self-Efficacy Scale

The scale was developed by Schwarzer et al. [10] and later translated and adapted into Chinese by Wang Caikang et al. [11]. It comprises 10 items rated on a 4-point scale, ranging from "completely incorrect" (1 point) to "completely correct" (4 points). The total score ranges from 10 to 40, with higher scores indicating a higher level of self-efficacy. The scale showed good reliability and validity, with a Cronbach's α coefficient of 0.87.

Survey Method

The questionnaire for this study was created using the Questionnaire Star platform. After obtaining consent from the nursing interns, electronic questionnaires were distributed with standardized instructions to ensure consistency. A total of 180 questionnaires were distributed, and 175 valid responses were collected, resulting in a valid response rate of 97.2%.

Statistical Methods

Data was entered and analyzed using SPSS 25.0. Descriptive statistics, independent samples t-tests, one-way ANOVA, and Pearson correlation analysis were employed for data analysis.

Results

Scores of Nursing Interns' Sense of Career Benefit

The total score of the nursing interns' sense of career benefit was 114.21 ± 13.18. The scores for each dimension are presented in Table 1.

Table 1. Scores on the perceived career benefits of trainee nursing students (n=175)

dimension	Mean score (±*s*)	Maximum value	Minimum value
Good nurse-patient relationship	4.16±0.90	5.00	1.00
Family and Friends Recognition	3.99±0.92	5.00	1.00
Self-growth	3.99±0.87	5.00	1.00
Team belonging	3.93±0.91	5.00	1.00
Positive career perception	3.71±0.85	5.00	1.00
Total Career Benefit Score	114.21±13.18		

Comparison of Career Benefit Scores Among Nursing Interns with Different Characteristics

The analysis revealed statistically significant differences ($P < 0.05$) in the career benefit scores of the 175 nursing interns based on their academic qualifications, reasons for choosing nursing, level of interest in nursing, intention to pursue nursing after graduation, and satisfaction with clinical instructors. Detailed results are presented in Table 2.

Table 2. Comparison of scores on perceived career benefits among trainee nurses with different characteristics (n=175)

Project	Number of people (%)	Score ($\bar{x}\pm s$)	*t/F*	*P*
Gender				
Female	151 (86.3)	113.83±15.80	–0.788	0.432
Male	24 (13.7)	116.63±18.30		
Whether the child is an only child				
Yes	41 (23.4)	112.31±12.94	0.825	0.410
No	134 (76.6)	114.77±16.99		
Academic qualifications				
Speciality	26 (14.9)	109.69±13.20	2.259	0.025
Undergraduate	149 (85.1)	115.35±16.37		
Place of birth				
Cities	75 (42.9)	114.11±17.27	1.073	0.929
Town	23 (13.1)	113.17±16.14		
Rural	77 (44.0)	114.62±17.08		
Reasons for choosing care				
Personal preference	71 (40.6)	118.15±15.17	3.672	0.013
Parents' reasons	35 (20.0)	107.54±19.51		
Transfer	34 (19.4)	112.68±17.35		
Employment	35 (20.0)	114.37±10.24		
How much do you like nursing				
Very much	39 (22.3)	118.79±13.16	8.138	0.000
Not at all	116 (66.3)	114.80±15.47		
Dislikes	20 (11.4)	101.85±19.60		
Personality				
Introverted	20 (11.4)	113.00±13.80	0.096	0.984
Introverted	54 (30.9)	114.91±13.66		
Neutral	56 (32.0)	114.66±16.64		
Extraverted	10 (5.7)	113.80±13.14		
Extraverted	35 (20.0)	113.23±11.59		
Being a student leader in school				
yes	68 (38.9)	115.35±16.26	–0.745	0.457
No	107 (61.1)	113.49±16.09		
Think about nursing after graduation				
Never	22 (12.6)	109.35±16.07	3.559	0.031
Occasionally	104 (59.4)	115.54±16.49		

Continue....

Often	49 (28.0)	118.77±12.13		
Satisfaction with teachers				
Satisfied	103 (58.9)	118.57±15.67	13.294	0.000
Satisfied	67 (28.3)	109.13±13.21		
Dissatisfied	5 (2.9)	105.40±11.67		

Self-Efficacy Scores of Nursing Interns

The total self-efficacy score of the 175 nursing interns was 27.48 ± 4.85. The scores were categorized as follows:

- High level (31–40): 21 (12.0%) interns.
- Medium level (21–30): 78 (44.6%) interns.
- Low level (10–20): 76 (43.4%) interns.

Correlation Between Nursing Interns' Sense of Career Benefit and Self-Efficacy

The total score of the nursing interns' sense of career benefit, as well as the scores for each dimension, showed a significant positive correlation with their self-efficacy scores ($P < 0.01$). Detailed results are presented in Table 3.

Table 3. Correlation between nursing interns' sense of career benefits and self-efficacy (r, n = 175).

Table 3. Correlation between perceived career benefits and self-efficacy of nursing interns (r, n=175)

Project	Good Patient Relationship	Family and Friends Recognition	Self-growth	Sense of belonging to the team	Positive career perception	Total Career Benefit Score
Self-efficacy	.312**	.296**	.203**	.338**	.348**	.297**

Note: ** indicates significant correlation at P<0.01.

Discussion

Nursing Interns' Sense of Career Benefit is at a Moderately Low Level

The total score of the 175 nursing interns' sense of career benefit was 114.21 ± 13.18, indicating a moderately low level. These findings are consistent with the results reported by Chen Lili et al. [12]. The reasons for this may include the following: during the internship period, students not only face the complexities of clinical work but also experience pressure related to academics, employment, and graduation.Nursing interns demonstrate significantly lower career benefit perceptions than licensed nurses, as evidenced by Zhuo Rongxin et al. 's research [13]. This disparity stems from two primary factors. Professionally, interns lack the clinical autonomy of registered nurses while performing similarly demanding tasks, limiting their sense of professional accomplishment. Additionally, the absence of financial remuneration during training - coupled with existing economic pressures - frequently creates a perceived imbalance between effort expended and rewards gained [14].

The positive nurse-patient relationshipdimension emerged as the highest-scoring aspect of career benefit, consistent with Wang Qianqian et al.'s research [15]. These findings indicate that nursing interns actively cultivate rapport with patients through open communication and trust-building, while demonstrating commitment to holistic patient care. Patients typically reciprocate this professional dedication with cooperation, encouragement, and positive feedback. This mutually beneficial dynamic creates an optimal environment for developing therapeutic nurse-patient relationships.

The positive career perception dimension scored the lowest among nursing interns, consistent with Bai Xiangwei's findings [16]. This can be attributed to three key factors: first, the transition to unfamiliar clinical environments often leads to difficulties in adaptation, resulting in anxiety and tension; second, the challenge of integrating theoretical knowledge with practical clinical work, coupled with limited experience and problem-solving skills, frequently lowers self-expectations and triggers negative emotions [17]; and finally, direct exposure to real-world nursing practice often leads to significant shifts in students' professional expectations and attitudes. These combined factors contribute to the observed deficit in positive career perception during the internship period.

These factors contribute to a relatively low level of positive career perception among nursing interns. To address this, schools and hospitals should emphasize career guidance to enhance interns' sense of professional fulfillment. Institutions can promote positive nursing values through regular career counseling sessions and specialized lectures, helping interns develop a balanced perspective on the profession's challenges and rewards, thereby strengthening their professional identity [18]. Additionally, educators should provide constructive career guidance to highlight the advantages of nursing while actively monitoring students' psychological well-being and implementing timely interventions when necessary.

Comparative Analysis of Career Benefit Scores Among Nursing Interns with Different Characteristics

Undergraduate Nursing Interns Report a Higher Sense of Career Benefit

As shown in Table 2, undergraduate nursing interns reported higher career benefit than diploma-level interns. This disparity stems from two main factors. First, undergraduates receive longer, more comprehensive training with stronger theoretical foundations, developing better critical thinking and problem-solving skills. These competencies earn them greater clinical recognition and professional fulfillment. Second, most hospitals (particularly tertiary centers) now require bachelor's degrees for nursing positions, creating employment uncertainties for diploma interns that undermine their motivation and perceived career benefits.

Higher Sense of Career Benefits Among Those Who Voluntarily Chose Nursing

Nursing interns who self-selected their career path reported greater professional satisfaction than those motivated by external factors like academic transfers, job security, or family influence. This disparity likely stems from intrinsically motivated students possessing clearer professional understanding and better alignment between personal values and nursing principles. Additionally, most interns who chose nursing based on their own preferences did so because they genuinely liked the profession, identified more strongly with its values, and maintained a more positive work motivation and mindset [14]. As a result, these individuals are more likely to experience a sense of achievement and career benefit during their clinical practice.

Higher Levels of Perceived Career Benefits Among Interns Who Strongly Enjoy Nursing

Table 2 demonstrates that nursing interns with strong professional enthusiasm reported greater career satisfaction than less interested peers. This difference stems from engaged interns' tendency to actively pursue knowledge, demonstrate initiative, and show resilience during challenges. Their positive approach enhances patient interactions, building trust through willing assistance. Moreover, these interns fundamentally appreciate nursing's value - recognizing its noble purpose in preserving life and prioritizing patient care. Such intrinsic motivation predicts their successful transition to competent practitioners.

Higher Sense of Career Benefit Among Interns Intending to Pursue Nursing After Graduation

The survey results indicate that nursing interns who expressed an intention to pursue nursing after graduation reported a higher sense of career benefit. This may be attributed to the fact that these individuals have a stronger commitment to the profession,

motivating them to actively acquire professional knowledge and skills during their internship. By enhancing their professional competence, they aim to better prepare themselves for future employment in the nursing field.

Higher Perceived Career Benefits Among Interns Satisfied with Their Clinical Instructors

Nursing interns' perceived career benefits show a positive correlation with their satisfaction with clinical instructors. As practice-based educators, instructors critically shape students' professional development through knowledge transfer and skill demonstration. Their teaching approach, professional demeanor, and interpersonal skills substantially impact interns' career perceptions [19].

A supportive and effective instructor can help nursing interns gain valuable experience, boost their confidence, and foster a more proactive approach to their work. For nursing interns, higher satisfaction with their instructors often leads to more positive interactions, a greater willingness to assist their instructors, and increased motivation to work diligently. These factors collectively contribute to a stronger sense of professional fulfillment. Therefore, hospitals should prioritize the selection of clinical instructors, ensuring that only highly qualified and experienced nurses are appointed to this role.

Self-Efficacy of Nursing Interns at a Medium Level

The total self-efficacy score of the nursing interns was 27.48 ± 4.85. Among the participants, 12.0% (n = 21) had a high level of self-efficacy, 44.6% (n = 78) had a medium level, and 43.4% (n = 76) had a low level of self-efficacy, indicating an overall medium level of self-efficacy. These findings are consistent with the results reported by Wang Shumin et al. [20] and Wang Shikun et al. [21], suggesting that the self-efficacy of nursing interns still requires further improvement.

Several underlying factors contribute to this phenomenon. First, the challenging transition from classroom to clinical settings proves difficult for many nursing interns, with the complex hospital environment potentially undermining both their learning capacity and motivation during this critical period. Second, numerous interns experience significant self-doubt regarding their clinical competencies, fostering perceptions of inadequate preparation for effective nursing practice.

Therefore, Nursing educators, administrators, and clinical instructors should focus on developing nursing interns' self-efficacy through personalized support strategies that account for individual differences in personality and confidence levels. This can be achieved by implementing regular mental health workshops to address clinical stress, organizing structured recreational activities to enhance well-being, and conducting thematic career lectures to cultivate professional optimism. Such targeted interventions are essential for building clinical confidence and resilience during training, ultimately fostering interns' professional growth and competence.

Positive Correlation Between Nursing Interns' Sense of Occupational Benefit and Self-Efficacy

As shown in Table 3, nursing interns' self-efficacy is significantly influenced by their sense of occupational benefit, with a strong positive correlation between the two variables ($P < 0.01$). This finding corroborates previous research by Li Feng et al. [22] and Zhang Zhen et al. [23], indicating that interns who perceive greater professional rewards in nursing tend to demonstrate higher levels of self-efficacy. These students typically exhibit more proactive work attitudes, stronger professional confidence, and deeper identification with the nursing profession, all of which contribute to enhanced self-efficacy in clinical practice.

A multi-level approach is essential for optimizing nursing interns' professional development. Educational institutions should embed nursing's professional value throughout curricula using integrated methods, including regular career guidance, professional lectures, and Nurses' Day events [24]. These initiatives promote balanced career perspectives by helping interns objectively assess nursing's rewards and demands.

Hospitals must actively collaborate with academic partners to create structured clinical

programs. Through rigorous instructor selection, standardized training protocols, and well-designed internship experiences, healthcare institutions can ensure consistent, high-quality clinical education that facilitates interns' rapid adaptation to practice environments.

Clinical instructors serve as pivotal mentors by maintaining dual focus on psychological support and professional development. Establishing open communication, providing constructive feedback, and acknowledging achievements fosters supportive learning atmospheres. When combined with modeling of exemplary clinical practice, these strategies significantly boost interns' confidence and competence.

Ultimately, interns themselves must engage actively in their professional formation. This requires dedicated theoretical review, deliberate skills practice, and proactive communication with both preceptors and patients. Cultivating a growth mindset and evidence-based career perspective enables interns to strengthen professional identity, enhance occupational satisfaction, and develop robust clinical self-efficacy.

Conclusion

This study demonstrates that the level of self-efficacy among nursing interns is influenced by their sense of career benefits, with the two showing a positive correlation. However, both aspects require further improvement. Therefore, educational institutions and hospitals should collaborate to implement targeted measures aimed at enhancing the sense of occupational benefit among nursing interns. By helping interns recognize the value and rewards of their profession, these efforts can increase their job satisfaction and professional identity. Ultimately, this will contribute to higher self-efficacy levels and greater stability within the nursing workforce.

Limitations of the Study

This study has several limitations. First, the sample was drawn exclusively from a single tertiary hospital in one region, which may limit the representatives of the sample and the generalizability of the findings. Second, the data were primarily collected through self-report measures, which may introduce biases such as social desirability bias or recall bias. Finally, the cross-sectional design of the study precludes the establishment of causal relationships between perceived career benefits and self-efficacy. To address these limitations, future research could expand the sample to include multiple hospitals across diverse regions, employ a combination of data collection methods (e.g., observational or interview-based approaches), and adopt a longitudinal design to better understand the dynamic relationship between these variables over time.

Ethical Clearance: This study adhered to ethical guidelines approved by the School of nursing,Pingdingshan University, Henan 467000, China. All participants provided informed consent, and their anonymity was rigorously protected.

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Conflict of interest: Nil

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