

**Research Article**

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**Nurses' knowledge, practice and confidence about wound care based on the competency standards in 8 hospitals in Vietnam****Phan Thi Dung<sup>1,2</sup>; Dao khac Hung<sup>3</sup>; Bui Manh Cuong<sup>4</sup>; Le Thi Thuy Trang<sup>4</sup>**<sup>1</sup>Hanoi University of Business and Technology, University in Vietnam, Vietnam.<sup>2</sup>Thien An Obstetrics and Gynecology Hospital, University in Vietnam, Vietnam.<sup>3</sup>Bac Ninh Obstetrics and Pediatrics Hospital, University in Vietnam, Vietnam.<sup>4</sup>Quang Ninh Obstetrics and Pediatrics Hospital, University in Vietnam, Vietnam.**\*Corresponding Author: Phan Thi Dung**Hanoi University of Business and Technology,  
University in Vietnam, Vietnam.

Tel: +84972612888;

Email: phanthidzungvd@gmail.com

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**Keywords:** nurse; wound; knowledge; practice; confidence.**Abstract****Background:** Wound Care (WC) plays a crucial role in patient care conducted by nurses. It directly affects treatment outcomes, especially when chronic or infected wounds remain a big challenge for WC specialists and requires huge medical recourses in wound care and treatment.**Objectives:** This research aimed to explore the actual situation of WC conducted by nurses to inform the development of a training program based on the Vietnam's Basic Nursing Competency Standards (VNBNCs).**Settings:** Eight hospitals in Vietnam.**Participants:** 518 nurses directly performing WC.**Design:** Descriptive cross-sectional study.**Methods:** The study was implemented from June 2020 to October 2020, and the research indicators are nurses' mean knowledge, practice, and confidence scores. The data collection tools included: 1) a self-administered questionnaire about nurses' general characteristics (4 items) and WC knowledge (48 items), a WC evaluation checklist (16 items), and a self-administered questionnaire about their confidence in performing WC (12 items). Data were entered using EpiData 3.1 and analyzed with SPSS 16.0. A  $p < 0.05$  was the level of significance.**Results:** The highest knowledge score of  $1.67 \pm 0.47$  points was found in the item on clean WC. The highest practice score of  $8.79 \pm 1.20$  points belonged to the item on strict compliance with disinfection principles, compared to the lowest one of  $7.58 \pm 1.94$  points found in the item on observing the patient's post-WC reactions, such as pain and bleeding. Nurses who felt very confident in their bandage replacement skills formed 21.2% (110/518 nurses).**Conclusion:** Nurses had high mean knowledge and practice scores in all items, and nurses who were confident and highly confident in performing WC accounted for more than 50%.

## Introduction

Wound Care (WC), especially that involving chronic and infected wounds, has remained a challenge for WC specialists and requires huge medical recourses in WC and treatment. In the 2005-2006 period, the treatment expenses for patients with chronic wounds, namely leg vein sores, diabetic sores, and pressure ulcers have reached £3 billion [1]. In Vietnam, according to statistic data of 430 patients admitted to the Recovery Department, National Burn Hospital, in 2014, 87.7% of these patients had chronic wounds due to various causes [2]. Besides background diseases, WC, especially that conducted by nurses, could affect wound recovery. In the USA 5.7 million people have chronic wounds that could have been prevented from risks, such as: complications, infection, leg-cutting operation, and pressure ulcer, if WC had been performed properly by competent nurses [3].

As the essential technique in patient care, WC is conducted by nurses and directly affects treatment outcomes. In 2012, the Vietnamese Ministry of Health has approved the Vietnam's Basic Nursing Competency Standards (VNBNCs) [4]. Viet Duc University Hospital (VDUH) is the first hospital in Vietnam that designed training programs on WC based on VNBNCs and started implementing the first steps of training process. Research shows that the rate of nurses with competent performance increased after having completed training programs, meaning that the training had positive effects on the quality of WC [5]. Agriculture General Hospital has applied the WC training programs and materials of VDUH to train their nurses. Twelve months after the training course, the means of WC-related knowledge, practice, and confidence scores showed a significant increase ( $p < 0.001$ ) [6].

However, except VDUH and Agriculture General Hospital, other hospitals have not yet applied the Vietnam's Basic Nursing Competency Standards; hence, we conducted the study titled "Nurses' Knowledge, Practice, and Confidence about Wound Care based on the Vietnam's Basic Nursing Competency Standards in some hospitals in Northern Vietnam". Our study results are expected to inform the development of training plans on VNBNCs-based WC.

## Methods

### Study design

This study had a descriptive cross-sectional design, we recruited 518 nurses responsible for directly performing WC at the Surgery Departments of eight hospitals in Northern Vietnam.

### Study duration

The study was conducted from June 2020 to October 2020.

### Study sites

The study took place at the surgery departments/faculties of eight hospitals in Northern Vietnam, namely Thanh Nhan Hospital, Hanoi Maternity Hospital, Thai Nguyen Central Hospital, Thien An Maternity Hospital, Quang Ninh General Hospital, Quang Ninh Maternity Hospital, Bac Ninh General Hospital, and Bac Ninh Maternity Hospital.

## Study sample

### Data collection tools

The study used the evaluation form developed by Phan Thi Dung, covering the following main areas:

All nurses participating in the research completed a self-administered questionnaire about nurses' general characteristics and WC knowledge, a WC evaluation checklist, and a self-administered questionnaire about their confidence in performing WC. General information included age (year), gender (male vs. female), education level (primary, intermediate school, college, and university), and the number of working years (5 years, 5-9 years, 10-14 years; 15-19 years, 20-29 years, and  $\geq 30$  years). Knowledge, practice, and confidence scores were calculated based on a prior study conducted by Phan Thi Dung et al [7].

The questionnaire on WC knowledge covered 10 areas: 1) General WC knowledge (18 items); 2) Knowledge about bacterial infection control (5 items); 3) Knowledge about communication with patients (2 items); 4) Knowledge about counseling on health education for patients (2 items); 5) Knowledge about career management and development (4 items); 6) Knowledge about clean WC (2 items); 7) Knowledge about infection in WC (4 items); 8) Knowledge about cutting stitches (4 items); 9) Knowledge about wound drainage (4 items); and 10) Knowledge about pressure ulcers (4 items). Each correct answer was assigned one point, while one incorrect answer zero point. The highest overall score was 167 points. The higher the score the richer the WC knowledge a nurse had.

The evaluation checklist consisted of 16 WC activities, each of which was measured using a 1-to-10-point scale. The higher the score, the more skillfully a nurse performed WC. The overall score ranged from 16 points to 160 points.

The self-administered 13-item questionnaire about nurses' level of confidence in performing WC used a 5-point scale, with 1 point as very not confident, 2 as not confident, 3 as neither confident nor unconfident, 4 as confident, and 5 as very confident. The overall score varied from 13 points to 65 points. The higher the score, the more confident in performing WC nurses were.

### Data collection methods

After this study was approved by the Ethical Board of Hanoi University of Public Health, the research team contacted the coordinators at eight hospitals and worked out the data collection plan. All the nurses who met all the study criteria were invited to participate in the study. Nurses' WC knowledge and level of confidence in performing WC: Investigators informed the participants about the study and its objectives, asked them to sign the written consent forms and complete answering all questions within 50 minutes. Practice by nurses on WC: two investigators observed one nurse performing WC, and each one provided an independent assessment report at two different times.

### Data analysis

Data were entered and analyzed using EpiData 3.1 and SPSS 16.0, respectively. A  $p < 0.05$  was the level of significance. Descriptive analysis was performed for each variable. Continuous variables, including age, knowledge scores, and practice scores

were presented as means and Standard Deviations (SD). Meanwhile, frequencies and percentages were used to express categorical variables, including gender, marriage, education, number of working years, exposure to WC training, and confidence levels.

### Ethical considerations

The study was approved by the Ethical Committee of the University of Public Health under Decision No. 248/2020/YTCC-HD3 dated June 19, 2020.

### Results

#### General information about study participants/nurses

This study recruited 518 nurses (Table 1), most of whom were relatively young. The mean age of all nurses was  $32.25 \pm 7.31$ , and female nurses accounted for 84.6% (438/518). More than a half had less than 10 years of work experience (63.3%; 329/518). Nurses who graduated from colleges constituted 58.1% (301/518), followed by the rate of those completing university education (28.2%; 146/518) and intermediate school education (12.0%; 62/518). Meanwhile, very few nurses completed postgraduate education (4.0%; 7/518) and primary school education (1.3%; 2/518), respectively. Only 40.7% of nurses used to participate in workshops and/or training courses on WC (211/518).

**Table 1:** General information about participants/nurses.

Content	Sampling number (n=518)	Percentage (%)
Mean of age ( $\bar{X} \pm SD$ )	32.25 $\pm$ 7.31	
Gender		
Male	80	15.4
Female	438	84.6
Total	518	100
Education		
Primary School	7	1.3
Intermediate school	62	12.0
College	301	58.1
University	146	28.2
Post-University	2	0.4
Total	518	100
Experience time		
Under 5 years	165	31.9
From 5 to 9 years	164	31.7
From 10 to 14 years	91	17.6
From 15 to 19 years	54	10.4
From 20 to 29 years	34	6.6
From 30 years or above	9	1.7
Total	518	100
Participated workshop/training on WC		
No	307	59.3
Yes	211	40.7
Total	518	100

### Nurses' WC Knowledge

Table 2 shows that the mean knowledge score of health education to patients was found highest ( $7.88 \pm 2.06$ ), followed by that of clean wound care ( $1.55 \pm 0.57$ ) and career management and development ( $23.72 \pm 6.93$ ). The mean knowledge score of infection control was lowest ( $6.77 \pm 1.53$ ).

**Table 2:** Nurses' knowledge of wound care.

No	Descriptions	Mean scores ( $X \pm SD$ )	Average/absolute score ratio
1	General knowledge on wound care (44 points)	31.48 $\pm$ 5.59	0.72
2	Knowledge on infectious control (10 points)	6.77 $\pm$ 1.53	<b>0.68</b>
3	Knowledge on communication skill and team work (17 points)	12.62 $\pm$ 3.97	0.74
4	Knowledge on health education to patients (10 points)	7.88 $\pm$ 2.06	<b>0.79</b>
5	Knowledge on management and professional development (32 points)	23.72 $\pm$ 6.93	0.74
6	Knowledge on clean wound care (2 points)	1.55 $\pm$ 0.57	0.78
7	Knowledge on infectious wound care (20 points)	14.08 $\pm$ 4.01	0.70
8	Knowledge on suture removal (14 points)	10.11 $\pm$ 2.94	0.72
9	Knowledge on drainage (8 points)	5.76 $\pm$ 1.62	0.72
10	Knowledge of pressure ulcer wound care (10 points)	7.40 $\pm$ 1.95	0.74
Total : 167		121.47 $\pm$ 24.11	0.73

### Nurses' WC practice

As can be seen in table 3, most participants had a relatively high WC practice score, and the scores of 16 items exceeded seven points. The score for compliance with disinfection principles was found highest ( $8.79 \pm 1.20$  points), followed by that for adequacy, readiness, and relevancy of WC devices ( $8.74 \pm 1.06$  points) and performance of proper and safe bandage replacement ( $8.74 \pm 1.06$  points). The lowest score belonged to the item "observing the patient's post-WC reactions, namely pain and bleeding ( $7.58 \pm 1.94$  points).

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**Table 3:** Nurses' wound care performance.

Contents	Mean of points (X±SD)	Total of points
<b>Observation</b>		
1. Observing the patient	8.02 ± 1.52	10
2. Observing the wound	8.43 ± 1.17	10
3. Wound care devices: adequate, ready, and relevant	8.74 ± 1.06	10
<b>Wound care planning</b>		
4. Making a relevant wound care plan	7.85 ± 1.33	10
5. Making sure patients are ready for having their wound(s) tended	8.54 ± 1.23	10
<b>Wound care workflows</b>		
6. Introducing themselves to the patient and informing him or her that they are about to conduct wound care	8.27 ± 1.16	10
7. Changing the bandage, whether clean or dirty, safely	8.74 ± 1.06	10
8. Strictly following disinfection principles	8.79 ± 1.20	10
9. Dealing with the right patient and use the right devices	8.47 ± 1.22	10
10. Making sure the working environment is safe and private	8.32 ± 1.01	10
11. Communicating with the patient during wound care	8.49 ± 1.10	10
12. Performing wound care based on the steps in the wound care workflows within an acceptable amount of time	8.32 ± 1.01	10
13. Completing the wound care workflows and making sure that the patient feels comfortable	8.55 ± 1.10	10
14. Collecting devices and ensuring hand sterilization	8.76 ± 1.05	10
<b>Assessment of how the patient's medical record is documented</b>		
15. Clearly and adequately documenting the patient's medical record	8.28 ± 1.38	10
16. Observing the patient after wound care (i.e., whether the patient suffers from pain or experiences bleeding after having their wound(s) tended)	7.58 ± .94	10
<b>Total</b>	<b>134.15 ± 18.54</b>	<b>160</b>

**Table 4:** Nurses' confidence in performing WC

No	Skills	Very low confidence	Low confidence	Medium confidence	High confidence	Very high confidence
		n (%)	n (%)	n (%)	n (%)	n (%)
1	Communication skills	5 (1.0)	1 (0.2)	131 (25.3)	293 (56.6)	88 (17.0)
2	Assessing patients	2 (0.4)	1 (0.2)	103 (19.9)	331 (63.9)	81 (15.6)
3	Assessing wounds	2 (0.4)	1 (0.2)	117 (22.6)	324 (62.5)	74 (14.3)
4	Identifying wound care problems	2 (0.4)	2 (0.4)	161 (31.1)	291 (56.2)	62 (12.0)
5	Planning wound care	1 (0.2)	2 (0.4)	183 (35.3)	281 (54.2)	51 (9.8)
6	Making wound care decisions	2 (0.4)	0 (0.0)	155 (29.9)	307 (59.3)	54 (10.4)
7	Performing clean wound care	1 (0.2)	1 (0.2)	93 (18.0)	341 (65.8)	82 (15.8)
8	Performing infected wound care	2 (0.4)	2 (0.4)	141 (27.2)	313 (60.4)	60 (11.6)
9	Performing exuding wound care	2 (0.4)	1 (0.2)	144 (27.8)	309 (59.7)	62 (12.0)
10	Performing pressure ulcer care	1 (0.2)	5 (1.0)	164 (31.7)	288 (55.6)	60 (11.6)
11	Changing dressings based on the related procedure	1 (0.2)	0 (0.0)	131 (25.3)	276 (53.3)	110 (21.2)
12	Giving health instructions, counseling, education to patients	1 (0.2)	2 (0.4)	123 (23.7)	328 (63.3)	64 (12.4)

## Discussion

Nurses' WC knowledge and practice are taken seriously because it directly affects the quality of patient care and related expenses resulting from extended hospital stay and usage of bandage, antibiotics, and intravenous infusion in case of any wound complication. Many domestic and/or international studies, therefore, were conducted on WC topics with the aim to help improve WC knowledge and practice, especially when nursing competency standards were put into use. In 2012, the Vietnamese Ministry of Health promulgated Decision No. 1352/QĐ-BYT regarding the approval of the Vietnam's Basic Nursing Competency Standards (VNBNCS). This set of standards has laid the foundation for enhancing the quality of nursing care [4].

Based on the actual situation of nursing care, including wound care, to later implement standardized steps, we coordinated with the hospitals to carry out this multi-centered study. Our study sample consisted of 518 nurses directly in charge of performing wound care at eight hospitals in four Northern provinces in Vietnam. With this big sample size, the data collected were highly significant for training development based on the competency standards. The study participants were evaluated in terms of their knowledge, practice, and confidence.

Adejumo PO et al. (2016) implemented a study of 317 nurses in several Nigerian hospitals in which their mean age was  $41.8 \pm 9.0$  years, and 30.3% of them completed university education [8]. However, most nurses in our study were young (mean age:  $32.25 \pm 7.31$  years), and female nurses constituted an overwhelming percentage of 84.6% (438/518). Besides, 63.3% of all nurses had less than 10 years of work experience (329/518 nurses), while those with 10-14 years and >15 years of work experience accounted for smaller percentages. Nurses with college, university, intermediate, primary, and postgraduate education made up 58.1% (301/518), 28.2% (146/518), 12% (62/518), 1.3% (7/518), and 4% (2/518), correspondingly.

Regarding knowledge scores, compared with the threshold score, the knowledge score of clean WC was found highest ( $1.67 \pm 0.47$ ), followed by that of health education ( $8.01 \pm 0.81$ ) and stitch removal ( $10.07 \pm 2.05$ ). Meanwhile, the knowledge score of communication with patients was lowest ( $9.96 \pm 2.55$ ). This result was consistent with that of a study conducted in VDUH by Phan Thi Dung et al. in which the knowledge score of clean WC was also the highest one ( $1.67 \pm 0.22$ ), higher than that of health education ( $8.32 \pm 0.81$ ) and that of stitch removal ( $8.65 \pm 3.19$ ) [5, 9]. Adejumo et al. (2016) showed that the mean WC knowledge score among nurses in their study was  $23.0 \pm 14.0$ , and only 6% of nurses possessed good WC knowledge (>50 points) [8]. With regard to WC practice, the mean score was  $21.1 \pm 14.2$ , and only 5% of nurses could perform WC well. However, according to another study of 43 nurses from five clinical departments in Agriculture General Hospital carried out by Phan Thi Dung et al. in 2020, the assessment criteria for WC knowledge and practice based on the nursing competency standards showed a huge difference [6,9].

Our study also shows the scores of 16 WC practice items all exceeded 7, fluctuating from  $7.58 \pm 1.94$  to  $8.79 \pm 1.20$ . These results were much higher than those in two previous studies conducted in the VDUH and AGH by Phan Thi Dung et al [5, 9, 10]. In the former study, 14/16 items had above-average scores, ranging from  $1.55 \pm 2.53$  to  $8.26 \pm 1.43$  [5,9], whereas in the latter study, 16/16 items had below-average scores ( $1.16$ - $4.90$  points) [10]. In our current study, nurses had high practice scores possibly because the investigators lacked experience

in assessing competency standards-based WC practice, or the wounds studied at the eight hospitals were less complicated than those at VDUH.

A study by Adejumo PO and Ilesanmi RE (2016) revealed nurses had poor knowledge of contemporary wound care practices and emphasized the need for nurse training [8]. The study of 150 nurses conducted by Geraldine (2012) in England showed that nurses had good knowledge of wound assessment, and that knowledge was correlated with attitude and practice [11]. However, Adejumo PO and Ilesanmi RE pointed out that only a few nurses who had been equipped with updated knowledge over the past two years had good attitude and practice. The authors recommended regular updating of WC knowledge and based on competency standards to help improve the quality of WC performed by nurses [8].

In our study, many nurses felt confident and very confident in performing WC relating to all 12 skills. The highest rate was found among nurses who felt very confident in their bandage replacement skills formed the highest rate (110/518 nurses, 21.2%), followed by that for communication skills with patients (88/518 nurses, 17.0%) and that for clean WC skills (82/518 nurses, 15.8%).

Health education and counseling is one of the 12 tasks of nurses assigned to take care of patients at hospital [12]. Nurses with good health education and counselling skills can support patients in taking care of themselves, preventing diseases, and improving their own health. These skills are taken seriously by the Vietnamese Ministry of Health and have been integrated into criteria for evaluating the quality of hospitals. If a hospital has high rates of nurses and midwives trained in health counselling, education, and communication skills and involved in conducting activities related to those skills, its quality is high [13]. To provide training in those skills for the entire health workers, especially those at health facilities, it is important to improve health workers' attitude when serving patients and patient satisfaction [14]. Furthermore, the local medical network should be strengthened, and the training for human resource for health should be upgraded, thereby reducing medical errors.

## Conclusion

Our study results demonstrated that the nurses' mean knowledge and practice scores were relatively high in all the items. Confident and very confident nurses constituted more than 50% in all 12 items.

## Declarations

The authors have no conflicts of interest to disclose.

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