



Factors Associated with Attitudes toward Scientific Research Vietnam Nursing Students: A Cross-sectional Study

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Abstract

BACKGROUND: Nursing students do scientific research at the university level not only contributing to the development of the nursing profession but also helping themselves to practice more useful skills for future work. A positive attitude toward scientific research has been shown to motivate students to practice research.

AIM: The objectives of the study were to assess attitudes toward scientific research and explore associated factors of nursing students in Vietnam.

METHODS: A cross-sectional study design was adopted and conducted on 238 nursing undergraduate students. Study samples were collected from October to November 2021 through a face-to-face meeting with study subjects and an accidental sampling technique. Attitudes toward Research Scale were used in this study.

RESULTS: The study showed that 76.1% of nursing students had a positive attitude toward scientific research. Through simple linear regression analysis, it showed that having been or participating in scientific research projects ($p = 0.044$), scientific research activities ($p = 0.013$); intending to pursue a postgraduate degree ($p = 0.021$); being introduced/invited to participate in scientific research projects ($p = 0.012$), understanding that scientific research is important to get a good job and improve professional qualifications ($p = 0.026$), and year of the study program ($p < 0.001$) was the factors that affect nursing students' attitudes toward scientific research.

CONCLUSIONS: Many associated factors influence the attitude towards scientific research of nursing students. Further effective interventions are needed to address this issue.

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Introduction

The care techniques and services provided by nurses directly affect people's health and lives. Therefore, nursing knowledge and practice must be based on a solid scientific basis and must be kept up to date. Updating and applying new knowledge or scientific evidence in clinical practice is the professional responsibility and ethics of nurses to ensure safe and effective treatment for patients. Scientific research is a reliable method to generate knowledge and evidence to guide clinical care practice. Thus, nurses need to do scientific research to improve the quality of health-care services thereby demonstrating the professionalism and role of nurses in the health system [1].

Nursing students who are future nurses need to have a positive attitude toward scientific research and should do scientific research while in college. This not only contributes to the development of the nursing profession but also brings many benefits to themselves. When participating in scientific research at the university

level, students will accumulate knowledge, practice critical thinking, problem-solving ability, and several other useful career skills such as communication, teamwork, presentation, finding scientific information or evidence to care for patients [2], [3], [4]. Students also will have the opportunity to receive rewards, privileges, and scholarships when they have good scientific research achievements. Especially in Vietnam and many countries around the world, good research skills will be an advantage for students to work and improve their professional qualifications after graduation. Because this skill is an important input and output standard of postgraduate education [5]. It also is a key factor influencing graduation on time among postgraduate students [6]. When working as a lecturer, manager, or researcher, doing scientific research and guiding someone in scientific research is a mandatory and often required task [7], [8].

The studies showed that the majority of nursing students did not participate in research projects nor utilize the research findings in clinical practice [9], [10]. A positive attitude toward scientific research motivated

students to conduct research, utilize the research findings, and positively influenced the outcome of the research they undertake [11], [12], [13]. Many surveys indicated that the majority of nursing students did not have a positive attitude toward scientific research [14], [15]. Attitude toward research was negatively impacted by difficulties in conducting research and anxiety due to a lack of research knowledge or skills [16], [17]. Although many studies have focused on assessing attitudes toward scientific research of nursing students around the world, to the best of our knowledge, no studies addressed this issue in Vietnam. Therefore, this study assessed nursing students' attitudes toward scientific research and identified factors that have an impact on it in the Vietnamese context.

Objectives

This study aimed to measure attitudes toward scientific research and explores associated factors among nursing students in Vietnam. Based on the literature, in the current study, we investigated the relationship between attitudes towards scientific research and groups of factors such as personal characteristics (age, gender, and school year), characteristics associated with scientific research (participation in a scientific research project, a scientific research course, activities related to scientific research, and scientific research club) and characteristics of study and employment after graduation (intending to pursue a postgraduate degree and teach in the field of nursing).

Methods

Study design

A cross-sectional study design was conducted.

Setting and sampling

A convenience sample of nursing students (n = 238) was recruited from Can Tho University of Medicine and Pharmacy, Vietnam. Data were collected between October and November of 2021. The inclusion criteria were as follows: Full-time undergraduate nursing students and willingness to participate in the study. Participants who were absent during data collection were excluded. Participants were explained the study's aims, benefits, and risks, the procedure for ensuring confidentiality, and the voluntary nature of participation. Written informed consent forms were signed immediately after they agreed to participate in this study. Then, the participants were obtained from all participants before beginning the study. Subsequently, participants were required to complete the questionnaires within 20 min and return them to the data collector.

Sample characteristics

Participants responded to questions regarding demographic characteristics, including age, gender, year of the study program, and information related to whether or not the research subject participates in scientific research activities, such as scientific research projects, scientific research courses, research clubs, and reading articles.

Assessment of attitude toward scientific research

The Attitudes toward Research Scale was used to assess the attitude toward scientific research of nursing students. The original scale was developed by [18]. This scale has 32 items with a 7-point Likert scale across five subscales: Research usefulness for a profession (9), research anxiety (8), interest in scientific research (8); Relevance to life (4); and Research difficulty (3). The higher the score on the scale, the better attitude toward research of nursing students. The mean score of each subscale or overall scale is calculated by dividing the total score of that subscale or overall scale by the number of corresponding items. Score 4 is the cutoff point of the scale. When the mean score of 4 or higher is considered to have a positive attitude toward scientific research and vice versa, it is considered to have a negative attitude. The original scale in English has a very good Cronbach's alpha coefficient for all subscales (0.94) [18]. In this study, Cronbach's alpha coefficient for the total scale was 0.79 and for each subscale was found a range from 0.77 to 0.81. A generally accepted rule is that Cronbach's alpha of 0.6–0.7 indicates an acceptable level of reliability, and 0.8 or greater a very good [19].

Data analysis

Data were analyzed using SPSS for Windows Version 26.0 (SPSS, Inc., Chicago, IL, USA). First, descriptive statistics were employed to summarize the collected data. The continuous variables were described using the mean and standard deviation. The frequency and percentage (%) were used for the categorical variables. Next, independent Student's t-tests and Pearson's correlation analysis were conducted to explore the association between the participants' characteristics and attitudes toward scientific research. Then, to avoid the phenomenon of multicollinearity between the independent variables which distorts the research results, a multiple regression analysis was performed to identify the predictors of attitude toward scientific research. For the regression analysis, the categorical variables were first coded as dummy variables [20].

Ethical considerations

This study conforms to the ethical principles of the Declaration of Helsinki [21], and it was granted

a research ethics committee approved by the ethical review board of the first author's institution (No. 2510/DHYDCT).

Results

Characteristics of the participants

Two hundred and thirty-eight nursing students were involved in filling out the questionnaire in this study. The mean age of the student was 19.87 ± 1.27 years. Most are female (83.2%). Students who intended to pursue a postgraduate degree account for 65.5%, intended to teach in the field of nursing account for 37.8%, or understood that scientific research is important to get a good job and improve professional qualifications account for 72.3%, but only 16% of students participated in a scientific research project. The majority of students have never participated in activities related to scientific research (71.8%) and research clubs (92.9%). More than half of the students have not had the necessary contact with people who can guide them in scientific research (53.8%) and have never been referred or invited to participate in a research project (66.4%). Almost half of the students have never read a scientific article (43.7%) and taken a scientific research course (43.3%). Still, 39.9% of students did not know the information about the school's scientific research activities (Table 1).

Attitude toward scientific research

The mean score of the overall scale for all participants was 4.32 ± 0.46 . The mean score of each subscale for all participants ranged from 3.22 ± 0.89 (research anxiety aspect) to 5.26 ± 0.96 (research usefulness for the profession aspect). The number of students with a positive general attitude toward scientific research was about 76.1%. The majority of students had a negative attitude toward the research anxiety (87.4%) aspect and research difficulty aspect (85.7%). Even so, they had a positive attitude toward research usefulness for the profession aspect (89.5%), interest in the scientific research aspect (76.9%), and relevance to life aspect (59.2%) (Table 2).

Association between the participants' characteristics and attitudes toward scientific research

Table 1 shows the association between the participants' characteristics and attitudes toward scientific research. There were statistically significant associations between the attitude toward scientific research and some personal-related factors, such as age ($r = -0.172$; $p = 0.008$), and year of the study

program ($t = 2.595$; $p = 0.010$). The findings indicated that the older student had more positive attitudes. Students in the 1st and 2nd years had more positive attitudes than those in the 3rd and 4th years.

There were statistically significant associations between the attitude toward scientific research and some scientific research-related factors, such as having been or participating in scientific research projects ($t = 2.720$; $p = 0.007$), a scientific research course ($t = -2.485$; $p = 0.014$), activities related to scientific research ($t = 2.613$; $p = 0.010$); joining the scientific research clubs ($t = 2.025$; $p = 0.044$); having contact with people who can guide scientific research ($t = 0.858$; $p = 0.039$), being introduced/invited to participate in scientific research projects ($t = 3.435$; $p = 0.001$), and understanding of research information in school ($t = 1.992$; $p = 0.047$). The findings indicated that students who participated in scientific research projects, activities related to scientific research, or science research clubs had more positive attitudes than students who did not. In addition, students who had contact with scientific research instructors or were introduced/invited to participate in research projects had a more positive attitude toward research. However, students who took a scientific research course had fewer positive attitudes.

There were statistically significant associations between the attitude toward scientific research and some study and work-related factors including intending to pursue a postgraduate degree, intending to teach in the field of nursing, and understanding that scientific research is important to get a good job and improve professional qualifications. The findings showed that the group of students who intended to pursue a postgraduate degree, teach in the field of nursing, or understood scientific research is important to get a good job and improve professional qualifications had a more positive attitude.

The results of the multiple regression method showed that there were six predictors, namely the variables of participating in scientific research projects, participating in activities related to scientific research, receiving a referral/invitation to participate in research projects, intending to pursue a postgraduate degree, understanding that scientific research is important to get a good job and improve professional qualifications, year of the study program. They accounted for 21.8% of the total variance ($F = 10.718$; $p < 0.001$). This informed that students who had these predictors had a more positive attitude toward scientific research (Table 3).

Discussion

This study showed that the attitude toward scientific research of nursing students did not have a

Table 1: Characteristics of the participants and association between the participant's characteristics and attitude toward scientific research (n = 238)

Characteristic	n (%)	Mean ± SD	t/r	p
Age		19.87 ± 1.27	-0.172 ^a	0.008
Gender				
Male	40 (16.8)	4.41 ± 0.47	1.375	0.176
Female	198 (83.2)	4.30 ± 0.46		
Having been or participating in scientific research projects				
Yes	38 (16.0)	4.51 ± 0.49	2.720	0.007
No	200 (84.0)	4.29 ± 0.45		
Having been or participating in a scientific research course				
Yes	135 (56.7)	4.26 ± 0.45	-2.485	0.014
No	103 (43.3)	4.41 ± 0.47		
Having participated in activities related to scientific research (conferences, workshops)				
Yes	67 (28.2)	4.46 ± 0.56	2.613	0.010
No	171 (71.8)	4.27 ± 0.41		
Joining the scientific research clubs				
Yes	17 (7.1)	4.54 ± 0.51	2.025	0.044
No	221 (92.9)	4.30 ± 0.46		
Reading scientific articles				
Yes	134 (56.3)	4.35 ± 0.48	1.230	0.220
No	104 (43.7)	4.28 ± 0.45		
Having contact with people who can guide scientific research				
Yes	110 (46.2)	4.35 ± 0.51	0.858	0.039
No	128 (53.8)	4.30 ± 0.42		
Being introduced/invited to participate in scientific research projects				
Yes	80 (33.6)	4.47 ± 0.52	3.435	0.001
No	158 (66.4)	4.24 ± 0.42		
Understanding of research information in school				
Yes	143 (60.1)	4.37 ± 0.47	1.992	0.047
No	95 (39.9)	4.25 ± 0.45		
Intending to pursue a postgraduate degree				
Yes	155 (65.1)	4.42 ± 0.48	5.155	0.000
No	83 (34.9)	4.13 ± 0.37		
Intending to teach in the field of nursing				
Yes	90 (37.8)	4.41 ± 0.49	2.236	0.026
No	148 (62.2)	4.27 ± 0.44		
Understanding that scientific research is important to get a good job and improve professional qualifications				
Yes	172 (72.3)	4.40 ± 0.46	2.236	0.026
No	66 (27.7)	4.10 ± 0.41		
Family members participate in scientific research				
Yes	20 (8.4)	4.36 ± 0.45	0.350	0.727
No	218 (91.6)	4.32 ± 0.45		
Year of the study program				
1 st and 2 nd	103 (56.7)	4.41 ± 0.47	2.595	0.010
3 rd and 4 th	135 (43.3)	4.25 ± 0.45		

^aPearson correlation coefficient. SD: Standard deviation.

Table 2: Attitude toward scientific research (n = 238)

Variable	Mean ± SD	Positive (mean ≥4), n (%)	Negative (mean <4), n (%)
Research usefulness for the profession	5.26 ± 0.96	213 (89.5)	25 (10.5)
Research anxiety	3.22 ± 0.89	30 (12.6)	208 (87.4)
Interest in scientific research	4.65 ± 0.95	183 (76.9)	55 (23.1)
Relevance to life	4.51 ± 0.78	141 (59.2)	97 (40.8)
Research difficulty	3.30 ± 1.10	34 (14.3)	204 (85.7)
Overall scale	4.32 ± 0.46	181 (76.1)	57 (23.9)

SD: Standard deviation.

high positive level. The mean score of the overall scale for all participants in this study was slightly lower than that of previous studies [17], [22]. Using the same tool, Oducado (2021) and Iloh (2020) found that the mean score of the overall scale was 4.91 ± 0.67 and 5.02 ± 0.96 . The percentage of students who had a positive attitude in this study is moderate compared to other conducted studies [16]. In this study, most students had a negative attitude toward the research anxiety aspect and research difficulty aspect. Even so, they had a positive attitude toward research usefulness for the profession aspect, Interest in scientific research aspect, and relevance to life aspect. These results are like previous studies [16], [17], [22]. This means that nursing students were interested in scientific research and are aware of its usefulness, and its important role of scientific research in their future work. However, difficulties, lack of confidence, and anxiety when

participating in research projects have made students' attitudes toward scientific research worse.

Table 3: The multiple logistic regression analysis (n = 238)

Model	B	Beta	p	R ²	F	p
Constant	4.679		<0.001	0.218	10.718	<0.001
Having been or participating in scientific research projects	0.160	0.127	0.044			
Having participated in activities related to scientific research	0.164	0.159	0.013			
Being introduced/invited to participate in scientific research projects	0.159	0.160	0.012			
Intending to pursue a postgraduate degree	0.152	0.155	0.021			
Understanding that scientific research is important to get a good job and improve professional qualifications	0.152	0.147	0.026			
Year of the study program (1 st and 2 nd)	0.218	0.233	<0.001			

The findings indicated that students who participated in scientific research projects had more positive attitudes. This is similar to previous studies [13], [23]. The reason for this result may stem from the benefits that scientific research brings to students. The above explanation consistent with the survey of [24], students said that when participating in research projects, they feel excited because they can expand their professional knowledge; have the opportunity to exchange and study with experts; challenged themselves to solve difficult research problems and they think research experience will help them to be more appreciated by employers in

the future [24]. Other studies on nursing students showed that after participating in a scientific research project, students have more new knowledge to apply to clinical practice and their life. Besides, it also helped them expand relationships and improve teamwork and communication skills [2], [25].

The findings informed that students who participated in activities related to scientific research had a more positive attitude. Similar results also were reported in previous studies [13], [26]. Results from other studies showed that after participating in scientific research conferences/workshops students have markedly improved their knowledge and skills in scientific research [27], [28]. That knowledge and skills helped students to solve the difficulties in the research process. This makes students less anxious and more confident when they conduct research. Hence, the negative problems of attitude which were explored in our study will be also solved. Therefore, regularly organizing seminars, and scientific conferences and encouraging students to participate is seen as a way to improve attitudes and motivate students to participate in scientific research.

Research results showed that the group of students who were introduced/invited to participate in research projects had a more positive attitude toward scientific research. This result is consistent with a previous study. It reported that nearly half (46.3%) of students did not participate in scientific research because they had never been suggested to participate by their teachers [9]. Therefore, the role of lecturers in promoting and encouraging students to research is very important. Lecturers need to have the right awareness of their impact on students and the benefits that scientific research brings to their students. In the process of teaching, teachers should suggest problems and topics that students can research them. Furthermore, express an expectation that they will participate and a willingness to support the research process.

The findings indicated that students who intend to pursue a postgraduate degree or understand that scientific research is important to get a good job and improve professional qualifications had a more positive attitude toward scientific research. A similar result was also found in Kritikos's study [23]. This result may be because students actively learn about the factors that help them realize their postgraduate study plans and they find that scientific research is an important skill they need to improve. Indeed, the regulations on postgraduate training (master's, doctoral) have identified scientific research as one of the purposes, the input standard as well as the output standard of the postgraduate training program. Previous studies showed that scientific research skills are important for students. It is a key factor influencing graduation on time among postgraduate students [6]. Therefore, educators need to promote information and introduce students to professional development directions and attractive

job opportunities after graduation. At the same time, lectures must also assist students in identifying and equipping them with the elements they need to realize their academic and career goals.

Research results show that the group of students in 1st and 2nd year of the study program has a more positive attitude toward scientific research than the group of students in 3th and 4th years. In Vietnam, undergraduate nursing students are often allowed to participate in practice clinical from 2nd semester of 2nd year of the study program. Since the data for this study were collected in the first semester of the academic year, only 3th and 4th students in the study participated in clinical practice. Therefore, this result may be because there are some problems where they practice in clinical practice that made the attitude of nursing students toward scientific research worse. Consistent with this hypothesis, Halabi's study found that the group of students who did not participate in clinical practice had a more positive assessment than the group of students who participated in clinical practice on the applicability of research results in patient care [16]. Some problems in clinical practice were also pointed out such as students finding that nurses-role models in their future professions did not apply research results to patient care, or students were not given favorable conditions and not allowed to research or apply research in practice [10]. Therefore, medical staff and nursing educators need to become a role model in applying evidence in clinical practice and actively guiding and creating optimal conditions to encourage students to research and use the research results in patient care.

This study has several limitations

First, the information was self-reported. Therefore, recall and supporting bias could have occurred during the data collection process. To minimize bias, objective measurements should be conducted. Second, the association findings from this study may not be causal owing to the study's cross-sectional design. A longitudinal design should be conducted to clarify the causality between the attitude toward scientific research and its associated factors. Finally, the findings of this study have limited generalizability because the sample included nursing students from only one university using the convenient sampling method. Therefore, further studies using nationwide systematic sampling and international comparisons are highly recommended.

Conclusions

The attitude toward scientific research of nursing students did not have a high positive level.

Organizing activities related to scientific research, improving the clinical practice environment, introducing/inviting students to participate in scientific research projects, and educating the benefits and role of scientific research are issues that need to be considered to improve nursing students' attitudes toward scientific research.

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