EVALUATION OF NURSES' COMPLIANCE WITH THE PERIPHERAL VENOUS CATHETER PLACEMENT PROCEDURE AT NINH BINH PROVINCIAL GENERAL HOSPITAL IN 2021

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ABSTRACT

Objective: To evaluate nurses 'compliance with Peripheral Venous Catheter Placement at Ninh Binh Provincial Hospital in 2021 and analysis of related factors.

Methodology: A cross-sectional descriptive study observed 425 peripheral venous catheter placements from February to September 2021.

Results: Nurses achieved an 81.2% compliance rate with standard procedures, with many steps performed correctly at a 100% rate. However, some steps were either skipped or done incorrectly. Factors influencing significantly adherence to aseptic techniques included gender and over 10 years of experience ($p < 0.05$).

Conclusion: The non-compliance rate remains relatively high at 18.8%. Gender and years of experience were significant factors influencing nurses' adherence to peripheral venous catheter insertion procedures ($p < 0.05$). Key steps, such as documenting catheter insertion time, hand hygiene, and equipment disposal, were sometimes neglected. Ongoing training and closer supervision are needed to improve compliance.

Keywords: Compliance, peripheral venous catheter placement, procedure, nurses.

1. INTRODUCTION

Peripheral intravenous catheterization (PIVC) is a common procedure in nursing care, diagnosis, monitoring, and treatment. This is an invasive technique performed on the patient, therefore, during the process of preparing instruments, equipment, insertion technique, covering, and post-insertion care, strict aseptic conditions must be maintained [1]. A majority of healthcare workers do not adhere to the technical procedures and infection control measures when performing intravenous injections and infusions [1], particularly the technique of catheter placement within the vessel.

A study by Le Van Hau [5] in 2020 showed that the rate of nurses who complied well with the PIVC procedure in one observation was 39.0% and the rate of nurses who achieved good practice in all 3 observations was 8.6%. With an invasive procedure, the rate of nurses' compliance with the procedure is very low.

At Ninh Binh General Hospital, in 2018, the status of infections due to central catheter placement had an infection rate of 13% [7]. The results of a study on the situation of infections related to peripheral venous catheter placement in the Stroke Department of Ninh Binh General Hospital in 2020 showed an infection rate of 6.7% [4].

Compliance with specialized technical procedures to ensure patient safety is always a challenge for nursing practices. One of the concerning issues is that the catheter care procedures have not been adhered strictly, leading to several cases of catheter obstruction, catheter displacement, venous inflammation, and particularly local infections at the catheter insertion site. This study was conducted with two objectives:

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1. To evaluate nurses 'compliance the PIVC procedure at Ninh Binh Provincial Hospital in 2021.

2. To analyze related factors to the compliance PIVC procedure by nurses at Ninh Binh Provincial Hospital in 2021.

2. SUBJECT AND METHOD

2.1. Research subjects: Nurses who are working in the clinical departments of Ninh Binh General Hospital and have performed the PIVC procedure on patients from February to September 2021.

2.2. Research location: At Ninh Binh General Hospital.

2.3. Study design: cross-sectional descriptive study.

2.4. Sample size and sampling method:

- Sample size: Apply the formula for studying a proportion:

$$n = \frac{z^2_{1-\alpha/2}\, p(1-p)}{d^2}$$

Where: n: sample size of the study

Z: Reliability coefficient with reliability 95%, Z = 1.96

p = 0.05; Due to the lack of prior research rates, the minimum number chosen is 50%

d: The desired margin of error. In this study, d = 0.021 (the desired accuracy level ~ ± 3%). Therefore, n = 414.

In fact, adding a margin of error of 3%, we estimate that the required sample size for the study should be 425.

2.5. Tools and methods for data collection.

The contents in the questionnaire were based on the following material:

+ Decision No. 3671/QĐ-BYT dated September 27, 2012, of the Ministry of Health on the approval of infection control guidelines [2].

+ Decision No. 3916/QĐ-BYT dated August 28, 2017, of the Ministry of Health regarding the approval of Guidelines for Infection Control in Healthcare Facilities [3].

+ Guidelines for Practicing 55 Basic Nursing Techniques – Edited by: Dr. Do Dinh Xuan, MSc. Tran Thi Thuan - Education Publishing House, 2011 [6].

+ Procedure of PIVC at Ninh Binh Provincial General Hospital.

A tool with 14 steps was used to assess the compliance of nurses in performing peripheral intravenous catheter (PIVC) procedures. Each step was scored on a scale from 0 to 2: 0 for incorrect/not performed, 1 for partially performed, and 2 for fully and correctly performed, with a maximum score of 28. Performance levels were categorized as follows:

- Good: 24-28 points
- Pass: 20-23 points
- Fails to meet standards: below 20 points

From 8 AM to 6 PM, Monday through Friday, two infection control nurses observe and record data from clinical wards. Each nurse is monitored several times while performing the PIVC procedure. The hospital has 26 departments, with data collected daily from one department, randomly observing two nurses until the sample size is adequate.

2.6. Data Analysis Method

The data collected and entered by using Epidata 3.1 software and analyzed using SPSS 16.0 software. Descriptive statistics was used to presentfrequency and percentage of charcteristics among nurses. The Chi-square test was used to find the association with the adherence to the peripheral venous catheter placement protocol by nurses, with a statistically significant difference considered when $p < 0.05$.

2.7. Research ethics

- The research was approved by the Scientific Research Council of Ninh Binh Provincial General Hospital (Official letter No. 643/BVĐK – ĐTCĐT dated December 31, 2020, from Ninh Binh Provincial General Hospital).

- The research is conducted on a voluntary basis: data is only collected when participants

agree to take part in the study and are clearly informed of the research objectives. Participants have the right to withdraw from the study at any time and can refuse to answer any questions on the monitoring form.

- The data is collected in a fair and objective manner.

- Ensure the confidentiality of the participants' information and the data, which is managed by the author and is to be used solely for research purposes.

3. RESULT

Table 3.1. Distribution of nurses' compliance rate (n = 425)

Practice technical procedure	Full performance	Insufficient performance	Incorrect/not performed
	N (%)	N (%)	N (%)
Preparing nurse	405 (95.3)	20 (4.7)	0 (0)
Preparing the tools	81 (95.3)	20 (4.7)	0 (0)
Preparing the patient	81 (95.3)	20 (4.7)	0 (0)
Hand hygiene, wearing gloves according to the correct procedure	135 (31.8)	180 (42.4)	110 (25.9)
Choose a location that poses low risk	380 (89.4)	40 (9.4)	5 (1.2)
Disinfect the site where the needle will be placed twice according to the procedure	80 (18.8)	345 (81.2)	0 (0)
The antiseptic area must be allowed to dry for at least 30" before inserting the peripheral intravenous catheter	340 (80)	85 (20)	0 (0)
Proceed with inspection according to the correct procedure	425 (100)	0 (0)	0 (0)
Connect the three-way junction/connector to the pin socket...	425 (100)	0 (0)	0 (0)
Secure the needle holder firmly	425 (100)	0 (0)	0 (0)
Help the patient with the appropriate position. Advise the patient on essential things	370 (87.1)	50 (11.8)	5 (1.2)
Clean up the tools, remove gloves, wash hands	155 (36.5)	225 (52.9)	45 (10.6)
Please specify: Date and time of placing the needle on the fixed bandage	105 (24.7)	110 (25.9)	210 (49.4)
Medical record keeping	415 (97.6)	10 (2.4)	0 (0)

Table 3.1 shows that most steps in the process of peripheral venous catheter placement performed by nurses were done quite well, with a 100% correct execution rate. However, certain steps, such as properly recording the date and time on the fixed dressing, were often overlooked (49.4% did not record anything), and 25.9% of nurses did not follow proper hand hygiene procedures.

Table 3.2. Distribution of nuses' compliance rate by department (n = 425)

Departments	Good (24-28 points	Pass (20 - 23 points)	Fails to meet standards (< 20 points)
	N (%)	N (%)	N (%)
Stroke	0 (0)	25 (5.9)	0 (0)
Neurology	55 (12.9)	10 (2.4)	0 (0)
Internal Medicine	0 (0)	10 (4.7)	12 (2.8)
Surgery	35 (8.2)	25 (5.9)	0 (0)
Oncology	10 (2.4)	91 (24.4)	20 (4.7)
Trauma	0 (0)	5 (1.2)	0 (0)
Traumatic Brain Injury	0 (0)	15 (3.5)	0 (0)
Surgical	15 (3.5)	15 (3.5)	0 (0)
Dialysis	0 (0)	0 (0)	45 (10.6)
Internal Medicine	10 (2.4)	0 (0)	0 (0)
Emergency	0 (0)	5 (1.2)	3 (0.7)
Intensive Care	0 (0)	9 (2.1)	0 (0)
Total	125 (29.4)	220 (51.8)	80 (18.8)

The compliance rate for nurses adhering to PIVC placement in the Neurology, General Internal Medicine, General Surgery, Oncology, and Nephrology departments is 100%. However, failure to meet standards is observed in 10.6% of cases in the Dialysis department and 4.7% in the Oncology department. Overall, the failure rate to meet standards is 18.8%.

Table 3.3. The association between nurse gender and compliance with PIVC placement (n = 425)

Compliance with the process	Male	Female	$p(\chi^2)$
	N (%)	N (%)	
Good	15 (3.5)	110 (25.9)	p = 0.000 (15.271)
Pass	60 (14.1)	160 (37.6)	
Fails to meet standards	55 (13)	25 (5.9)	
Total	130 (30.6)	295 (69.4)	

Females exhibit better adherence to the procedure compared to males. The gender difference in performing the peripheral venous catheterization process is statistically significant ($p < 0.05$).

Table 3.4. The association between nurse age and compliance with PIVC placement (n = 425)

Compliance with the process	Age group				P (χ^2)
	< 23 years	From 23 – < 30 years	From 30 – < 50 years	> 50 years	
	N (%)	N (%)	N (%)	N (%)	
Good	0 (0)	45 (10.6)	80 (18.8)	0 (0)	p = 0.198 (8.592)
Pass	5 (1.2)	90 (21.2)	120 (28.2)	5(1.2)	
Fails to meet standards	0 (0)	60 (14.1)	20 (4.7)	0(0)	
Total	5 (1.2)	195 (45.9)	220 (51.7)	5(1.2)	

The age group of 30 to under 50 years showed better adherence to the technical procedure for placing peripheral venous catheters compared to other age groups; however, the correlation was not statistically significant ($p > 0.05$).

Table 3.5. The association between nurse work experience and compliance with PIVC placement (n = 425)

Compliance with the process	Working time			P (χ^2)
	< 5 years	From 5 – 10 years	> 10 years	
	N (%)	N (%)	N (%)	
Good	35 (8.2)	60 (14.1)	30 (7.1)	p = 0.018 (11.976)
Pass	105 (24.7)	85 (20)	30 (7.1)	
Fails to meet standards	65 (13.5)	15 (3.5)	0 (0)	
Total	205 (48.2)	160 (37.6)	60 (14.2)	

Table 3.5 indicates that greater nursing experience is associated with better adherence to the technical procedures for inserting peripheral venous catheters. There is a significant difference in performance based on work experience, with this difference being statistically significant ($p < 0.05$).

Table 3.6. The association between nurse level of education and compliance with PIVC placement (n = 425)

Compliance with the process	Nurse level of education			p (χ^2)
	Intermediate	College	University	
	N (%)	N (%)	N (%)	
Good	20 (4.7)	50 (11.8)	55 (12.9)	p = 0.409 (3.981)
Pass	30 (7.1)	100 (23.5)	90 (21.2)	
Fails to meet standards	5 (1.2)	20 (4.7)	55 (12.9)	
Total	55 (13)	170 (40)	200 (47)	

The difference in nurse level of education does not result in significant variation in adherence to PIVC placement.

4. DISCUSSION

The results of the study in Table 3.1 shows that the steps involved in the correct procedure are: performing the technique as per protocol; connecting the three-way stopcock/connecting tube to the needle hub of the catheter, injecting a test solution to ensure the needle is in the correct position, securing the three-way stopcock (or connecting tube) firmly, all achieving a 100% compliance rate. The steps for nursing preparing nurse; preparing the tools; preparing the patient; and documenting in the medical record all have a compliance rate of over 95%. However, there are still some steps, such as clearly specifying the date and time of catheter placement on the dressing, which are frequently forgotten or overlooked by nurses (49.4% did not record anything). Additionally, the hand hygiene steps saw a non-compliance rate of 25.9%. The research by Tran Ngoc Thao Vi and colleagues [8] (2019) at Binh Thanh District Hospital indicated a low compliance rate of 70.9% for hand hygiene after procedures and only 77.1% for skin disinfection techniques among nurses who underwent training.

Table 3.2 shows that 18.8% of the injections performed by nurses did not meet the required standards (this non-compliance was found among some nurses in the Hemodialysis department at 10.6%; Oncology at 4.7%; Cardiology at 2.8%; and Emergency department at 0.7%). The Neurology, General Internal Medicine, General Surgery, Oncology, and Internal Medicine departments had 100% of nurses performing well or meeting standards, with no cases of non-compliance.

Through the study of 425 injections performed for peripheral intravenous catheter placement on patients being treated at Ninh Binh Provincial General Hospital from February to September 2021, we found that the overall adherence to procedures among nurses was quite good (with 29.4% performing well and 51.8% meeting requirements); the remaining 18.8%

were injections that did not meet the standards. Previous studies have shown that in various countries, adherence to the peripheral intravenous catheter placement procedure is still limited. Research by Le Van Hau [5] in 2020 showed that the percentage of nurses practicing well across three observation rounds was only 8.6%, which is lower than our study. Mohamad G Fakih and colleagues (2013) [9] evaluated compliance with all steps of peripheral intravenous catheter placement before intervention at a very low level (4.8%), which significantly improved after educational interventions and feedback (increasing to 31.7%). The study by Daniella Hasselberg and colleagues (2010) [10] in Sweden observed 413 cases, revealing a compliance rate of 30.2%.

Our research shows that female nurses perform the procedure better than male nurses, with a statistically significant difference at $p < 0.05$. This may be due to women being more dexterous and careful, leading to better performance in following the procedures compared to men.

Older nurses exhibited higher compliance rates with procedures compared to younger nurses. However, we did not find a statistically significant difference between age and adherence to procedures.

Table 3.5 indicates that the longer nurses work, the better their compliance with the peripheral intravenous catheter placement procedure (with non-compliant injections from nurses with less than 5 years of experience was injections, those with 5-10 years was 15 injections, and those with over 10 years having no non-compliant injections). There is a statistically significant difference ($p < 0.05$) regarding working time when performing the peripheral intravenous catheter placement procedure.

The research results indicate that nurses with a university degree have a higher rate of performing the procedure well compared to those with college or intermediate level. However, this difference is not statistically significant.

5. CONCLUSIONS

Out of 425 injections, 29.4% were performed, 51.8% met basic requirements, and 18.8% fell short. Gender and years of experience were significant factors influencing nurses' adherence to peripheral venous catheter insertion procedures ($p < 0.05$). Ongoing training and closer supervision are needed to improve compliance.

Closely monitor the infection control process in general and the peripheral venous catheterization process in particular. Organize regular training sessions to update knowledge on infection control and peripheral venous catheterization procedures for healthcare staff, especially for newly recruited nurses and male nurses.

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EVALUATION OF THE RESULTS OF USING MOBILE INSTRUMENT PREPARATION BOXES IN CARDIOVASCULAR INTERVENTION AT VINMEC TIMES CITY INTERNATIONAL GENERAL HOSPITAL

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ABSTRACT

Objective: To describe the results of using a mobile box for preparing interventional instruments outside the intervention room.

Methodology: A retrospective study comparing a normal intervention group with a group using a standard mobile stainless steel box. The analysis compares three time periods: (i) Period 1: Q1/2022 & Q1/2023 from 45 intervention cases; (ii) Period 2: Q4/2022 & Q4/2023 from 75 intervention cases; (iii) Period 3: Q1/2023 & Q1/2024 with 20 randomly selected cases from 60 cases (with k=3).

Results: The average intervention time per case was as follows: 2022 (1:49:34 hours/patient), and 2023 (1:28:53 hours/patient); Q4/2022 (1:32:59 hours/patient) and Q4/2023 (1:22:18 hours/patient); Q1/2023 (1:53:38 hours/patient) and Q1/2024 (1:35:11 hours/patient). There were 140 comparison samples using the Box, and the intervention time was reduced by an average of 20 minutes and 06 seconds per patient, resulting in a total reduction of 2,800 minutes or 46,7 hours, equivalent to almost 6 working days.

Conclusion: The use of the mobile box reduces the intervention time by an average of 20 minutes and 06 seconds per patient. The mobile box optimizes the preparation of consumable materials for interventions. The stainless steel box does not produce secondary radiation, is resistant to chemical and biological corrosion, easy to clean, has good load and heat resistance, and has high durability. Using two alternating boxes allows for proactive preparation of instruments.

Key words: Mobile instrument preparation boxes, cardiovascular intervention, results.

1. INTRODUCTION

Cardiovascular intervention is no longer a new field in the world or in Vietnam. Cardiovascular interventions have contributed to saving many patients with acute myocardial infarction (Code STEMI). The 90-minute timeframe is considered the "golden hour" in Code STEMI interventions specifically, and it is the ideal duration for a cardiovascular intervention case [1, 2]. The use of instruments in interventions is also very diverse and flexible, with no standard for how many supplies and instruments are needed for a single intervention. The world has adopted the use of mobile boxes instead of fixed cabinets in intervention rooms, yielding significant benefits [5]. Based on this reality, we conducted the study "Evaluation of the Results of Using Mobile Instrument Preparation Boxes in Cardiovascular Interventions at Vinmec Times City International General Hospital" with the objective: To describe the results of using mobile boxes in preparing intervention instruments outside the intervention room.

2. RESEARCH METHODOLOGY

2.1. Research Subjects

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- Cardiovascular interventions
- Mobile 304 stainless steel boxes

2.2. Research site

Cardiovascular Intervention Room – Cardiovascular Center, Vinmec Times City International General Hospital.

2.3. Research Design

A retrospective and comparative study with a control group at three different time points. The total number of intervention cases in 2022 and 2023 was compared across similar periods.

2.4. Sample Size and Sampling Method

Convenience sampling was used, selecting all intervention cases from 2022 and 2023. The remaining samples were compared using random control group testing. The sampling interval $k = 3$.

2.5. Research Variables

Disease diagnosis, type of intervention, and intervention duration.

2.6. Data Collection Tools and Methods

Two mobile boxes (Box1 and Box2) were used for preparing instruments outside the intervention room. Nurses prepared all the basic instruments needed for an intervention case. A list of consumables was checked according to the most complete basic set for a standard intervention case, with separate compartments for special instruments and emergency STEMI equipment. After each intervention, Box1 was taken out by administrative nurses to replenish the used consumables. If there was another case, Box2 was brought in to minimize the preparation time between cases. There were also compartments for medications and IV fluids, including emergency cardiovascular medications for each case.

Data were collected from the intervention room's database.

2.7. Data Analysis Method

Data entry and analysis were performed using Excel software. A comparison of the three time points was made using automatic filters in Excel to calculate averages.

2.8. Research Ethics

The study was approved by the hospital's scientific committee on April 15, 2023.

3. RESULTS

3.1. Status of Cardiovascular Interventions during the study period

Table 3.1. Distribution by Type of Intervention and Average Time per Case in 2022 and 2023

No	Type of interventions	Year 2022 (n=166)			Year 2023 (n=265)		
		N	(%)		N	%	
1	Coronary angiography and intervention	72	43,4	Average Time per Case:1:49:34	152	57,4	Average Time per Case: 1:28:53
2	Transcutaneous pacemaker implantation	26	15,7		19	7,2	
3	Radiofrequency ablation (RF)	12	7,2		10	3,7	
4	Stent graft and TAVI	11	6,6		7	2,6	
5	Peripheral vascular interventions and other procedures	28	16,9		60	22,6	
6	Emergency Code STEMI	12	7,3		13	4,9	
7	Congenital heart disease interventions (CHD)	5	3,01		4	1,5	
	Total number of interventions in the year	166	100		265	100	
	Difference in Time per Case (2022 vs. 2023): 21minutes 08 second.						

Comments: The majority of adult interventions were coronary interventions, which increased by 159.7% in 2023 compared to 2022. The proportion of emergency Code STEMI cases decreased from 7.3% in 2022 to 4.9% in 2023, a reduction of 32.8%, indicating effective cardiovascular disease control. The average intervention time per case was 1:49:34 in 2022 and 1:28:53 in 2023, with a statistically significant difference ($p < 0.05$).

Table 3.2. Distribution by type of intervention and average time per case in Q1/2022 and Q1/2023

No	Type of interventions	Quarter 1/2022 (n=45)			Quarter 1/2023 (n=45)		
		N	(%)		N	(%)	
1	Coronary angiography and intervention	19	42,2	Average Time per Case: 1:53:38	21	46,7	Average Time per Case: 1:42:11
2	Transcutaneous pacemaker implantation	3	6,7		6	13,3	
3	Electrophysiological ablation (RF)	4	8,9		5	11,1	
4	Stent graft and TAVI (Transcatheter Aortic Valve Implantation)	2	4,4		1	2,2	
5	Peripheral vascular and other interventions	15	33,3		10	22,2	
6	Emergency Code STEMI	2	4,4		2	4,4	
7	Congenital heart disease intervention	0	0.0		0	0.0	
	Total number of quarters	45	100		45	100	
	Time difference per case between Q1/2022 and Q1/2023: 11 minutes 27 seconds						

Comments: The types and number of intervention cases between the two groups were quite similar. The average time difference per case between the two groups was 11 minutes and 27 seconds. The difference is not statistically significant.

Table 3.3. Distribution by type of intervention and average time per case in Q1/2022 and Q1/2023

No	Type of interventions	Quarter 4/2022 (n=75)			Quarter 4/2023 (n=75)		
		N	(%)		N	(%)	
1	Coronary angiography and intervention	39	52.0	Average Time per Case:1:32:59	42	56.0	Average Time per Case:1:08:12
2	Transcutaneous pacemaker implantation	10	13.3		6	8.0	
3	Electrophysiological ablation (RF)	2	2.7		8	10.7	
4	Stent graft and TAVI (Transcatheter Aortic Valve Implantation)	3	4.0		5	6.7	
5	Peripheral vascular and other interventions	11	14.7		9	12.0	
6	Emergency Code STEMI	5	6.7		4	5.3	
7	Congenital heart disease intervention	5	6.7		1	1.3	
	Total number of quarters	75	100		75	100	
	Time difference per case between Q4/2022 and Q4/2023: 24 minutes 47 seconds.						

Comments: There was not much difference in the number of cases and the proportion of intervention types between the two groups, but the average time per case in Q4/22 was 24 minutes and 47 seconds longer, and the difference was statistically significant.

Table 3.4. Distribution by type of intervention and average time per case in Q1/2023 and Q1/2024

No	Type of interventions	Quarter 1/2023 (n=20)			Quarter 1/2024 (n=20)		
		N	(%)		N	(%)	
1	Coronary angiography and intervention	9	45	Average Time per Case: 1:31:45	8	40	Average Time per Case: 1:08:09
2	Transcutaneous pacemaker implantation	2	10		3	15	
3	Electrophysiological ablation (RF)	0	0		0	0	
4	Stent graft and TAVI (Transcatheter Aortic Valve Implantation)	0	0		1	5	
5	Peripheral vascular and other interventions	7	35		7	35	
6	Emergency Code STEMI	2	10		1	5	
7	Congenital heart disease intervention	0	0		0	0	
	Total number of quarters	20	100		20	100	
	Time difference per case between Q I/2024 and I/2023: 23 minutes 36 seconds						

Comments: Although the intervention cases were randomly selected into two groups (n=20/group), the proportion of coronary angiography and intervention in Q1/2023 & Q1/2024 was not different and constituted the majority. The intervention time in Q1/2023 was longer by 23 minutes and 36 seconds per patient compared to Q1/2024. The difference is statistically significant with $p < 0.05$.

Table 3.5. Distribution by type of intervention and average time per case between the group using the mobile Box and the control group

No	Type of interventions	Control group (n=140)			Mobile Box (n=140)		
		N	%		N	%	
1	Coronary angiography and intervention	67	47.9	Average Time per Case: 1:39:27	71	50.7	Average Time per Case: 1:19:21
2	Transcutaneous pacemaker implantation	12	8.6		15	10.7	
3	Electrophysiological ablation (RF)	6	4.3		13	9.3	
4	Stent graft and TAVI (Transcatheter Aortic Valve Implantation)	5	3.5		7	5.0	
5	Peripheral vascular and other interventions	33	23.5		26	18.6	
6	Emergency Code STEMI	9	6.4		7	5.0	
7	Congenital heart disease intervention	5	3.5		1	0.7	
	Total number	140	100		140	100	
	The time difference per case between the group using the mobile box and the control group: 20 minutes 06 seconds.						

4. DISCUSSION

Currently, there is not much research or documentation on the use of mobile boxes made from 304 stainless steel [9]. However, globally and in Southeast Asia, boxes made from composite materials have been used [3,4,6,8,10]. There are very few comparative studies on the use of mobile boxes for preparing instruments from the outside of the intervention room published [7]. At the Vinmec healthcare system, Vinmec Central Park Hospital (Ho Chi Minh City) has been using boxes made from composite materials. The cost for each composite instrument preparation box is about 138 million VND per box, and so far there are no studies evaluating the reduction in time and other safety and efficacy features. At Vinmec Times City, we have improved the instrument preparation box from the outside using 304 stainless steel. In our study, we have 140 samples comparing traditional methods and the use of the box, and the results show that the intervention time in the group using the mobile box is reduced by an average

of 20 minutes and 6 seconds per case. With 140 intervention cases, the total reduced time is 2,800 minutes (140 x 20 minutes) = 46.7 hours. This is a very significant amount of time in cardiovascular emergencies. Moreover, using the mobile box for preparing instruments from the outside is more suitable for intervention rooms with a high number of patients and high traffic, and it is very effective in urgent situations such as acute myocardial infarction (Code STEMI).

In the scope of this article, we do not analyze the economic efficiency and other benefits of replacing the composite box with the 304 stainless steel box, but generally, the cost of a stainless steel box is only approximately one-third of the cost of a composite box (50 million VND per box). Additionally, the 304 stainless steel mobile box is also proven to not block X-rays, does not generate secondary radiation, and has better heat and impact resistance than composite materials [9]. These are the grounds for recommending the use of stainless steel boxes for instrument preparation in intervention rooms and operating rooms.

5. CONCLUSION AND RECOMMENDATIONS

The average intervention time per case in the group using the stainless steel box for preparing instruments from the outside is reduced by 20 minutes and 6 seconds, a significant amount of time in cardiovascular interventions in general and particularly significant in acute myocardial infarction interventions. The mobile box, which can be rotated during the intervention process, helps optimize the preparation of consumable supplies for interventions.

The mobile box can be moved and positioned in different locations, making it suitable for intervention centers that implement Hybrid rooms integrated into operating rooms. Based on the results of this study, we recommend using a mobile stainless steel box for preparing instruments from outside for all cardiovascular intervention rooms.

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ASSESSMENT OF EVIDENCE-BASED KNOWLEDGE, ATTITUDES AND PRACTICES OF NURSES AT THANH VU MEDIC BAC LIEU GENERAL HOSPITAL IN 2023

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ABSTRACT

Objective: To describe knowledge, practical attitudes of nurses towards Evidence-based practice

Methodology: The study describes cross-sectional on the subject is a nurse working at Thanh Vu Medic Bac Lieu General Hospital

Results: Nurses' knowledge in evidence-based practice averaged 4.76 ± 0.96, positive attitudes average score of 4.62 ± 1.09, practice at an average of 4.85 ± 0.70. There was a statistically significant association between attitudes to nursing marital status (p=0.02) and attitudes to nursing seniority (p=0.04). There was a statistically significant association between practice and nursing marital status (p=0.01).

Conclusions: Knowledge/skills, practice for average nursing degree-based practice, need some solutions to contribute to increasing knowledge and practice for evidence-based practice and promoting their application to nursing

Keywords: Knowledge, attitude, practice, EBP

1. INTRODUCTION

Evidence-Based Practice (EBP) in nursing is the effective use of the best current clinical evidence in decision-making for patient care. Globally, nurses' knowledge and practice of EBP are at a moderate level. Nurses in the U.S. have lower research skills and information translation than those in Oman and South Korea, while U.S. nurses have better EBP practice than those in New Zealand. Additionally, nurses in the U.S., Oman, and South Korea have positive attitudes towards EBP [2,5,13]. Additionally, nurses in the U.S., Oman, and South Korea have positive attitudes towards EBP. EBP positively impacts safe and effective patient care, cost-effectiveness in end-of-life care, and nurses' time management [4,10]. According to Melnyk and colleagues, patient outcomes improve with the implementation of EBP compared to traditional practices [8,9]. However, in Vietnam, the gap between EBP application and practice remains a concern for nursing managers, healthcare organizations, and the health sector in Bac Lieu. This study aims to:

1. Evaluate the knowledge, attitudes, and practices of nurses towards EBP.

2. Determine the relationship between demographic characteristics and the knowledge, attitudes, and practices of nurses towards EBP.

2. SUBJECTS AND METHODS

2.1. Study Subjects

Nurses who have worked for more than 6 months, were clearly explained the study and agreed to participate.

2.2. Study site and time

The study was conducted in clinical and subclinical departments that met sampling criteria over to march from April 2022 to June 2022.

2.3. Study Design: Cross-sectional descriptive study

2.4. Sample Size and Sampling Method:

Sample size: 237 nurses

Sampling method: Total sampling

2.5. Tools and Data Collection Methods

The research tool was a questionnaire evaluating nurses' knowledge, attitudes, and practice of

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EBP by Upton et al., consisting of 24 questions using a Likert scale divided into 7 levels.

Knowledge scale convention: 1 point: very poor, 2 points: poor, 3 points: weak, 4 points: average, 5 points: good, 6 points: very good, 7 points: excellent. Attitude scale convention: 1 point: strongly disagree, 2 points: mostly disagree, 3 points: somewhat disagree, 4 points: neutral, 5 points: somewhat agree, 6 points: mostly agree, 7 points: strongly agree. Practice scale convention: 1 point: never, 2 points: rarely, 3 points: sometimes, 4 points: occasionally, 5 points: often, 6 points: quite often, 7 points: very often.

2.6. Data Analysis Methods

Data were analyzed using SPSS 20 software with descriptive statistical algorithms (percentage, mean, standard deviation). For independent binary variables, T-test was used; for "nominal, ordinal" variables, ANOVA test was used. The relationship between demographic characteristics and nurses' knowledge, attitudes, and practices towards EBP was considered statistically significant if $p<0.05$.

2.7. Ethical Considerations

The study complied with ethical regulations. It was approved by the Scientific Council of Thanh Vu Medic Bac Lieu General Hospital. Participants were explained the purpose, significance, and approach of the study, and their rights were ensured by clearly explaining the research objectives. Participation was completely voluntary, without coercion, and based on respect.

3. RESULTS

Among the 237 participating nurses, females accounted for 60.8%, which was 1.5 times higher than males (39.2%). The majority were aged 20-29 (57%), with the highest nursing qualification being college level (48.5%). The majority were ethnic Kinh (92%), and over half were married (55.3%). The majority of nurses held a nursing position (87.3%).

Table 3.1. General Level of Knowledge, Attitudes, and Practices towards EBP (n = 237)

Variables	Mean ± SD	Min	Max
EBP Knowledge	4.85 ± 0.70	2	7
EBP Attitudes	4.62 ± 1.09	1	7
EBP Practices	4.76 ± 0.96	2	7

The average score for EBP knowledge/skills was 4.76 ± 0.96, with the highest score for "Identifying types of main information sources" (4.97 ± 1.17) and the lowest for "IT skills" (3.73 ± 1.74). The average scores for attitudes towards EBP were positive (4.62 ± 1.09), indicating positive attitudes towards EBP application in daily work. The highest attitude score was for "My practice has changed since finding evidence" (5.16 ± 1.28), and the lowest was for "My workload is high, but I will arrange to find evidence as it is very important" (3.85 ± 1.40).

The average score for EBP practice was 4.85 ± 0.70. The highest practice score was for "Sharing practice knowledge with colleagues" (5.00 ± 1.26), and the lowest was for "Evaluating your practice outcomes" (4.65 ± 1.27).

Table 3.2: Relationship Between Demographic Characteristics and Nurses' Knowledge towards EBP (n=237)

Demographic Characteristics		Knowledge	
		Mean±SD	p
Gender	Female	4.82 ± 0.76	0.67*
	Male	4.87 ± 0.66	
Age Group	20-29	4.78 ± 0.70	0.12**
	30-39	4.91 ± 0.67	
	≥ 40	4.15 ± 0.86	
Highest Qualification	Primary	5.00 ± 0.84	0.65**
	Secondary	4.87 ± 0.73	
	College	4.81 ± 0.66	
	University	5.06 ± 0.89	
Ethnicity	Kinh	4.83 ± 0.70	0.47**
	China	5.08 ± 0.79	
	Khmer	5.11 ± 0.60	
	Other	5.00 ± 0.75	
Religion	None	4.86 ± 0.69	0.39**
	Buddhist	4.70 ± 0.78	
	Catholic	4.92 ± 0.80	
	Other	3.83 ± 0.79	
Marital Status	Single	4.70 ± 0.86	0.39*
	Married	4.81 ± 1.03	
Seniority	≤ 5 years	4.80 ± 0.66	0.32**
	6-10 years	4.92 ± 0.75	
	> 10 years	4.97 ± 0.82	
Nursing Title	Nurse	4.86 ± 0.80	0.19*
	Nurse Manager	4.82 ± 0.70	

There was no significant relationship between knowledge and gender, age group, highest qualification, ethnicity, religion, seniority, or nursing title ($p>0.05$).

Table 3.3. Relationship Between Demographic Characteristics and Nurses' Attitudes towards EBP (n = 237)

Demographic Characteristics		Attitude	
		M±SD	p
Gender	Female	4.67 ± 1.09	0.43*
	Male	4.55 ± 1.10	
Age Group	20-29	4.54 ± 1.12	0.18**
	30-39	4.68 ± 0.06	
	≥ 40	5.08 ± 0.95	
Highest Qualification	Primary	6.00 ± 1.11	0.50**
	Secondary	4.63 ± 1.14	
	College	4.57 ± 1.04	
	University	4.85 ± 1.17	
Ethnicity	Kinh	4.61 ± 0.09	0.58**
	China	4.88 ± 0.12	
	Khmer	4.85 ± 0.14	
	Other	3.50 ± 0.11	
Religion	None	4.59 ± 0.09	0.6**
	Buddhist	4.90 ± 0.95	
	Catholic	4.66 ± 1.78	
	Other	5.50 ± 0.89	
Marital Status	Single	4.44 ± 1.01	**0.02***
	Married	4.77 ± 1.13	
Seniority	≤ 5 years	4.69 ± 0.99	**0.04****
	6-10 years	4.82 ± 1.07	
	> 10 years	4.93 ± 0.87	
Nursing Title	Nurse	4.27 ± 0.97	0.06*
	Nurse Manager	4.60 ± 1.09	

There was a significant relationship between attitudes and seniority (p=0.04), marital status (p=0.02). Nurses with longer seniority had more positive attitudes compared to those with shorter seniority, and married nurses had more positive attitudes compared to single nurses.

Table 3.4. Relationship Between Demographic Characteristics and Nurses' Practices towards EBP (n = 237)

Demographic Characteristics		Practice	
		M±SD	p
Gender	Female	4.77 ± 0.97	0.99*
	Male	4.76 ± 0.96	
Age Group	20-29	4.66 ± 0.92	0.10**
	30-39	4.87 ± 0.97	
	≥ 40	5.14 ± 1.20	
Highest Qualification	Primary	6.00	0.06**
	Secondary	4.67 ± 0.99	
	College	4.76 ± 0.89	
	University	5.39 ± 1.14	
Ethnicity	Kinh	4.74 ± 0.97	0.53**
	Chinese	5.17 ± 1.00	
	Khmer	4.93 ± 0.67	
	Other	5.57	
Religion	None	4.71 ± 0.94	
	Buddhist	5.23 ± 1.06	0.06**
	Catholic	5.35 ± 1.12	
	Other	4.50	
Marital Status	Single	4.72 ± 0.68	**0.01***
	Married	4.95 ± 0.70	
Seniority	≤ 5 years	4.49 ± 1.12	0.23**
	6-10 years	4.88 ± 0.87	
	> 10 years	4.96 ± 0.91	
Nursing Title	Nurse	4.92 ± 1.01	0.29*
	Nurse Manager	4.78 ± 0.93	

There was no significant relationship between practice and gender, age group, highest qualification, ethnicity, religion, seniority, or nursing title (p>0.05). However, there was a significant relationship between marital status and practice (p=0.01), with married nurses having higher practice scores compared to single nurses.

4. DISCUSSION

4.1 Knowledge/Skills, Attitudes, Practices Based on Evidence

The average score for EBP knowledge/skills was 4.76 ± 0.96, indicating a moderate level of knowledge/skills in EBP among the study sample. This score is lower than those in other studies such as Ammouri (4.97 ± 0.86) [3], Al-Busaidi (4.9 ± 0.8) [2], González (4.56 ± 0.95) [6], White (4.78 ± 1.07) [12], and Lim (4.61 ± 0.75) [7]. This may be due to the EBP program being relatively new in Vietnam, introduced by the Ministry of Health and the Nursing Association since 2012, and officially taught only in nursing management programs [1]. This may be due to the EBP program being relatively new in Vietnam, introduced by the Ministry of Health and the Nursing Association since 2012, and officially taught only in nursing management programs

The average attitude score towards EBP application was 4.62 ± 1.09 (table 3.2), indicating positive attitudes among nurses. This score is higher than in Nguyễn Thị Bích Trâm's study (3.94 ± 6.33) but lower than in international studies such as Al-Busaidi (5.5 ± 1.2) [2], and Lim (4.85 ± 0.94) [7]. The difference in attitudes may be due to the following reasons: First, the need for EBP application among nurses may not be perceived as necessary. Second, the relevance of evidence to their clinical practice may be lacking. Third, EBP may not be organized or emphasized at their workplace or by their professional organization or colleagues. [1].

The average practice score for EBP was 4.85 ± 0.70 (Table 3.2). lower than in previous studies by Ammouri (4.92 ± 1.25) [3], Al-Busaidi is (4.9 ± 0.8) [2], and Lim is (4.90 ± 0.88) [7], but higher than in González's study Gonerzélez is (4.62 ± 1.25) [6], White is (3.41 ± 1,04) [12]. Despite efforts to facilitate the application of research results into practice, the application among nurses remains slow

4.2 Relationship between knowledge, attitudes, practices, and nurses' demographic characteristics

The study found that married nurses had more positive attitudes compared to single nurses. This

relationship is similar to studies by Thiel et al., [11], Gonzalez-Torrente et al., [6], Al-Busaidi et al [2], and Ammouri et al [3]. Married nurses, who are typically around 30 years old, are more mature in thinking and actions, with higher knowledge, experience, and longer seniority, leading to higher application in clinical practice. Nurses with longer seniority also had more positive attitudes compared to those with shorter seniority, aligning with studies by Thiel et al. [11], Lim et al.[7], and González-Torrente et al [6], The difference may be due to experienced nurses using research-based evidence to answer clinical questions, helping them adjust practices to better fit their work. Married nurses had higher EBP practice compared to single nurses, similar to studies by Thiel et al., Gonzalez-Torrente et al [6], Al-Busaidi et al [2], Ammouri et al. [3], and Yoo et al. Single nurses, mostly new graduates, lack experience in life and clinical practice, while married nurses, mostly over 30 years old, have higher knowledge, life experience, and longer seniority, leading to higher application in clinical practice.

5. CONCLUSION

Nursing has an average level of knowledge, a positive attitude, and an average level of practice in evidence-based practice. There was a statistically significant relationship between the attitude of nurses and seniority (p=0.04), marital status (p=0.02), nurses with longer working seniority had more positive attitudes than nurses with short working seniority, married nurses had more positive attitudes than single nurses. There was a statistically significant association between marital status and nursing practice (p=0.01), and married nurses had higher practices than single nurses.

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SIMULATION METHOD APPLICATION IN PROBLEM SOLVING SKILL DEVELOPMENT FOR NURSING STUDENTS IN PRECLINICAL PRACTICE MODULES

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ABSTRACT

Objective: To assess the effectiveness of simulation methods application in problem-solving skills development for bachelor nursing students during pre-clinical practice modules at the Van Hien University (VHU).

Method: A before-and-after study was conducted with 51 third and fourth-year bachelor nursing students at VHU. A problem-solving skill questionnaire was administered to participants before and after the application of simulation methods in pre-clinical practice. The average scores from the questionnaires were compared to assess the effectiveness of the intervention.

Result: The study involved 51 bachelor nursing students from VHU (35 third-year and 16 fourth-year students). The average score on the EM-PSI scale was 62.2 ± 11.1 before the pre-clinical practice courses. After implementing simulation methods, the score increased to 72.7 ± 9.7, resulting in an average score difference of 10.5 ($p < 0.05$). This significant improvement indicates that simulation methods effectively enhance problem-solving skills in nursing students. Notably, the confidence in problem-solving and personal control subscales improved, with average score increases of 2.9 and 2.6, respectively, demonstrating enhanced confidence and personal control in problem-solving after the intervention.

Conclusions: The results clearly show that simulation methods significantly improve problem-solving skills among nursing students in pre-clinical practice. Therefore, this approach should be widely and consistently implemented in nursing education programs.

Keywords: Problem – solving skills, Nursing Students, Simulation method, pre-clinical practice.

1. INTRODUCTION

In recent years, nursing has become one of the most sought-after professions due to its practical nature. As a vital part of the healthcare system, the demand for a well-trained nursing workforce in Vietnam has increased significantly. This demand presents a challenge for nursing universities and colleges to provide systematic and comprehensive nursing education.

Practical education is crucial in nursing curricula, as it significantly contributes to training skilled healthcare professionals. Preclinical modules in skill labs are essential for building foundational knowledge and skills before nursing students enter real-world clinical environments. This places a responsibility on educators to develop high-quality preclinical programs. However, the quality of practical teaching in healthcare has often fallen short of expectations [5]. A major reason for this is the heavy focus on theoretical classes, limiting students' opportunities for hands-on practice, which results in suboptimal practical learning outcomes.

Simulation-based education (SBE) has become an effective method to bridge the gap between academic learning and the clinical environment. Recent studies indicate that SBE enhances knowledge, critical thinking, self-efficacy, confidence, clinical judgment, and motivation compared to traditional methods [3]. However, some research has shown no significant differences in these areas between high-fi-

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delity simulation groups and control groups [4]. These mixed results highlight the need for further studies to clarify SBE's effectiveness. Additionally, there is limited research on SBE in Vietnam, especially in preclinical nursing education. Therefore, the authors conducted a study on "Simulation method application in solving – problem skill development for nursing students in preclinical practice modules" to provide a more objective assessment of this approach.

2.RESEARCH METHODOLOGY

2.1. Reasearch participants: 51 nursing students from the Bachelor of Nursing program at the School of Medicine and Pharmacy, Van Hien University, Ho Chi Minh City, participated in the study. The students had completed preclinical practice modules at skill – labs of School of Medicine and Pharmacy, Van Hien University: Fundamental of Nursing Practice 1 and Fundamental of Nursing Practice 2 (in 3rd academic year) and Advanced Medical Caring Practice and Advanced Surgery Caring Practice (in 4th academic year).

2.2. Research time and site: The study was conducted from November 2023 to July 2024 at the Van Hien University, Ho Chi Minh City.

2.3. Research Design: Before and after Intervention Study.

2.4. Sample Size: All nursing students in the third and fourth academic year.

2.5. Instrument and Data Collection: Engineering modified Problem-Solving Inventory (EM PSI) was modified by Phillips and Lambie in 2019 from the original tool developed by Heppner & Petersen [6]. The EM PSI is designed to measure problem-solving skills and includes three key aspects: Subscale 1: Problem-Solving Confidence including 9 items, Subscale 2: Approach-Avoidance Style with 11 items and Subscale 3: Personal Control including 5 questions. The total number items of this instrument are 25, with each item rated on a 6-point Likert scale, where 0 indicates Strongly Disagree and 5 indicates Strongly Agree.

2.6. Data Analysis Methods: Data was entered and processed by SPSS 20.0 software. Descriptive statistics were used for demographic information of the participants and assess their problem-solving skills. Paired-Sample t-Test was used to evaluate the differences in problem-solving skills before and after the implementation of the SBE in preclinical practical modules.

2.7. Research Ethics: The study was approved by the Institutional Review Board (IRB) at Van Hien University and received permission by School of Medicine and Pharmacy at Van Hien University under the decision No 1293/MYH24/VHU/QĐ as well as the participants before data collection.

3.RESULTS

3.1. Participant characteristics

A total of 51 3rd and 4th year nursing students at VHU participated in the study. The average age of participants is 21 ± 0.7 years old (the youngest 21 years old, oldest 23 years old). Female gender accounts for the majority (96%). Regarding the average GPA, the proportion of students with academic performance of level B accounted for nearly half of those surveyed (43.1%) and only 5.9% of students achieved academic performance of level D. Results of participant's demographic characteristics showed in Table 3.1.

Table 3.1: Participant characteristics

Characteristics		Number (%)
Age		Mean: 21 ± 0,7; range: 21-23
Sex	Male	2 (4.0)
	Female	49 (96.0)
School year	3rd	35 (68,6)
	4th	16 (31,4)
GPA	A (3.6 - 4)	8 (15,7)
	B (3.2 – 3.59)	22 (43,1)
	C (2.5 -3.19)	18 (35,3)
	D (2 – 2.49)	3 (5,9)

3.2. Problem – solving skills

In this study, the EM - PSI question set with 25 questions achieved an assessment level is 62.2 ± 11.1 before the intervention start. After applying SBE and evaluating after finishing the

preclinical practice modules, the EM – PSI assessment result was 72.7 ±9.7. The average difference was 10.5 before and after the SBE application ($p < 0.05$). This shows that there is a significant increase in problem-solving skills of nursing students after applying SBE in teaching preclinical practice. Along with that, each small subscale has different values described. (Table 3.2).

Table 3.2: Problem solving skills before and after SBE application in preclinical practice modules

.

Aspects		M ± SD	Average Difference	p
Problem-solving skills	Before	62,2 ±11,1	10,5	<0,05
	After	72,7 ± 9,7		
Problem-Solving Confidence	Before	22,6 ± 5,2	2,9	<0,05
	After	25,5 ± 4,1		
Approach-Avoidance Style	Before	25,4 ± 5,4	5,0	>0,05
	After	30,4 ± 5,8		
Personal Control	Before	14,2 ± 3,4	2,6	<0,05
	After	16,8 ± 2,7		

3.2.1: Problem-Solving Confidence

Problem-Solving Confidence is a subscale that includes 9 questions related to students' confidence when facing clinical situations and their ability to handle these situations. In fact, the total score given by participants for this subsection before intervention application was only 22.6 ± 5.2. However, after applying SBE to teaching, the total score for this item has increased quite high, reaching 25.5 ± 4.1, an average score increases of 2.9 (Table 3.2). This shows that nursing student's confidence in solving problems increases significantly after finishing preclinical modules that apply simulation teaching methods ($p < 0.05$).

3.2.2: Approach-Avoidance Style

Approach-Avoidance Style reflects students' attitudes when approaching an emerging problem and their initial efforts to solve these problems. The score for this subscale was 25.4 ± 5.4 (Table 3.2) before the preclinical courses started. After finishing the preclinical modules that have SBE application, the nursing students rated this subscale with a total score of 30.4 ± 5.8. Although there was an increase in the score, it was not statistically significant ($p > 0.05$).

3.2.3: Personal Control

Personal Control allows learners to demonstrate their self-regulation when facing emerging problems. The total number of questions for this subscale is 5. The score was given by participants for this subscale before intervention application was only 14.2 ± 3.4. This score increased to 16.8 ± 2.7 after applying the simulation method throughout the entire preclinical practice modules. Although the score difference before and after the course was not large, with a change of only 2.6 points (Table 3.2), it still reflects a positive change in nursing student's problem-control skills by SBE application in preclinical practice. This difference is statistically significant ($p < 0.05$).

4.DISCUSSTION

4.1. Problem – Solving Skills Development after SBE Application

The study showed a significant improvement in the problem-solving abilities of nursing students at Van Hien University after implementing SBE in preclinical practice. This aligns with global and Vietnamese studies, highlighting simulation as an ideal, safe environment for practicing problem-solving skills without real-life consequences [2]. Additionally, it offers a training space for addressing ethical and safety issues, particularly in complex situations.

4.1.1.Problem-Solving Confidence

The simulation method enhances patient safety by preventing first-time interventions on real patients. SBE provides a supportive and safe learning environment, helping nursing students build confidence and develop problem-solving skills in clinical practice [1]. The discussion step following the problem-solving process allows students to reflect on their learning, strategies, and emotions, which further develops their skills and confidence [7]. This study found a signifi-

cant improvement in nursing students' knowledge and self-confidence in problem-solving abilities after using simulation methods, consistent with other studies in Vietnam [7].

4.1.2.Approach-Avoidance Style

Approach-Avoidance Style in problem-solving refers to a cognitive-behavioral approach where individuals navigate tasks or challenges by oscillating between approaching desired outcomes and avoiding potential risks or negative consequences. This style can significantly influence how individuals perceive and tackle problems. This study has shown significant improvements among nursing students in their problem-solving approach. They frame issues within a context that requires careful consideration and seek the most optimal solutions before proceeding to address them. The prevalence and effectiveness of approach-avoidance styles can vary across cultures and contexts. Cultural values, societal norms, and personal experiences shape individuals' tendencies towards approach or avoidance in problem-solving.

4.1.3.Personal Control

Personal control in problem-solving is an individual's perceived ability to influence outcomes through actions and decisions, crucial for nursing students facing complex environments. Engaging in simulated patient scenarios helps students familiarize themselves with potential clinical issues, develop proactive problem-solving approaches, manage emotions, and critically assess situations to identify optimal solutions. This study, along with others in Vietnam, including one by Tran Thi Hoang Oanh et al. in 2023, demonstrates that simulation-based education (SBE) effectively develops problem-solving skills in nursing students [7]. The authors recommend incorporating SBE in nursing education to enhance these essential skills for addressing the complex needs of patients.

5.CONCLUSION AND RECOMMENDATIONS

The study highlights the crucial role of simulation-based education (SBE) in enhancing problem-solving skills, a key soft skill in nursing education. SBE has proven effective in improving cognitive abilities, self-confidence, and psychomotor skills. Students' problem-solving abilities significantly improved after participating in SBE sessions. Therefore, nursing universities and colleges should implement comprehensive SBE training programs to enhance educational quality. Additionally, nursing educators should establish standardized guidelines and protocols for simulation-based teaching.

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NUTRITIONAL STATUS AND RELATED FACTORS IN THYROID CNCER PATIENTS BEFORE THYROIDECTOMY AT ONCOLOGY DEPARTMENT NO.2, BAI CHAY HOSPITAL IN 2023

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ABSTRACT

Objective: To describe the nutritional status and identify related factors in thyroid cancer patients before thyroidectomy at Oncology Department No.2, Bai Chay Hospital.

Methodology: A cross-sectional descriptive study was conducted on 218 thyroid cancer patients from January to October 2023. Participants were ≥ 18 years old, able to communicate for interviews, and consented to join the study.

Results: Female patients made up 85.8%, and males 14.2%, with an average age of 49.83 ± 12.3 years. Patients aged 40-59 accounted for 49.1%. Overweight and obesity rates were 23.4% and 21.6%, respectively, with an average BMI of 22.5 ± 2.6. Factors significantly associated with overweight and obesity included high meat consumption, snacking, late-night eating (after 9 PM), fried food intake, and drinking carbonated beverages

Conclusion and recommendations: Overweight and obesity were prevalent in 23.4% and 21.6% of thyroid cancer patients, with contributing factors including excessive consumption of meat, snacks, late-night meals, fried foods, and carbonated drinks ($p < 0.05$). To address this, patients should regularly monitor their weight and reduce intake of these foods. Healthcare providers are encouraged to offer nutritional counseling and implement intervention strategies to improve patients' nutritional status and enhance treatment outcomes.

Keywords: nutritional status, thyroid cancer patients, pre-surgery.

1. INTRODUCTION

Thyroid cancer is the most common endocrine cancer, with increasing incidence rates. According to GLOBOCAN 2020, thyroid cancer ranked 9th among the most common cancers in both sexes, with approximately 586,202 new cases annually [7]. Worldwide studies have reported the association between nutritional status, eating habits, and thyroid cancer risk. The study findings of Kitahara and colleagues demonstrated a positive association between higher BMI and thyroid cancer risk [5], indicating that overweight, obesity, and weight gain were significant health concerns for thyroid cancer patients, rather than malnutrition.

Quang Ninh is a coastal province in Northeast Vietnam. With rapid economic development, the incidence of cancer has increased in medical facilities in Quang Ninh. At Bai Chay Hospital, the number of thyroid cancer patients admitted for treatment in Oncology Department No.2 has risen over the years. In 2022, 209 thyroid cancer surgeries were performed in this department. Assessing the nutritional status and identifying related factors in these patients are essential for developing effective nutritional counseling and intervention strategies. This approach aims to improve patients' nutritional health, enhance treatment outcomes, extend survival, and quality of life.

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In 2022, 209 thyroid cancer surgeries were conducted in this department. Assessing the nutritional status and identifying related factors in these patients are essential for developing effective nutritional counseling and intervention strategies. This approach aims to describe the nutritional status and identify related factors in order to improve patients' nutritional health, enhance treatment outcomes, extend survival, and elevate their quality of life.

2. SUBJECTS AND METHODS

2.1. Research subjects

The patients who were diagnosed with thyroid cancer.

2.2. Location

Oncology Department No.2, Bai Chay Hospital.

2.3. Research design

Cross-sectional descriptive study.

2.4. Sample size and sampling method

Sample size: Sample size was calculated using the following formular

$$n = \frac{z^2_{1-\alpha/2}\, p(1-p)}{d^2}$$

n: Sample size

p: proportion of overweight and obese patients from previous study is 28.6% [1].

α: statistical significance level, α= 0.05

Z 1-α/2: Confidence coefficient. Z 1-α/2 corresponds to 95% confidence level = 1.96

d: desired deviation. d = 0.06

Thus, the sample size is 218.

Sampling method:

Convenience sampling was applied: All patients with thyroid cancer meeting the selection criteria at Oncology Department No-2, Bai Chay Hospital during the two-month period from March to October, were included.

Inclusion criteria:

- Purposeful selection: Patients aged ≥18 with histopathological confirmed thyroid cancer, scheduled for surgery.

- Exclusion criteria:

+ Patients with scoliosis

+ Patients < 18 years old

+ Patients with severe, acute complications such as coma, perioperative period, paralysis, or prolonged immobility, coexisting with other cancers

+ Patients not alert enough to participate in data collection or insufficient data

+ Patients refusing to participate

+ Patients on total parenteral nutrition

2.5. Tools and methods of data collection

- Tools: Medical records, a structured interview questionnaire, BMI were used in this study. The study uses BMI thresholds according to Asian standards (International Diabetes Institute & Western Pacific Regional Office - IDI & WPRO) to identify nutritional status.

- Data Collection Method: Information was obtained from medical records and direct patient interviews.

2.6. Data analysis method

Data was cleaned, entered, and processed using SPSS 20.0 software.

2.7. Research ethics

Participants were informed about the study's purpose and content and voluntarily participation. All information was kept confidential and used only for research purposes. The study was approved by the hospital's scientific council as per report number 11/BC-KHKT on March 30, 2023, and decision number 290/QĐ-SYT of the Department of Health on May 5, 2023.

3. RESULT

3.1. Demographic characteristics of the study population.

The study was conducted on 218 thyroid cancer patients, with a higher proportion of fe-

males (85.8%)

The age group 40-59 years accounted for 49.1% of thyroid cancer patients.

There was no significant difference in the incidence of thyroid cancer between rural (54.1%) and urban areas (45.9%). The average weight of thyroid cancer patients was 56.11 ± 8.2 kg, average height was 157.45 ± 6.5 cm, and BMI ranged from 15.1 to 28.8, with an average of 22.5 ± 2.6. The average age of thyroid cancer patients was 49.83 ± 12.3 years.

The prevalence of non-communicable diseases related to nutrition was 43.6% (including cardiovascular disease 1.8%, hypertension 10.6%, diabetes 6.9%, chronic gastritis 7.8%, and other diseases 16.5%).

3.2. Nutritional Status of Thyroid Cancer Patients Before Thyroidectomy

Table 3.1. Nutritional status according to BMI

Classification by BMI	N	%
Malnutrition (<18,5)	10	5
Normal (≥18,5 -22,9)	109	50
Overweight (23-24,9)	52	23,4
Obese ≥ 25	47	21,6
Total	**218**	**100**

In both genders, 5% of patients were malnourished, 50% had normal BMI, 23.4% were overweight, and 21.6% were obese.

3.3. Observations on Factors Related to Nutritional Status of Thyroid Cancer Patients Before Surgery

Table 3.2 Relationship Between Nutritional Status by BMI and Gender of Thyroid Cancer Patients

General information		BMI		OR (95%CI)	p
		Overweight/ Obese (N=98)	Not Overweight/Obese (N=120)		
		N (%)	N (%)		
Gender	Male	16 (51,6)	15 (48,4)	1,36 (0,6-2,9)	0,421(*)
	Female	82 (43,9)	105 (56,1)		
Age	< 60	71 (43,8)	91 (56,2)	0,8 (0,4-1,5)	0,542(*)
	≥ 60	27 (48,2)	29 (51,8)		

(*) Chi-squared test

Gender and age were not significantly related to patients' BMI (p > 0.05).

Table 3.3. The relationship between eating habits and BMI of patients with cervical cancer

Eating Habit		BMI		OR (95%CI)	p
		Overweight/ Obese N=98)	Not Overweight /Obese (N=120)		
		N (%)	N (%)		
Likes red meat	Yes	32 (61,5)	20 (38,5)	2,4 (1,2-4,5)	0,006(*)
	No	66 (39,8)	100 (60,2)		
Snacks	Yes	76 (52,8)	68 (47,2)	2,6 (1,4-4,7)	0,001(*)
	No	22 (29,7)	52 (70,3)		
Eats after 9 PM	Yes	29 (59,2)	20 (40,8)	2,1 (1,1-4,0)	0,023(*)
	No	69 (40,8)	100 (59,2)		
Likes sweet food	Yes	41 (51,9)	38 (48,1)	1,5 (0,8-2,7)	0,120(*)
	No	57 (41)	82 (59)		
Dining out habit	Yes	33(41,2)	47 (58,8)	0,7 (0,4-1,3)	0,403(*)
	No	65 (47,1)	73 (52,9)		
Consumption of processed foods	Yes	39 (42,4)	53 (57,6)	0,8 (0,4-1,4)	0,516(*)
	No	59 (46,8)	67 (53,2)		
Prefers fried food	Yes	34 (59,6)	23 (40,4)	2,2 (1,2-4,1)	0,009(*)
	No	64 (39,8)	97 (60,2)		

(*) chi-squared test

The results show that eating red meat, snacking, eating after 9 PM, and preferring fried food were related to the BMI of thyroid cancer patients (p < 0.05). Patients who had these eating habits had a higher risk of being overweight or obese.

The dining out habit, preference for sweet foods, and consumption of processed foods were not significantly related with BMI (p > 0.05).

Table 3.4. The relationship between lifestyle and BMI of patients with thyroid cancer

General information		BMI		OR (95%CI)	p
		Overweight/ Obese N=98)	Not Overweight/ Obese (N=120)		
		N (%)	N (%)		
Soft Drink Consumption	Yes	20 (71,4)	8 (28,6)	3,5 (1,5-8,5)	0,003(*)
	No	78 (41,1)	112 (58,9)		
Smoking habit	Yes	7 (43,8)	9 (56,2)	0,9 (0,3-2,6)	0,920(*)
	No	91 (45)	111 (55)		
Alcohol Consumption	Yes	70 (41,9)	97 (58,1)	0,5 (0,3-1,1)	0,103(*)
	No	28 (54,9)	23 (45,1)		
Coffee Consumption	Yes	35 (53,8)	30 (46,2)	1,6 (0,9-2,9)	0,085(*)
	No	63 (41,2)	90 (58,8)		

(*) chi-squared test

Thyroid cancer patients who consumed soft

drinks were 3.5 times more likely to be overweight or obese compared to those who did not, with a statistically significant difference (of $p < 0.05$). No significant relationships between smoking, alcohol consumption, and coffee consumption habits with BMI were found ($p > 0.05$).

4. DISCUSSION

4. 1. Nutritional status of people with thyroid cancer.

The assessment of nutritional status among thyroid cancer patients prior to surgical intervention, categorized by Body Mass Index (BMI), revealed that 5% of the patients were at risk of malnutrition, while 50% of the study's participants maintained a BMI within the normal range. Additionally, 23.4% and 21,6% were classified as overweight and obese, respectively. These findings indicated a substantially lower incidence of malnutrition compared to other studies. For instance, Lê Thị Ngọc Ánh et al. (2020) reported a malnutrition rate of 55.1% among 118 hospitalized cancer patients, with 38.1% having a normal BMI, and 6.8% being overweight or obese [6]. The discrepancy attributed to the fact that the study population consisted of pre-operative thyroid cancer patients at various stages of their disease and with differing durations of illness. It is plausible that the duration of illness has not been sufficient to significantly impact BMI, suggesting that BMI may not be a sensitive indicator for detecting nutritional deficiencies over a short period. Adequate nutritional care within the hospital setting remains critical, as it supports recovery and potentially reduces the duration of hospitalization.

The average weight of the thyroid cancer patients in this study was 56.11 ± 8.2 kg, with an average height of 157.45 ± 6.5 cm. The recorded BMI ranged from a minimum of 15.1 to a maximum of 28.8, with an average BMI of 22.5 ± 2.6. This result is lower than the result of a study evaluating 92 thyroid cancer patients who underwent total thyroidectomy and adhered to a low-iodine diet at Seoul National University Hospital in South Korea by Dal Lae Ju and colleagues with an average BMI of 23.5 ± 3.5 kg/m^2 [4].

Our result of overweight and obesity prevalence (23.4%) is equivalent to the result of Hoang Thi Hang, whose overweight and obesity prevalence was 23.1% [3]. The overweight and obesity prevalence of both genders (45%) in our study is higher than that of the study conducted by Duong Thi Phuong and colleagues (2022) with a thyroid cancer prevalence in both genders of 28.6% [1]. A cohort study conducted in Norway (2006) involving over 2 million individuals demonstrated a moderate increase in thyroid cancer risk associated with higher BMI and height across both genders and for both papillary and follicular thyroid carcinoma [2]. Additionally, Kitahara et al. reaffirmed a positive correlation between elevated BMI and thyroid cancer risk [5]. Current research endeavors continue to explore the links between dietary patterns and thyroid cancer risk, with particular focus on red and processed meats.

4.2. Factors related to obesity in people with thyroid cancer.

The study found a relationship between the dietary habits of thyroid cancer patients and overweight/obesity. Specifically, 61.5% of patients who preferred red meat were overweight or obese, which is lower than the 67% found in the study by Duong Thi Phuong et al. (2022) [1], Among those with a habit of snacking, 52.8% were overweight or obese. Patients

who ate after 9 PM had a 59.2% rate of being overweight, while those who frequently consumed fried and processed foods had a 59.6% rate of overweight or obesity, similar to the 60.5% reported by Duong Thi Phuong, with a significance level of $p < 0.05$.

The study results indicate the need to communicate to patients the benefits of healthy eating and physical activity in weight control and the prevention of diseases caused by excessive weight.

5. CONCLUSION AND RECOMMENDATIONS

Our study found that 23.4% of patients were overweight, and 21.6% were obese. Several factors significantly related to overweight and obesity ($p < 0.05$) included high meat consumption, snacking, late-night eating (after 9 PM), a preference for fried and processed foods, and drinking carbonated beverages. Therefore, patients are advised to regularly monitor their weight and reduce their intake of red meat, snacks, late-night meals, and processed foods. Healthcare providers should offer nutritional counseling and intervention strategies to improve patients' nutritional status and enhance treatment effectiveness.

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KNOWLEDGE OF STROKE PREVENTION AMONG HYPERTENSIVE OUT-PATIENTS AT DONG DA GENERAL HOSPITAL IN 2024 AND RELATED FACTORS

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ABSTRACT

Objective: To describe knowledge of stroke prevention among hypertensive out-patients at Dong Da General Hospital in 2024 and to identify associated factors.

Method: A descriptive cross-sectional survey was conducted on 253 outpatients with hypertension at Dong Da General Hospital. Data were collected by direct interview through a structured questionnaire set. Data collected on patient demographics, knowledge about stroke prevention, knowledge of stroke prevention practices. Associated factors were identified by calculating odds ratio (OR), 95%CI of OR, p values < 0.05 is the level of statistically significant.

Results: The study found that 55.73% of patients had adequate knowledge of stroke prevention, while 70.75% demonstrated satisfactory knowledge of stroke prevention practices. Significant associations were observed between knowledge of stroke prevention and factors such as age, occupation, education level, marital status, and economic status. Similarly, knowledge of stroke prevention practices was significantly related to gender, occupation, education level, marital status, and economic status.

Conclusions: The findings suggest that health education for hypertensive people needs improvement to enhance their knowledge of stroke prevention. This improvement is crucial for encouraging behavior changes that minimize the risk of stroke. Key recommendations include promoting a healthy diet, regular exercise, consistent blood pressure monitoring, early treatment of complications, stress reduction, and educating patients and their families about stroke symptoms and the importance of seeking timely medical help.

Keywords: Knowledge, stroke prevention, hypertension.

1.INTRODUCTION

Stroke is a critical medical condition and a significant global health challenge, especially in developing countries. It commonly manifests as either ischemic or hemorrhagic stroke. Hypertension is the leading modifiable risk factor for stroke, with approximately 80% of first-time stroke patients having high blood pressure.

Although stroke is a dangerous disease, it is completely preventable. The most effective measure is to have knowledge about the disease and practice good prevention measures including: controlling blood pressure and changing lifestyles. Assessing knowledge about stroke prevention helps grasp the current situation and is the key to stroke prevention. Knowledge is the golden key to changing behavior and leading a healthy lifestyle.

Research conducted in Taizhou, China in 2022, knowledge of stroke prevention practices

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in hypertensive patients is still poor with only 36.5% of people having good knowledge of stroke warning signs [7]. Research in Indonesia on 457 participants showed that 78.3% of patients had poor knowledge. According to research by Chu Thi Hoang Anh (2019) conducted at Thanh Hoa General Hospital, the knowledge of research participants is 64.25% unsatisfactory [1]. From there, it shows that to prevent the occurrence of stroke and its burden, assessing the knowledge of hypertensive patients about warning signs and ways to prevent stroke is very necessary. Nurses play an important role as providers of knowledge about prevention to improve knowledge about stroke so that patients can prevent it, practice a healthy lifestyle and control disease-causing factors well. Maximize the risk of infection and reduce the burden on health, family and society.

In 2023, Dong Da General Hospital recorded 92.000 medical visits, with 25.484 for hypertension, yet no studies have assessed the knowledge of these patients regarding stroke prevention. Therefore, this study aims to evaluate the knowledge of stroke prevention among hypertensive outpatients at Dong Da General Hospital in 2024 and to identify associated factors.

2.RESEARCH METHODOLOGY

2.1 Research subjects

Patients diagnosed with hypertension come for outpatient examination and treatment at the Examination Department of Dong Da General Hospital in 2024.

2.2 Research site

Research: At the Cardiovascular Clinic, Medical Examination Department – Dong Da General Hospital.

2.3 Research design: A cross-sectional descriptive study

2.4 Sample size and sample selection

Sample size:

Apply the sample size calculation formula to estimate the proportion for cross-sectional descriptive research:

$$n = Z^2_{(1-\alpha/2)} \times \frac{p(1-\rho)}{d^2}$$

In which: n - Sample size to be studied; Reliability coefficients (α = 0,05), Z2(1-α/2= 1.96; p = 0.183 the proportion of hypertensive patients with knowledge of stroke prevention practices is satisfactory [8]; d was the absolute error; d = 0.05 was selected. Substituting these values into the formula, the sample size was calculated as n = 230, with a margin of error of 10%. Therefore, the final sample size included in the analysis was

n = 253.

Sample selection: convenient sampling was chosen.

2.5 Tools and methods data collection

Assessment tools and methods

The pre-designed set of interview questions referenced from previous research includes 3 parts: general information and parts related to knowledge about stroke prevention such as knowledge about stroke prevention and knowledge about stroke prevention. stroke prevention practice of research subjects, each correct answer gets 1 point; Wrong or unknown answers are counted as 0 points. The total score is the total number of correct answers. Evaluation standards are as follows [1]:

Knowledge about stroke prevention includes 13 multiple choice questions. Evaluation as pass has a total score of (7-13 points), score (0-6 points) is classified as unsatisfactory.

Knowledge about stroke prevention practices includes 13 multiple choice questions. Evaluation as pass has a total score of (7-13 points), score (0-6 points) is classified as unsat-

isfactory.

Data collection

After the patient's examination, while waiting for the results the researcher invited eligible patients to choose to participate in the study by explaining the purpose and content of the study and signing consent to participate in the study. Conduct a face-to-face interview using a structured questionnaire set in an easy-to-understand way (no suggested answers). On average an interview lasted 10-15 minutes.

Data processing methods

Use REDCAP software to enter data and SPSS 27 software to process data. Use the chi – square test to compare two proportions, calculate the odds ratio OR 95%CI; p for correlation analysis. Results are presented as absolute numbers and percentages (%).

3.RESULTS

3.1 General characteristics of participants

Table 3.1. General characteristics of participants (n=253)

General characteristics		Number	(%)
Age group	<40 years old	1	0.4
	40-49 years old	3	1.2
	50-59 years old	30	11.9
	60-69 years old	**147**	**58.1**
	≥70 years old	72	28.5
Gender	Male	116	45.8
	Female	**137**	**54.2**
Career	Free labor	43	17.0
	Worker, farmer	25	9.9
	Oofficials and civil servants	41	16.2
	Retire	**144**	**56.9**

The age of the research subjects was mainly from 60-69 years old accounting for 58.1%. Female accounted for 54.2% more and 56.9% of the study subjects were retired.

3.2 Knowledge about stroke prevention

3.2.1Knowledge about stroke prevention

Table 3.2. Knowledge about stroke prevention (n=253)

Knowledge about stroke prevention		Number	(%)
The most common type of stroke **(Cerebral artery occlusion)**	**Correct**	**94**	**37.2**
	Wrong	159	62.8
Disease causing the highest risk of stroke **(Hypertension)**	**Correct**	**136**	**53.8**
	Wrong	117	46.2
The age group with the highest risk of stroke **(>60 years old)**	**Correct**	**199**	**78.7**
	Wrong	54	21.3
When to call 115 ambulance (Immediately)	**Correct**	**218**	**86.2**
	Wrong	35	13.8
Signs of stroke (FAST) **(All: Distorted mouth, weakness on one side of the body, slurred speech)**	**Correct**	**81**	**32.0**
	Wrong	172	25.3
Risk factors for stroke **(Both genetics, gender, age)**	**Correct**	**67**	**26.5**
	Wrong	186	73.5

The data in Table 3.2 indicates that only 37.2% of participants correctly identified the most common type of stroke, and 53.8% recognized hypertension as a significant risk factor for stroke. Additionally, 78.7% of participants believed that individuals over 60 years old are at high risk. Only 32.0% correctly identified the signs of stroke using the FAST method, and 26.5% correctly identified high-risk factors for stroke. Overall, 55.73% of participants demonstrated adequate knowledge of stroke prevention, scoring between 7 and 13 points.

3.2.2 Knowledge about stroke prevention practices

Table 3.3. Knowledge about stroke prevention practices (n=253)

Monitor and control blood pressure		Number	%
Frequency of blood pressure monitoring	**Daily**	**117**	**46.2**
	Only follow up when you feel tired	88	34.8
	When conditions permit	3	1.2
	Don't track	45	17.8
Frequency of using antihypertensive drug	**Take medicine daily as prescribed**	**186**	**73.5**
	Only drink when feeling uncomfortable	47	18.6
	Sometimes remember, sometimes forget	17	6.7
	Don't take medicine	3	1.2
Actions taken when there is a sudden increase in blood pressure	Call someone to take you to a medical facility immediately	57	22.5
	Rest and take measures according to you doctor's instructions	**130**	**51.4**
	Use double normal dose of antihypertensive medication	53	20.9
	Rest, do nothing	13	5.1
Frequency of medical examination	**Regular check-ups according to doctor's appointments**	**202**	**79.8**
	Only go to the doctor when you feel tired	50	19.8
	Go to the doctor every 3 months	1	0.4

Study participants demonstrated that 46.2% had knowledge of daily blood pressure monitoring, and 73.5% consistently used prescribed antihypertensive medication to prevent stroke. Additionally, 79.8% attended regular stroke pre-

vention examinations as recommended by their doctors. Overall, 70.75% of participants scored between 7 and 13 points on stroke prevention practices, while 29.25% scored below 7 points.

3.3 Factors associated to knowledge of stroke prevention

Table 3.4. Socio-demographic factors of participants related to knowledge of stroke prevention

Socio-demographic characterisics		Knowledge of stroke prevention		OR CI 95%	p
		Adequate [N (%)]	Inadequate [N (%)]		
Age group	<60 years old	29 (85.3)	5 (14.7)		<0,001
	≥60 years old	112 (51.1)	107 (48.9)	5.54 (2.07 – 14.84)	
Gender	Female	79 (57.7)	58 (42.3)		0,5
	Male	62 (53.4)	54 (46.6)	1.19 0.72 – 1.95	
Career	Working	78 (71.6)	31 (28.4)		<0,001
	Retire	63 (43.8)	81 (56.2)	3.24 (1.9 – 5.5)	
Education level	Intermediate level*	48 (72.7)	18 (27.3)		0,002
	≤ High school	93 (49.7)	94 (50.3)	2.69 (1.46 – 4.98)	
Marital status	Live with family	137 (58.8)	96 (41.2)		0,002
	Widow	4 (20)	16 (80)	5.7 (1.9 – 17.6)	
Economic status	High income	72 (69.9)	31 (30.1)		<0,001
	Average income	69 (46)	81 (54)	2.72 (1.6 – 4.63)	

Participants aged 60 years and older demonstrated significantly better knowledge of stroke prevention compared to those under 60 (OR = 5.54, $p < 0.05$). Similarly, retirees and those with higher education had better knowledge than those still working and those with lower education levels (OR = 3.24 and 2.69, respectively). Marital and economic status also influenced knowledge, with participants living with family or having higher incomes showing better knowledge than widows or those with lower incomes (OR = 5.7 and 2.72, respectively).

Bảng 3.5. Socio-demographic factors of participants related to practice stroke prevention

Socio-demographic characteristics		Knowledge of stroke prevention practices		OR CI 95%	p
		Adequate [N (%)]	Inadequate [N (%)]		
Age group	<60 years old	28 (82.4)	6 (17,6)		0,106
	≥60 years old	150 (68.5)	69 (31.5)	2.14 (0.85 – 5.42)	
Gender	Female	109 (79.6)	28 (20.4)		<0,001
	Male	69 (59.5)	47 (40.5)	2.65 (1.52 – 4.63)	
Career	Working	85 (78.0)	24 (22.0)		0,022
	Retire	93 (64.6)	51 (35.4)	1.94 (1.1 – 3.43)	
Education level	Intermediate level*	59 (89.4)	7 (10.6)		<0,001
	≤ High school	119 (63.6)	68 (36.4)	4.81 (2.08 – 11.14)	
Marital status	Widow	10 (50)	10 (50)		0,044
	Live with family	168 (72.1)	65 (27.9)	2,6 (1.02 – 6.5)	
Economic status	High income	82 (79.6)	21 (20.4)		0,008
	Average income	96 (64.0)	54 (36)	2.2 (1.23 – 3.94)	

There was a statistical significant association between gender and knowledge of stroke prevention practices, with females showing better knowledge than males (OR = 2.65). Additionally, those with higher education and retirees had superior knowledge compared to those still working and those with lower education levels (OR = 1.94 and 4.81, respectively). Participants with higher economic status also demonstrated better knowledge of stroke prevention practices than those with average incomes (OR = 2.2).

4. DISCUSSION

4.1 Current status of knowledge about stroke prevention

Table 3.2 shows that 53.8% of respondents recognized hypertension as a major risk factor for stroke that was lower than the result reported in Nayab Z Daz's study (93.5%) [7]. Additionally, 86.2% of participants knew to call 115 immediately upon detecting stroke symptoms, closely aligning with the 87% reported in Daz's study [7]. This suggests that knowledge of emergency response during a stroke is relatively strong. However, only 32.0% of respondents correctly identified all stroke symptoms,

including weakness or paralysis on one side of the body, slurred speech, facial distortion, and vision disturbances. In comparison, Ly Thi Kim Thuong's research found that only 4.8% of participants recognized sudden numbness and weakness on one side, and 4% were aware of vision problems as stroke indicators [4]. These findings highlight the need to enhance education on stroke warning signs, not just among hypertensive individuals but throughout the community, emphasizing that prevention is better than cure.

The research showed that 46.2% of participants measured their blood pressure daily to prevent stroke, a result similar to Tran Thi Nga's study (46.1%) [2], lower than Nguyen Van Trieu's (69.67%) [5], but higher than Alhowaymel's (29.6%) [6] and Dinh Thi Thu's (15%) [3]. Regarding medication adherence, 73.5% of respondents took their prescribed antihypertensive drugs daily, a higher rate than in Liang's study in Taizhou (57.1%) [7]. Regular follow-up examinations, crucial for early detection of hypertension complications, were chosen by 79.8% of participants, similar to Woldetsadik's findings (75.6%) [9] and higher than Dinh Thi Thu's (69.3%) [3]. These results indicate that medical staff at Dong Da General Hospital should emphasize educational interventions, monitor medication adherence, and encourage monthly follow-up visits to ensure treatment compliance.

In this study, 55.73% of participants demonstrated knowledge about stroke, which is higher than the 35.75% reported by Chu Thi Hoang Anh [1]. This difference may be attributed to the research being conducted at a general hospital in an urban area, where participants likely had higher education levels and better access to disease information and prevention resources. However, the comparison is not entirely accurate due to inconsistencies in the assessment scales used in different studies. The proportion of participants with adequate stroke prevention practices was 70.75%, while 29.25% did not meet the standard. This outcome is higher than those reported by Dinh Thi Thu (55.3%) [3] and Woldersadik (51.3%) [9]. These findings highlight the need for continued efforts to promote healthier lifestyles and improve quality of life to reduce stroke risk.

4.2 Factors related to knowledge about stroke prevention

Knowledge of stroke prevention was significantly associated with age, occupation, education, marital status, and economic status ($p < 0.05$). Retirees and those with higher education had better knowledge than those still working or with lower education levels (OR = 3.24 and 2.69, respectively). Woldesadik's study in Northwest Ethiopia (2021) also found that individuals with a high school education or higher were 4.6 times more likely to have general knowledge than those without formal education (AOR = 13.7, 95% CI: 2.08 - 10.17) [9]. Marital and economic status were also linked to stroke prevention knowledge, with those living with family or having higher incomes showing better knowledge than widows or those with lower incomes (OR = 5.7 and 2.72, respectively). Ly Thi Kim Thuong's research supports this, indicating that individuals with high or middle incomes had significantly better knowledge (OR = 7.637, 95% CI, $p < 0.001$) [4].

Knowledge of stroke prevention practices was similarly related to gender, occupation, education, marital status, and economic status ($p < 0.05$). Females demonstrated better knowledge than males (OR = 2.65), consistent with Chu Thi Hoang Anh's findings (OR = 2.59, 95% CI: 1.69-2.98) [1]. Participants with higher economic status also had better prevention practices than those with average incomes (OR = 2.2), which differs from Chu Thi Hoang Anh's

2019 study [1]. The results suggest that individuals with higher economic status have better preventive practices and are more likely to adopt a healthy lifestyle. Additionally, studies indicate that a lack of knowledge and practice in stroke prevention is associated with being unmarried, potentially due to the absence of spousal support that can positively influence healthcare.

CONCLUSION & RECOMMENDATIONS

The study found that 55.73% of patients had adequate knowledge of stroke prevention, while 70.75% demonstrated satisfactory stroke prevention practices. Significant associations were identified between knowledge of stroke prevention and factors such as age, education, occupation, marital status, and economic status. Similarly, stroke prevention practices were significantly related to gender, occupation, educational status, marital status, and economic status ($p < 0.05$).

These findings underscore the importance of enhancing health education for hypertensive patients to improve their knowledge and practices related to stroke prevention. Key recommendations include promoting proper nutrition and regular exercise, with medical staff providing clear guidance on healthy eating and physical activity. Additionally, patients should regularly monitor blood pressure and address complications such as dyslipidemia, diabetes, and cardiovascular disease early. Stress reduction and psychological support are also crucial for maintaining mental health. Finally, educating patients and their families about stroke symptoms and the importance of seeking timely medical help is essential to minimize stroke risk.

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CURRENT STATUS OF PERIPHERAL INTRAVENOUS CATHETER PLACEMENT BY NURSES FOR CHILDREN UNDER 5 YEARS OLD AT CHILDREN'S HOSPITAL NO 1 IN 2024

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ABSTRACT

Objectives: (i) To determine the rate of unsuccessful first attempts at peripheral intravenous catheter (PIVC) placement in children under 5 years old at Children's Hospital No 1 in 2024; and (ii) to identify factors associated with unsuccessful PIVC placement.

Methodology: A descriptive study was conducted on children under 5 years old who had PIVC placements by nurses in 10 clinical departments at Children's Hospital No 1. The study period was from March 2024 to June 2024.

Results: In 230 cases of PIVC placements, 28.14% were unsuccessful on the first attempt. Statistically significant factors associated with these failures included a previous hospitalization history (PR = 1.89) and specific vein characteristics: veins not visible under the skin (PR = 2.33), not straight (PR = 2.99), not large (PR = 2.31), unclear visibility (PR = 2.21), and not palpable after tourniquet application. Characteristics of the children, their relatives, and the nurses did not significantly affect the success of the first attempt.

Conclusion: The rate of unsuccessful first attempts at PIVC placement in children under 5 years old remains high (28.14%). Significant factors contributing to these unsuccessful attempts include specific vein characteristics and previous hospitalization history ($p < 0.005$). To improve success rates and care quality, it is crucial to enhance nurses' skills, assess vein conditions, and consider the child's hospitalization history, ensuring that relatives are well-informed and the procedure is carefully conducted.

Keywords: unsuccessful peripheral intravenous catheter placement, failure factors, children under 5 years old, nursing

1.INTRODUCTION

Intravenous (IV) therapy is vital, especially for emergency and critically ill patients [1,2,3]. Peripheral intravenous catheter (PIVC) placement is a common and challenging procedure in hospitalized children, particularly for pediatric nurses. Successful first attempts at PIVC placement require skill and continuous practice [3]. Factors such as children's restlessness, lack of cooperation, parental presence, and anxiety complicate vein access, resulting in failure rates between 23% and 34% [2,4]. Studies indicate that the child's demographic and clinical characteristics, nurse's skill, injection site, and vein characteristics significantly affect success rates [2,3,4,5].

Children's Hospital No. 1, a leading pediatric hospital, sees 5,000 - 8,000 pediatric outpatients daily, with an inpatient admission rate of 6.5% to 8.2%. Many inpatients, especially children aged 12 to 60 months, require PIVC placements.

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However, there is no current statistical data on the success rate of first PIVC attempts by nurses. This study aims to (i) determine the rate of unsuccessful first attempts at PIVC placement in children under 5 years old at Children's Hospital No. 1 in 2024; and (ii) identify factors associated with these unsuccessful attempts.

2. STUDY OBJECTS AND METHODS

2.1. Study subject: Children under 5 years old who had PIVC placements by nurses.

2.2. Study site: Children's Hospital No.1

2.3. Study design: A cross-sectional descriptive study.

2.4. Sample Size and Sampling Method:

In there:

$$n = \frac{Z^2_{(1-\alpha/2)} \cdot p \cdot (1-p) \times D}{d^2}$$

n: sample size

Z = confidence level coefficient at 95%, $Z(1-\alpha/2)=1.96Z$

p = 0.5(due to no previous similar study in Vietnam, p is taken as 0.5 to obtain the largest sample size)

d = absolute allowable error, d = 0.1 (10%)

D = design effect coefficient (D = 2) due to cluster sampling

The calculated sample size was 192, with a 10% margin added for emergency deviations, resulting in a target sample of 211. The actual sample size was 230.

Sampling methods

Each clinical department selected 23 children who underwent PIVC placements, using convenience sampling based on the inclusion criteria until the required sample size was reached.

2.5. Data Collection Tools and Methods

Data Collection Tool: A research data collection form based on literature, including 6 sections: A: Personal information of the child; B: Vital signs; C: Clinical information; D: Information on PIVC placement by nurses; E: Characteristics of the child and family members; F: Characteristics of nurses performing PIVC. The form had a CVI = 1 and was piloted on 30 clinical cases across 10 departments before use.

Data collection method: Direct observation of nurses performing PIVC placements and subsequent administrative data collection using the research data collection form.

2.6. Data Analysis Method: Analysis was conducted using SATA 14.0.

2.7. Ethical consideration

The study observed PIVC placement in clinical departments with hospital beds at Children's Hospital No. 1. Data collectors did not influence treatment outcomes or prognosis. Participants were fully informed about the study's purpose, benefits, and risks, and participation was entirely voluntary. Study data were not used to evaluate individual nurses. The study was approved by the Children's Hospital No. 1 Ethics Committee (Certificate No. 41/GCN-BVNĐ1 dated March 4, 2024).

3.RESULTS

3.1. Characteristics of hospitalized children

Table 3.1: Characteristics of children under 5 years old hospitalized at the hospital

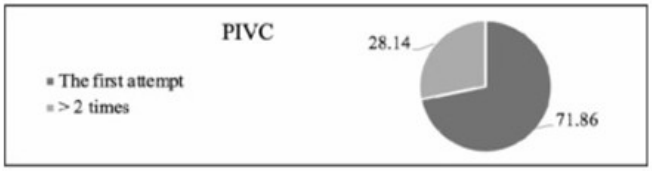
Characteristic	Frequency	Percentage (%)
Gender (Male)	144	62,3
Residence (Ho Chi Minh City)	51	22,1
Group Age		
<1 months	32	13,9
1 months - < 3 years	159	68,8
3-5 years	40	17,3
BMI		
Low weight (thin)	195	84,4
Normal weight	34	14,7
Overweight	2	0,9

Comment: The study included 144 males, comprising 62.3% of the total. Of the children, 22.1% were from Ho Chi Minh City, with the rest from neighboring provinces. Most children (68.8%) were aged 1 month to under 3 years, 13.9% were under 1 month, and 17.3% were

aged 3-5 years. The majority (84.4%) were underweight, while 14.7% had normal weight, and 0.9% were overweight.

3.2. Status of unsuccessful PIVC placement in children < 5 years old

Chart 1: Distribution of unsuccessful PIVC placement results in children under 5 years old at Children's Hospital No 1



Comment: The rate of unsuccessful PIVC placements on the first attempt was 28.14%, accounting for nearly one-third of needle insertions during hospital admission.

3.3. Factors associated with unsuccessful PIVC placement by nurses for children under 5 years old

Table 3.2: Association between children characteristics and unsuccessful PIVC

Characteristic (n=230)		PIVC placements on the first attempt: Unsuccessful N (%)	PIVC placements on the first attempt: Successful N (%)	PR (95% CI)	*P value*
Gender	Male	27 (31,1)	60 (68,9)		
	Female	38 (26,4)	106 (73,6)	0,85 (0,56 – 1,29)	0,447
Group age					
<1 months		10 (31,3)	22 (68,7)	1	
1 months - < 3 years		44 (27,7)	115 (72,3)	0,86 (0,49 – 1,57)	0,678
3-5 years		11 (27,5)	29 (72,5)	0,88 (0,43 – 1,81)	0,728
BMI					
Low weight (thin)		55 (28,2)	140 (71,8)	1	
Normal weight		9 (26,5)	25 (73,5)	0,94 (0,51 – 1,71)	0,837
Overweight		1 (50,0)	1 (50,0)	0,43 (0,43 – 7,24)	0,425
Premature birth history					
Yes		9 (36,0)	16 (64,0)	1,32 (0,75 – 2,34)	0,355
No		56 (27,2)	150 (72,8)		
Previous Hospitalization history					
Yes		40 (37,7)	166 (62,3)	1,89 (1,23 – 2,89)	**0,003**
No		25 (20,0)	100 (80,0)		

Comment: Only the history of previous hospitalization was significantly associated with unsuccessful first attempts (p<0.05)

Table 3.3. Association of venous characteristics with unsuccessful PIVC placement

Venous characteristicsPIVC placements on the first attempt

Venous characteristics	PIVC placements on the first attempt: Unsuccessful N (%)	PIVC placements on the first attempt: Successful N (%)	PR (95% CI)	*P value*
Visible under skin vein				
No	40 (42,6)	54 (57,6)	2,33 (1,52 – 3,57)	**<0,001**
Yes	25 (18,2)	112 (81,8)		
Straight vein				
No	44 (46,3)	51 (53,7)	2,99 (1,91 – 4,69)	**<0,001**
Yes	21 (15,4)	115 (84,6)		
Large visible vein				
No	53 (40,2)	79 (59,8)	3,31 (1,87 – 5,86)	**<0,001**
Yes	12 (12,1)	87 (87,9)		
Palpable after tourniquet application				
No	50 (35,9)	89 (64,1)	2,21 (1,32 – 3,69)	**<0,001**
Yes	15 (16,3)	77 (83,7)		

Comment: There was a statistically significant association between vein characteristics and unsuccessful PIVC placement.

Table 3.4: Association of children and family condition with unsuccessful PIVC placement

Condition of Child and Family	PIVC placements on the first attempt: Unsuccessful N (%)	PIVC placements on the first attempt: Successful N (%)	PR (95% CI)	*P value*
Child				
Crying				
Yes	53 (27,8)	138 (72,3)	0,92 (0,55 – 1,56)	0,773
No	12 (30,0)	28 (70,0)		
Fear				
Yes	20 (21,3)	74 (78,7)	0,65 (0,41 – 1,02)	0,054
No	45 (32,9)	92 (67,1)		
Struggling				
Yes	18 (27,3)	48 (72,7)	0,95 (0,60 – 1,52)	0,853
No	47 (28,5)	118 (71,5)		
Family				
Parental Anxiety				
Yes	29 (33,7)	57 (66,3)	1,36 (0,90 – 2,05)	0,146
No	36 (24,8)	109 (75,2)		
Parental Non-cooperation				
Yes	1 (33,3)	2 (66,7)	1,19 (0,23 – 5,96)	0,631*
No	64 (28,1)	164 (71,9)		

Comment: There was no statistically significant association between the child and parental conditions and unsuccessful PIVC placement.

Table3.5: Nurse characteristics associated with unsuccessful PIVC placement

Nurse characteristics	PIVC placements on the first attempt: Unsuccessful N (%)	PIVC placements on the first attempt: Successful N (%)	PR (95% CI)	*P value*
Work Experience				
< 5 years	9 (29,0)	22 (71,0)	1	
5 – 10 years	19 (27,9)	49 (72,1)	0,96 (0,49 – 1,88)	0,911
> 10 years	37 (28,0)	95 (72,0)	0,97 (0,52 – 1,79)	0,911
Experience at Children's Hospital				
< 5 years	9 (29,0)	22 (71,0)	1	
5 – 10 years	19 (27,9)	49 (72,1)	0,96 (0,49 – 1,88)	0,911
> 10 years	37 (28,0)	95 (72,0)	0,97 (0,52 – 1,79)	0,911
Position				
Head Nurse	1 (16,7)	5 (83,3)	1	
Senior Nurse	2 (14,3)	12 (85,7)	0,86 (0,09 – 7,79)	0,891
Staff Nurse	62 (29,4)	149 (70,6)	1,76 (0,29 – 10,72)	0,538
Qualification				
Intermediate	3 (23,1)	10 (76,9)	1	
College	38 (28,4)	96 (71,6)	1,23 (0,44 – 3,22)	0,695
University	24 (28,6)	60 (71,4)	1,24 (0,43 – 3,54)	0,690
Training in PIVC Placement				
Yes	63 (27,8)	164 (72,3)	0,56 (0,20 – 1,51)	0,315
No	2 (50,0)	2 (50,0)		

Comment: There was no statistically signifi-

cant association between nurse characteristics and unsuccessful PIVC placement.

4.DISCUSSION

4.1. Current status of unsuccessful PIVC Placement in children < 5 years old at Children's Hospital No 1

Our study found a failure rate of 28.14% for PIVC placements, lower than the 34.8% reported by Aytenew et al. [4] and similar to the 23.3% reported by Al-Awaisi et al. [2]. The differences may be attributed to patient characteristics, practitioner skills, and environmental and equipment factors [2]. A high success rate on the first attempt is crucial for minimizing pain and discomfort in children.

4.2. Factors associated with unsuccessful PIVC placement by nurses in children under 5

Our study did not find statistically significant associations between unsuccessful PIVC placement and demographic characteristics of the children, their conditions, or their parents' conditions, contrasting with Ballar's finding that overweight and obese children had higher failure rates ($p < 0.005$) [5].

However, we did find statistically significant associations between unsuccessful PIVC placement and specific vein characteristics (invisible, non-straight, unclear, and non-palpable veins after tourniquet application) as well as previous hospitalization history. These findings align with studies by Ballar [5] and Lee [3], emphasizing the importance of selecting suitable veins for successful PIVC placement. Nurses should carefully assess vein conditions before the procedure to make the best decisions regarding vein selection and insertion site.

Additionally, our study did not find significant associations between nurse characteristics, such as experience and training, and unsuccessful PIVC placement, which differs from Ballar's findings where nurses without professional certification had higher failure rates [5].

5.CONCLUSION AND RECOMMENDATIONS

The rate of unsuccessful first attempts at PIVC placement in children under 5 years old remains high (28.14%). Statistically significant factors include certain vein characteristics (invisible, non-straight, unclear, non-palpable after tourniquet application) and previous hospitalization history. There was no association with demographic characteristics, weight, prematurity history, or the conditions of the children and their parents, nor with nurse experience.

To improve success rates and enhance care quality, it is crucial to refine PIVC skills, assess vein conditions, and consider previous hospitalization history. Nurses should provide accurate prognostic information to parents and exercise caution during procedures. Ongoing monitoring and analysis of PIVC placements are necessary to identify influencing factors and reduce pain and discomfort for pediatric patients.

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FACTORS ASSOCIATED WITH PROFESSIONAL EXHAUST IN NURSING: A STUDY IN CLINICAL DEPARTMENTS OF 6 HOSPITALS IN HO CHI MINH CITY

RELATED FACTORS OF OCCUPATIONAL BURNOUT IN NURSES: A STUDY IN THE CLINICAL DEPARTMENTS OF 6 HOSPITALS IN HO CHI MINH CITY

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ABSTRACT

Objective: To identify personal and work-related factors contributing to occupational occupational burnout among nurses in the clinical departments of six hospitals in Ho Chi Minh City.

Methods: A cross-sectional descriptive study was conducted with 540 nurses using the Maslach Burnout Inventory (MBI) and independent variables related to job characteristics. Data analysis was performed with SPSS 16.0 software.

Results: Burnout was prevalent among 62.8% of the nurses at an average level, and 5.7% experienced high burnout. Factors significantly associated with higher burnout levels include working in public hospitals, lower monthly income (less than 10 million VND), and having only a college-level education. Nurses in the Department of Internal Medicine and those working over 54 hours per week also showed higher burnout levels. In contrast, nurses with higher professional qualifications or working fewer shifts per month experienced lower burnout.

Conclusion: Occupational burnout is a critical issue in public hospitals driven by high work pressure and limited resources. it is essential to improve working conditions, enhance staff support, and implement policies that address workload and staffing levels. Additionally, increasing nurses' income and professional development opportunities may help reduce burnout and improve job satisfaction.

Keywords: Occupational burnout, Nurses, hospitals.

1. INTRODUCTION

Employee burnout occurs when mental, emotional and physical health is compromised due to excessive work pressure, prolonged stress or job dissatisfaction [2,4,3,7 ,6,8,35]. Maslach identified three key dimensions of burnout: exhaustion, depersonalization, and reduced personal achievement, measured using the Maslach Burnout Inventory (MBI) [6, 7, 8, 19-22, 24, 29, 30, 32]. The MBI is a validated and reliable tool, with Cronbach Alpha coefficients ranging from 0.64 to 0.91, demonstrating its effectiveness in assessing nurse burnout [19]. Globally and in Vietnam, the MBI is widely used to evaluate nurse burnout [8, 10, 18, 23].

Studies worldwide have explored the relationship between work characteristics and nurse

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burnout [10,11,19,25]. A meta-analysis of 91 studies across 28 countries found that high workload and low staffing levels are strongly associated with emotional exhaustion, particularly the nurse-to-patient ratio [20]. Nurses in public hospitals often experience higher burnout levels than those in private hospitals due to increased work pressure and limited support resources [29]. Moreover, nurses in high-stress departments, such as emergency medicine and intensive care, report elevated stress and exhaustion levels [27].

Personal factors including gender, age, and marital status also influence burnout levels. Women and younger nurses often face higher burnout levels, possibly due to social and family pressures[17]. Conversely, those with extensive work experience and higher education levels are better equipped to handle work stress [26].

In Vietnam, a study of 99 doctors and 294 nurses in internal medicine departments revealed that 16.7% of nurses and 14.1% of doctors exhibited negative attitudes, with 15% in both groups dissatisfied with their achievements [1]. Additionally, 41% of nurses reported moderate burnout, underscoring the severity of the issue [2]. Despite the absence of research on the impact of the work environment on burnout in Vietnam, it is evident that inadequate resources and poor management exacerbate nurse burnout.

This study was conducted in six hospitals in Ho Chi Minh City to identify the personal and work-related factors contributing to nurse burnout, aiming to develop preventive measures and improve care quality.

2. RESEARCH METHOD

This cross-sectional descriptive study was conducted to identify factors related to nurse burnout across 128 clinical departments in 6 hospitals in Ho Chi Minh City including: two class I hospitals, two district hospitals and two private hospitals. . Based on Brito Guirardello and colleagues and the sample size calculation formula [19], a sample size of 310 was initially determined, accounting for a 10% expected sample loss. However, to accommodate Structural Equation Modeling (SEM: Structural Equation Modeling), Exploratory Factor Analysis (EFA: Exploratory Factor Analysis) and the and the presence of more than seven factor groups, the minimum required sample size was adjusted to 500. The final study included 540 observations.

The study sample consisted of nurses from 6 hospitals. Clinical departments from each hospital were selected based on departmental recommendations and a random draw from a list of eligible departments. A total of 51 clinical departments participated. Nurses within these departments were randomly selected from the department's nurse list, starting with a randomly chosen number corresponding to the day of the week during data collection. Inclusion criteria required nurses to have over one year of experience in their current department and to agree to participate in the study. Management representatives and those absent due to holidays, vacation, maternity leave, or illness during the survey period were excluded.

The study's dependent variable was nurse burnout, while the independent variables were work characteristics. Data were collected using the Maslach Burnout Inventory (MBI) questionnaire, which includes 22 items across three domains to assess physical and mental burnout. The MBI uses a Likert scale from 1 to 5 and was administered with the original authors' permission. Descriptive statistics and univariate regression analysis were performed using SPSS 16.0, with a 95% significance level ($p < 0.05$) to evaluate the impact of work environment factors on nurse burnout. The study received ethical approval from the An Sinh Hospital Appraisal Board and the participating hospitals.

3. RESULTS

The survey included 540 nurses from six hos-

pitals, with 75.9% from public hospitals and 24.1% from private hospitals. The Department of Internal Medicine had the highest participation at 35.7%. The majority of nurses were female (73.9%) with an average age of 34.1 years. Most held university (47.8%) or college degrees (44.6%), with an average of 10.5 years of experience. Monthly incomes predominantly ranged from 5 to 10 million VND (56.7%). Analysis revealed that 62.8% of nurses experienced average workplace exhaustion, and 81.3% rated their sense of personal achievement as average (Table 1).

Table 3.1. Demographic and Professional Characteristics of Surveyed Nurses

	Variable	Number of observations (%)	Variable	Number of observations (%)
Information of research sample	**Hospital**	540 (100)	**Religion**	540 (100)
	Public hospital 1	114 (21.1)	Buddha	143 (26.5)
	Public hospital 2	100 (18.5)	Catholic	51 (9.4)
	Public hospital 3	115 (21.3)	Other	80 (14.8)
	Public hospital 4	81 (15.0)	Are not	266 (49.3)
	Private hospital 1	62 (11.5)	**Professional qualifications**	540 (100)
	Private hospital 2	68 (12.6)	Intermediate level	28 (5.2)
	Department	537 (100)	College	241 (44.6)
	Emergency department	80 (14.8)	University	258 (47.8)
	Clinic	54 (10.0)	After college	13 (2,4)
	Intensive care unit (ICU)	76 (14.1)	**Average income/month**	540 (100)
	Department of internal medicine	193 (35.7)	≤ 5 million	50 (9.2)
	Department of surgery	77 (14.3)	> 5 - 10 million	306 (56.7)
	Retail specialties	57 (10.6)	> 10 - 15 million	122 (22.6)
	Sex	540 (100)	> 15 million	62 (11.5)
	Male	141 (26.1)	**Total number of shifts**	540 (100)
	Female	399 (73.9)	Not on duty	129 (23.9)
	Marital love	540 (100)	≤ 4 shifts/month	128 (23.7)
	Married	344 {63,7)	5 - 8 shifts/month	190 (35.2)
	Single	175 (32.4)	> 8 shifts/month	93 (17.2)
	Widowed, divorced…	21 (3.9)		
	Shift time	494 (100)		
	8-hour shift	123 (22.8)	**Variable**	**Mean (SD)**
	12-hour shift	68 (12.6)	**Year old**	34.07 (±7.35)
	16-hour shift	47 (8.7)	**Experience**	10.49 (±7.02)
	24-hour shift	256 (47.4)	**Average total working time/week (Hours)**	54.63 (±40.74)

	Variable	Number of observations (%)
Level of occupational burnout according to MBI scale	**Feeling exhausted at work**	**540 (100)**
	Short (%)	170 (31.5)
	Medium (%)	339 (62.8)
	High (%)	31 (5.7)
	Feel personal achievement	**540 (100)**
	Short (%)	8 (1.5)
	Medium (%)	419 (77.6)
	High (%)	113 (20.9)
	Negative attitude	**538 (100)**
	Short (%)	302 (55.9)
	Medium (%)	222 (41.1)
	High (%)	14 (2.6)

Univariate linear regression analysis revealed that higher average monthly income significantly reduces job exhaustion, personal achievement, and negative attitudes, with decreases of 0.43, 0.17, and 0.16 points, respectively, for each income group increase ($p < 0.05$). Non-religious individuals exhibited the greatest reduction in perceived burnout, decreasing by 0.192 points compared to Buddhists, while Christians and other religions showed reductions of 0.064 and 0.128 points, respectively. Additionally, higher professional qualifications improved the sense of personal achievement by 0.11 points per education level. Conversely, an increase in weekly working hours slightly raised job exhaustion and personal achievement by 0.002 units per hour. Variables such as age, gender, marital status, work experience, and the total number of shifts showed no significant impact on burnout in this sample (Table 3.2).

Table 3.2. Regression Analysis of Factors Affecting Burnout, Personal Achievement, and Negative Attitudes Among Nurses (n = 540)

Content	Feeling professionally exhausted			Feel personal achievement			Negative attitude		
	β	t-statistics	p	β	t	p	β	t	p
Year old	0.004	0.367	0.714	0.02	0.60	0.55	0.01	1.45	0.15
Sex	-0.028	-0.293	0.770	-0.06	-1.44	0.15	-0.08	-0.98	0.33
Marital status	0.056	0.835	0.404	0.01	0.92	0.36	-0.02	-0.29	0.78
Religion	-0.064	-1979	**0.048**	-0.04	-0.52	0.61	0.01	0.49	0.62
Professional qualifications	0.103	1549	0.122	0.11	2.31	**0.03**	0.06	1.06	0.29
Work experience (Years)	0.014	1079.00	0.281	-0.01	-0.28	0.78	-0.02	-1.51	0.13
Average income/month	-0.43	-7509.00	**0.000**	-0.17	-3.99	**0.00**	-0.16	- 2,33	**0.02**
Total number of shifts performed during the month	0.073	1641.00	0.101	0.03	0.68	0.50	0.03	0.71	0.48
Time of each shift	-0.032	-0.951	0.342	-0.01	-0.05	0.96	-0.01	-0.47	0.64
Total working time per week (Hours)	0.002	1991.00	**0.047**	0.002	2.04	**0.04**	0.00	1.16	0.24

Note: p-value is statistically significant below 5%.

According to table 3.3, the Chi-Square test reveals significant relationships between hospital type, department, and average monthly income with perceived exhaustion and negative attitudes ($p < 0.05$). However, no significant relationship was found between these variables and perceived personal achievement. This variation may stem from differing work demands across departments; for instance, emergency department nurses may assess their performance based on crisis management, while internal medicine nurses may focus on continuity of care and patient relationships.

Table 3.3: Chi-squared Analysis of Nursing Characteristics and Maslach Burnout Inventory Components

	Some characteristics of DD		
MBI scale components	**Hospital**	**Department**	**Average monthly income**
	The p-value of the Chi-squared test		
Feeling exhausted	**0.00**	**0.027**	**0.00**
Personal achievements	**0.01**	0.61	0.11
Negative attitude	**0.00**	**0.03**	**0.00**

Note: p-value is statistically significant below 5%.

4. DISCUSSION

The study reveals that burnout in the nursing profession is alarming high exceeding previous research findings in Vietnam [2-4] and surpassing the global burnout rate of 11.23% across 49 countries [12]. This high rate may be linked to current hospital work practices, with factors such as long working hours, extended shifts, age, gender, education level, and seniority contributing to burnout [4-5]. Burnout is particularly severe in public hospitals, likely due to heavier workloads and staff shortages [34].

The study also found that negative attitudes among nurses are more prevalent at medium and high levels compared to earlier studies by Le Thi Thanh Nguyen [2] and Nguyen Tien Hoang [1], though lower than those reported by Cao Thi Thanh Truc [5]. High work pressure, particularly in emergency situations requiring meticulous attention, contributes to feelings of fatigue and loss of control. Despite this, nurses still find satisfaction in patient care, feeling close to their patients and valuing their work [2]. Hospital type, department, and monthly income significantly influence nurses' burnout levels and negative attitudes. Public hospital nurses face high pressure due to staff shortages and frequent emergencies, compounded by poor working conditions and inadequate facilities [31]. Management policies and staff support also play a critical role in burnout and job satisfaction [30, 33].

Additionally, while higher income can reduce burnout, there are complex relationships between income, job dissatisfaction, and turnover intentions [14]. The work environment and nurse-to-patient ratio are key factors affecting burnout levels [8, 13-14, 33, 34].

5. CONCLUSION AND RECOMMENDATIONS

This study highlights that burnout is a significant issue among nurses, particularly in public hospitals where 62.8% of nurses reported moderate levels of burnout, and 5.7% experienced high levels. Factors such as high work pressure, staff shortages, and inadequate facilities are key contributors. Specifically, 75.9% of the surveyed nurses were from public hospitals, where burnout levels are exacerbated by these challenges. The study also found that income and department type significantly influence burnout levels, with nurses in the Department of Internal Medicine experiencing the highest rates of burnout at 35.7%.

To mitigate burnout, it is essential to improve working conditions, enhance staff support, and implement policies that address workload and staffing levels. Additionally, increasing nurses' income and professional development opportunities may help reduce burnout and improve job satisfaction.

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TẠP CHÍ
ĐIỀU DƯỠNG
VIỆT NAM

EVALUATION OF THE COLON CLEANING EFFECTIVENESS OF SIMETHICONE COMBINED WITH FORTRANS IN COLONOSCOPY PREPARATION

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ABSTRACT

Target:

To assess the effectiveness of Simethicone combined with Fortrans for colon cleansing in preparation for colonoscopy, and to investigate how patient compliance influences the quality of the colon cleansing outcomes.

Objects and methods: A cross-sectional study was conducted involving 200 patients to evaluate the effectiveness of colon cleansing. Using the Rebecca Matro scoring scale, colon cleansing outcomes were assessed in 100 patients in the case group, who received a combination of Simethicone and Fortrans, and 100 patients in the control group, who received Fortrans alone as preparation for colonoscopy. Additionally, the study examined the relationship between patient compliance during the preparation process and the resulting colon cleansing effectiveness.

Result: The mean age of patients was 59.89 ± 17.53 years, with the majority being in the age group ≥ 60, accounting for 60.5%. Following drug administration, symptoms of abdominal bloating were significantly lower in the case group (24.0%) compared to the control group (34.0%), with a statistically significant difference ($p < 0.05$). The level of colon and rectal cleanliness, both overall and at specific survey locations, was also higher in the case group than in the control group ($p < 0.05$). . Additionally, patients who adhered to the prescribed medication schedule and performed recommended auxiliary movements demonstrated significantly better colon cleansing results compared to those who did not, with a statistically significant difference ($p < 0.05$).

Conclusions: The cleanliness of the entire colon - rectum as well as each segment of the colon, was higher in the case group than in the control group ($p < 0.05$). Patients who adhered to the prescribed medication schedule, walked, and massaged their abdomen achieved a significantly higher rate of colon cleansing compared to those who did not follow these instructions, with a statistically significant difference ($p < 0.05$). It is recommended to use Simethicone with Fortrans for colonoscopy preparation and enhance patient education on preparation procedures.

Keywords: Simethicone, colon cleansing, colonoscopy.

1. INTRODUCTION

Colonoscopy is a routine procedure that

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helps diagnose and treat colorectal diseases. Foam and feces are factors that hinder the observation and detection of lesions during colonoscopy, greatly affecting the quality of diagnosis and treatment. Therefore, cleaning the colon before performing endoscopy is a requirement that plays a very important role in patient preparation [8]. Simethicone is a mixture of Polydimethylsiloxane and Silicon Dioxyd, which reduces the surface tension of air bubbles, breaks them or agglomerates them to be expelled, thereby reducing factors that interfere with observation and preventing flatulence. Combining simethicone with Fortrans has been shown to help dissolve foam and increase the ability to observe lesions [4], [6]. Many medical facilities have used Simethicone to clean the colon during patient preparation, but there is not much data regarding the combined use of Simethicone and Fortrans in patient preparation. We conducted this study to evaluate the colon cleansing effectiveness of Simethicone combined with Fortrans in colon preparation and to find out the impact between patient compliance and pre-endoscopic colon cleansing results.

2. RESEARCH SUBJECTS AND METHODS

2.1. Research subjects

From January to August 2023, 200 patients underwent colonoscopy at the Department of Gastroenterology - Blood Diseases, Military Hospital 354.

Selection Criteria:

• Study Groups:

- Case Group: Patients who prepared with Fortrans combined with Simethicone.

- Control Group: Patients who used Fortrans alone for colon cleansing.

• Inclusion Criteria: Patients capable of normal communication, able to accurately describe subjective symptoms, and willing to participate in the study.

• Exclusion Criteria: Patients with a history of colorectal resection, suspected intestinal obstruction or perforation, severe constipation, mental illness, inability to make decisions, unstable medical conditions, severe acute diseases, pregnancy, breastfeeding, or limited communication, as well as those unwilling to participate.

2.2. Research methods

- Research design: Cross-sectional study.

- Research location: the Department of Gastroenterology - Blood Diseases, Military Hospital 354, from January to August 2023

- Research steps:

- Select 200 patients for the study and randomly assign them into two groups: a control group (100 patients) and a case group (100 patients). Document the patients' general characteristics. Instruct patients on colon preparation prior to colonoscopy. The control group will prepare as usual, using 3 packets of Fortrans, each mixed with 1 liter of filtered water, to be consumed within 3 hours, along with performing auxiliary movements (such as walking or abdominal rubbing). The case group will follow the same preparation but with the addition of 40 mg/ml Simethicone (1 bottle of Espumisan 30 ml) mixed into the oral solution.- Conduct the procedure on eligible patients and document the results based on the study objectives. Research objectives include recording the patient's general characteristics and any adverse drug effects (e.g., nausea, vomiting, bloating). Evaluate the degree of colon cleanliness from endoscopic images using the Rebecca Matro scale, assessing three locations (left colon, transverse colon, and right colon), as well as the entire colon and rectum. The cleanliness level is classified into two categories: clean (A, B) and unclean (C, D) according to the Rebecca Matro scale [4].

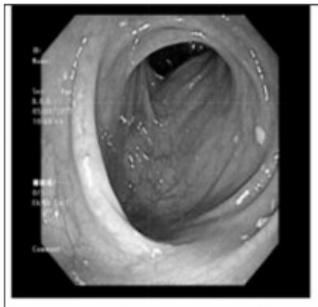

Figure 1: Level A, completely clean of foam

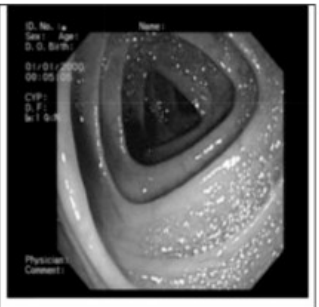

Figure 2: Level B, the survey area still has little foam, occupying less than half of the magnifying glass colon

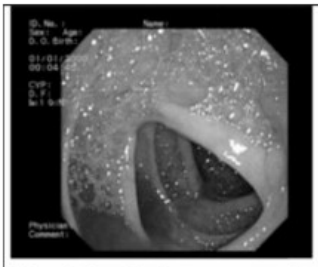

Figure 3: Level C, the survey area still has a lot of foam, accounting for more than ½ of the colon diameter but less than the entire colon diameter

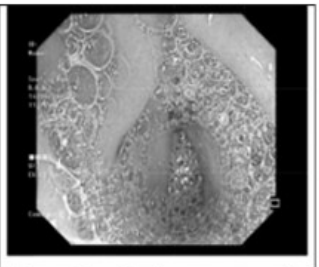

Figure 4: Level D, the survey area still has a lot of foam, occupying the entire diameter of the colon

+ Colonscopy results: detection rate of colon lesions (such as inflammation, colitis, colon polyps, hemorrhoids...) on endoscopy.

+ Percentage of patients complying with medication taking time, complying with supporting operations (walking, abdominal massage...) and the relationship between patient compliance and colon cleansing results.

- Data analysis methods: The Data analysis was performed by using SPSS 22.0 software.

- Research ethics:

+ The study was approved by the Scientific Council and the Medical Ethics Council of Military Hospital 354. The patient was explained and agreed to participate in the study.

+ Participation in this study was voluntary. Patients could refuse or withdraw from the study without any negative consequences to their treatments. The privacy of participants was kept a secret when the study was published

3. RESEARCH RESULTS

- General characteristics of patients: we conducted research on 200 patients (100 patients in each group), with an average age of 59.89 ± 17.53 years old, of which the largest proportion is the patients are aged 60 years or older (accounting for 60.5%).

- Unwanted effects of the drug:

Table 1. Unwanted effects of the drug

Unwanted effects	Case group (n = 100)		Control group (n = 100)		p
	Patient number	Ratio %	Patient number	Ratio %	
No signs	25	25.0	29	29.0	0.32
Nausea	40	40.0	36	36.0	0.33
Vomit	8	8.0	10	10.0	0.4
Abdominal bloating	24	24.0	34	34.0	0.044

After taking the medicine, symptoms of bloating in the Case group (24.0%) were lower than in the control group (34.0%), a statistically significant difference (p = 0.044).

Table 2. Level of colon cleanliness at survey and evaluation locations

Colon location and foam clearance level		Case group (n = 100)		Control group (n = 100)		p
		Patient number	Ratio %	Patient number	Ratio %	
Whole colon	Clean	86	86.0	74	74.0	0.025
	Not clean	14	14.0	26	26.0	
Right colon	Clean	81	81.0	71	71.0	0.036
	Not clean	19	19.0	29	29.0	
Transverse colon	Clean	88	88.0	78	78.0	0.045
	Not clean	12	12.0	22	22.0	
Left colon, rectum	Clean	90	90.0	82	87.0	0.042
	Not clean	10	10.0	18	13.0	

The rate of patients with cleanliness of the entire colon as well as each colon segment in the Case group was higher than the control group, the difference was statistically significant, with p < 0.05.

Table 3. Colon lesions detected through endoscopy

Colon damage	Case group (n = 100)		Control group (n = 100)		p
	Patient number	Ratio %	Patient number	Ratio %	
No damage	35	35.0	31	31.0	0.79
Inflammation and edema of the colon and rectum	38	38.0	27	27.0	0.045
Colon-rectal ulcer	12	12.0	9	9.0	0.08
Colon polyps	46	46.0	45	45.0	0.87
Colon malignant tumor	2	2.0	5	5.0	0.03
Hemorrhoids	80	80.0	87	87.0	0.12

Rate of colitis - rectal inflammation in patients in the Case group (38.0%)higher than in the control group (27.0%), the difference is statistically significant with $p < 0.05$.

Table 4. Relation between patient compliance with colon preparation preparation and colon cleansing results in the Case group (n=100)

Follow		Clean (n=86)		Not clean (n=14)		p
		Patient number	Ratio %	Patient number	Ratio %	
Time to take medicine	Follow	60	69.77	9	64.29	0.035
	Non-compliance	26	30.23	5	35.71	
Walk around and rub your belly	Follow	78	90.70	10	71.43	0.02
	Non-compliance	8	9.30	4	28.57	

Patients who comply with the time of taking medicine, walking, and rubbing their abdomen have a higher rate of colon cleansing than patients who do not comply with the time of taking medicine, walking, and rubbing their abdomen. The difference is statistically significant ($p < 0.05$).

4. DISCUSSION

4.1. Colon cleansing results of Simethicone

- Regarding drug tolerance: during the process of monitoring patients taking the drug, we recorded unwanted effects such as nausea, vomiting, bloating; In particular, abdominal bloating symptoms in the case group were lower than the control group, the difference was statistically significant ($p = 0.044$), the proportion of patients with symptoms of nausea and vomiting between the two groups was not statistically different. list. This is because the drug Simethicone, in addition to its anti-foaming effect, also reduces flatulence and bloating, increasing tolerance when using the drug [1]. Our results are similar to the research of Luong Thi Mai Huong [2] and Sasinee Tongprasert [8].

Evaluate the degree of colon cleanliness according to the scale Rebecca Matro between the 2 groups, the level of cleanliness of the entire colon and rectum as well as each colon segment in the Case group was higher than in the control group, the difference was statistically significant with $p < 0.05$. This result shows the superiority of preparing lower gastrointestinal endoscopy with Simethicone. Compared with Tran Van Toi's study in 2020, our study showed equivalent results [7]. According to Sasinee Tongprasert (2009), patients using Simethicone had a greater colon clearance rate (100%) than the control group (43.3%), with $p < 0.0001$ [8].

Evaluating endoscopic results (Table 3), we see that the rate of detecting colon and rectal inflammatory lesions in the Case group (38%) is higher than in the control group (27%), the difference is statistically significant. millet ($p < 0.05$). According to research by Luong Thi Mai Huong and Sasinee Tongprasert, reducing foam in the lower digestive tract has made endoscopic images clearer, better supporting the observation and detection of lesions in the patient's colon and rectum. [2].

4.2. Relation of patient compliance to colon cleansing results

Complying with the medication taking time helps patients ensure better tolerance and avoid unwanted effects such as vomiting and nausea. In addition, rubbing the abdomen and

walking also help stimulate better intestinal circulation, making bowel movements cleaner, especially for patients with a history of constipation. During monitoring, the patient is preparing for gastrointestinal endoscopyWe have noted that patients who comply well with taking medication and regularly walk and rub their abdomen can have better and cleaner bowel movements. In this study, the majority of patients in the colon clean group complied with walking, abdominal massage (table 4), and the difference is statistically significant ($p < 0.05$). According to research by Wah-Kheong Chan (2011), one of the factors affecting the quality of colon preparation for colonoscopy in patients is non-compliance with colonoscopy preparation instructions [8].

5. CONCLUSIONS AND RECOMMENDATIONS

The average age of patients was on 59.89 ± 17.53 years, with the majority (60.5%) being aged 60 or older. After drug administration, the incidence of abdominal bloating in the case group (24.0%) was significantly lower compared to the control group (34.0%), with a statistically significant difference ($p < 0.05$). The cleanliness of the entire colon - rectum as well as each segment of the colon, was higher in the case group than in the control group ($p < 0.05$). Additionally, patients who adhered to the prescribed medication schedule, walked, and massaged their abdomen achieved a significantly higher rate of colon cleansing compared to those who did not follow these instructions, with a statistically significant difference ($p < 0.05$).

Based on the findings of the study, the following recommendations can be made:

- Promote the use of Simethicone with Fortrans for colonoscopy preparation;
- Enhance patient education on preparation procedures;
- Develop comprehensive Pre-Colonoscopy guidelines;
- Monitor and encourage patient compliance:
- Conduct further research to explore additional variables such as dietary influences, hydration levels, and the role of other adjunct therapies in colon cleansing. This will help refine and optimize preparation protocols.

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HEALTH RELATED QUALITY OF LIFE AMONG PATIENTS WITH ACUTE EXACERBATION OF CHRONIC OBSTRUCTIVE PULMONARY DISEASE TREATED IN E HOSPITAL AND ASSOCIATED FACTORS

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ABSTRACT

Objectives: To assess the health-related quality of life (HrQoL) using the COPD Assessment Test (CAT) and identify factors associated with HrQoL among inpatients with acute COPD exacerbations at E Hospital's Department of Respiratory Medicine.

Methodology: A cross-sectional study was conducted on 120 inpatients. The CAT questionnaire was used to evaluate HrQoL, with higher scores indicating a greater impact of COPD on overall health.

Results: COPD significantly impaired HrQoL, affecting 65% of patients at a severe level and 8.3% at a very severe level. Key affected factors included coughing, expectoration, and energy levels. Patients who were underweight or obese, long-term smokers, or had a history of COVID-19 and comorbidities experienced worse HrQoL compared to those with normal BMI, no COVID-19 history, and no comorbidities. Additionally, COPD patients with longer disease duration and greater severity had poorer HrQoL. However, those living with family and receiving family care during hospitalization had better HrQoL than those living alone.

Conclusions: To improve HrQoL in COPD patients, nurses should focus on preventive and promotive measures, such as encouraging smoking cessation, enhancing medication adherence, and improving self-care management through strengthened family support.

Keywords: Chronic obstructive pulmonary disease (COPD), health-related quality of life (HrQoL), CAT

1.INTRODUCTION

COPD is a serious public health problem that affects approximately 9.5% of the Vietnamese population, which was the highest COPD prevalence in the Asia-Pacific Region [1]. COPD is also often called the "silent killer" because its symptoms become more severe over time and can be severely impaired patient's quality of life or even leading to death. Chronic cough with a lot of phlegm due to increased bronchial secretions, destruction of bronchial epithelium and lung parenchyma that lead to recurrent of bronchopulmonary infections, makes COPD more and more severe and cause many acute exacerbations, which requires the patient to be hospitalized for treatment.

When it comes to COPD patients, health related quality of life is impaired that can cause patients to lose their ability to work, or even they are inable to take care of themselves, reduce social interaction, and enjoy their hobbies. It also makes patients feel frustrated and

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angry because they cannot do what they want. However, the impact of COPD on quality of life is various that based on patient's characteristics and COPD stages. Previous studies showed that during the outbreak period, the quality of life of COPD patients is seriously reduced. When the disease became stable, although symptoms were improved, the HrQoL still be affected by the disease symptoms such as cough, sputum production, chronic shortness of breath and limited physical activity [3],[5].

To assess the health-related quality of life in COPD patients, the World Health Organization has recommended clinicians to use CAT questionnaire. CAT is a short and simple questionnaire that is easy to apply in clinical practice. However, current research mainly assess the HrQoL of COPD patients who are living in the community or in stable disease status. Meanwhile, patients in acute COPD that must be hospitalized for treatment and the relevance between HrQoL with some clinical characteristics of patients in the acute stage have not been fully evaluated. Therefore, the study was conducted to assess the health-related quality of life by CAT questionnaire and identify associated factors of health-related quality of life among inpatients with acute exacerbations of COPD at the Department of Respiratory Medicine, E Hospital.

2. SUBJECT AND METHODOLOGY

2.1. Research Subject

120 inpatients are diagnosed with COPD in the Department of Respiratory Medicine – E Hospital from November 2023 to May 2024 and meet the patient selection criteria.

Inclusion criteria

- The patient was diagnosed with COPD according to GOLD 2020 standards.
- At the age of 18 or older.
- In state of consciousness and alertness at the time of interview.
- Able to self-assess on the survey form after instructions.
- Voluntarily agreed to participate in the study.

Exclusion criteria

- Suffering from other lung diseases such as tuberculosis, lung fungus, lung cancer...
- Suffering from other accompanying diseases such as heart failure, liver failure or severe kidney failure.
- Having deformities of the spine and chest.
- Suffering from asthma or has history of asthma.

2.2. Methodology

Study design: Cross-sectional study

Sample size and sampling: Convenience sampling

2.3. Research tools

The research questionnaire includes 4 parts:

Part A: Demographic information of participants (age, gender, economic situation, living situation)

Part B: Health status related to COPD (comorbid diseases, history of COVID-19, smoking, duration of COPD, COPD stage)

Part C: Anthropometric indicators (height, weight)

Part D: The CAT questionnaire was used to assess the impact of COPD on patients. The HrQoL index was assessed through the Vietnamese version of the CAT questionnaire according to the 2018 Ministry of Health guidelines [2]. The CAT questionnaire includes 8 questions for patients to self-assess the level from mild to severe, each question has 6 levels from 0 - 5 with higher scores representing the greater impact of COPD on each symptom. The maximum score of the CAT scale is 40 points.

2.4. Data collection

Hospitalized patients who met the research criteria were invited to take part in the study. The researcher introduced to patients the purpose, meaning and processes of study, and clearly explained the patient's questions. The questionnaire was not given to the patient until after the patient had signed a written consent form voluntarily. Time to complete the questionnaire was about 15 - 20 minutes.

2.5. Statistical analysis

SPSS 22.0 software was used to analyze the data. Descriptive statistics of frequency, percentage, mean and standard deviation were used to analyze variables such as demographic, patient's health status and quality of life characteristics. The relationship between demographic characteristics and health status characteristics with patients' HrQoL was calculated by t-test and ANOVA. The difference was statistically significant when the p value is <0.05.

2.6. Research ethics

The study was followed research ethics regulations. The study was approved by the Board of Directors of E Hospital. Patients were clearly explained about the purpose of the study and agreed to participate in the study.

3. RESULTS

Table 3.1. Participant's sociodemographic characteristics (N=120)

Sociodemographic characteristics		Frequency (n)	Percentage (%)
Age	56 - 59	3	2,5
	60 - 69	31	25,8
	70 - 79	62	51,7
	≥80	24	20,0
Gender	Male	115	95,8
	Female	5	4,2
Living place	Mountainous areas	1	0,8
	Rural areas	6	5,0
	Urban areas	113	94,2
Living status	Single	31	25,8
	Live with family	89	74,2

Comment: All participants were over the age of 40, of which 97.5% were patients over 60 years old. Most of participants were men (95.8%), living with their families (74.2%).

Table 3.2. Participant's health status characteristics (n=120)

Health status characteristics		Frequency (n)	Percentage (%)
BMI	Thin (BMI <18,5)	66	55,0
	Normal (18,5 ≤BMI ≤24,9)	52	43,3
	Overweight (BMI ≥25)	2	1,7
Comorbid diseases	Yes	84	70,0
	No	36	30,0
History of COVD-19	Yes	67	55,8
	No	53	44,2
Smoking	Yes	103	85,8
	No	17	14,2
Duration of COPD	Less than 5 years	32	26,7
	5 to 10 years	48	40,0
	More than 10 years	40	33,3
COPD's categories	GOLD I (Mild)	10	8,3
	GOLD II (Moderate)	42	35,0
	GOLD III (Severe)	35	29,2
	GOLD IV (Very severe)	33	27,5

Comment: Participants were mainly in thin condition, had cormobid diseases, had history of COVID-19 and were smokers. More than half of patients had COPD's category in the late stage (severe and very severe) with disease duration of more than 5 years.

Table 3.3. Health related quality of life according to 8 indicators of CAT questionnaire (n=120)

Indicators	Point (n, %)						
	Mean ± SD	0	1	2	3	4	5
Cough	3,6 ± 0,9	0 (0)	0 (0)	14 (11,7)	35 (29,2)	53 (44,2)	18 (15)
Phlegm	3,3 ± 0,9	0 (0)	1 (0,8)	19 (15,8)	51 (42,5)	40 (33,3)	9 (7,5)
Tight chest	2,3 ± 1,2	13 (10,8)	10 (8,3)	38 (31,7)	46 (38,3)	10 (8,3)	3 (2,5)
Breathlessness	2,9 ± 1,0	1 (0,8)	4 (3,3)	32 (26,7)	58 (48,3)	15 (12,5)	10 (8,3)
Limitation in doing any activities at home	2,2 ± 1,1	8 (6,7)	13 (10,8)	60 (50)	23 (19,2)	13 (10,8)	3 (2,5)
Confident for leaving home	2,5 ± 1,1	2 (1,7)	14 (11,7)	59 (49,2)	22 (18,3)	19 (18,5)	4 (3,3)
Sleep	3,0 ± 0,7	0 (0)	1 (0,8)	22 (19,3)	73 (60,8)	21 (17,5)	3 (2,5)
Energy	3,2 ± 0,8	0 (0)	1 (0,8)	19 (15,8)	64 (53,5)	31 (25,8)	5 (4,2)
CAT total score	Mean ±SD (Min – Max) 23,1 ± 5,0 (11 – 36)						

Comment: The average of total CAT score was 23.1 ± 5.0 with the highest score being 36 and the lowest score being 11 points. The av-

erage score in each indicator was quite high, in which cough, phlegm production and energy were 3 characteristics that most affected the COPD patient's quality of life.

Table 3.4. Impact of COPD on the participant's health related quality of life according to CAT questionnaire (n=120)

Score	Impact level	Frequency (n)	Percentage (%)
≤10	Low	0	0
10-20	Medium	32	26,7
21-30	High	78	65
31-40	Very high	10	8,3

Comment: According to the CAT questionnaire, 65% and 8,3% of participants had the impact on Hr-QoL at high and very high levels. All of participants were clearly affected by COPD with total CAT score of 10 points or more.

Table 3.5. Associated factors related to health related quality of life of COPD participants (n=120)

Associated factors		Mean ± SD	p
Living status	Single	21,3 ±4,1	<0,05*
	Live with family	28,3 ± 3,5	
Living place	Mountainous/rural areas	19,3 ± 5,8	<0,05*
	Urban areas	24,0 ± 4,9	
BMI	Thin (a)	25,4 ± 4,8	<0,05**
	Normal (b)	20,0 ± 3,6	
	Overweight (c)	26,0 ± 5,0	
Comorbid diseases	No	21,4 ± 4,8	<0,05*
	Yes	23,8 ± 5,0	
History of COVID-19	No	23,1 ± 4,9	<0,05*
	Yes	23,3 ± 6,2	
Smoking	No	21,7 ± 4,4	<0,05*
	Yes	24,2 ± 5,3	
Duration of COPD	Less than 5 years	19,3 ± 4,8	<0,05**
	5 to 10 years	22,2 ± 3,1	
	More than 10 years	27,5 ± 3,9	
COPD's categories	GOLD I (Mild)	19,5 ± 4,5	<0,05**
	GOLD II (Moderate)	22,8± 3,0	
	GOLD III (Severe)	25,9 ± 4,1	
	GOLD IV (Very severe)	32,0± 4,0	

* Results from t-test

**Post-hoc analysis results from One-way ANOVA test.

Comment: Participants who lived alone, lived in urban areas, were thin or overweight, had comorbid diseases, and smoked cigarettes, have a significantly higher average score on the CAT scale than participants who lived with their family, lived in rural/mountainous areas, had a normal BMI, didn't suffer from chronic diseases and didn't smoke. The longer duration participants suffered from COPD and the later stage of COPD participants had the higher impact of COPD on quality of life.

4.DISCUSSION

In our study, 120 COPD inpatients meeting the sampling criteria participated in the study. Most participants were over 60 years old (97.5%), with an average age of 74.13 ± 7.54 years. This average age is higher than in previous studies by Nguyen Thi Khuyen and Dinh Thi Minh, where 65.4% were over 60 with an average age of 64.73 ± 12.0 years, and Phan Thanh Thuy et al., who reported an average age of 66.16 ± 8.1 years [5],[6]. However, these findings align with literature indicating that COPD is prevalent in individuals over 40 [8]. The study also confirmed that COPD predominantly affects men, consistent with other epidemiological studies [1],[5],[8]. This is likely due to higher smoking rates among men, a primary cause of COPD. In terms of living conditions, 74.2% of participants lived with their families, while 25.8% lived alone. Most COPD patients in this study were elderly and in the late stages of the disease, requiring significant support from family members, which contributes to their preference for living with family for better care and security.

To assess the HrQoL of acute COPD patients at E Hospital, we used the CAT questionnaire, where higher scores indicate a greater impact of the disease. The study revealed an average total CAT score of 23.1 ± 5.0 among 120 patients, with scores rang-

ing from 11 to 36. These results are comparable to the findings of Nguyen Thi Khuyen and Dinh Thi Minh (23.5 ± 3.4) but lower than those of Le Thi Thao et al., who reported an average score of 26.29 ± 0.693 [4],[5]. The difference may stem from our study focusing on patients in the acute phase, while the other studies involved those in the stable phase. Our results were also higher than similar studies in France (22.0 ± 7.0) and Korea (19.5 ± 8.4), where patients were in the stable phase and had better symptom control, likely due to more accessible healthcare services and developed family doctor systems [9],[12]. In Vietnam, where QoL is lower, many patients self-treat at home and only seek hospital care when the disease becomes severe. Additionally, factors such as cultural practices, social support, and physical conditions may further impact HrQoL in Vietnamese COPD patients. According to COPD's impact on HrQoL classification, 73.3% of patients had CAT scores indicating high to very high impact, with all patients scoring 10 or more. This aligns with Nguyen Thi Khuyen and Dinh Thi Minh's findings that COPD significantly affects QoL [5]. Similarly, Sidharth Kharbanda and R. Anand's study using the St George's score also demonstrated the disease's clear impact on QoL, where higher scores indicated poorer QoL [10]. Symptom scores in our study included cough (3.6 ± 0.9), phlegm production (3.3 ± 0.9), chest heaviness (2.3 ± 1.2), dyspnea (2.9 ± 1.0), activity limitation (2.2 ± 1.1), confidence to go out (2.5 ± 1.1), sleep (3.0 ± 0.7), and energy (3.2 ± 0.8). These were consistent with the findings of Nguyen Thi Khuyen et al. [5]. The high average scores, particularly for cough, phlegm production, and energy, indicate these are the most affected areas.

The study identified several factors associated with the quality of life (QoL) in COPD patients. These included living situation, residence, physical condition, comorbidities, smoking history, COVID-19 infection, disease duration, and stage [7],[11]. Patients living with family had significantly better Hr-QoL scores on the CAT scale than those in rural or mountainous areas. This could be attributed to urban patients facing higher population density, exposure to dust, and irritants that exacerbated COPD, leading to a decline in both physical and mental health. Additionally, a long smoking history and COPD often resulted in appetite loss, bloating, weight loss, and depression, which weakened the patient and increased susceptibility to comorbidities, thereby worsening COPD. COVID-19 history also negatively impacted QoL, as post-COVID complications impaired lung function, exacerbated COPD, and led to greater fatigue and poorer QoL. Notably, the study found that disease duration and stage significantly affected QoL, with longer disease duration and more severe symptoms leading to greater difficulties in daily activities and a marked decline in QoL. These findings aligned with previous research by Ying et al. and Habraken et al. [7],[11].

5. CONCLUSIONS

COPD significantly impacted the quality of life for 120 participants, with most affected at high or very high levels. Key factors like cough, phlegm production, and energy levels were most affected. Quality of life was also strongly linked to living situa-

tion, physical condition, comorbidities, smoking history, COVID-19 history, COPD duration, and disease stage ($p < 0.05$). Beyond treating COPD, nurses can enhance patients' quality of life through preventive and promotive measures, including smoking cessation programs, improving medication adherence, and fostering self-care with family and social support.

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TẠP CHÍ ĐIỀU DƯỠNG VIỆT NAM

NURSES' PERCEPTION OF PATIENT HANDOVER BY HES SCALE AT CLINICAL DEPARTMENTS OF THANH VU MEDIC BAC LIEU GENERAL HOSPITAL IN 2023

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ABSTRACT

Objectives: To evaluate nurses' awareness of patient handover using the HES handover scale in clinical departments.

Methodology: A cross-sectional descriptive study was conducted on nurses with practice certificates at Thanh Vu Medic Bac Lieu General Hospital.

Results: Nurses demonstrated an average level of awareness of handover, scoring 4.42 ± 0.61. Specifically, information quality was rated at 4.46 ± 1.12, interaction and support at 4.80 ± 0.83, and efficiency at 4.01 ± 0.75. There was a statistically significant association between overall awareness and factors such as age (p=0.032), nursing seniority (p=0.001), working hours (p=0.046), and working departments (p=0.001).

Conclusions: Nurses' perception of patient handover is average, indicating a need for solutions to enhance their awareness of its importance.

Keywords: Perception, handover, HES.

1.INTRODUCTION

The Handover Evaluation Scale (HES), developed by O'Connell B. in 2008, is a widely recognized tool for assessing nurses' perception of handover quality, with high internal consistency (Cronbach's alpha: 0.92-0.94) [1]. A 2013 study recommended using 14 out of the 20 items on the HES scale to evaluate clinical handover perceptions [12]. The scale includes 14 items divided into three categories: Information Quality (6 items), Interaction and Support (5 items), and Efficiency (3 items), rated on a 7-point Likert scale.

Handover functions include exchanging and updating patient information and facilitating interaction among staff [8,13]. Factors affecting clinical handover include organizational, cultural, behavioral, and environmental issues, which can lead to incomplete handovers due to missing information, communication errors, inconsistent data, lack of updates in nursing care plans, non-standardized data, and omission of patient-beneficial content [2,4,6,7,10,11,15].

In Vietnam, no studies have explored nurses' perceptions of patient handover. Thus, we conducted a study titled "Assessment of Nurses' Perception of Patient Handover by HES Scale at Clinical Departments of Thanh Vu Medic Bac Lieu General Hospital in 2023" with the following objectives: (i) To assess nurses' perception of patient handover using the HES scale in clinical departments; (ii) To analyze the relationship between demographic characteristics and nurses' perception of patient handover.

2. METHODOLOGY

2.1. Research Subjects

All 211 nurses in clinical departments with

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practice certificates.

2.2 Research site

Research was conducted in clinical departments meeting sampling criteria, from September 1, 2023, to November 30, 2023.

2.3 Research Design

Cross-sectional descriptive study

2.4 Sample Size and Sampling Method

Sample size: 211 nurses

Sampling method: Total sampling

2.5. Data Collection Tools

The principal investigator obtained the original HES tool from O'Connell [14]. The translation process included four stages, and the questionnaire comprises three parts: Information Quality (6 questions), Interaction and Support (5 questions), and Efficiency (3 questions). Responses are scored from 1 to 7, with "strongly disagree" as 1 and "strongly agree" as 7. Two negatively phrased items are scored inversely. The total score indicates the perception level: 1-3 (negative), 4 (average), 5-7 (positive) [9]. Results will display section-wise question content, mean score, standard deviation, and score range.

2.6. Data Processing and Analysis

Data were analyzed using SPSS 20 with descriptive statistics (percentage, mean, standard deviation). T-tests were used for dichotomous variables, and ANOVA for nominal and ordinal variables. Relationships between general characteristics and nurses' perception of clinical handover were considered significant if $p<0.05$.

2.7. Ethical consideration

The study adheres to ethical research regulations and was approved by the Science and Technology Council of Thanh Vu Medic Bac Lieu General Hospital. Participants

3. RESULTS

A total of 211 nurses participated in the study. The female participants comprised 66.8%, approximately double the male participants at 33.2%. Nurses over 30 years old made up 57.3% of the sample. Regarding educational qualifications, 56.9% held college degrees, and 3.8% had university degrees. Married nurses accounted for 57.3% of the participants. In terms of experience, 48.8% had 2-5 years of experience, while 12.3% had over 11 years. The outpatient department had the highest number of nurses at 30.3%. The majority of handovers took place in under 5 minutes (48.3%), while 26.1% took over 10 minutes.

Table 3.1.: Nurses' Perception of Handover Work (n=211)

Content	Mean ± SD	Min	Max
I can focus on the patient information received	5.35 ± 1.32	1.0	7.0
Patient information received is updated	4.87 ± 1.76	1.0	7.0
I receive complete patient information	4.67 ± 1.96	1.0	7.0
I clearly understand the information provided	4.17 ± 1.85	1.0	7.0
Important information is not always provided	3.67 ± 1.71	1.0	7.0
The way information is provided is easy to follow	4.03 ± 1.86	1.0	7.0
Information quality	4.46 ± 1.12	1.0	7.0
I have the opportunity to discuss unclear issues	5.24 ± 1.43	3.0	7.0
I can discuss difficult clinical situations	5.08 ± 1.27	3.0	7.0
I can discuss workload issues	4.82 ± 1.38	3.0	7.0
I am trained in various aspects of nursing care	4.58 ± 1.22	1.0	7.0
I can discuss difficult cases with colleagues	4.32 ± 1.20	1.0	7.0
Interaction and support	4.80 ± 0.83	2.8	7.0
Patient information is provided timely	4.10 ± 1.35	1.0	7.0
I often receive unrelated information during handover	4.08 ± 1.41	1.0	7.0
Handover takes too much time	3.86 ± 1.46	1.0	7.0
Handover efficiency			
I can focus on the patient information received	4.01 ± 0.75	1.0	7.0

For information quality, the average score was 4.46, with "I am able to focus on the information received by the patient" scoring highest at 5.35 and "The way the information is provided to me is easy to follow" scoring lowest at 4.03.

In the engagement and support category, the statement "I have the opportunity to talk about things I don't understand" had the highest average score of 5.24, while "I have the opportunity to talk to colleagues when I encounter a difficult case" scored the lowest at 4.32.

Regarding handover effectiveness, the average score was 4.01. The statement "Patient information was provided in a timely manner" scored highest at 4.10, and "I found the handover took

too long" scored lowest at 3.86.

Table 3.2.: General Perception of Handover (n=211)

Handover evaluation scale	Mean ± SD	Min	Max
General perception	42 ± 0.61	1.27	6.05

The overall perception score was 4.42 ± 0.61

Table 3: Relationship between Demographic Characteristics and General Perception of Handover (n=211)

Demographic Characteristics	General Perception	p
Giới tính		
Male	4.27 ± 0.56	0.071*
Famale	4.50 ± 0.71	
Age		
≤ 30 years	4.48 ± 0.58	0.032*
30 years	4.35 ± 0.43	
Education		
High School	4.48 ± 0.62	0.822**
College	4.40 ± 0.73	
University	4.44 ± 0.62	
Ethnicity		
Kinh	4.00 ± 0.76	<0.001**
China	3.92 ± 1.02	
Khmer	4.25 ± 0.70	
Marital Status		
Married	4.42 ± 0.62	0.501*
Single	4.43 ± 0.60	
Seniority		
< 1 year	4.06 ± 1.08	<0.001**
2-5 years	4.53 ± 0.59	
6-10 years	4.34 ± 0.64	
> 11 years	4.47 ± 0.81	
Working Time		
Full-time:	4.42 ± 0.62	0.046*
Department		
Emergency	3.88 ± 0.37	<0.001**
Demographic Characteristics	**General Perception**	**p**
Clinical	4.44 ± 0.64	
Hemodialysis	3.81 ±0.44	
Emergency Resuscitation (ICU)	4.72 ± 1.08	
Surgery and Anesthesia	4.33 ± 0.49	
Obstetrics	4.74 ± 0.73	
Surgery	4.69 ± 0.65	
Pediatrics	4.46 ± 0.38	
Internal Medicine	4.69 ± 0.65	
Handover Time		
< 5 minutes	4.49 ± 0.59	0.483*
5-10 minutes	4.38 ± 0.70	
> 10 minutes	4.37 ±0.82	

*Notes: T-test for binary variables, ANOVA for ordinal variables- were used.

There were no significant associations between general perception and gender, education level, marital status, or handover time (p>0.05). However, age was significantly associated with general perception (p=0.03); nurses under 30 had better cognition than those over 30. Ethnicity also showed a significant relationship with general perception (p<0.001), with the Kinh ethnic group having higher general awareness and social interaction levels than the Chinese and Khmer groups.

Seniority was significantly associated with handover awareness (p<0.001); nurses with two or more years of experience showed higher handover efficiency than those with one year. Working time (p=0.04) and faculty (p<0.001) were also significantly associated with general perception of handover.

4. DISCUSSION

4.1. General Perception

Information Quality: The average score was 4.46 ± 1.12, lower than Chong D (2020) (5.19 ± 0.69) [3], Bin Wang (2022) (6.15 ± 1.17) [16], and Gungor et al. (2022) (38.32 ± 6.85) [5]. This lower score may be due to the high workload of nurses, leading to increased awareness of recording patient information. However, the content "I am able to focus on the information received by the patient" received a positive score of 5.35 ± 1.32.

Interaction and Support: The average perception score was 4.80 ± 0.83, lower than Chong D (5.54 ± 0.79), Bin Wang (2022) (5.73 ± 1.31) [16], and Gungor et al. (2022) (14 ± 3.81) [5]. The lower support among nurses may be due to a young, inexperienced workforce. Nonetheless, nurses positively perceived the opportunity to discuss unclear issues.

Handover Efficiency: The average perception score was 4.01 ± 1.41, indicating a negative perception. This score was lower than those found in studies by Chong D (2020) (4.46 ± 1.01) [3] and Bin Wang (2022) (5.43 ± 1.25) [16]. The high workload and reliance on paper-based handovers might explain this lower score.

4.2. Relationships with Demographic Characteristics

No significant associations were found between general perception and gender, education level, or marital status. However, there was a statistically significant association between age and general cognition (p=0.03). Younger nurses had

a higher general awareness of the handover scale than older nurses, similar to findings by Chong D (2020) (p=0.02) [8]. This suggests that younger nurses are more proactive in learning and interested in patient handover processes.

There was also a significant association between ethnicity and general perception (p<0.001), with Kinh ethnic nurses having a higher understanding than Chinese ethnic nurses. Additionally, working time (p=0.04) and working faculty (p<0.001) were significantly associated with general perception.

Seniority was significantly associated with awareness of handover efficiency (p<0.001). Nurses with longer tenure had a higher awareness of patient handover, consistent with findings by Berg Jochen et al. (2018) (p=0.04) [2]. New nurses, typically with one year of experience, are still developing practical and communication skills. In contrast, nurses with about five years of experience have accumulated substantial knowledge and can mentor newer nurses.

5. CONCLUSION AND RECOMMENDATIONS

Nurses' perception of handover at Thanh Vu Medic Bac Lieu General Hospital is generally average, with specific scores as follows:

- Information Quality: 4.46 ± 1.12
- Interaction and Support: 4.80 ± 0.83
- Handover Efficiency: 4.01 ± 0.75

To improve these perceptions, training sessions should be organized to enhance nurses' awareness of the importance of effective patient handover.

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TẠP CHÍ ĐIỀU DƯỠNG VIỆT NAM

POSTOPERATIVE CARE FOR KIDNEY TRANSPLANT PATIENTS AT VIET DUC UNIVERSITY HOSPITAL IN 2023: A STATUS REPORT

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ABSTRACT

Objectives: To describe the current status of post-operative care for Kidney Transplant Patients and propose solutions to enhance the quality of care at the Organ Transplantation Center, Viet Duc University Hospital.

Methodology: A cross-sectional study descriptive study was conducted from August to November 2023. Data were collected using a questionnaire based on the Ministry of Health's Postoperative Patient Monitoring Table. The sample included all kidney transplant recipients monitored at the hospital during the study period. Data were analyzed using SPSS version 21.

Results: The study included 148 kidney transplant recipients, of whom 59.5% were male, and 72.6% had a high school education level. The majority of patients rated nursing care activities highly, with over 80% reporting satisfaction with aspects such as mobility support and assistance in returning to daily activities. Overall, 96% of patients assessed the quality of care as good, while 4% rated it as very good.

Conclusions: The postoperative care provided at the Organ Transplantation Center, Viet Duc University Hospital is positively evaluated by kidney transplant patients. To further improve care quality, it is recommended to implement enhanced nursing training, kidney transplant health education programs, and robust monitoring and evaluation plans.

Keywords: postoperative, kidney transplant recipients, quality of care.

1. INTRODUCTION

Kidney transplantation is considered the optimal treatment for patients with end-stage renal disease. In 2022, the Americas reported the highest number of kidney transplants in the world. That year there were around 39,196 kidney transplants in the Americas, compared to 25,329 transplants in Europe, and 18,219 in the Western Pacific. Organ donation can be given through both a deceased and living donor if blood and oxygen are flowing through the organs until the time of recovery to ensure viability [7]. According to the Vietnam Organ Transplant Association, from 1992 to March 31, 2022, Vietnam transplanted 6,550 people. Of which, there were 6,094 kidney transplants [4]. However, post-transplant patients may encounter several issues such as rejection, infection, new-onset diabetes after transplant (NODAT), cardiovascular disease, hypertension, lipid disorders, cancer, anxiety, and depression [2]. To improve the success rate after transplantation, post-transplant patients need special care, including regular clinical check-ups, monitoring drug levels, and strictly adhering to prescribed immunosuppressive medication regimens in terms of dosage and

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timing as directed by their doctor to prevent rejection [3]. Nursing care plays a crucial role in providing necessary information to help patients comply with these strict guidelines. In Vietnam, the first kidney transplant was performed in 1992, and since then, it has become a routine procedure at many major centers and hospitals across the country. However, studies evaluating the current state of post-transplant care have not been fully reported. Therefore, we conducted this study to describe the current state of care for post-kidney transplant patients and propose some solutions to improve the quality of care for post-kidney transplant patients at the Organ Transplantation Center, Viet Duc University Hospital.

2. STUDY DESIGN AND SETTING

2.1 Populations

2.1.1. Inclusion criteria

All kidney transplant recipients from August 2023 to November 2023 agreed to participate in the study had completed medical records, and be monitored after transplantation at the Organ Transplant Center - Viet Duc Friendship Hospital.

2.1.2. Exclusion criteria

Patients who had kidney transplants elsewhere or had kidney transplants at Viet Duc Hospital were followed up elsewhere.

Patients who did not agree to participate in the study

2.2. Method

- A cross-sectional descriptive study was conducted among post-operative care for kidney transplant recipients, total sample selection

- The questionnaire based on the Post-operative patient monitoring table of the Ministry of Health to assessed quality of care and also was referenced by the research team from several other domestic authors. The questionnaire was built in 2 parts:

Part 1: General information of the research subjects

This part exploits general information of the research subjects such as: gender, age, education level.

Part 2: Current status of nursing care for patients after kidney transplant surgery

The current status of nursing care for patients after kidney transplant surgery was studied and surveyed based on a set of quantitative survey questions. Patients were interviewed directly by nurses for each question, including detailed explanations of each item so that patients understood each item before answering. The variables included: Monitor the progression of the patient's condition, monitor daily fluid intake and output, monitor signs of rejection, care for drainage tubes and catheters, monitor complications (bleeding, vascular occlusion, etc.), help patients manage post-surgery pain, support mobility, administer medication to the patient, assess the surgical wound and dressings change properly, provide adequate nutritional care for the patient, provide psychological counseling and health education to the patient, guide and help the patient return to normal life activities and overall patient assessment of care results.

- Data were coded in MS Excel 2016 and imported into Statistical Package for Social Sciences (SPSS) version 21 for analysis.

3. RESULTS

3.1. Characteristics of study subjects

Table 3.1: Demographic Characteristics of study subjects

Variables		N (%)
Age		49,5 (min 39, max 55) 50-55 50-55 years old accounts for the largest proportion, 76.2%.
Male/female		1,47/1
Education	High school	61 (72,6%)
	Vocational training	18 (21,4%)
	University	1 (1,2 %)
	Secondary school	4 (4,8%)
Occupation	Farmer	53 (63,1%)
	Worker	14 (16,7%)
	Officer	3 (3,6%)
	Other	14 (16,7%)

Comments: The average age of the study sub-

jects were 49.5 years, with the highest proportion being in the 50-55 age group. 72.6% had a high school education level, and the primary occupation was farming, accounting for 61.3%.

3.2. Underlying diseases of study subjects

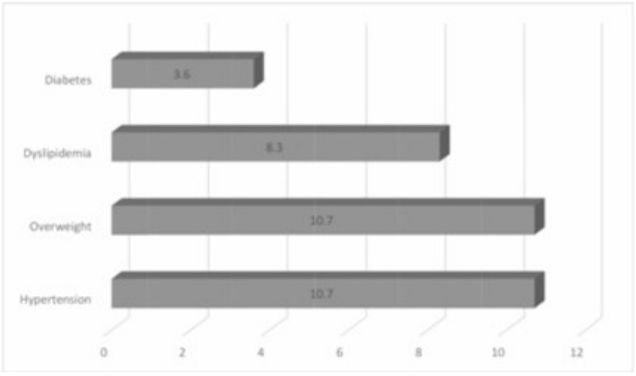

Figure 3.1: Distribution of underlying diseases among study subjects

Comments: The patients with hypertension accounted for the highest proportion of 10.7

3.3. The current state of patient care after kidney transplantation

No.	Content	Fully Implemented (%)	Partially Implemented (%)	No Implemented (%)
1	Monitor the progression of the patient's condition	86.9	6	7.1
2	Monitor daily fluid intake and output	80	15	5
3	Monitor signs of rejection	79.8	14.3	5.9
4	Care for drainage tubes and catheters	66.7	28.6	4.8
5	Monitor complications (bleeding, vascular occlusion, etc.)	84.5	7.2	8.3
6	Help patients manage post-surgery pain	88	8.3	3.7
7	Support mobility	94	6	0
8	Administer medication to the patient	65.5	21.4	13.1(The patients did not remember the name of medications)
9	Assess the surgical wound and dressings change properly	52.4	35.5	11.9
10	Provide adequate nutritional care for the patient	85.7	9.5	4.8
11	Provide psychological counseling and health education to the patient	52	38	10
12	Guide and help the patient return to normal life activities	83	17	0
13	Overall patient assessment of care results	96	4	0

Table 3.2: Current status of patient care after kidney transplantation

Table 3.2: Current status of patient care after kidney transplantation

Comments: Most nursing activities were highly rated, with substantial percentages for monitoring patient progress (84.5%), providing nutritional care (85.7%), monitoring complications (84.5%), and supporting mobility (94%). However, certain areas received lower ratings from patients, such as psychological care and health education, which were rated at 52%, and wound care at 52.4%. Additionally, despite daily medication intake, 13.1% of patients were unable to recall the names of their medications.

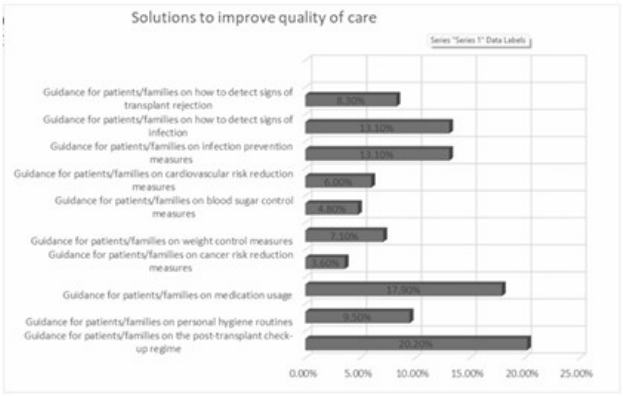

Figure 3.2: Solutions to improve quality of care

The figure shows the percentage of patients suggested the solutions to improve the quality of care including: Guidance for patients/families on the post-kidney transplant check-up regime; guidance for patients/families on personal hygiene routines; guidance for patients/families on medication usage; guidance for patients/families on cancer risk reduction measures; guidance for patients/families on weight control measures; guidance for patients/families on blood lipid control measures; guidance for patients/families on reducing cardiovascular risk factors; guidance for patients/families on infection prevention meas-

ures; guidance for patients/families on how to detect signs of infection; guidance for patients/families on how to detect signs of transplant rejection.

4. DISCUSSION

In our study, the age of the study subjects ranged from 39 to 55 years old, which was considered a favorable age factor when performing kidney transplantation. Because at this age, the patient's physical condition was still good. Regarding gender, more than half patients were male, accounting for 59.5%. This result was consistent with previous studies with a higher rate of male kidney transplant patients than female patients in the study [5], [1]. 72.6% of patients had a high school education, 21.4% had a college-level education, which was considered a favorable factor for doctors and nurses to guide and help patients grasp issues related to the profession that need to be followed and monitored after transplantation. 63.1% of patients worked in the fields, this characteristic could affect the economic conditions, living conditions, movement, and activities of patients after kidney transplantation [6].

The study results indicated that patients had a very high opinion of post-transplant care at the Organ Transplant Center, Viet Duc Friendship Hospital, with more than 80% rating the care by nurses as good, including full implementation of procedures. This was especially true for aspects like patient mobility support, nutritional care, postoperative pain management, and guidance to help patients return to normal life activities. A literature review of nursing care for kidney transplant patients indicated that patients should be encouraged to walk as soon as possible within 24 hours after kidney transplant surgery [8] Some aspects that nursing staff needed to focus on to improve the quality of post-transplant care include medication administration, wound assessment, psychological care, and education for patients.

Based on the survey of post-kidney transplant care, we found that effective patient care requires:

From the hospital: Regularly check and supervise post-transplant patient care, and create nursing care checklists for each post-transplant phase.

For nursing staff: Nurses must adhere to the technical procedures for post-transplant patient care, such as dressing changes and medication administration. They should guide patients and their families on using immunosuppressive drugs and emphasize the importance of adherence, including long-term use. Nurses could also guide patients on using smart applications to support medication adherence.

For patients and families: Firstly, to ensure health and the longevity of the new kidney, post-discharge patients needed to follow up regularly as scheduled by the treating physician and seek immediate medical attention for any unusual signs. Patients should keep daily records of pulse, blood pressure, weight, and urine output (and blood glucose if necessary) to report to their doctor during follow-ups for appropriate medication adjustments. Secondly, special attention is required for the post-transplant diet: follow a cooked food and boiled water diet. Avoid raw foods and seafood as they can easily cause infections like E.coli. Did not consume alcohol or stimulants. Drink adequate water daily. Thirdly, an appropriate lifestyle: Besides following the post-transplant diet, patients should engage in gentle exercises for 20-30 minutes per session to strengthen their bodies and boost immunity. Fourthly, adhere to prescribed medications: Kidney transplant patients must use immuno-

suppressive drugs for life to maintain the longevity of the transplanted kidney. Therefore, patients should note: Did not stop taking medication even if feeling healthy. Did not arbitrarily increase or decrease the dosage of immunosuppressive drugs. Did not skip doses or take extra medication without consulting a doctor. Lastly, maintain hygiene: Isolate for at least the first month after discharge (preferably in a separate room), and wear masks when interacting with others and going outside. Maintain personal hygiene. Avoid contact with people showing signs of contagious diseases, especially respiratory infections like flu, measles, mumps, and pneumonia.

5. CONCLUSION AND RECOMMENDATIONS

Post-kidney transplant care at the Organ Transplant Center, Viet Duc Friendship Hospital is rated positively by patients. Certain aspects of post-transplant care, such as psychological counseling, medication administration, and wound assessment, need to be enhanced. Some solutions to improve care quality include training nurses, implementing health education programs about kidney transplantation, and developing plans for regular monitoring, supervision, and evaluation.

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QUALITY OF LIFE IN KIDNEY TRANSPLANT RECIPIENTS BEFORE AND AFTER THE TRANSPLANTATION

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ABSTRACT.

Objective: To investigate the impact of kidney transplantation (KTx) on recipients' quality of life (QoL) before and after the procedure.

Method: A comparative cross-sectional study was conducted on 137 kidney transplant recipients (KTRs) followed at the 108 Military Central Hospital from December 2016 to June 2022. QoL was assessed using the self-reported SF-36 Questionnaires.

Result: The average age of the participants was 40.5 years, with an average of 2.4 years post-transplant. The post-transplant QoL score averaged 73±14 points, indicating a significant improvement (effect size 0.85). Normal-weight KTRs had higher QoL scores compared to overweight and underweight KTRs. QoL scores decreased by 0.26 points per year of age and 3.78 points per year post-transplant. There was no significant association between QoL and graft function or comorbidities.

Conclusions and recommendation: Kidney transplantation significantly enhance the quality of life of recipients, though QoL declines with age and time post-transplant. Managing body weight is crucial for maintaining higher QoL. Continuous personalized care and monitoring are recommended to sustain these improvements.

Keywords: Kidney transplantation, quality of life, SF-36 Questionnaire, Chronic Kidney Disease, Post-Transplant Care.

1. INTRODUCTION

Chronic kidney disease (CKD) is a growing concern globally and in Vietnam, leading to increased utilization of kidney transplantation (KTx) as an optimal renal replacement therapy [3]. Transplant recipients typically experience better survival rates and quality of life (QoL) compared to those on long-term dialysis. KTx significantly reduces metabolic abnormalities and partially restores renal function. Since Vietnam's first kidney transplant in 1992, over 7000 kidney transplants have been performed nationwide [2].

Despite the evident benefits, post-kidney transplant care remains a complex, long-term challenge, both physically and psychologically, for patients and caregivers. Previous studies in Vietnam have reported significant improvements in QoL post-transplant, yet comprehensive assessments comparing pre- and post-transplant QoL remain limited [1, 3, 4]. Monitoring these changes and understanding the influencing factors are crucial for optimizing care for transplant recipients. This study aims to evaluate the impact of KTx on patient QoL and identify factors affecting QoL among kidney transplant recipients.

2. SUBJECTS AND METHODS

2.1. Subjects

The study included patients over 18 years old who underwent successful kidney transplantation and were monitored at 108 Military Central Hospital from January 2019 to June 2022. Pa-

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tients with poor health unable to complete a 30-minute questionnaire or without pre-transplant QoL assessments were excluded.

2.2. Study Site

108 Military Central Hospital

2.3. Study Design

Cross-sectional descriptive study with analysis.

2.4. Sample Size and Sampling Method

137 kidney transplant recipients with complete follow-up records and pre-transplant QoL assessments.

2.5. Data Collection

QoL was assessed using the SF-36 questionnaire, covering 8 domains: physical functioning, role physical, bodily pain, general health, vitality, social functioning, role emotional, and mental health. Scores range from 0 to 100, with higher scores indicating better QoL.

2.6. Data Analysis Method

Effect size (ES) was calculated as the mean change in QoL scores before and after transplantation, divided by the standard deviation of the pre-transplant scores. ES was classified as small (0.20), medium (0.50), and large (0.80). Regression analysis determined correlations between QoL and independent variables. Paired t-tests compared QoL scores before and after transplantation, with statistical significance set at $p < 0.05$. Data were analyzed using SPSS 22.0.

2.7. Ethical Considerations

The study protocol was approved by the Ethics Committee of the Biomedical Research Department at 108 Military Central Hospital.

3.RESULT

3.1. Characteristics of Study Subjects

The study included 137 patients, predominantly male (74.5%), with a mean age of 40.5 years, and an average follow-up of 2.4 years post-kidney transplant. Among the participants, 48.2% had a normal BMI.

3.2. Comparison of QoL before and after kidney transplant

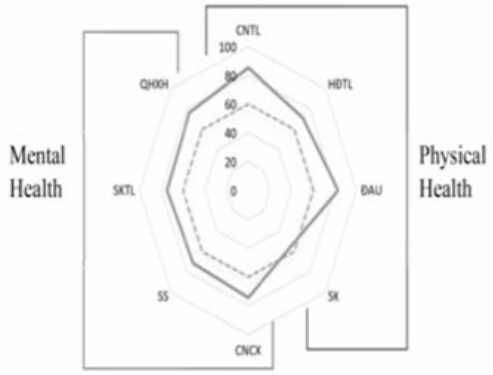

Figure 1. Distribution of QoL of kidney transplant recipients across 8 domains

Figure 1 illustrates the 8 aspects of quality of life in kidney transplant recipients according to the SF-36 scale. Physical role limitations (PRL) and pain sensation scored the highest, above 80 points. However, general health scored only 55 points, below the SF-36 average threshold of 60 points. All mental health aspects scored above 70 points.

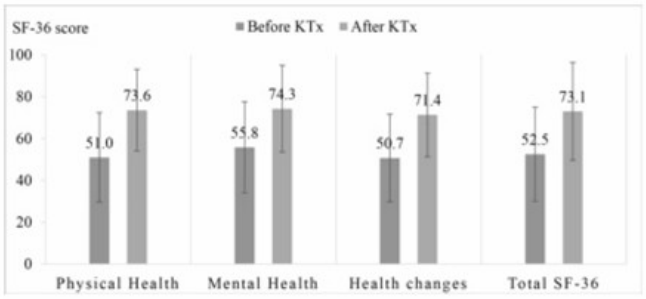

Figure 2. Comparison of quality of life scores before and after kidney transplantation

EF, Effect size, impact factor, EF = 0.2 is a small impact, 0.5 is a medium impact, and 0.8 is a large impact. *p<0.001.

Solid lines represent good quality of life classification (SF-36 > 60 points).

Figure 2 showed the changes in quality of life before and after kidney transplantation, categorized by physical health, mental health, and self-assessment of health compared to one year prior. Pre-transplant SF-36 scores were around 50 points, significantly increasing to over 70 points post-transplant ($p < 0.001$). The effect size (EF > 0.8) indicated a large impact of kidney

transplantation on improving both physical and mental health.

3.3. Quality of Life of kidney transplant recipients and risk factors

Table 3.1. Relationship between nutritional status and QoL in kidney transplant recipients

Quality of Life Aspect	Malnutrition (BMI < 18.5 kg/m2)		Overweight (BMI > 23 kg/m2)	
	OR (95% CI)	p-value	OR (95% CI)	p-value
Physical Health Score > 60	0.56 (0.16-1.91)	0.56	0.31 (0.12-0.79)	0.01
Mental Health Score > 60	0.75 (0.20-2.71)	0.66	0.31 (0.12-0.79)	0.01
General SF-36 Score > 60	0.79 (0.19-3.35)	0.75	0.32 (0.12-0.88)	0.03

Table 3.1 illustrated the relationship between nutritional status and quality of life among kidney transplant recipients. Poor nutritional status, including malnutrition and overweight/obesity, was inversely related to quality of life. However, only overweight/obesity significantly reduced quality of life in both physical and mental health domains ($p < 0.05$).

Table 3.2. Relationship between quality of life and several risk factors

Risk Factor	β	(95% CI)	p-value
Age (years)	-0.26	(-0.47 ; -0.05)	0.01
Gender, male	1.52	(-3.98 ; 7.04)	0.58
Years post-transplant	-3.78	(-5.86 ; -1.68)	< 0.001
Poor kidney function (eGFR < 60 ml/min/1.73m2)	-1.55	(-7.83 ; 4.72)	0.62
Hypertension (BP > 130/80 mmHg)	-2.30	(-6.98 ; 2.37)	0.33
Elevated blood glucose (Glucose > 5.6 mmol/L)	-1.56	(-6.41 ; 3.27)	0.52

Regression analysis revealed that the overall SF-36 score decreased by 0.26 points per year of age ($p < 0.05$) and by 3.78 points per additional year post-transplant ($p < 0.001$). Patients with conditions such as hypertension and elevated blood glucose tended to have poorer quality of life post-transplant, although these differences were not statistically significant.

4.DISCUSSION

According to the WHO, "Health is a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity" The SF-36 questionnaire comprehensively assesses the quality of life (QoL) in kidney transplant recipients, covering both physical and mental health. This study measured the impact of kidney transplantation on QoL, showing significant improvements with effect sizes (ES) greater than 0.8 for both physical and mental health, as well as health changes one year post-transplant. Compared to studies in the Netherlands, where health improvement scores increased from 28 to 66 points pre-transplant, the impact in this study is lower [8]. In Norway, QoL scores for kidney transplant recipients increased from 58 to 68 points [6].

Comparing the QoL scores of kidney transplant recipients in Vietnam, this study shows higher scores compared to domestic research [1, 3]. At Viet Duc Hospital in 2014, QOL scores significantly increased from 34.7 to 53.9 points [1], demonstrating that after kidney transplantation, patients can engage in various physical activities, leading to greater comfort and a substantial improvement in QOL. Despite potential post-surgery complications such as stress and dysphoria, kidney transplantation primarily impacts physical health due to the immediate recovery of renal function, allowing patients to be discharged within 1-2 weeks post-surgery [5]. This study indicates that mental health scores tend to be lower than physical health scores post-transplant; however, the impact of transplantation on mental health is more significant. This may be explained by the correlation between mental health and reduced hospitalization rates, as well as a lower incidence of complications such as new-onset diabetes and adverse effects of immunosuppressive therapy [7]. Additionally, transplant recipients face psychological challenges such as depression and anxiety, possibly stemming from concerns about their health status or the return to dialysis.

In our study, overweight and malnutrition are inversely correlated with QoL, with a statistically significant correlation observed only for overweight. This contrasts with previous research, which found malnutrition, assessed by preliminary nutritional evaluation, to be associated with physical health but not significantly with mental health [10]. Previous studies indicated negative associations between physical health and factors such as age, gender, education level, income, and graft function [9]. However, our study only found an inverse correlation between age and QoL.

5. CONCLUSION AND RECOMMENDATIONS

The quality of life (QOL) of chronic kidney disease patients post-transplantation is statistical significance with notable improvements in SF-36 scores. However, QoL declines with age and time post-transplant. The study highlights the importance of managing body weight in maintaining higher QoL. These findings suggest the need for ongoing personalized care and monitoring to sustain QoL improvements in kidney transplant recipients.

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POSTOPERATIVE CARE OUTCOMES OF VASCULAR PEDICLED FLAP COVERAGE FOR SOFT TISSUE DEFECTS AT THAI NGUYEN CENTRAL HOSPITAL IN 2023

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ABSTRACT

Objective: To describe the outcomes of post-operative care vascularized skin flaps used to cover soft tissue defects at Thai Nguyen Central Hospital and to examine related factors.

Methods: A cross-sectional descriptive study analyzed the care outcomes of 71 patients who underwent skin flap transfer to cover soft tissue defects with vascular pedicles at the Department of Plastic and Aesthetic Surgery, Thai Nguyen Central Hospital, from January to October 2023..

Results: The survival rate of skin flaps was 93.0%. The average care duration was 8.65 ± 1.82 days, with most flaps showing good survival signs by the second day. There was 1 case (1.4%) of congestion on the second day post-surgery and 3 cases (4.2%) of pale flaps with poor capillary refill on the third day. The flap infection rate was 7.0%. Flap infection and instructions on exercising the recipient area were associated with skin flap necrosis.

Conclusions: Flap infection and exercise instructions for the recipient area are key factors influencing flap survival.

Keywords: Vascularized skin flaps care, soft tissue defect, associated factors

1. BACKGROUND

Skin flap transfer surgery using pedicle flaps for soft tissue defect coverage is a complex microsurgical technique that involves connecting blood vessels and accompanying nerves to nourish the skin flaps [1]. The success of the treatment depends not only on the surgeon's expertise but also on the careful monitoring and care of the skin flap's progress, which is crucial for detecting issues such as poor blood flow or bacterial infections, enabling timely intervention to save the flap.

Over the past decades, numerous studies worldwide and in Vietnam have reported encouraging results using pedicle flaps to treat soft tissue defects. For instance, a study by Xiucun Li (2016) at Jilin University, China, on ankle skin reconstruction using pedicle flaps, showed a flap survival rate of 85.24%, with postoperative wound infection being a significant risk factor for flap necrosis ($p < 0.001$) [8]. Similarly, a study by Vu Thi Dung (2017) at Xanh Pon General Hospital and Hanoi Medical University Hospital found that 94.12% of the flaps survived completely [2]. Pham Minh Quan (2021) reported a high survival rate (87.09%) for flaps used to cover soft tissue defects in the lower third of the leg and foot at Can Tho Central General Hospital [5].

Despite performing hundreds of such surgeries annually, Thai Nguyen Central Hospital's Plastic Surgery Department has yet to publish a comprehensive report on the outcomes of post-operative care for pedicle flaps used in soft tissue defect coverage. Therefore, we conducted this study with the following objectives: (i) To describe the results of postoperative care for skin flap transfers used to cover soft tissue defects with vascular pedicles; (ii) To investigate factors related to the outcomes of skin flap care.

2. METHODOLOGY

2.1. Participants

The patients underwent skin flap surgery with

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vascular pedicles to cover soft tissue defects at the Department of Plastic Surgery, Thai Nguyen Central Hospital.

2.1.1. Inclusion criteria

- Patients who underwent initial skin flap surgery with vascular pedicles to cover soft tissue defects.

- Patients who voluntarily participated in the study.

2.1.2. Exclusion criteria

- Patients with vascular conditions such as arterial occlusion, varicose veins, atherosclerosis causing vascular lumen narrowing, or blood clotting disorders.

- Elderly patients with chronic cardiovascular or respiratory diseases who cannot undergo lengthy surgery.

2.2. Study site and time

- Study period: From 1/2023 to 10/2023

- Research site: Department of Plastic and Plastic Surgery – Thai Nguyen Central Hospital.

2.3. Study design:

A cross-sectional description with Analysis

2.4. Sample size and sampling

Including all patients who meet the sample inclusion criteria during the study period.

2.5. Research instruments

The research tool was designed with a pre-structured set of questions divided into three parts: patient characteristics, care activities, and care outcomes.

- Patient characteristics include 8 questions covering age, gender, cause of illness, BMI, chronic comorbidities, graft location, flap size, and flap type.

- Care activities were based on the postoperative monitoring and care protocol for microsurgical flap surgery at the Maxillofacial and Plastic Surgery Department, National Hospital 108 [4]. This study focused specifically on evaluating skin flap follow-up and topical care activities. The content includes 10 questions assessing flap viability (color, temperature, tone, capillary refill, and wound infection status) and care practices (flap warming, dressing changes, limb elevation, immobilization, and exercise regimen guidance).

Flap viability monitoring and care practices were rated on a 0-2 point scale. Patients who received care documented by nurses in the medical records received 2 points; if care was provided but not documented, 1 point; and if no care was provided, 0 points. Each monitoring and care activity was assessed as either "good" (2 points) or "not good" (0-1 point).

- The skin flap care outcomes section consists of 8 questions about clinical signs (color, temperature, tone, capillary refill, skin flap acupuncture, and infection status) on days 2, 3, 4, and 5 post-surgery, as well as the final outcome (skin flap survival status and duration of postoperative care).

2.6. Data collection

Step 1. Each day at 8 a.m., the researcher compiled a list of patients meeting the admission criteria.

Step 2. The researcher then visited the eligible patients, informed them about the study, and invited them to participate. Data collection commenced after obtaining the patient's consent.

Step 3. Patient characteristics were gathered from their medical records.

Step 4. The monitoring and care activities of the graft were assessed using the nurse's daily care checklist.

Step 5. The clinical manifestations of the skin flap and care outcomes were evaluated and recorded from the medical records post-discharge.

2.7. Data analysis

After data cleaning, the questions are encoded, and the data is entered and analyzed using SPSS 22.0 software.

2.8. Ethical consideration

The study was approved by the Medical Ethics Council of Thai Nguyen Central Hospital.

3. RESULTS

3.1. Demographic characteristics of participants

Table 3.1. Distribution of age and causes by gender of the participants

Character		Gender		Sum	p
		Male (%)	Female (%)		
	Age (Mean ± SD); Min-max		36.27 ± 15.34; 5-7		
Age group	≤ 20	10 (17,2)	2 (15,4)	12 (16,9)	0,596
	21 - 40	26 (44,8)	6 (46,2)	32 (45,1)	
	41 - 60	19 (32,8)	4 (30,8)	23 (32,4)	
	> 60	3 (5,2)	1 (7,7)	4 (5,6)	
Reason	Traffic accidents	24 (68,6)	11 (31,4)	35 (49,3)	0,021*
	Occupational Accidents	29 (93,5)	2 (6,5)	31 (43,7)	
	Others	5 (100)	0 (0,0)	5 (7,0)	

The average patient age was 36.27 ± 15.34 years, ranging from 5 to 77. Most patients (60.6%) were aged 40 or younger. Of the 71 patients, 58 were male (81.7%), with no significant age-related gender difference (p = 0.596). Traffic accidents were the leading cause of injury (49.3%), followed by occupational accidents (43.7%). Among male patients, 68.6% were involved in traffic accidents, with a statistically significant difference in injury causes between men and women (p = 0.021).

Table 3.2. Disease characteristics of the participants

Character		N	%
Chronic diseases	Yes	15	21,1
	No	56	78,9
BMI	Light weight	6	8,5
	Average	54	76,1
	Overweight	11	15,5
Grafted skin flap position	Upper limbs	42	59,1
	Lower limbs	23	32,4
	Body	6	8,5
Grafted skin flap type	Seamless vascular stalk	65	91,5
	Free Flap	6	8,5
Flap size	$< 5^{cm2}$	61	89,7
	$5 - 10^{cm2}$	7	10,3

Only 21.1% of patients had chronic diseases. Most patients (76.1%) were in average physical condition. Flap transfer surgeries were primarily performed on the upper limb (hand), representing 59.1% of cases. Flaps with continuous vascular stalks accounted for 91.5%, and flaps smaller than 5 cm^2 made up 89.7% of the total.

3.2. Nursing care activities

Table 3.3. Activities of monitoring the viability of skin flaps

Pigs monitor the condition of the skin flap	Good		Poor	
	N	%	N	%
Color of the flap	71	100	0	0,0
Temperature of the skin flap	67	94,4	4	5,6
Skin flap tension	65	91,5	6	8,5
Capillary regurgitation of the skin flap	65	91,5	6	8,5
Skin flap infection	69	97,2	2	2,8

Most patients had their skin flap's vital condition monitored thoroughly and accurately in accordance with the department's care protocol.

Table 3.4. Skin flap care activities

Skin graft care	Good		Poor	
	N	%	N	%
Leather flap heating	69	97,2	2	2,8
Replace the bandage on the skin flap receiving area	67	94,4	4	5,6
Raising the limb to receive the skin flap	63	88,7	8	11,3
Immobilization of the skin flap receiving area	65	91,5	6	8,5
Exercise Mode Guide	59	83,1	12	16,9

Approximately 83.1% of patients received proper and thorough instruction from nurses on post-surgery movement protocols for the grafted skin flap. The majority of patients had their skin flaps cared for correctly and comprehensively.

3.3. Skin flap care outcomes

Table 3.5. Clinical manifestations of skin flaps

Clinical manifestations		Day 2	Day 3	Day 4	Day 5
Colour	Red	70 (98,6)	67 (94,4)	66 (93,0)	66 (93,0)
	Pale	0	3 (4,2)	4 (5,6)	5 (7,0)
	Violet	1 (1,4)	1 (1,4)	1 (1,4)	0
Temperature	Warm	71 (100)	68 (95,8)	66 (93,0)	66 (93,0)
	Cold	0	3 (4,2)	5 (7,0)	5 (7,0)
Tension	Stretch evenly	71 (100)	71 (100)	66 (93,0)	66 (93,0)
	Softness	0	0	5 (7,0)	5 (7,0)
Capillary reflux	Yes	71 (100)	68 (95,8)	66 (93,0)	66 (93,0)
	No	0	3 (4,2)	5 (7,0)	5 (7,0)
Infection	Yes	0	1 (1,4)	5 (7,0)	5 (7,0)
	No	71 (100)	70 (98,6)	66 (93,0)	66 (93,0)
Pricking the skin	Bleeding	-	68 (95,8)	66 (93,0)	66 (93,0)
	No		3 (4,2)	5 (7,0)	5 (7,0)

Most skin flaps showed positive signs s of viability by the second day of care. There was one case of congestion on the second day after surgery (1.4%). By the third day, three cases (4.2%) exhibited signs of flap hypoperfusion, with pale skin and poor capillary refill. By the fifth day, both the hypoperfusion and infection rates had risen to 7.0%.

Table 3.6. End Care Results

End Care Results		N	%
Condition Leather flap	Fully live flap	42	59,2
	Lack of nutrition at the edge of the flap	19	26,8
	Necrosis < 1/3 of the area	5	7,0
	Complete necrosis	5	7,0
Skin flap care time	< 10 days	51	71,8
	≥ 10 days	20	28,2
	Mean ± SD = 8.65 ± 1.82; min = 5; max = 14		

The overall survival rate of perioperative flaps and healed wounds is 93.0%, with fully viable flaps accounting for 59.2%. The average skin flap care duration is 8.65 ± 1.82 days, with 28.2% of patients requiring more than 10 days of care.

3.4. Factors related to care outcomes

Table 3.7. The relationship between personal characteristics and the final outcome of the flap

Related factors		Skin flap condition		p
		Necrosis (%)	Live (%)	
Age group	> 40	3 (10,7)	25 (89,3)	0,376
	≤ 40	2 (4,7)	41 (95,3)	
BMI	Different	2 (11,8)	15 (88,2)	0,587
	Average	3 (5,6)	51 (94,4)	

There was no relationship between age or physical condition and skin flap necrosis (p > 0.05).

Table 3.8. The relationship between disease characteristics and the final outcome of the flap

Related factors		Skin flap condition		p
		Necrosis (%)	Live (%)	
Chronic diseases	Yes	2 (13,3)	13 (86,7)	0,283
	No	3 (5,4)	53 (94,6)	
Flap Position	Lower limbs	4 (17,4)	19 (82,6)	0,035*
	Different	1 (2,1)	47 (97,9)	
Flap Type	Free Flap	3 (50,0)	3 (50,0)	0,003*
	Seamless vascular stalk	2 (3,1)	63 (96,9)	
Flap size	5 – 10 cm^2	2 (28,6)	5 (71,4)	0,073
	< 5 cm^2	3 (4,7)	61 (95,3)	

Flap necrosis differed significantly between lower limb flaps and those in the upper limb and trunk (p = 0.035) and between free flaps and those with a continuous stalk (p = 0.003). There was no significant relationship between chronic disease history or flap size and graft necrosis.

Table 3.9. The relationship between care activities and the final outcome of the flap

Related factors		Skin flap condition		p
		Necrosis (%)	Live (%)	
Flap heating	Not good	1 (50,0)	1 (50,0)	0,137
	Good	4 (5,8)	65 (94,2)	
Disinfect wounds	Not good	1 (25,0)	3 (75,0)	0,258
	Good	4 (6,0)	63 (94,0)	
Limb elevation	Not good	2 (25,0)	6 (75,0)	0,094
	Good	3 (4,8)	60 (95,2)	
Immobility	Not good	2 (33,3)	4 (66,7)	0,054
	Good	3 (4,6)	62 (95,4)	
Exercise Instructions	Not good	3 (25,0)	9 (75,0)	0,031*
	Good	2 (3,4)	57 (96,4)	

Flap motor guidance was significantly associated with flap necrosis (p = 0.031), while other care activities showed no association with flap necrosis.

Table 3.10. The relationship between infection and the final outcome of the skin flap

Related factors		Skin flap condition		p
		Necrosis (%)	Live (%)	
Infection	Yes	2 (40,0)	3 (60,0)	0,037*
	No	3 (4,5)	63 (95,5)	

Flap infection was significantly associated with flap necrosis (p = 0.037).

4. DISCUSSION

4.1. Skin flap care outcomes

Most skin flaps showed positive signs of viability by the second day of care, with only one case of congestion reported (1.4%). By the third day, three cases (4.2%) exhibited signs of flap malnutrition, such as pale skin and poor capillary refill due to inadequate blood supply. Upon detecting these signs, the treating doctor was notified, and flap puncture was performed, which revealed no bleeding. Flaps showing necrotic signs, including pallor, softness, and lack of bleeding during puncture, were typically removed by the fifth day post-

surgery, with a necrosis rate of 7.0% by this time.

Postoperative flap infections were observed in 5 out of 71 patients (7.0%), a rate comparable to Vu Thi Kim Dung's study, where 7.2% of patients experienced flap infections [3].

Our study found an overall flap and wound healing survival rate of 93.0%, with fully viable flaps accounting for 59.2% and partial viability (flap edges) for 26.8%. Five cases (7.0%) involved flap necrosis affecting less than one-third of the area, all at the distal end of the flap stalk. This survival rate is higher than that reported by Vu Thi Kim Dung, where the flap survival rate was 85.7% [3], and Xiucun Li, whose study showed an 85.4% survival rate [7]. This higher rate in our study may be attributed to the use of flaps with continuous vascular stalks and smaller flap sizes (mostly less than 5 cm^2).

The rates of complete and partial necrosis in our study were both 7.0%, aligning with Lingyun Xiong's findings of 6.0% for both total and partial flap necrosis [10]. The average duration of skin flap care was 8.65 ± 1.82 days, ranging from 5 to 14 days. Notably, 28.2% of patients required flap care for more than 10 days. Cases with a 5-day care period involved necrotic flaps that were removed on the fifth day post-surgery; five cases of partial necrosis (less than one-third of the flap area) extended the care duration.

In comparison, Vu Thi Kim Dung's study reported an average skin flap care duration of 15 days [3], longer than in our study. This discrepancy may be due to our focus solely on patients who underwent skin flap transplant surgery.

Most patients in our study were monitored and cared for in full compliance with the department's care protocol, consistent with Vu Thi Kim Dung's findings [3]. This adherence can be attributed to our department's established guidelines for monitoring and care. However, certain care aspects, such as flap elevation and movement guidance for the recipient area, were only well-executed in just over 80% of cases. This may be due to the challenges in immobilizing or elevating flaps located on the face and torso.

4.2. Some factors related to care outcomes

4.2.1. Relationship between personal characteristics and the final outcome of skin flaps

The patient's age and physical condition can influence incision healing. Older age and a frail physique may reduce resistance, increase the risk of infection, and elevate the likelihood of vascular disease, leading to circulatory issues and potential flap necrosis. However, our study found no significant difference in the rate of flap necrosis across age groups or physical conditions, with p-values of 0.376 and 0.587, respectively ($p > 0.05$). This may be due to our study's inclusion criteria, which excluded patients with vascular conditions such as arterial inflammation, vein disorders, atherosclerosis, and blood clotting disorders.

4.2.2. Relationship between disease characteristics and the final outcome of skin flaps

The results in Table 3.8 indicate that flap necrosis rates are higher in patients who underwent lower limb flap transfer surgery compared to those with upper limb and trunk surgeries ($p = 0.035$). This may be due to poorer blood circulation in the lower limb, which is farther from the heart, increasing the risk of flap occlusion. Bekara et al. also identified significant risk factors for complications in lower extremity stalked flaps, including age over 60, diabetes, and arterial disease.

The necrosis rate was higher in the free flap group compared to the group with contiguous vascular stalks ($p = 0.003$). This may be due to the increased risk of thrombosis following vascular ligation, leading to embolism. Our findings align with previous studies, such as Xiucun Li's research, which also demonstrated

that flap type significantly affects survival rates [8]. Zhu et al. reported necrosis rates of 7.9% for stalked flaps and 17.7% for free flaps [11].

When comparing necrosis rates between flaps smaller than 5 cm^2 and those 5–10 cm^2, no significant difference was found ($p = 0.073$). While Nguyen Ngoc Thach's research suggests that flap size is inversely proportional to survival [6], and Wei et al. found a strong correlation between flap size and necrosis [9], our study's results differ, possibly due to the fact that 89.7% of the flaps in our study were smaller than 5 cm^2.

4.2.3. Relationship between care activities and the final outcome of the flap

Caring for patients after microsurgical flap transfer surgery requires more than standard postoperative care. To achieve optimal outcomes, nurses must possess specialized knowledge and skills in monitoring and assessing graft progress.

For successful graft survival and healing, it is crucial not only to restore blood circulation through microsurgical vascular ligation but also to properly immobilize the flap recipient area. Immobilization supports capillary regeneration, which nourishes the flap.

In our study, 16.9% of patients did not receive adequate instructions on exercising the flap recipient area, and those who were not well-instructed had a higher rate of flap necrosis ($p = 0.031$). This may be due to the location of some grafts on the face and torso, where immobilization is less emphasized. Additionally, inexperienced nurses may struggle to recognize the importance of each aspect of the care process, leading to insufficient guidance on patient exercise routines.

4.2.4. The relationship between infection and the final outcome of the flap

Infection triggers an inflammatory response that releases mediators, leading to thrombosis or vasospasm, potentially damaging blood vessels. Incisional infection can result from the complex interaction between bacterial invasion and the host's defense mechanisms, increasing the risk of vascular surgical failure.

Our study found that among the 5 infected flaps, 2 were completely necrotic, and 3 were partially necrotic. The necrosis rate in infected flaps was significantly higher than in non-infected flaps ($p = 0.037$). This finding aligns with Xiucun Li's research, which also identified postoperative wound infection as a risk factor for flap necrosis [8].

5. CONCLUSIONS AND RECOMMENDATIONS

The overall flap survival rate was 93.0%, with 59.2% fully viable, 26.8% showing nutritional deficiencies at the edges, 7.0% with necrosis affecting less than one-third of the area, and 7.0% completely necrotic. Signs of necrosis appeared in 4.2% of cases by the third day post-surgery, increasing to 7.0% by the fifth day. The flap infection rate was 7.0%, with an average care duration of 8.65 ± 1.82 days. Necrosis was more common in lower limb flaps compared to upper limb and trunk flaps ($p = 0.035$), and in free flaps versus those with integrated vascular stalks ($p = 0.003$). Infected flaps had a higher necrosis rate than non-infected flaps ($p = 0.037$). Motor guidance of the flap recipient area was also associated with necrosis risk ($p = 0.031$).

It is crucial for hospitals to provide continuous training for nurses on monitoring and caring for patient's post-microsurgical flap transfer, particularly emphasizing the importance of proper motor guidance and infection prevention to reduce complications and improve graft survival.

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TẠP CHÍ
ĐIỀU DƯỠNG
VIỆT NAM

DEVELOPMENT OF A VIETNAM NURSE EDUCATOR COMPETENCY ASSESSMENT INSTRUMENT : AN INITIAL REPORT

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ABSTRACT

Objectives: To develop and validate the Vietnam Nurse Educator Competency Assessment Instrument.

Methodology: The instrument's items were developed from a literature review and aligned with the Vietnam Nurse Teachers Branch's 2022 Nurse Educator Competency Framework. Content validity was initially assessed by five experts, followed by a validity test with ten additional nursing education experts. The instrument was piloted with 30 nurse educators, resulting in a revised version with 51 items across 9 dimensions/sub-scales. This version was then surveyed with 196 nurse educators, and after data cleaning, 191 responses were analyzed for construct validity using confirmatory factor analysis (CFA).

Results: The instrument, comprising 51 items across 9 dimensions, was confirmed. The CFA fit indices showed a good fit with $\chi 2/df$ = 2.083, RMSEA = 0.075, CFI = 0.839, and IFI = 0.841. However, GFI = 0.638 and AGFI = 0.596 indicated that the model did not fully fit the data. Cronbach's alpha values ranged from 0.813 to 0.937 for the sub-dimensions and 0.976 for the entire instrument.

Conclusions and Recommendations: This instrument is a reliable and valid tool for assessing the competency of Vietnam nurse educators. Further studies with larger and more diverse samples are recommended to refine and evaluate its psychometric properties.

1. INTRODUCTION

Nurse educators play an important role in promoting excellence in nursing education, especially in the context of universal health care and promoting equality in access to health care [1]. This is particularly critical given the growing

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needs of the elderly [2, 3] and people with chronic diseases [4]. To perform this role effectively, nurse educators need to be proficient in evidence-based teaching methods and integrate technology into their teaching practices [5]. Additionally, they must possess comprehensive professional clinical knowledge in various nursing fields. The impact of nurse educators extends beyond the academic environment to the educational and healthcare environments, promoting leadership in the healthcare field [6].

A systematic assessment of the competencies of nurse educators is necessary to ensure they meet the required standards and to help them identify areas for professional development. The World Health Organization (WHO) and other international organizations have established common competency areas for nurse educators, including applying theory to practice, developing and evaluating curricula, updating evidence-based nursing care, conducting research, communicating effectively, teaching ethical and professional values, overseeing nursing education programs, and demonstrating leadership [7]. These competencies set international standards that can serve as a basis for assessing the competencies of nurse educators globally. Although they have different names, the competency categories of the WHO and the National League for Nursing (NLN) largely share the same spirit. According to the NLN, the main responsibility of nurse educators is to support the academic and professional development of students [8]. Other studies have also identified nurse educator competencies based on knowledge, skills, attitudes, and values in various areas of health and social care education [9, 10].

Despite the availability of various instruments designed to measure the competence of nurse educators from different aspects, there is still no validated instrument to assess the competence of nurse educators in Vietnam. Existing instruments are often developed in different contexts, based on the perspectives of nurse educators, nursing students, and nursing education leaders [11-14]. However, the unique educational and healthcare environment in Vietnam requires a suitable instrument to accurately assess and support the development of the specific competencies required of Vietnam nurse educators.

Therefore, this study was conducted with the goal of developing and validating the Vietnam Nurse Educator Competency Assessment Instrument, a self-assessment instrument designed for nurse educators working at various organizations and hospitals across Vietnam.

2. METHODS

2.1. Study Participants:

The participants of this study included experts in nursing education and nurse educators at medical universities and colleges nationwide.

2.2. Research methodology:

Study Design: Cross-sectional descriptive study.

Sample Size and Sampling: Convenient sampling was conducted through an online questionnaire sent to experts in nursing education and nurse educators at all medical universities and colleges nationwide.

Inclusion criteria: (i) Voluntary participation in research; (ii) Being a nurse; (iii) Serving as a full-time educator, participating in part-time lectures, or adjunct lectures at universities and colleges in the Health Sciences sector.

Exclusion criteria: (i) Currently on sick leave,

maternity leave, or prolonged absence from education occupation.

Timeline and Sample size: Between March 1, 2024, and April 27, 2024, 196 responses were collected. After data cleaning, a dataset of 191 samples was included in the analysis to evaluate the structural value.

2.3. Instrument

The instrument was designed based on a comprehensive review of domestic and international research literature and tailored to measure the competency of nurse educators, aligning with the Nurse Educator Competency Standards developed by the Vietnam Nurse Teachers Branch in 2022. After adjustments, the instrument consisted of 51 items, assessing the competency of nurse educators across 9 dimensions. Each item was designed as a Likert scale with 4 response levels ranging from 1 (Totally disagree) to 4 (Completely agree).

2.4. Data processing

Statistical analysis was performed using SPSS 20.0 and AMOS 22.0, with a statistical significance level set at $p < 0.05$.

Calculating the Validity of the Instrument: The questionnaire was distributed to 05 experts for content validity and evaluated by 10 additional nurse educator experts. The questionnaire was then piloted with 30 nurse educators and adjusted based on their feedback to ensure clarity and comprehension.

Reliability of the Instrument: Confirmatory factor analysis (CFA) was conducted with appropriate indices, including RMSEA, GFI, CFI, CMIN/df, and PCLOSE. Structural Equation Modeling (SEM) was used in the model conformance assessment CFA. Internal consistency within each dimension was tested using Cronbach's alpha, with thresholds set as follows: unreliable (Cronbach's alpha < 0.40), poor reliability (0.40 – 0.59), high reliability (0.60 to 0.79), and very reliable (0.8 to 1.0).

2.5. Research Ethics

The study received funding from the Vietnam Nurse Teachers Branch and was approved by the Scientific Council and the Ethics Council in Biomedical Research of Vinmec Times City International Hospital (Decision No. 41/2023/QD-VMEC dated May 31, 2023). All information collected during the study is confidential, does not reveal the identity of the participants, and serves only for research purposes.

3. RESULTS

3.1. Characteristics of the Participants

Table 3.1. Characteristics of the Study Participants (n = 191)

		Frequency (N)	Rate (%)
Age (Mean ± SD)		41.01 ± 8.18	
Gender	Male	34	17.8
	Female	157	82.2
Education	Bachelor	41	21.5
	Master	129	67.5
	PhD	21	11
Years of Teaching		14.01±7.73	
Types of Teaching Contracts	Full-time	177	92.7
	Part-time	14	7.3

Among the 191 nurse educators participating in the study, the average age was 41.01 ± 8.18 years. The gender distribution included 34 male educators (17.8%) and 157 female educators (82.2%). All educators had at least a bachelor's degree, with the majority holding a

master's degree (67.5%), and 21 educators possessing doctoral degrees (11%). The average number of years of teaching experience was 14.01 ± 7.73 years. Most educators were employed under full-time teaching contracts, accounting for 92.7%.

3.2. Validation of the Instrument

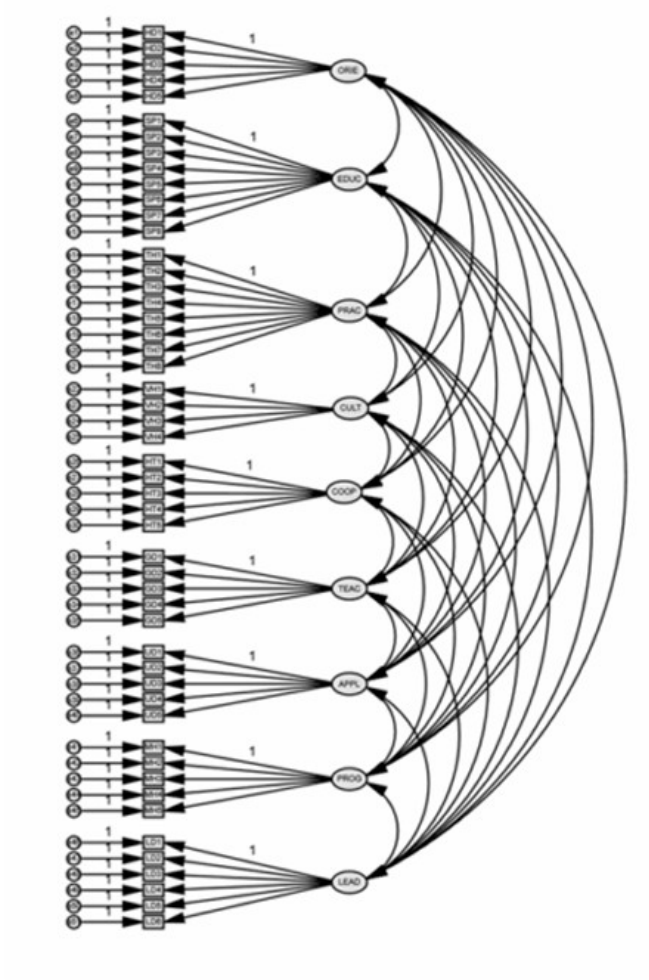

Figure 1. Linear Structure Modeling (SEM)

The Nursing Educator Competency Instrument was validated through confirmatory factor analysis (CFA), encompassing 9 aspects and 51 items, as shown in Figure 1. Factor loadings across the nine competency areas varied, with most showing acceptable values, ranging from 0.5 to 0.8, reflecting the strength of the relationship between observed variables and their underlying constructs.

Table 3.2. Calculating the Value of the Instrument (Confirmatory Factor Analysis - CFA)

	X2	df	p	X2/DF	RMSEA	CFI	YOUTH	GFI	AGFI
Model	2474.331	1188	0.000	2.083	0.075	0.839	0.841	0.638	0.596

The model's acceptability was supported by the following indices: $\chi^2/df = 2.083$, RMSEA = 0.075, CFI = 0.839, and IFI = 0.841. However, the high Chi-square value (2474.331, $p < 0.05$) and low GFI (0.638) and AGFI (0.596) values indicated that the model did not fully fit the data.

Table 3.3. Cronbach's Alpha Coefficient of the instrument

	Cronbach's Alpha
Competence in teaching knowledge and practice (GD1 – GD5)	0.860
Competence in subjects and curriculum (MH1 – MH5)	0.876
Competence in mentoring students into professional competence development (HD1 – HD5)	0.880
Competence in student-centered pedagogy (SP1 – SP8)	0.937
Competence in evidence-based practice (TH1 – TH8)	0.939
Competence in digital collaborative learning (UD1 – UD5)	0.887
Competence in leadership and management (LD1 – LD6)	0.877
Competence in cultural and linguistic diversity (VH1 – VH4)	0.813
Competence in collaboration and societal (HT1 – HT5)	0.889
Overall Instrument	0.976

The subscales in each competency area showed Cronbach's Alpha coefficients ranging from 0.813 to 0.939, indicating good to very good reliability. The overall Cronbach's Alpha coefficient for the instrument was 0.976, demonstrating that the instrument is highly reliable and consistent in assessing the competencies of nurse educators.

4. DISCUSSION

The development and evaluation of the Vietnam Nurse Educator Competency Assessment Instrument offer a valuable tool for assessing

and enhancing nurse educators' capabilities in Vietnam. By identifying both strengths and areas for improvement, educational institutions can tailor professional development programs to address specific needs, ultimately enhancing the quality of nursing education. This approach aligns with research highlighting the critical role of competent nursing faculty in fostering effective learning environments and improving patient care outcomes [9, 10, 15].

The structure and assessment process of the Vietnam Nurse Educator Competency Assessment Instrument align with international efforts to create reliable competency tools for nurse educators. The Nursing Education Capacity Framework by the World Health Organization (WHO) serves as a foundation for similar instruments developed in various contexts, such as those by Farahani et al. (2015) and Garbrah et al. (2020a) [7, 11, 12]. These studies highlight the importance of culturally relevant adaptation, which this study addresses through a rigorous translation and back-translation process.

Despite the instrument's high internal consistency and reasonable structural accuracy, the lower GFI and AGFI indicators suggest a need for further refinement. These indicators highlight areas where the model does not fully align with the expected data, signaling potential points for improvement. Future research should focus on enhancing the instrument's accuracy and applicability by adjusting variables to ensure cultural and contextual relevance for Vietnam nurse educators. This may involve gathering qualitative feedback from a broader range of stakeholders, including nurse educators, administrators, and education professionals, to identify and eliminate any vague or redundant variables. This approach aligns with previous studies that emphasize the importance of context-specific revisions to improve the clarity and relevance of assessment instruments [9, 13].

Expanding the size and diversity of the research sample is essential to ensure robust standardization and generalizability of the instrument. Including participants from various geographical regions, organizational types, and educational backgrounds can provide a more comprehensive understanding of self-assessment responses, thereby enhancing the instrument's accuracy. This approach is supported by findings from confirmatory studies in different educational contexts, which underscore the importance of of diverse samples in developing reliable and generalizable assessment instruments [10, 14]. Additionally, recent research indicates that Vietnam nurse educators across different professional fields often report moderate to high confidence in clinical teaching [16]. Notably, experienced nurses tend to rate their confidence lower than those with no prior clinical experience, offering insights into the development of professional identities among nursing students and informing future refinements of the instrument.

Conducting longitudinal follow-up studies is also necessary to assess the instrument's stability over time and its sensitivity to changes in educator competencies as they engage in professional development. Longitudinal tracking can reveal how each competency area evolves and whether the instrument effectively measures these changes. This approach aligns with research that highlights the need to evaluate the sensitivity and adaptability of instruments over time to ensure their continued usefulness and reliability in nursing education settings [11].

5. CONCLUSIONS AND RECOMMENDATIONS

The Vietnam Nurse Educator Competency

Assessment Instrument is a valuable and reliable tool with CFI and IFI indices above 0.8, despite inconsistencies with GFI (0.638) and AGFI (0.596). While the instrument is suitable for assessing the competencies of Vietnam nurse educators, further research with larger and more diverse samples is recommended to enhance and validate its structure and applicability.

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TẠP CHÍ ĐIỀU DƯỠNG VIỆT NAM

QUALITY NURSING CARE, COMPASSIONATE CARE AND PATIENT SATISFACTION: A MULTIPLE REGRESSION IN PATH ANALYSIS MODEL

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ABSTRACT

Purpose: (i) to describe the quality of nursing care, compassionate care, and patient satisfaction; (ii) To examine the multiple regression relationship between the quality of nursing care, compassionate care, and patient satisfaction; (iii) To propose a model to improve patient satisfaction with nursing care based on the results of this study.

Methodology: A descriptive study was conducted on 304 patients hospitalized for a minimum of 72 hours at Hoan My hospital in Dong Nai, selected from the General Internal Medicine and General Surgery departments.

Results: Overall patient satisfaction with nursing care, of nursing care quality, and compassionate care were positive, with mean scores of 3.54 ± 0.69, 3.46 ± 0.86, and 3.54 ± 0.67, respectively. There was a strong positive correlation between patient satisfaction and both the quality of nursing care (r=0.845) and compassionate care (r=0.777). The analysis revealed that 72.9% of the variation in patient satisfaction was due to factors like medical-technical competence, identity-oriented approach, and physical-technical conditions. Compassionate care accounted for 61.7% of the variance in satisfaction, with patient expectation and capable practitioner being key factors. Mediation analysis showed that nursing care quality had a significant indirect effect on patient satisfaction through compassionate care.

Conclusions: The study found that patients rated nursing care quality and compassionate care very high resulting in strong satisfaction. Imroving care quality through a compassionate approach can further enhance patient satisfaction.

It is recommended to develop a culture of patient-centered care that values empathy, understanding, and addressing patients' psychological and emotional needs.

Keywords: Nursing care quality, compassionate care, patient satisfaction, path analysis model, patient expectations.

1. INTRODUCTION

Patient satisfaction with the quality of nursing care is an important aspect to consider when evaluating the quality of healthcare services in a hospital. When patients are satisfied with nursing care services, they are more likely to adhere to treatment plans, underscoring the importance of satisfaction in promoting overall health and wellbeing. Moreover, patients who

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express satisfaction with nursing care tend to strictly adhere to their prescribed treatment regimen, leading to positive health outcomes and reduced hospital stays [5]. Patient satisfaction research plays an important role in providing valuable insights to healthcare managers, allowing them to assess patient expectations, evaluate satisfaction levels related to the quality of nursing care, identify areas for improvement in nursing services, and design and implement necessary training programs [5,7]. To further enhance patient satisfaction and foster better patient-provider relationships, healthcare providers should prioritize compassionate care. Integrating the principles of compassionate care into nursing practice can have a profound impact on the patient experience and overall quality of healthcare [3].

Nurses have the skills necessary to perform various direct care procedures and are often the first to identify and stabilize any deterioration in a patient's condition [6]. Patient satisfaction about nursing care serves as a positive prognostic indicator for patients and is a clear determinant of the quality of health care provided in a hospital. Therefore, assessing patient satisfaction with nursing care services is necessary to improve the overall quality of nursing care [5].

In Vietnam, hospitals regularly conduct patient satisfaction surveys to evaluate the quality of medical services. However, it is worth noting that there is still a lack of specific focused assessments of patient satisfaction with the quality of nursing care. By understanding the factors that contribute to patient satisfaction, hospitals can optimize resource allocation and improve patient outcomes. Additionally, recognizing the importance of compassionate care is important in nursing practice. Compassionate care focuses on providing empathetic and supportive services to patients, emphasizing their mental and psychological health in addition to their physical health. Integrating compassionate care into nursing practice has the potential to significantly enhance the patient experience and overall quality of health care. Given the current gaps in assessing patient satisfaction with the quality of nursing care and the need to prioritize compassionate care in nursing practice, we aim to conduct a study on "Quality Nursing Care, Compassionate Care And Patient Satisfaction: A Multiple Regression In Path Analysis Model" with following objectives: (i) To describe the quality of nursing care, compassionate care, and patient satisfaction from the perspective of the patients at the selected hospital in Vietnam; (ii) To examine the multiple regression relationship between the quality of nursing care, compassionate care, and patient satisfaction; (iii) To propose a model to improve patient satisfaction with nursing care based on the results of this study

2. MATERIALS AND METHODS

2.1. Study design

Cross-sectional descriptive study.

2.2. Research Locale: The study was conducted at Hoan My Dong Nai hospital. The study period was from December 2023 to February 2024

2.3. Population and Sample:

The target sample size was calculated using G*Power software. This freely available software was utilized to compute statistical power. Power analysis was employed to determine the minimum sample size required to reasonably detect an effect of a given size. Given an alpha of 0.01 and 99% power, the estimated sample size was 304 (effect size=0,1, Alpha err=0,01, Power err=0.99 and number

of predictors=3 because this study predicted that there were 3 variables that influenced the dependent variable).

Inclusion criteria: Patients hospitalized for at least 72 hours, in stable condition, and with a discharge order on the day of data collection, aged 18-59 years.

Exclusion criteria: Patients who were demented, critically ill, or unable to listen, speak, or read.

2.4. Sampling Technique: The study used a systematic random sampling technique to select patients from the departments of General Surgery and Internal Medicine. The starting point was determined randomly and subsequent participants were selected at fixed intervals, ensuring a representative sample.

2.5. Research Instrument: The study employed a questionnaire to gather data on patient satisfaction with nursing care, quality of nursing care, and compassionate nursing care.

The patient satisfaction questionnaire (PSNCQQ) of Laschinger (2005) includes 19 items on nursing attention, kindness, respect, and competence [6]. It uses a 5-point Likert scale and has high reliability, with a Cronbach's α of 0.97.

Wilde Larsson's (2002) quality of nursing care questionnaire comprises 24 items across four dimensions: medical-technical competence, identity-oriented approach, physical-technical conditions, and socio-cultural atmosphere, with Cronbach's α ranging from 0.54 to 0.87 [8].

Burnell's (2011) compassionate nursing care questionnaire has 20 items over four factors: meaningful connection, patient expectations, caring attributes, and capable practitioner, with Cronbach's α ranging from 0.774 to 0.867 [2].

All questionnaires were translated into Vietnamese for this study.

2.6. Data Analysis

Jamovi was utilized to enter and analyze data

The study employed a variety of data analysis techniques to explore the relationships between key variables. Descriptive statistics summarized patient satisfaction, quality of nursing care, and compassionate care. Pearson's correlation coefficient analyzed the associations between these variables. Multiple regression and path analysis provided insights into the complex relationships among nursing quality, compassionate care, and patient outcomes.

3. RESULTS

The research conducted on 304 patients with indications for discharge from the hospital, and the results were as follows:

Table 3.1. The quality of nursing care reported by study patients

The quality of nursing care	Mean ± SD	Descriptive Interpretation
Medical-technical competence	3.49 ± 0.7	Very Good
Identity-oriented approach	3.49 ± 0.7	Very Good
Physical-technical conditions	3.38 ± 0.8	Good
Socio-cultural atmosphere	3.46 ± 1.19	Very Good
Overall mean	**3.46 ± 0.86**	**Very Good**

Legend: 4.21 – 5.00: Excellent; 3.41 – 4.20: Very Good; 2.61 – 3.40: Good; 1.81 – 2.60: Fair; 1.00 – 1.80: Poor

The results show that the overall quality of nursing care was rated as 'Very Good', with a mean score of 3.46 out of 5. Looking at the individual aspects, 'Medical-technical competence' and 'Identity-oriented approach' both received 'Very Good' ratings, with mean scores of 3.49. 'Physical-technical conditions' was rated as 'Good' with a mean of 3.38. The 'Socio-cultural atmosphere' aspect also received a

'Very Good' rating, with a mean of 3.46.

Table 3.2. The compassionate care reported by study patients

The compassionate care	Mean ± SD	Descriptive Interpretation
Meaningful connection	3.52 ± 0.63	Always
Patient expectation	3.52 ± 0.67	Always
Caring attributes	3.52 ± 0.67	Always
Capable practitioner	3.61 ± 0.71	Always
Overall mean	**3.54 ± 0.67**	**Always**

Legend: 4.21 – 5.00: Often; 3.41 – 4.20: Always; 2.61 – 3.40: Sometimes; 1.81 – 2.60: Rarely; 1.00 – 1.80: Never

The overall mean score for compassionate care was 3.54 out of 5, which corresponds to a descriptive interpretation of "Always". Looking at the specific aspects, patients reported that they "Always" experienced meaningful connections with caregivers, with a mean score of 3.52. Patients also felt their expectations were consistently met, with a mean of 3.52 for that dimension. The caring attributes of the staff were also rated as "Always" present, with a mean of 3.52. Importantly, patients felt the practitioners providing their care were highly capable, with a mean score of 3.61 for this aspect.

Table 3.3. Distribution of the respondents' satisfaction with the nursing care received

The patient satisfaction	Mean	Descriptive Interpretation
Provide health information	3.53 ± 0.70	Very Good
Counseling and care	3.52 ± 0.68	Very Good
Attending the emotional needs of the patients	3.58 ± 0.68	Very Good
Professional-technical competencies	3.54 ± 0.68	Very Good
Advice and guidance on care when discharged from the hospital	3.51 ± 0.67	Very Good
Overall mean	**3.54 ± 0.69**	**Very Good**

Legend: 4.21 – 5.00: Excellent; 3.41 – 4.20: Very Good; 2.61 – 3.40: Good; 1.81 – 2.60: Fair; 1.00 – 1.80: Poor

The mean patient satisfaction score was 3.54 out of 5, classified as "Very Good." All measured aspects also fell into the "Very Good" category. Patients were very satisfied with the health information provided (mean score: 3.53). The counseling and care received had a similar mean of 3.52, indicating patients felt well-supported. The organization effectively attended to the emotional needs of patients, scoring a mean of 3.58. The technical competencies of healthcare professionals were highly rated, with a mean of 3.54. Additionally, patients expressed satisfaction with the discharge advice and guidance, with a mean score of 3.51.

Table 3.4. Regression analysis on the significant relationship with the quality of nursing care, the compassionate care and patient satisfaction

Predictors	β	SE	p	Pearson's r
The the quality of nursing care and patient satisfaction **R=0.854, R^2= 0.729, F=201**				
Intercept	17.91	1.8577	<.001	
Medical-technical competence	0.46	0.0914	<.001	0.776
Identity-oriented approach	1.08	0.1552	<.001	0.828
Physical-technical conditions	0.45	0.1233	<.001	0.75
Socio-cultural atmosphere	0.086	0.1497	0.566	0.478
The compassionate care and patient satisfaction **R=0.785, R^2= 0.617, F=120**				
Intercept	13.19	2.633	<.001	
Meaningful connection	1.36	0.318	<.001	0.72
Patient expectation	0.57	0.145	<.001	0.722
Caring attributes	0.13	0.403	0.74	0.668
Capable practitioner	1.37	0.258	<.001	0.677

Patients' perceptions of the medical-technical competence of healthcare staff strongly influenced their overall satisfaction ($\beta = 0.46$, $p < .001$, $r = 0.776$). An identity-oriented, patient-centered approach by healthcare providers significantly impacted patient satisfaction ($\beta = 1.08$, $p < .001$, $r = 0.828$). The quality of the physical environment and technical aspects of the healthcare setting also contributed significantly to patient satisfaction ($\beta = 0.45$, $p < .001$, $r = 0.75$).

Meaningful connections with caregivers were a strong driver of overall satisfaction ($\beta = 1.36$, $p < .001$, $r = 0.72$). Meeting or exceeding patients' expectations positively influenced their satisfaction ($\beta = 0.57$, $p < .001$, $r = 0.722$). Finally, patients' perceptions of practi-

tioners' capabilities and competence significant predicted of satisfaction (β = 1.37, p < .001, r = 0.677).

Table 3.5. Path analysis model of the relationship with the quality of nursing care and compassionate care to patient satisfaction

				95% C.I. (a)				
Type	**Effect**	**Estimate**	**SE**	**Lower**	**Upper**	**β**	**z**	**p**
Indirect	Quality of nursing care ⇒ Compassionate care ⇒ PATIENT SATISFASTION	0.156	0.027	0.102	0.209	0.227	5.73	< .001
Component	Quality of nursing care ⇒ Compassionate care	0.543	0.0237	0.496	0.589	0.796	22.93	< .001
Direct	Compassionate care ⇒ PATIENT SATISFASTION	0.287	0.0485	0.192	0.382	0.286	5.91	< .001
	Quality of nursing care ⇒ PATIENT SATISFASTION	0.422	0.0331	0.357	0.487	0.616	12.75	< .001
Total	Quality of nursing care ⇒ PATIENT SATISFASTION	0.578	0.0212	0.536	0.619	0.843	27.26	< .001

Note. Confidence intervals computed with method: Standard (Delta method)

Note. Betas are completely standardized effect sizes

The indirect effect of the quality of nursing care on patient satisfaction, mediated by compassionate care, was statistically significant (Effect = 0.156, 95% CI: 0.102 - 0.209, p < .001, β = 0.227). The data showed a strong positive relationship between nursing care quality and compassionate care (Effect = 0.543, 95% CI: 0.496 - 0.589, p < .001, β = 0.796). Compassionate care also significantly positively effected on patient satisfaction (Effect = 0.287, 95% CI: 0.192 - 0.382, p < .001, β = 0.286). The direct effect of nursing care quality on patient satisfaction, independent of compassionate care, was also statistically significant (Effect = 0.422, 95% CI: 0.357 - 0.487, p < .001, β = 0.616). The total effect, combining both the direct and indirect paths showed a strong and positive relationship between nursing care quality and patient satisfaction (Effect = 0.578, 95% CI: 0.536 - 0.619, p < .001, β = 0.843).

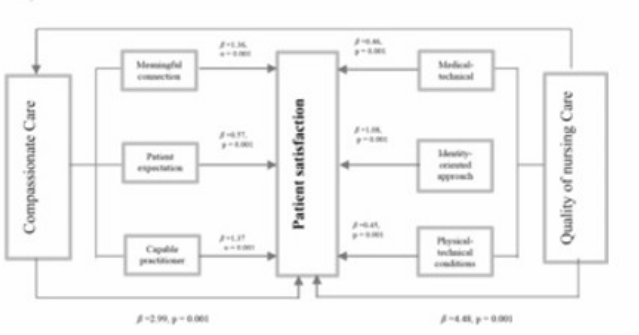

Figure 3.1. Path analysis model based on quality of nursing care and compassionate care to patient satisfaction

Proposed care model

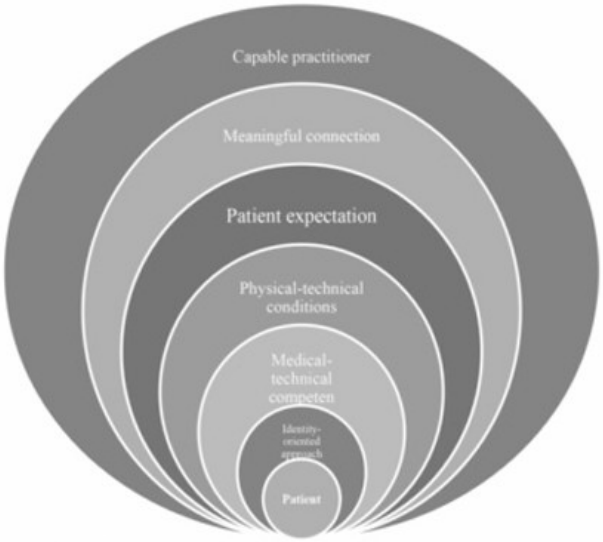

Figure 3.2. Identity-Oriented Comprehensive Care Model

At the heart of this model is patient-centricity, prioritizing their needs, desires, and satisfaction. Additionally, it emphasizes an identity-oriented approach, focusing on each patient's unique cultural, social, and psychological factors. Simultaneously, it aims to enhance the medical technical capacity of staff, ensuring they possess adequate qualifications, knowledge, and professional skills, and to modernize facilities and equipment. Meeting patient expectations, fostering a trusting

and friendly relationship between patients and medical staff, and ensuring competent personnel through appropriate recruitment and training are also crucial to improving patient satisfaction and the quality of healthcare services.

Based on the characteristics of the components of the model, suggest naming it the "Identity-Oriented Comprehensive Care Model-Mô hình chăm sóc toàn diện định hướng cá nhân hóa".

4. DISCUSSION

In this study, the overall average quality of care score was 3.46 ± 0.86, classified as "Very Good" indicating that technical and professional services met patient expectations well. The overall average compassionate care score wad 3.54 ± 0.67 classified as "Always," showing high patient satisfaction with the attitude, care, and empathy of medical staff. This aspect is crucial as it significantly impacts the overall patient experience. These results highlight the efforts of medical facilities to improve care quality, both technically and humanely. This not only increases patient satisfaction but also contributes to better health outcomes, such as treatment adherence, reduced overuse of services, and a strengthened positive image of the healthcare facility in the community.

The overall average patient satisfaction score with care reached the "Very Good" level at 3.54 ± 0.69 points in this study, reflecting successful efforts to improve care quality at this medical facility. Other studies also show high levels of patient satisfaction, but not all aspects achieved such high ratings [5].

In the Quality of Care factor: "Medical Technical Competence" had the greatest influence on patient satisfaction (β=0.31) highlighting the importance of improving healthcare personnel's expertise and skills. "Identity-Oriented Approach" (β=0.27) and "Physical-Technical Conditions" (β=0.22) also significantly influenced satisfaction, emphasizing the need for a patient-focused environment and well-maintained facilities. Notably, “Sociocultural environment” did not significantly affect patient satisfaction, indicating a need to reconsider the approach to building the care environment and culture at this medical facility.

In Compassionate Care: "Meaningful Connection" (β=0.32) and "Patient Expectations" (β=0.29) are the most influential factors, highlighting the importance of establishing relationships and meeting patient expectations. "Competent Healthcare Providers" (β=0.25) is also crucial, underscoring the need for training and developing skilled medical staff. Notably, the factor "Quality of Care" did not have a significant relationship [8].

The results in this study align with those of other studies on nursing care quality, compassionate care, and patient satisfaction [1,3,5,6].

Quality of nursing care indirectly affects patient satisfaction through the intermediate variable "Devoted care" highlighting its importance in increasing patient satisfaction. Quality of care also directly and strongly influences "Compassionate Care" (β = 0.543). Therefore, enhancing the quality of care will improve compassionate care.

Compassionate care directly impacts patient satisfaction (β = 0.287), indicating that its improvement increases patient satisfaction. Additionally, quality of care directly influences patient satisfaction (β = 0.422), meaning that

enhancing care quality positively affects patient satisfaction. The overall impact of quality of care on patient satisfaction is substantial, with a coefficient of 0.578 and a highly significant p-value (< 0.001). These results underscore the crucial role of improving both quality of care and compassionate care in enhancing patient satisfaction.

This study recommends the Identity-Oriented Comprehensive Care Model, which is based on a thorough understanding and recognition of the patient as a whole person with unique cultural, social, and psychological factors that shape their healthcare experience and needs. It offers highly personalized and holistic healthcare services that are tailored to the specific needs and characteristics of each individual patient.

First and foremost, the model places a strong emphasis on a "identity-oriented approach" that recognizes and attends to the unique cultural, social, and psychological aspects of every patient. This means that rather than using a one-size-fits-all strategy, healthcare professionals make a deliberate effort to learn about a patient's background, beliefs, lifestyle, and emotional state. For instance, the model acknowledges that patients' viewpoints on illness, recovery, and treatment may differ depending on their cultural background. The model makes sure that the care is respectful and in line with the patient's values and preferences by recognizing and addressing these cultural differences.

In a similar vein, the model considers the social determinants of health, which include a patient's living situation, financial standing, and resource accessibility. This allows healthcare providers to address any disparities or barriers that may impact the patient's ability to seek, engage with, and benefit from healthcare services.

Additionally, the model emphasizes how important it is for patients to be emotionally and psychologically well. It acknowledges that a patient's mental state has a major impact on the results of their general health. Consequently, the model integrates techniques to offer emotional support, cultivate trust and empathy between patients and medical personnel, and tackle any behavioral or psychological issues that might be impeding the patient's recuperation or overall health.

In addition to this identity-focused methodology, the model seeks to improve healthcare personnel's technical proficiency and competency. This involves making certain that staff members have the training, expertise, and credentials required to provide excellent, research-based care. In order to provide patients with a contemporary, comfortable environment that encourages healing and recovery, the model also strongly emphasizes updating healthcare facilities and equipment.

The Identity-Oriented Comprehensive Care Model's ultimate goal is to raise patient satisfaction and the standard of healthcare services by placing the patient at the center of the care delivery process. Through the identification and resolution of each person's distinct and complex needs, this model seeks to deliver a more effective, compassionate, and individualised healthcare experience.

5. CONCLUSIONS AND RECOMMENDATIONS

The results indicate that the quality of nursing care, compassionate care, and patient sat-

isfaction were rated at a high level.

There is a positive relationship between the quality of care, compassionate care, and patient satisfaction, suggesting that enhancing these factors can further improve patient satisfaction.

The proposed "Identity-Oriented Comprehensive Care Model" emphasizes personalizing healthcare services to ensure each patient receives care and attention tailored to their unique cultural, social, and psychological characteristics, which is expected to enhance patient satisfaction. It is recommended to develop a culture of patient-centered care that values empathy, understanding, and addressing patients' psychological and emotional needs.

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TẠP CHÍ ĐIỀU DƯỠNG VIỆT NAM

INFLUENCE OF WORK ENVIRONMENT, AND JOB SATISFACTION ON NURSING CARE QUALITY IN SELECTED HOSPITALS IN VIET NAM: NURSES' PERSPECTIVE

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ABSTRACT

Objectives: This study examines the relationships between work environment, nursing care quality, and job satisfaction among nurses in selected hospitals in Vietnam, aiming to propose a framework for improving nursing practice.

Methodology: A descriptive-correlation research design was used, involving 375 randomly selected staff nurses. Data were collected using validated tools: the Practice Environment Scale of the Nursing Work Index, the Quality Nursing Care Scale, and the Job Satisfaction Survey. The Statistical Package for Social Science (SPSS) software was used for data analysis. Descriptive statistics were used to measure the variables. Linear regression was used to analyze the influence factors related to the quality of nursing care in the selected hospitals Vietnam.

Results:

The study results showed that the work environment was rated at 2.64 (SD = .42), quality nursing care at 4.59 (SD = .38), and job satisfaction at 3.52 (SD = .47). The work environment strongly correlated with both quality nursing care ($r = .57$, $p < .01$) and job satisfaction ($r = .52$, $p < .01$), while a moderate correlation existed between quality nursing care and job satisfaction ($r = .32$, $p < .01$). Linear regression indicated that the work environment ($\beta = .26$, $p < .001$) and job satisfaction ($\beta = .22$, $p < .001$) were significant predictors of quality nursing care, explaining 23.9% of the variance.

Conclusions: These findings indicate that nursing care quality is satisfactory and that work environment, and job satisfaction are key factors influencing quality It is suggested that improving the work environment and job satisfaction can enhance the quality of nursing care in Vietnamese hospitals.

Key works: Work environment, Job satisfaction, nursing care quality, staff nurses, Vietnam.

1. INTRODUCTION

Nurses in healthcare organizations are grappling with staff shortages, increasing patient loads, reduced reimbursements, and regulatory pressures. These challenges include understaffing, poor responsibility distribution, high workloads, low salaries, and limited opportunities for professional development [2]. The work environment, a critical factor influencing workforce stability, has been identified as essential for recruiting and retaining high-quality staff [14]. The nursing practice environment, defined as the organizational characteristics that facilitate or constrain professional nursing, plays a pivotal role in this context.

Recent studies have increasingly focused on improving quality nursing care, recognizing that nurses are often the first point of contact for patients and play a key role in comprehensive care models. Quality nursing care significantly im-

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pacts patient well-being, influencing both health outcomes and nurse job satisfaction [7]. This has become a major concern for healthcare providers and patients alike. The World Health Organization (WHO) has released national quality policies and strategies aimed at enhancing healthcare quality and patient safety [1]. Job satisfaction, closely tied to quality care, is also crucial as it affects nurse performance and reduces burnout, commitment issues, and turnover.

Understanding the factors contributing to job satisfaction and quality nursing care is essential, as these directly impact the healthcare industry. If nurses are unable to provide quality care, patient turnover increases. This study aims to explore the relationship between work environment, quality nursing care, and job satisfaction among nurses in selected hospitals in Vietnam, with the goal of proposing strategies to improve nursing practice.

2. RESEARCH METHODOLOGY

2.1. Study design

This study utilized descriptive-correlation research design to evaluate the influence of work environment, quality nursing care, and job satisfaction among nurses working in hospitals.

2.2. Research sites

The population of the study consisted of nurses from selected hospitals in Vietnam, specifically Cho Ray Hospital (3500-bed capacity, 1968 nurses) and Can Tho Central General Hospital (1500-bed capacity, 800 nurses), both similar in hospital category, medical services, bed capacity, and staffing.

2.3. Population, Sample size, and Sampling Technique

The two selected hospitals employ over 2700 nurses. Using G*power with an analyzed power of 0.90, an effect size of 0.50, and a significance level of 0.05, the required minimum sample size was 374 respondents, who were randomly selected.

2.4. Research Instruments

1. A demographic data form developed by the researchers, covering gender, age, marital status, education level, area of assignment, work shift, experience, and weekly working hours.

2. The Practice Environment Scale of the Nursing Work Index (PES-NWI) by Lake (2002), containing 31 items across five dimensions, rated on a four-point Likert scale (1 = strongly disagree to 4 = strongly agree), with overall ratings ranging from very poor to very good.

3. The Good Nursing Care Scale (GNCS), developed by Leino-Kilpi (1996) and revised by Phong (2023), consisting of 55 items across seven dimensions, rated on a six-point Likert scale (1 = do not know to 6 = fully agree).

4. The Job Satisfaction Survey (JSS) by Paul E. Spector (1997), comprising 36 items across nine elements, rated on a six-point Likert scale (1 = strongly disagree to 6 = strongly agree).

Instrument reliability was pilot-tested with 30 nurses. The Cronbach's alpha coefficients were 0.90 for PES-NWI, 0.94 for GNCS, and 0.88 for JSS, indicating high reliability. In this study, with 375 nurses, the Cronbach's alphas were .93, .89, and .83 for PES-NWI, GNCS, and JSS, respectively.

2.5. Data Collection and Analysis

Data collection took place in 2023, with instruments distributed by research assistants at each hospital and returned in sealed folders to the principal investigator. A total of 390 questionnaires were distributed, and 375 (96.15%) were completed and analyzed. Descriptive statistics were used to analyze the scores, and factors related to QNC were examined using stepwise multiple regression analysis and path analysis.

2.6. Ethical considerations

Research approval was obtained from the Faculty of Nursing Ethics Committee at Trinity University of Asia. Permissions were also secured from the directors of the two hospitals in Vietnam. All participants signed consent forms,

ensuring their rights to privacy and confidentiality.

3.RESULTS

3.1. General information of study nurses

Table 3.1. Demographic and work characteristics of study nurses (n=375)

Characteristics	Frequency	Percentage
Gender		
Male	71	18.9 %
Female	304	81.1 %
Age (years old) ($\overline{X}$ =34.90, SD =9.09, Range = 22-56 years old)		
21 - 34 years old	219	58.4 %
35 - 48 years old	109	29.1 %
49-52 years old	25	6.7 %
53-59 years old	22	5.9 %
Marital status		
Single	114	30.4 %
Married	256	68.3 %
Divorced	5	1.3 %
Educational level		
Secondary	4	1.1 %
Diploma	206	54.9 %
Bachelor	162	43.2 %
Masters	3	0.8 %
Area of Assignment		
Medicine	123	32.8 %
Surgical	126	33.6 %
Emergency	65	17.3 %
Ob&G dept	19	5.1 %
ICU/Operations	42	11.2 %
Work Shift		
24 hours	243	64.8 %
12 hours	71	18.9 %
8 hours	61	16.3 %
Work Experiences ($\overline{X}$ =10.36, SD =8.87, Range = 1-36)		
1 - 5 years	147	39.2 %
6 - 10 years	88	23.5 %
11-15 years	54	14.4 %
16-20 years	34	9.1 %
more than 20 years	52	13.9 %
Number of Working Hours/Week		
at least 40 hours	34	9.1 %
41-45 hours	69	18.4 %
46-50 hours	131	34.9 %
more than 50 hours	141	37.6%

The majority of participants were female (304, 81.1%), with ages ranging from 21 to 59 years (average 34.9). Most were married (256, 68.3%) and held a diploma (206, 54.9%). A significant portion worked in the surgical department (126, 33.6%) on 24-hour shifts (243, 64.8%). Work experience varied, with 147 (39.2%) having 1 to 5 years of experience, and the average weekly working hours were 49.95.

3.2. Description of study variables

Table 3.2. Range, Mean, Standard Deviation and Dimension level of work environment reported by staff nurses (n=375)

Work Environment	Range	$\overline{X}$	SD	Level
Nurse participation in hospital affairs	1.22 -4.00	2.75	.49	Good/Agree
Nursing foundations for quality of care	1.30- 4.00	2.79	.48	Good/Agree
Nurse manager ability, leadership, and support of nurses	1.00-3.80	2.47	.50	Poor/Disagree
Staffing and resource adequacy	1.00-4.00	2.22	.66	Poor/Disagree
Collegial nurse-physician relations	1.00-4.00	2.76	.55	Good/Agree
Overall Work Environment	1.13-3.84	2.64	.42	Good/Agree

The results in Table 3.2 indicate that while the overall work environment was rated as "good" (M = 2.64, SD = 0.42), specific dimensions like "Staffing and resource adequacy" (M = 2.22, SD = 0.66) and "Nurse manager ability, leadership, and support" (M = 2.47, SD = 0.50) were rated lower.

Table 3.3. Range, Mean, Standard Deviation and Dimension level of nursing care quality reported by staff nurses (n=375)

Type of Quality Nursing Care	Range	$\overline{X}$	SD	Level
Service of safety care	1.33-6.00	4.44	.78	Very satisfied/ Agree
Nursing characteristics	2.00-6.00	4.77	.59	Very satisfied/ Agree
Nursing care activities	2.71-5.90	4.67	.44	Very satisfied/ Agree
Nursing competency	2.83-6.00	4.69	.74	Very satisfied/ Agree
Physical environment	2.17-5.67	4.22	.82	Somewhat satisfied/ Neither agree nor disagree
Nursing procedure	3.00-6.00	4.87	.50	Very Satisfied/Agree
Cooperation with relative	2.33-6.00	4.12	.82	Somewhat satisfied/ Neither agree nor disagree
Overall mean NCQ	3.13- 5.84	4.59	.38	Very satisfied/ Agree

The results in Table 3.3 shows that staff nurses rated most dimensions of nursing care quality as very satisfactory, with the highest scores in "Nursing procedures" (M = 4.87, SD = .50) and "Nursing characteristics" (M = 4.77, SD = .59). However, lower satisfaction was observed in "Cooperation with relatives" (M = 4.12, SD = .82) and "Physical environment" (M = 4.22, SD = .82).

Table 3.4. Range, Mean, Standard Deviation and Dimension level of job satisfaction reported by staff nurses (n=375)

Type of Job Satisfaction	Range	$\bar{X}$	SD	Level
Pay	2.00-5.75	3.73	.71	Satisfied slightly/ Agree slightly
Promotion	1.75-5.75	3.50	.70	Satisfied slightly/ Agree slightly
Supervision	1.75-5.75	3.76	.81	Satisfied slightly/ Agree slightly
Fringe Benefits	1.50-5.0	3.23	.64	Dissatisfied slightly/ Disagree slightly
Contingent Rewards	1.25-5.50	3.46	.71	Dissatisfied slightly/ Disagree slightly
Operating Conditions	1.25-5.00	2.93	.55	Dissatisfied slightly/ Disagree slightly
Coworkers	1.25-6.00	3.57	.74	Satisfied slightly/ Agree slightly
Nature of Work	2.00-6.00	4.00	.81	Satisfied slightly/ Agree slightly
Communication	1.75-6.00	3.57	.78	Satisfied slightly/ Agree slightly
Overall mean	2.39-4.97	3.52	.47	Satisfied slightly/ Agree slightly

The results in Table 3.4 indicate that overall job satisfaction among staff nurses was moderate (M = 3.52, SD = 0.47). Notably, satisfaction with pay (M = 3.73, SD = 0.71) and supervision (M = 3.76, SD = 0.81) was slightly higher, while satisfaction with fringe benefits (M = 3.23, SD = 0.64) and operating conditions (M = 2.93, SD = 0.55) were lower.

Table 3.5. Correlation analysis of the Relationship between work environment, nursing care quality and job satisfaction among staff nurses (n=375)

Variables	Computed r	Degree of Relationship	p Value	Inte-relation
Quality nursing care to Work environment	.57***	Strong relationship	.000	With significant correlation
Quality nursing care to Job satisfaction	.32***	Moderate relationship	.000	With significant correlation
Work environment to job satisfaction	.52***	Strong relationship	.000	With significant correlation

The results in Table 3.5 demonstrate significant correlations between the work environment and quality nursing care ($r = .57$, $p < .001$), as well as between the work environment and job satisfaction ($r = .52$, $p < .001$). Additionally, a moderate correlation was found between quality nursing care and job satisfaction ($r = .32$, $p < .001$). These findings underscore the critical role of the work environment in influencing both job satisfaction and the quality of nursing care.

Table 3.6. Multiple regression analysis of the factors predicting NCQ

Steps Variables	B	Beta	p value
Work environment	11.91	.26	.000***
Job satisfaction	.68	.22	.000***

$R^2 = .224$; Adjusted R=.239; F (2,374) = 16.98 *** $p < .001$

The results in Table 3.6 indicate that the work environment ($\beta = .26$, $p < .001$) and job satisfaction ($\beta = .22$, $p < .001$) are significant predictors of nursing care quality, together explaining 23.9% of the variance in NCQ among staff nurses. This underscores the importance of improving work conditions and job satisfaction to enhance nursing care quality.

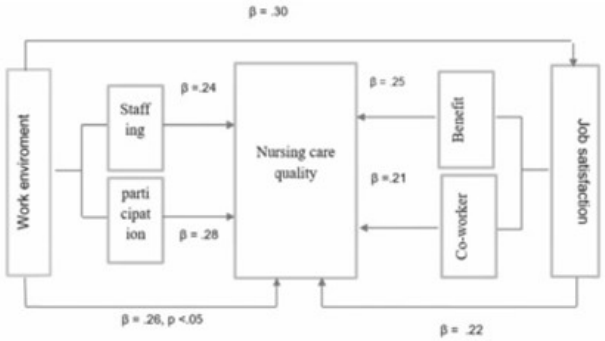

Figure 3.1. Conceptual framework of nursing care quality

The conceptual framework of nursing care quality presented in the figure 3.1 highlights the interconnectedness of key factors influencing nursing care quality. It emphasizes how the work environment, job satisfaction, and nursing practices interact to impact the overall quality of care provided by nurses. The framework serves as a guide for understanding the relationships between these variables, helping to identify areas for improvement in nursing care through targeted interventions and strategies [7].

4.DISCUSSION

4.1. Work environment

The overall work environment was rated as good (M = 2.64, SD = 0.42). However, specific aspects like nurse manager ability, leadership,

and staffing adequacy were rated only fair. This suggests that many nurses in Vietnam experience a mixed work environment. Chronic understaffing and inadequate resources often lead to unsustainable workloads, resulting in decreased job satisfaction [8,11]. A positive work environment is essential for job satisfaction, as it directly influences nurse performance. Without sufficient support, job satisfaction diminishes, ultimately affecting the quality of care provided [5].

4.2. Nursing care quality

The overall rating for NCQ was very satisfactory (M = 4.59, SD = 0.38). However, the "Physical Environment" and "Cooperation with Relatives" scored lower, indicating potential gaps in patient and relative care. These lower scores may be attributed to inadequate staffing and nursing resources, as consistent with Wichaikhum et al. (2019), who highlighted insufficient time for patient and relative discussions under such conditions [12]. Papastavrou et al. (2020) also noted that room size, furniture placement, and workstation design can influence communication, teamwork, and safety [10]. In this study, patient-serving furniture, such as toilets, ventilation, beds, and pillows, received lower ratings (M = 3.82, SD = 1.22). The work environment had a direct positive effect on NCQ, indicating that nurses perceived their workplace favorably [13]. These findings align with previous studies showing that a positive work environment correlates with higher care quality [4]. Interestingly, factors like noise, lighting, and cleanliness were not identified by participants as affecting patient care quality.

4.3. Job satisfaction

The overall job satisfaction was slightly satisfied (M=3.52, SD=0.47). Job satisfaction is essential for nurses to deliver quality care, as confirmed by Farman et al. (2018), who found a positive relationship between job satisfaction and care quality [6]. Additionally, 87.6% of nurses believe that job satisfaction directly influences the quality of care provided [9]. Job satisfaction, a multidimensional concept, reflects the interaction between nurses' expectations, values, environment, and personal characteristics. Understanding and enhancing job satisfaction was crucial for achieving high-quality care and optimal clinical outcomes.

4.4. Relationship between work environment, nursing care quality, and job satisfaction among nurses in selected hospitals in Vietnam

The study result showed significant correlations between all independent variables and the dependent variable. The work environment had the strongest correlation with quality nursing care ($r = .57$, $p < .001$), followed by its correlation with job satisfaction ($r = .52$, $p < .001$), and then the correlation between quality nursing care and job satisfaction ($r = .32$, $p < .001$). These findings align with Ablotaibi (2022), who also observed a moderate correlation between the work environment and job satisfaction ($r = .055$, $p < .05$). Furthermore, there was a positive relationship between job satisfaction and the quality of care delivered, with workload, stress, and unsafe work environments identified as key factors affecting care quality [6]. The study suggests that nurses experience higher job satisfaction when their work environment supports optimal performance. Therefore, policymakers in Vietnam's healthcare institutions should focus on improving the work environment to enhance job satisfaction levels among nurses [3].

Limitations of the study

The study had several limitations. Firstly, the findings cannot be generalized to all hospital settings, as the research was conducted in specific tertiary care hospitals in Vietnam. Additionally, the possibility of response bias exists, where staff nurses may have felt pressured to provide real answers about the quality of nursing care to protect their institution's reputation. Further research is needed to explore other factors influencing the quality of nursing care that were not included in this study.

5.CONCLUSIONS AND RECOMMENDATIONS

The study assessed the work environment, quality nursing care, and job satisfaction in two public tertiary hospitals in Vietnam, identifying work environment and job satisfaction as significant predictors of quality nursing care. While the work environment was rated as good and nursing care as very satisfactory, job satisfaction was only slightly satisfactory. The study highlights the need to measure nursing outcomes as a foundation for improving nursing care quality in Vietnam. Hospitals should reduce nurses' workloads by enhancing the work environment and recruiting more staff to address shortages. Strategies to create a supportive and positive work environment are essential for increasing job satisfaction and retaining nursing professionals. Additionally, implementing timely reward systems for well-performing employees can further motivate staff and improve public service delivery.

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TẠP CHÍ ĐIỀU DƯỠNG VIỆT NAM

FACTORS INFLUENCING NURSES' IMPLEMENTATION OF EVIDENCE-BASED PRACTICE AT TIEN GIANG GENERAL HOSPITAL

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ABSTRACT

Objectives: to describe the information sources nurses use as evidence in practice and to analyze factors affecting the implementation of evidence-based practice at Tien Giang General Hospital.

Methodology: A cross-sectional descriptive study was conducted on 246 nurses in the clinical departments of Tien Giang General Hospital using interviews based on the Vietnamese version of the "Developing Evidence-Based Practice" questionnaire. Data were analyzed using descriptive statistics and the Kruskal-Wallis test, with significance set at $p < 0.05$.

Results: Nurses primarily relied on long-established knowledge (80.08%), insights from experienced colleagues (77.64%), and specific patient needs (77.24%) as evidence. Less frequently used sources included medical and nursing journals (both at 26.83%). Major barriers to adopting evidence-based practice were limited English comprehension (68.29%), insufficient time to access research materials (57.72%), and lack of confidence in evaluating research quality (51.62%). Interestingly, nurses aged 30 to 39 faced fewer challenges in transitioning to evidence-based practice, with a lower mean score of 3.01 ± 0.82 compared to other age groups ($p < 0.05$).

Conclusion: The study identified key factors that both hinder and support evidence-based practice in nursing. To enhance nurses' capacity for evidence-based practice, interventions should target improving English reading skills, allocating more time and resources for research, and boosting nurses' confidence in applying evidence to patient care.

Keywords: Evidence-based practice, nurse, related factors, Tien Giang General Hospital.

1. INTRODUCTION

Evidence-based practice, with three core elements of best evidence, clinical experience, and patient values [3], is essential in improving healthcare quality. In the current context, when the demand for healthcare is increasing, improving the capacity of nursing staff, who play a crucial role in patient care, is extremely necessary. Scientific evidence-based care has been proven to be an effective solution to improve the quality of healthcare services, ensure patient safety, and help nurses increase their confidence, critical thinking ability, and decision-making skills [12].

However, applying evidence-based practice faces many barriers, including time constraints, English reading ability, and authority to change practice [11]. Studies by Pham Thi Oanh [4] and Dang Thi Minh Phuong [5] also pointed out similar challenges in Vietnam. To better understand the situation of evidence-based practice in nursing, this study was conducted with the following

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objectives: Describe the sources of information that nurses use as evidence in care practice; analyze factors affecting the application of evidence-based practice in nursing at Tien Giang Provincial General Hospital.

2. RESEARCH METHODS

2.1 Research subjects: Nurses working in clinical departments of Tien Giang Provincial General Hospital.

Inclusion criteria: Agree to participate in the study.

Exclusion criteria:

The research subjects were absent three times during the survey.

2.2 Research time and location: The study was conducted from April 2022 to July 2022 at clinical departments of Tien Giang Provincial General Hospital.

2.3 Research method: Cross-sectional descriptive study.

2.4 Sample size and sample selection

- Sample size: determined based on the sample size calculation formula for estimating a proportion

$$n = Z^2_{\left(1-\frac{\alpha}{2}\right)}\frac{p(1-p)}{d^2}$$

In this case, n is the sample size required for the study.

$Z_{\left(1-\frac{\alpha}{2}\right)}$ = 1,96 confidence interval 95% =>@= 0,05

p: the proportion of nurses applying scientific research into practice according to the study at Children's Hospital 1 and 2; p = 20% [5].

d: is the allowable error, choose d = 0.05.

Applying the formula to calculate the sample size of 246 nurses.

- Sample selection method: Convenient sampling.

2.5 Research tools:

Dang Thi Minh Phuong translated the Vietnamese version of the Developing Evidence-Based Practice (DEBP) questionnaire with a Cronbach alpha index of 0.8 [5].

2.6 Data collection method: interviewing research subjects based on the available questionnaire.

2.7 Data processing method: Using Stata 14.0 software for analysis. Perform descriptive statistics (frequency, percentage %) and analyze using Kruskal Wallis test, One-way ANOVA to determine the relationship between variables, 95% confidence interval, and statistical significance level $p < 0.05$.

2.8 Research ethics: The Scientific Council of Tra Vinh University approved the study in Decision No. 1372/QD-DHTV dated March 11, 2022.

3. RESEARCH RESULTS

Table 3.1. Characteristics of study subjects (n=246)

Characteristics		Frequency (N)	Percentage (%)
Sex	Male	34	13.8
	Female	212	86.2
Age Group	21 - 29	80	32.5
	30 - 39	118	48
	40 - 49	35	14.2
	≥ 50	13	5.3
Median Age	33.95 ± 7.92 (Min= 22, Max = 63)		
Marital Status	Single/Divorce	71	28,9
	Married	175	71.1
Qualifications	College	151	61.4
	Bachelor's	88	35.8
	Master's	7	2.9
Working time	Administration – on duty	191	77.6
	Shift	55	22.4
Work experience (years)	0 - 5	71	28.9
	6 - 10	79	32.1
	11 - 20	71	28.9
	> 20	25	10.2

Results from Table 3.1 show that most nurses are female, accounting for 86.12% with an average age of 34 ± 7.92. Nurses in the age group of 30 - 39 account for the highest percentage of 48%. Nurses with 6 - 10 years of working experience account for the most at 32.1%.

Table 3.2. Distribution of information sources used by nurses as evidence

Sources of information	Never/ Rarely N (%)	Sometimes N (%)	Often/ Always N (%)
Each patient's needs	6 (2.44)	50 (20.32)	190 (77.24)
Personal experiences	1 (0.40)	58 (23.58)	187 (76.02)
Knowledge that has been applied effectively for a long time	10 (4.07)	39 (15.85)	197 (80.08)
Experienced nurses share	3 (1.22)	52 (21.14)	191 (77.64)
Colleagues share	4 (1.63)	62 (25.20)	180 (73.17)
Hospital policies/protocols	20 (8.13)	88 (35.77)	138 (56.10)
Ministry of Health's improvement initiatives/procedures	22 (8.95)	106 (43.09)	118 (47.96)
Department monitoring reports	19 (7.73)	109 (44.31)	118 (47.96)
Continuous/short-term training courses	22 (8.94)	117 (47.56)	107 (43.50)

Results from Table 3.2 show that nurses mainly rely on knowledge that has been effectively applied for a long time (80.08%) and practical experience in patient care (77.24%). Other sources of information, such as hospital policies, protocols, and initiatives from the Ministry of Health, are also used but less commonly, accounting for only about 47.96%.

Table 3.3 Distribution of Journal Types Used by Nurses as Evidence

Sources of information	Never/ Rarely N (%)	Sometimes N (%)	Often/ Always N (%)
Medical journals	60 (24.39)	120 (48.78)	66 (26.83)
Nursing journals	54 (21.95)	126 (51.22)	66 (26.83)
Other industry research journals	66 (32.92)	112 (45.53)	53 (21.55)

Table 3.3 shows that the distribution of Journal types that nurses often/always use as evidence accounts for a similar proportion of 26.83%, which are Medical and Nursing Journals. In comparison, a lower proportion of 21.54% is Research Journals of other disciplines.

Table 3.4. Distribution of barriers to seeking, evaluating information, and changing evidence-based practice (n=246)

Difficulty factors	Strongly agree/ Agree N (%)	No comment N (%)	Disagree/ Strongly disagree N (%)
Search barriers			
Difficulty in searching for research reports, information from agencies and organizations	126 (51.22)	72 (29.26)	48 (19.52)
Limited ability to read and understand English	168 (68.29)	54 (21.95)	24 (9.76)
No time to search for research documents from the hospital library	142 (57.72)	61 (24.80)	43 (17.48)
Not enough time to search for research reports	127 (51.63)	65 (26.42)	54 (21.95)
Not enough time to search for information from agencies and organizations	126 (51.22)	67 (27.24)	53 (21.54)
Assessment barriers			
Lack of confidence in evaluating the quality of reports and research	127 (51.62)	71 (28.86)	48 (19.52)
Difficulty in determining the applicability of research results to practice	119 (48.37)	85 (34.55)	42 (17.08)
Difficulty in determining the applicability of information from agencies and organizations to practice	117 (47.56)	80 (32.52)	49 (19.92)
Practice barriers			
Lack of authority to change practice	102 (40.92)	80 (32.52)	64 (26.02)
Lack of resources to change practice	98 (39.84)	90 (36.59)	58 (23.57)
Lack of time to implement practice change	99 (40.24)	95 (38.62)	52 (21.14)

Most nurses believe that the most significant barriers to finding evidence are Limited ability to read and understand English 68.29%, lack of time to find research documents from the hospital library 57.72%, and lack of time to find research reports 51.63%, lack of time and difficulty in finding research reports, and information from similar agencies and organizations accounted for 51.22%.

Most nurses have difficulty evaluating information sources when they are not confident in assessing the quality of reports and research 51.62%, difficulty in determining the applicability of research results to practice 48.37% and difficulty in determining the applicability of information from agencies and organizations to practice 47.56%. The most significant difficulty for practice was needing more authority to change practice 41.46%, followed by more time 40.24% and resources 39.84% to change practice.

Table 3.5. Factors supporting practice change (n=246)

Support Factors	Always/ Often N (%)	Sometimes N (%)	Rarely/ Never N (%)
Nursing Colleagues	199 (80.89)	42 (17.07)	5 (2.04)
Head Nurse	165 (67.07)	63 (25.61)	18 (7.32)
Co-Doctors	119 (47.97)	97 (39.43)	30 (12.19)
Hospital Leadership	101 (41.05)	76 (30.90)	69 (28.05)

Clinical nurses received the highest level of support from nursing colleagues at 80.89%, followed by support from head nurses at 67.07%. However, nurses received support from medical colleagues and hospital leaders at only 47.97% and 41.05%, respectively.

Table 3.6. Association between factors hindering the adoption of evidence-based practices and age groups

Barriers	Age group				p
	21 - 29	30 - 39	40 - 49	≥ 50	
Barriers*	2.58 ± 0.74	2.79 ± 0.70	2.47 ± 0.73	2.83 ± 0.52	0.07
Search Barriers†	2.56 ± 0.76	2.71 ± 0.76	2.39 ± 0.77	2.83 ± 0.66	0.10
Evaluation Barriers*	2.56 ± 0.93	2.72 ± 0.89	2.56 ± 1.09	2.63 ± 0.68	0.40
Practice Barriers*	**2.64 ± 0.95**	**3.01 ± 0.82**	2.53 ± 0.81	**3 ± 0.71**	**0.01**

** Kruskal Wallis test*

† One – way ANOVA

Nurses in the age group of 30 to 39 years old had a higher mean score (3.01 ± 0.82) than the mean score of the age group of 21 to 29 years old (2.64 ± 0.95) and the mean score of the age group of 50 years and older (3 ± 0.71) in the practice barriers group. Thus, in the application of evidence-based practice, there was a difference between age groups in the practice barriers group, which was statistically significant with $p < 0.05$.

4. DISCUSSION

Two hundred forty-six nurses participated in the study, and female nurses accounted for the majority with 86.18%; this rate is similar to the author Dang Thi Minh Phuong [5]; the average age of the research subjects is 33.95 ± 7.92. Nurses aged 30 to 39 accounted for the highest rate, consistent with some studies in Vietnam [4,5,6]. Most nurses had college degrees at 61.38%; this result is similar to the study of Nguyen Thi Bich Tram [7] and bachelor's degrees at 35.77%, higher than Tran Thi Nguyen Tien [6]. Among the nurses participating in the study, nurses with working experience from 6 to 10 years accounted for the majority at 32.12%. This difference may be due to different locations and research times, and nurses have proactively improved their professional qualifications to meet the development context of the healthcare system.

The sources of information often used by nurses as evidence are long-standing adequate knowledge (80.08%) and information from the needs of each specific patient (77.24%). This shows that nurses constantly absorb and promote the knowledge that has been passed on well while also applying new knowledge to keep up with trends such as patient-centered care. Next is information from personal experience, experienced nurses sharing, colleagues sharing experience, information from hospital policies or protocols, information from continuing or short-term training courses, monitoring reports at hospital departments, improvement initiatives or procedures of the Ministry of Health. Articles in professional journals and other research journals are rarely used by nurses as evidence in practice [5,6,9].

In applying evidence-based practice, nurses encounter obstacles in searching, evaluating evidence, and using it to practice. Limited ability to read and understand English, insufficient time to find research reports, evidence for nursing practice, not being confident in assessing the quality of research reports, and difficulty determining the applicability of research results to practice are the most significant barriers in searching and evaluating evidence. In the group of practice barriers, needing more authority to change practice and requiring more time and

resources are the most significant barriers [4 - 8, 12]. In addition to the difficulties, nurses receive much support from nursing colleagues and head nurses in applying evidence-based practices to patient care [1,2,5,6,12].

The study found a relationship between age groups and practice barriers; specifically, nurses aged 30-39 applied evidence more effectively to care practice than the remaining age groups. This difference may be because nurses aged 30-39 have accumulated enough knowledge and clinical experience and are also at an age where their professional qualifications and skills have been improved compared to other age groups.

5. CONCLUSIONS

The study identified key factors that both hinder and support the application of evidence-based practice in nursing. To enhance nurses' capacity, interventions should target improving English comprehension, allocating more time and resources for research, and boosting confidence in applying evidence to patient care.

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DISEASE AWARENESS, DISPOSITION, AND CAREGIVING COMPETENCY AMONG PARENTS OF CHILDREN WITH CONGENITAL HEART DISEASE IN SELECTED COMMUNITIES IN VIETNAM

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ABSTRACT

Objectives: To investigate the relationship between disease awareness, caregiving disposition, and competency among parents of children with congenital heart disease, with the goal to developing a comprehensive health education program to improve these factors.

Methodology: A correlational descriptive study was conducted involving 275 parents of children with congenital heart disease across three regions: the Mekong Delta, Central Highlands, and Central Coastal areas.

Results: Parents of children with congenital heart diseases demonstrated a high level of disease awareness, with a mean score of 3.82. Their atttitude towards the condition was notably positive, scoring an average of 4.65, and their caregiving competency was similarly strong, with a mean score of 4.36. While no significant correlation was found between disease awareness and both disposition or caregiving competency, a significant positive correlation was identified between attitude and caregiving competency, reflected by a high correlation coefficient and a p-value of less than 0.001. Furthermore, the study revealed that the linear regression model had an r^2 value of 0.386, indicating that 38.6% of the variability in caregiving ability could be explained by factors, such as acceptance of the condition, recognition of parental role, and support and collaboration with other parents of children with congenital heart disease.

Conclusions: Disposition and caregiving competency play a critical role in determining the health outcomes and quality of care for children with congenital heart disease. As such, it is essential to design and implement specialized training programs tailored for parents, aimed at strengthening their caregiving skills and improving the overall well-being of their children.

Keywords: Disease awareness, disposition, caregiving competency, congenital heart disease, parents.

1. INTRODUCTION

Congenital heart disease (CHD) is one of the most frequently diagnosed congenital disorders, afflicting approximately 0.8% to 1.2% of live births worldwide (W Wu, 2020). CHD management is chronic, requiring ongoing hospitalizations, surgeries, and lifelong follow-up (Ruben Willems et al., 2019). This places significant demands on families, often leading to challenges such as maintaining care routines and managing financial and social constraints (Cardoso Vaz Jéssica & Marten Milbrath Viviane, 2018). Previous studies have shown that parents of children with CHD may struggle with disease management due to limited disease awareness and challenges in planning and implementing care strategies (Berto J. Bouma, 2017; Devyani Chowdhury, 2021). These difficulties can compromise the quality of care provided, potentially leading to poorer health outcomes for the child (Alina Morawska, 2015). Therefore, understand-

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ing how parental awareness, disposition, and caregiving competency are interrelated is crucial for developing targeted interventions. This study aims to explore these relationships with the goal of developing a health education program that enhances these factors and supports families in effectively managing the condition.

1.METHODS

2.1. Population

Parents of children aged 0-18 with congenital heart diseases living in selected areas of Vietnam: Mekong Delta (Dong Thap, Ca Mau), Central Highlands (Lam Dong, Dak Lak), and Central Coast (Phu Yen, Ninh Thuan).

Inclusion Criteria: Participants must be able to read and write and must agree to participate.

Exclusion Criteria:

• Parents of children with additional illnesses other than congenital heart diseases.

• Parents unable to complete the study due to illness, personal reasons, or unwillingness to participate.

2.2. Settings

Research period: from October 25, 2023 to July 17, 2024

Research location: conducted in three regions of Vietnam: Mekong Delta (Dong Thap, Ca Mau), Central Highlands (Lam Dong, Dak Lak) and Central Coast (Phu Yen, Ninh Thuan).

2.3. Design: A correlational descriptive study was used.

2.4. Sample size

The sample size was determined using G Power software, version 3.1.9.2. With an effect size (ρ) of 0.20, a power of 80%, and a margin of error of 5%, the estimated sample size was 275.

2.5. Data collection

The questionnaire was developed based on relevant studies and content-validated by five cardiovascular disease experts (Cardoso Vaz Jéssica & Marten Milbrath Viviane, 2018; Kunnara Maneekunwong, 2022; Osama Hafiz Elshazali & Farah, 2020). It was pilot-tested with 25 respondents who met the inclusion criteria but were not part of the final study. The questionnaire showed good internal consistency, with a Cronbach's alpha of 0.805.

Data were collected directly using a self-administered questionnaire with a 5-point Likert scale, including:

+ Part A of the questionnaire deals with study characteristics

+ Part B of the questionnaire pertains to the disease awareness on congenital heart disease

Numerical Value	Mean Value	Verbal Interpretation	Extended Meaning
5	4.51 – 5.00	Strongly Agree	Very High awareness
4	3.51 – 4.50	Agree	High awareness
3	2.51 – 3.50	Neither Agree Nor Disagree	Moderate awareness
2	1.51 – 2.50	Disagree	Low awareness
1	1.00 – 1.50	Strongly Disagree	Very low awareness

+ Part C of the questionnaire pertains to the disposition among parents of children with congenital heart disease

Numerical Value	Mean Value	Verbal Interpretation	Extended Meaning
5	4.51 – 5.00	Strongly Agree	Very Good disposition
4	3.51 – 4.50	Agree	Good disposition
3	2.51 – 3.50	Neither Agree Nor Disagree	Fair disposition
2	1.51 – 2.50	Disagree	Poor disposition
1	1.00 – 1.50	Strongly Disagree	Very Poor disposition

+ Part D of the questionnaire pertains to the caregiving competency among parents in caring for their children with congenital heart disease.

Numerical Value	Mean Value	Verbal Interpretation	Extended Meaning
5	4.51 – 5.00	Always	Very Good competency
4	3.51 – 4.50	Often	Good competency
3	2.51 – 3.50	Sometimes	Fair competency
2	1.51 – 2.50	Seldom	Poor competency
1	1.00 – 1.50	Never	Very Poor competency

2.6. Data Analysis

The data were processed and analyzed using Jamovi 2.5, with techniques including frequency, percentage, mean, and Pearson's correlation coefficient analysis.

2.7. Research Ethics

The study was conducted after approval from Trinity University of Asia and subsequently with the specific community where the research was carried out. Participants' personal information and data obtained from the research were kept confidential and used only for research purposes.

2. RESULTS

3.1. Characteristics of the study subjects

Table 3.1 Characteristics of the Study Population (n=275)

Demographic	Frequency	Percentage (%)
Sex		
Female	180	65.5%
Male	95	34.5%
Others	0	0%
Highest educational attainment		
Primary level	57	20.7%
Secondary level	179	65.1%
College level	36	13.1%
Postgraduate level	0	0%
None	3	1.1%
Occupational status		
Employed	193	70.2%
Unemployed	81	29.5%
Student	0	0%
Retired	1	0.4%
Area of Residence		
Urban	226	82.2%
Rural	49	17.8%
Civil Status		
Single	14	5.1%
Married	255	92.7%
Divorced	4	1.5%
Widow	2	0.7%
Socioeconomic Status		
Poor level (<65 USD)	55	20.0%
Near -poor level (~65 USD – ~85 USD)	98	35.6%
Average level (~65 USD – ~130 USD)	82	29.8%
Above average level (>130 USD)	40	14.5%

The study involved 275 participants with the following key characteristics:

The age range of parents in the study spans from 19 to 68 years, with a mean age of 38 years. The children's ages range from 1 to 17 years, with a mean age of 6.5 years.

Majority were female (65.5%), with males making up 34.5%.

Most participants had secondary education (65.1%), while primary education was held by 20.7%, and university education by 13.1%.

The majority were employed (70.2%), and 29.5% were unemployed. A significant majority lived in urban areas (82.2%).

Most were married (92.7%), with a small proportion being single (5.1%).

The largest group had a medium socioeconomic status (35.6%), followed by upper-medium (29.8%) and low (20.0%).

Most were mothers (59.6%), followed by fathers (32.0%).

Table 3.2 Characteristics of congenital heart disease in children (n=275)

Characteristics	Frequency	Percentage (%)
Relationship with child		
Father	88	32.0%
Mother	164	59.6%
Others	23	8.4%
Child's initial diagnosis		
Hypoplastic left-heart syndrome	1	1.8%
Univentricular physiology	9	3.3%
Tetralogy of Fallot	34	12.4%
Double-outlet right ventricle	20	7.3%
Double-inlet left ventricle	12	4.4%
Truncus arteriosus	0	0%
Transposition of the great arteries (TGA)	0	0%
Congenitally-corrected TGA	3	1.1%
Coarctation of the aorta	35	12.7%
Atrioventricular septal defect	19	6.9%
Atrial septal defect, type 1	4	1.5%
Ebstein malformation	10	3.6%
Pulmonary valve abnormality	14	5.1%
Aortic valve abnormality	1	0.4%
Aortic abnormality	3	1.1%
Left ventricle outflow tract obstruction	3	1.1%
Atrial septal defect, type 2	7	2.5%
Ventricular septal defect	75	27.3%
Mitral valve abnormality	20	7.3%
Pulmonary vein abnormality	1	0.4%
Other:	0	0%

The most common initial diagnoses were Ventricular septal defect at 27.3%, Coarctation of the aorta at 12.7% and Tetralogy of Fallot at 12.4%.

3.2. Disease awareness among parents of children with congenital heart disease

Table 3.3 Disease Awareness Among Parents of Children with Congenital Heart Disease

Dimension	Mean	Interpretation
A. Disease	3.83	Strongly Agree/ High awareness
B. Symptoms	3.90	Strongly Agree/ High awareness
C. Treatment	3.84	Strongly Agree/ High awareness
D. Prevention	4.01	Strongly Agree/ High awareness
E. Complications	3.50	Neither Agree Nor Disagree / Moderate Awareness
Overall Rating	**3.82**	**Agree/High awareness**

Legend:
4.51 – 5.00 – Strongly Agree / Very High Awareness
3.51 – 4.50 – Agree / High Awareness
2.51 – 3.50 – Neither Agree Nor Disagree / Moderate Awareness
1.51 – 2.50 – Disagree / Low Awareness
1.00 – 1.50 – Strongly Disagree / Very Low Awareness

The average scores for various aspects of congenital heart disease awareness were as follows: Disease (3.83), Symptoms (3.90), Treatment (3.84), Prevention (4.01), and Complications (3.50). Overall, general awareness was high, with a mean score of 3.82, indicating strong agreement with a high level of awareness.

3.3. Disposition Among Parents of Children with Congenital Heart Disease

Table 3.4. Disposition Among Parents of Children with Congenital Heart Disease

Dimension	Mean	Interpretation
A. Acceptance of the Condition	4.59	Strongly Agree / Very Good disposition
B. Acknowledgement of Role	4.66	Strongly Agree / Very Good disposition
C. Support and Collaboration	4.71	Strongly Agree / Very Good disposition
Overall Rating	**4.65**	**Strongly Agree / Very Good disposition**

Legend:
4.51 – 5.00 – Strongly Agree / Very Good disposition
3.51 – 4.50 – Agree / Good disposition
2.51 – 3.50 – Neither Agree Nor Disagree / Fair disposition
1.51 – 2.50 – Disagree / Poor disposition
1.00 – 1.50 – Strongly Disagree / Very Poor disposition

The mean scores for different aspects of parental attitudes towards congenital heart disease were: Acceptance of the condition (4.59), Role perception (4.66) and Support and cooperation (4.71). Overall, the general attitude was very positive with a mean score of 4.65, indicating strong consensus and very good attitudes towards caring for children with congenital heart disease.

3.4. Caregiving Competency Among Parents of Children with Congenital Heart Disease

Dimension	Mean	Interpretation
A. Care after surgery	4.46	Often/ Good competency
B. Nutritional care	4.37	Often/ Good competency
C. Compliance to medication	4.63	Always/ Very Good competency
D. Physical Activity	4.09	Often/ Good competency
E. Oral Care	4.11	Often/ Good competency
F. Caring in emergency situation	4.52	Always/ Very Good competency
Overall Rating	**4.36**	**Often/ Good competency**

Legend:
4.51 – 5.00 – Always/ Very Good competency
3.51 – 4.50 – Often/ Good competency
2.51 – 3.50 – Sometimes/ Fair competency
1.51 – 2.50 – Seldom/ Poor competency
1.00 – 1.50 – Never/ Very Poor competency

Table 3.5. Caregiving Competency Among Parents of Children with Congenital Heart DiseaseThe average scores for various aspects of caregiving are as follows: Post-operative Care (4.46), Nutritional Care (4.37), Medication Adherence (4.63), Physical Activity (4.09), Oral Care (4.11), and Emergency Care (4.52). Overall, caregiving competency is rated as good with a mean score of 4.36, indicating that parents frequently exhibit good caregiving skills.

3.5. Linear relationship between the assessed disease awareness, disposition and caregiving competency among parents of children with congenital heart disease

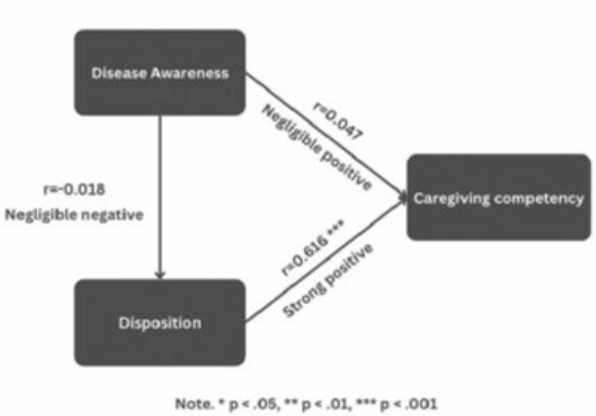

Figure 3.1 Linear relationship between the assessed disease awareness, disposition and caregiving competency among parents of children with congenital heart disease

The study found a statistically significant correlation between attitudes and caregiving ability, suggesting that positive attitudes may be associated with better caregiving ability. Other factors such as illness awareness did not show a significant effect on attitudes or caregiving ability.

3.6. The predictive relationship between the assessed disposition and caregiving competency among parents of children with congenital heart disease

Table 3.6. The predictive relationship between the assessed disposition and caregiving competency among parents of children with congenital heart disease

Variables	Caregiving Competency		
	Coefficients	95% Confidence Interval – 95% CI	p-value
Intercept	0.2459		
A. Acceptance of the Condition	0.0696	-0.0336 ; 1.695	0.139
B. Acknowledgement of Role	0.0615	0.1413 ; 0.383	< .001
C. Support and Collaboration	0.310	0.1724 ; 0.447	< .001
	R^2	0.386	

The findings showed that both acknowledgement of Role and Support and Collaboration were significantly positively associated with caregiving competency, as indicatedby confidence intervals that did not include zero, confirming statistical significance. In contrast, Acceptance of the Condition had a positive co-

efficient, its confidence interval includes zero, suggesting the relationship was not statistically significant. The model explains 38.6% of the variance in caregiving competency, highlighting the strong predictive power of the key dispositions. The resulting predictive equation was:

Caregiving Competency = 0.2459 + (0.0696 * Acceptance of the Condition) + (0.0615 * Acknowledgement of Role) + (0.310 * Support and Collaboration).

Intercept (0.2459): Baseline caregiving competency.

Acceptance of the Condition: Increases caregiving competency by 0.0696 units per one-unit increase but is not statistically significant ($p = 0.139$).

Acknowledgement of Role: Increases caregiving competency by 0.0615 units per one-unit increase and is statistically significant ($p < 0.001$).

Support and Collaboration: Increases caregiving competency by 0.310 units per one-unit increase and is statistically significant ($p < 0.001$).

These results highlighted the importance of support and collaboration in improving caregiving competency, while suggesting further research on other influential factors.

3.7. Recommended health education framework for parents of children with congenital heart disease

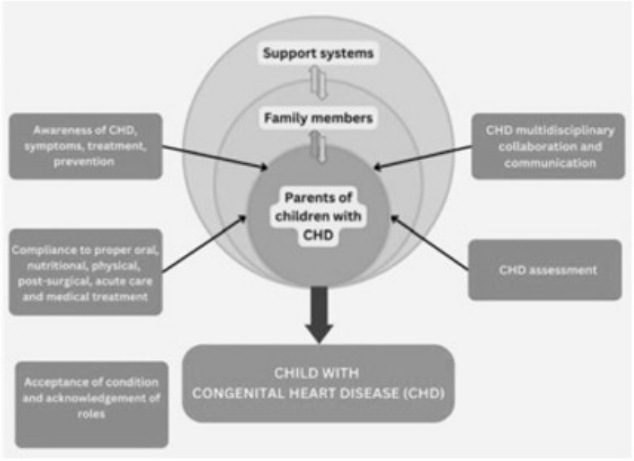

Figure 3.2. Recommended health education framework for parents of children with congenital heart disease

The training program for children with congenital heart disease (CHD) aims to improve quality of life by educating about complications and physical activity requirements. The program includes lectures, case studies, and practical workshops, implemented regularly and integrated into the existing healthcare system, with key support from the nursing staff.

4. DISCUSSION

The study highlights several key characteristics of the participants. The majority are female (65.5%) and married (92.7%), with mothers comprising 59.6% and fathers 32.0% of the respondents. In terms of education, 65.1% have completed secondary education, reflecting a similar trend in developing countries (Osama Hafiz Elshazali & Farah, 2020). Regarding employment, 70.2% are employed, which is higher compared to previous studies that reported lower employment rates (Kunnara Maneekunwong, 2022; Osama Hafiz Elshazali & Farah, 2020). Most participants live in urban areas (82.2%), consistent with the increasing trend of urbanization. Socioeconomic status is categorized as follows: 20.0% are classified as "poor," 35.6% as "near-poor," 29.8% as "middle," and 14.5% as "above average," differing from other studies that reported higher percentages in lower socioeconomic categories (Kunnara Maneekunwong, 2022; Osama Hafiz Elshazali & Farah, 2020).

The study found that awareness of congenital heart disease (CHD) prevention is high, with an average score of 4.01, reflecting effective public health initiatives. In contrast, awareness of complications is lower, with a score of 3.50, indicating a need for better education on severe CHD outcomes such as arrhythmias and heart failure. Similarly, Elshazali et al. (2020) and Maneekunwong et al. (2022) emphasize that edu-

cational campaigns have improved general knowledge but often fail to address the complexities of CHD complications (Kunnara Maneekunwong, 2022; Osama Hafiz Elshazali & Farah, 2020). Therefore, enhancing education on CHD complications is crucial for better disease management and achieving improved outcomes.

The study shows that "Support and Cooperation" has the highest average score of 4.71. On the other hand, "Acceptance of the Condition" has the lowest score of 4.59. This is consistent with findings from Chowdhury et al. (2021) and other studies indicating that acceptance of illness can be a gradual process (Devyani Chowdhury, 2021; Kunnara Maneekunwong, 2022; Osama Hafiz Elshazali & Farah, 2020). Overall, enhancing informational and psychological support for parents could further improve their coping and acceptance of their child's condition.

The study indicates high competency in "Medication Adherence," with an average score of 4.63, reflecting strict adherence to medication regimens for controlling congenital heart disease (CHD). This is crucial for effective treatment and preventing complications, consistent with findings by Bouma (Berto J. Bouma, 2017) and Maneekunwong (Kunnara Maneekunwong, 2022). However, "Physical Activity" also scored 4.63, suggesting a need for improved management of physical activity in CHD care. This contrasts with the higher emphasis found in other studies in 2023, which highlighted the importance of balanced physical activity (Macarena Lorente, 2023). This study underscores the need for a comprehensive care approach that also addresses physical activity and emergency care.

The study reveals a statistically significant correlation between attitude and caregiving ability, indicating that a positive attitude may be related to better caregiving. This highlights the need for support programs focused on emotional management and communication skills for caregivers. Further research could enhance understanding of these dynamics and improve intervention strategies (Kunnara Maneekunwong, 2022; Lorente et al., 2023).

The program will be rolled out on a regular basis and seamlessly integrated into the existing healthcare system. The nursing staff will be central to this process, responsible for organizing training sessions and ensuring that all established protocols are followed.

5. CONCLUSION AND RECOMMENDATIONS

There is a no significant linear relationship between disease awareness and disposition among parents of children with congenital heart disease, nor between disease awareness and caregiving competency. However, a significant linear relationship exists between disposition and caregiving competency. This highlights the need to focus on enhancing caregiving attitudes as a critical factor in improving care quality.

There is no significant linear relationship between disease awareness and disposition among parents of children with congenital heart disease (CHD), nor between disease awareness and caregiving competency. However, a significant linear relationship exists between disposition and caregiving competency. This highlights the need to focus on enhancing caregiving attitudes as a critical factor in improving care quality.

To further support the well-being of children with CHD, a comprehensive training program has been developed. The program aims to improve quality of life through education on complications, early detection, and physical activity. Delivered through lectures, case studies, and workshops, it is integrated into the healthcare system with nursing support. The study concludes that this model can significantly enhance the well-being of children with CHD.

In addition, raising awareness about CHD among parents and caregivers is vital, with a

focus on understanding complications, early diagnosis, treatment options, and the importance of regular medical monitoring. To support families holistically, social and psychological services, including counseling and coping strategies, should be provided. Efforts to increase access to pediatric cardiology services by addressing geographical, financial, and language barriers are also crucial. Expanding program outreach through educational initiatives, seminars, and collaboration with schools and community organizations will further promote awareness and ensure greater support for children with CHD.

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DISEASE-RELATED KNOWLEDGE, STRESS, AND QUALITY OF LIFE AMONG PARENTAL CAREGIVERS OF CHILDREN WITH CLEFT LIP AND PALATE AT MY THIEN ODONTOSTOMATOLOGY PRIVATE HOSPITAL

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ABSTRACT

Background: The lack of research on the impact of knowledge and stress on the quality of life of parents of children with cleft lip and palate, along with the absence of an official care model in Vietnamese hospitals, highlights critical gaps. Comprehensive studies are essential to identify the specific challenges these families face, especially regarding knowledge and stress levels, to develop effective interventions and support systems.

Objectives: This study aimed to assess the self-reported disease-related knowledge, stress levels, and quality of life among parental caregivers of children with cleft lip and palate at My Thien Odonto-stomatology Private Hospital. It also explored the relationships between these factors to better understand the challenges faced by these families.

Methods: This cross-sectional descriptive study included 235 parents of children with cleft lip and palate at My Thien Odonto-stomatology Private Hospital from January to March 2024.

Results: The parental caregivers demonstrated a slightly good level of self-assessed knowledge, with a relatively high standard deviation. Their overall stress level was rated as "Slightly not stressful", and their quality of life as "slightly good". A strong, statistically significant positive correlation was found between their knowledge and stress levels, but no significant correlation was found between knowledge and quality of life.

Conclusions: The findings emphasize the need for comprehensive caregiver support through targeted education, psychosocial interventions, and multidisciplinary care to enhance caregiver wellbeing. The study's results will guide the creation of a parent-centered care model for children with cleft lip and palate in the Vietnamese healthcare system.

Keywords: Children with cleft lip and palate, Caregivers, Disease-related knowledge, Stress, Quality of life.

1. INTRODUCTION

Children with cleft lip and palate are a big problem that disrupts family life. Children with these birth defects of the mouth and face create psychological and emotional stress that significantly affects families [12]. The stages of diagnosis, delivery and treatment of children with cleft lip and palate need to be clearly un-

derstood and adapted by the family [1]. Emotional reactions such as shock, denial, sadness, guilt, and acceptance all reflect the family's efforts to adjust to the situation. Often, parents have to adjust life goals and postpone or cancel activities, leading to increased feelings of anxiety, depression, and stress [3]; [8].

Research by Soeselo et al., (2019) showed that parents' lack of understanding about the health status of children with cleft lip and palate is due to low education levels and informal information and education [9]. from medical experts. Furthermore, parents and caregivers need to be well informed and prepared to manage potential post-operative complications and provide a safe, nurturing environment for their child to recover and thrive.

Quality of life (QoL) is especially important for caregivers of parents of children with cleft lip and palate. They often face unique challenges that can significantly impact their QoL. These challenges can include the physical and psychological stress of caregiving, the financial burden of lengthy medical procedures, and the emotional burden of managing the child's social experiences [2]. These aspects interact with each other, emphasizing the multidimensional nature of the QoL concept. In particular, the psychological health of caregivers can be seriously affected. A study showed that parents of children with cleft lip are suffering from psychological disorders such as anxiety and depression, which contribute to physical deterioration and the victimization of affected children [7]. This psychological stress can, in turn, affect other dimensions of QoL, such as physical health, social relationships, and interactions with the environment [5]. Furthermore, social relationships, which are an integral aspect of QoL, may also be affected. Parental caregivers of children with cleft lip and palate often report feelings of isolation and lack of social support [11].

To the author's knowledge no study has examined how knowledge and stress impact the quality of life of parents of children with cleft lip and palate in Vietnam, and no official care model existed in hospitals. This study aims to (1) assess parents' knowledge, stress and quality of life of parents of children with cleft lip and palate; (2) Evaluate the relationship between knowledge, stress and quality of life; and (3) Develop a suitable care model to support these families in the Vietnamese context.

2. METHODS

2.1 Population and samples

Population

The target population of this study consisted of parental caregivers, the father or mother of children with cleft lip and palate, receiving treatment at My Thien Odonto-stomatology Private Hospital from January to March 2024.

Sample

The inclusion criteria for the study were as follows:

- Had a child with cleft lip/palate between 6 months and 6 years old
- Aged of 18 and 60 years of age
- Take care child for at least six months

The exclusion criteria included serious cognitive or physical impairments, and mental incapacity.

Sample size

Target sample size was calculated using G*Power software. Power analysis was used to determine the minimum sample size necessary to reasonably detect the effect of a given sample size. With an alpha coefficient of 0.01, and 80% power, the estimated sample size was 235.

2.2 Research design

The descriptive correlational method was used in this study, and a convenience sampling technique was applied.

2.3. Research Instruments

A survey questionnaire was used in the

data-gathering to measure the variables defined for the study, which was divided into four parts: (1) Sociodemographic profile was developed by author. This questionnaire consists of age, relationship to child, marital status, highest educational attainment, and employment status; (2) The Disease-related knowledge scale was developed by Pongpagatip et al., (2012). This question consists of 17 items in 5 dimensions, including providing information, Advice and treatment, Information about the disease, Interdisciplinary approach to treatment, and Coordinate appointment scheduling and follow-up. Each item scored on a 6-point Likert scale, from 1 "strongly disagree" to 6 "strongly agree" [6]. (3) Stress Scale Questionnaire was developed from the research of Lei et al., (2010). Includes 33 items, divided into 4 factors including pressure related to long-term care, pressure due to lack of resources, Pressure due to family adaptation, pressure capacity due to disability management. Each item scored on a 6-point Likert scale, from 1 "never" to 6 "always" [4]; (4) The quality-of-life questionnaire was developed by Qatamin et al., (2023), included 26 items in 4 areas physical health, psychological health, social relationships, and environment. Each item scored on a 6-point Likert scale, from 1 "very poor" to 6 "very good" [7].

2.4. Data analysis

Data analysis was performed using SPSS 22.0. Descriptive statistics were used to summarize knowledge, stress, and quality of life. Pearson's correlation coefficient and Chi-squared analysis examined the association between independent variables and quality of life.

3. RESULTS

This study included 235 participants. Most of the participants (34.0%) were 31 -36 years old. Above half of the participants (53.2%) were mother. The majority (64.7%) reported being employed (As can be seen in Table 1).

Table 1. Participant characteristics (n=235)

Variables	Frequency (n)	Percentage (%)
Age		
25 - 30	14	6.0
31 - 36	80	34.0
37 - 42	53	22.6
43 - 48	61	26.0
49 - 55	27	11.4
Relationship to the Child		
Father	110	46.8
Mother	125	53.2
Marital Status		
Single	1	0.4
Married	174	74.0
Divorced	60	25.6
Education level		
Primary school	6	2.6
Secondary school	12	5.1
High School	92	39.1
Bachelor	89	37.9
Postgraduate	36	15.3
Employment Status		
Employed	152	64.7
Unemployed	9	3.8
Self-employed	74	31.5

Table 2. Self-assessed Disease-Related Knowledge of Parental Caregivers of Children with Cleft Lip and Palate

Statements	Mean	SD	Descriptive Interpretation
Information Provision	3.90	0.43	Slightly Good Knowledge
Advice and Treatment.	3.49	0.38	Slightly Poor Knowledge
Information about the Disease	3.74	0.34	Slightly Good Knowledge
Multidisciplinary Approach to Treatment	3.69	0.37	Slightly Good Knowledge
Coordination of Visits to Treatment	3.47	0.44	Slightly Poor Knowledge
Overall Mean	**3.66**	**0.39**	**Slightly Good Knowledge**

Noted: 5.16 - 6.00 Very Good Knowledge 2.67 - 3.49 - Slightly Poor Knowledge

4.33 - 5.15 Good Knowledge 1.84 - 2.66 – Poor Knowledge

3.50 - 4. Slightly Good Knowledge 1.00 - 1.83 - Very Poor Knowledge

Parents caring for children with cleft lip and palate rated their knowledge of the disease as generally quite good, with an average score of 3.66 ± 0.39. Specifically, their knowledge of information provision and disease details was rated as "Slightly Good Knowledge," with average scores of 3.90 ± 0.43 and 3.74 ± 0.34, respectively. Knowledge of multidisciplinary treatment methods was similarly rated as "Slightly Good Knowledge," with a score of 3.69 ± 0.37. However, some aspects, such as advice (3.49 ± 0.38) and coordination of examinations (3.47 ± 0.44), were rated as "Slightly Poor Knowledge."

Table 3. Self-assessed Stress of Parental Caregivers of Children with Cleft lip and Palate

Statements	Mean	SD	Descriptive Interpretation
Long Child Care-Related Stressors	3.43	0.34	Slightly not stressful
Resource Deficiency-Related Stressors	3.57	0.58	Slightly Stressful
Family Adaptation-Related Stressors	3.37	0.48	Slightly not stressful
Defect Management-Related Stressors	3.47	0.37	Slightly not stressful
Overall Mean	**3.46**	**0.44**	***Slightly not stressful***

Noted: 5.16 - 6.00 Always/Very stressful
2.67 - 3.49 – Sometimes/Slightly not stressful
4.33 - 5.15 Almost Always/Stressful
1.84 - 2.66 – Seldom/Not stressful
3.50 - 4.32 Often/Slightly stressful
1.00 - 1.83 – Never/Not very stressful

The self-assessed stress level of parents caring for children with cleft lip and palate is classified as " Slightly not stressful " with an average score of 3.46 ± 0.44. Specifically, stressors related to long-term care of children and factors related to family adaptation were rated as " Slightly not stressful " with scores of 3.43 ± 0.34 and 3.37 ± 0.48. Similarly, stressors related to resource shortages and defective management were also classified as " Slightly Stressful " with mean scores of 3.57 ± 0.58 and 3.47 ± 0.37, respectively.

Table 4. Self-assessed Quality of Life of Parental Caregivers of Children with Cleft Lip and Palate

Statements	Mean	SD	Interpretation
Physical Health	4.01	0.42	Slightly Agree
Psychological health	3.77	0.49	Slightly Agree
Social Relationships	3.67	0.52	Slightly Agree
Environment	3.95	0.40	Slightly Agree
Overall quality of life and general health	4.39	0.50	Agree
Overall mean	3.97	0.47	**Slightly Agree / Slightly Good QoL**

Noted: 5.16 - 6.00 Strongly agree Very good QoL 2.67 - 3.49 – Slightly disagree / Slightly poor QoL
4.33 - 5.15 Agree / Good QoL
1.84 - 2.66 – Disagree / Poor QoL
3.50 - 4.32 Slightly agree / Slightly good QoL 1.00 - 1.83 – Strongly disagree / Very poor QoL

Parents caring for children with cleft lip and palate rated their self-assessed quality of care as "somewhat good," with an average score of 3.97 ± 0.47. Specifically, they rated their general health as "good," with a score of 4.39 ± 0.50. "Slightly good" levels were recorded for physical health (4.01 ± 0.42), environment (3.95 ± 0.40), psychological health (3.77 ± 0.49), and social relationships (3.67 ± 0.52).

Table 5. Multivariate regression between predictors of knowledge factors, self-assessed disease-related stress factors, and parental stress Caregivers of Children with Cleft Lip and Palate

Predictors Knowledge- Stress	SE	t	β	p
Intercept	32.573	0.3708	8.786	< .001
Information Provision	**-0.1503**	**0.0569**	**-2.641**	**0.009**
Advice and Treatment	-0.0331	0.0610	-0.543	0.588
Information about the disease	0.1121	0.0591	1.898	0.059
Multidisciplany approach to treatment	0.0143	0.0501	0.286	0.775
Coordination of visits to treatment	-0.0443	0.0666	-0.664	0.507
Long – term child care- related stressors	**0.2585**	**0.0769**	**3.361**	**<.001**
Resource deficiency – related stressors	**-0.0971**	**0.0476**	**-2.039**	**0.043**
Family adaptation – related stressors	**0.1270**	**0.0620**	**2.048**	**0.042**
Defect management – related stressors	**32.573**	**0.3708**	**8.786**	**<.001**

The multiple regression analysis explored the relationship between self-assessed disease knowledge, stress levels, and the quality of life in parental caregivers of children with cleft lip and palate. The model explained 15.5% of the variance in quality of life ($F = 5.2$, $p = 0.001$), underscoring the importance of addressing both informational and stress-related factors. Effective information provision was negatively correlated with stress, improving caregivers' quality of life. Long-term care stressors fostered resilience and positively impacted quality of life, while resource deficiencies had a negative effect. Family adaptation also contributed to caregiver well-being. The analysis highlighted the need for targeted information and support to improve caregivers' outcomes.

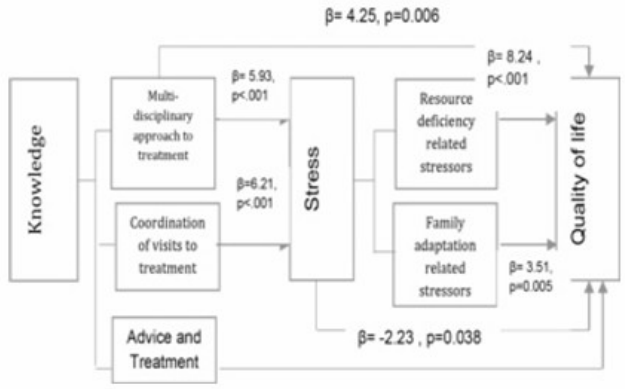

Figure 1. Parent-centered care pathway model for children with cleft lip and palate

Proposing a parent-centered care model for children with cleft lip and palate

Figure 2. Holistic care model for parental caregivers of children with cleft lip and palate

This study utilizes the Comprehensive Care Framework to model support for parents of children with cleft lip and palate, placing the Parent Caregiver at the center of the caregiving process. Key factors impacting their quality of life include clear Information Provision, enabling informed decisions, and Long-term Child Care Stressors, reflecting the ongoing emotional challenges they face. Resource deficiency-related Stressors such as limited financial, medical, or educational access, exacerbate stress, while Family Adaptation Stressors affect overall well-being. Defect Management Stressors highlight the complexities of managing medical care. This holistic model underscores how these interconnected factors shape caregivers' quality of life.

4. DISCUSSION

Research results showed that parents of children with cleft lip and palate generally have a good understanding of their child's condition, with an average knowledge score of 3.58 ± 0.42. They demonstrated a solid grasp of information provision, disease details, and multidisciplinary treatment approaches. However, some areas, such as advice and coordination of examinations, were rated as "somewhat poor." This suggests that parents require additional support and guidance in these areas to care for their children more effectively.

The self-assessed stress level of parents caring for children with cleft lip and palate was rated as "slightly stressful," with an average score of 3.46 ± 0.44. Specifically, stressors related to long-term care and family adaptation were both rated as "slightly stressful," with scores of 3.43 ± 0.34 and 3.37 ± 0.48, respectively. Similarly, stressors related to resource shortages and defective management were also classified as "slightly stressful," with mean scores of 3.57 ± 0.58 and 3.47 ± 0.37, respectively. These results indicate that parents experience a moderate level of stress but are managing it effectively while caring for their child. According to Wells-Durand et al., (2023), the financial costs associated with the comprehensive care of a child with cleft lip and palate can be substantial that can cause stress affecting the quality of life of parental caregivers [10]. Surgical procedures, orthodontic treatments, speech therapy, and other interventions can place a significant financial strain