International Journal of Africa Nursing Sciences 21 (2024) 100798

Contents lists available at ScienceDirect

International Journal of Africa Nursing Sciences

journal homepage: www.elsevier.com/locate/ijans

Challenges associated with supervision of undergraduate research projects by nurse educators in South Africa

Xolani L. Mhlongo *, Sibusiso M. Zuma

University of South Africa (UNISA), Department of Health Studies, 1 Preller Street, Pretoria, South Africa

ARTICLE INFO

Keywords:
Challenges
Nurse educators
Research projects
Supervision
Undergraduate

ABSTRACT

Successful nursing research is determined by the quality of research supervision by nurse educators. This study aimed to explore challenges encountered by educators when implementing research supervision for undergraduate nursing students. A qualitative, exploratory-descriptive research design was employed through semi-structured interviews. Data were collected from twenty-seven participants who were selected purposefully from four nursing campuses located in two provinces. Thematic analysis was used to analyse data in the study. The study found that inadequate nurse educators' research supervision skills, lack of students' commitment to research activities, inadequate infrastructure, staff shortage and time constraints were identified as challenges. It is recommended that novice nursing research supervisors should be guided on how to supervise research students and be taught the importance of research.

1. Introduction

The capability to think critically, scrutinise problems and make conclusions in the face of complex knowledge is required of all professional nurses in the twenty-first century. This awareness has motivated higher education institutions to consider research and inquiry as important in a student's development (Brew & Mantai, 2017). Therefore, research in nursing has been made a major offering for undergraduate programmes, considering that evidence generated from research is constantly changing practice and health policies. Nurses are expected to deliver cost-effective and high-quality care. It is essential to develop and refine knowledge so that nurses can contribute to improve clinical practice and promote quality outcomes (Grove & Gray 2018). In order to provide evidence-based care, nurse researchers are needed to evaluate effective healthcare models and interventions (Ayoola et al., 2017). In nursing, it has been noted that research has a positive impact on patient outcomes and lack of research has harmful effects (Al-Muallem, 2016).

According to Al-Doubi, Fawzi and Walters (2019), undergraduate research forms an integral part of higher education, and the research project signifies a vital component of the undergraduate qualification. Therefore, nurses joining the workforce must have familiarity and training concerning inter-professional research, evidence-based practice and quality improvement (Beyea & Slattery, 2006). Similarly, Cleary, Sayers and Watson (2016) state that nursing research is fundamental to driving evidence-based practice and achieving safe outcomes for patients. Research is vital in the provision of quality learning experiences for nursing students (Grove & Gray, 2018). In addition, Hadi and Muhammad (2017) state that successful nursing research capacitation during undergraduate training is determined by the quality of research supervision. During supervision, supervisors provide advice and guidance to assist students in planning their research projects and to develop appropriate research practices. The feedback that the supervisors give to the students helps them to develop their research skills, keep them on track to improve and advance their knowledge in a specific area of research and equip them with skills needed to become independent researchers.

2. Background

The last three decades have highlighted a vast rise in attempts to emphasise and promote undergraduate research worldwide. It has been reported that this development is more noticeable in the United States (US) due to the work of the Council on Undergraduate Research, which was founded in 1978. Important improvements in research projects are being emphasised across the globe through programmes that help introduce and support undergraduate research experiences, not just in final-year dissertations, as is in the United Kingdom (UK) (Brew &

* Corresponding author.
E-mail addresses: XolaniM5@dut.ac.zam (X.L. Mhlongo), Ezumas@unisa.ac.za (S.M. Zuma).

https://doi.org/10.1016/j.ijans.2024.100798
Received 28 December 2023; Received in revised form 29 August 2024; Accepted 31 October 2024
Available online 4 November 2024

Mantai, 2017). In conjunction with this, the Australian Research Skills Development Framework as well as worldwide national and international conferences and publications have been dedicated to continuously communicating undergraduate research achievements (Brew & Mantai, 2017). The undergraduate education system in the US has informed higher education institutions to make research-based learning the standard at all levels of undergraduate learning (Brew & Mantai, 2017; Roberts & Seaman, 2018). Similarly, in Namibia, undergraduate students are required to carry out research projects as part of the fulfilment of their undergraduate degree requirements. However, students generally encounter several challenges during the research process. It has been observed over the years that third–year undergraduate nursing students in Namibia struggle to write their research proposals; thus, their degree completions are delayed. One of the major challenges that students encounter in research is poor guidance from the supervisors.

As in other countries, professional nurses' role in South Africa (SA) is fourfold, namely, clinical care, unit management, teaching and research. Therefore, nurse educators must have adequate knowledge of research so that a professional nurse capable of undertaking and utilising research findings is produced at the end of training. Nurse educators must be research savvy (South African Nursing Council [SANC], 2014). Therefore, the SANC (2022) has emphasised that research is one of the key nurse educators' competencies. Nurse educators serve as role models and provide the leadership needed to initiate evidence-based practice (EBP). To be successful in this effort, nurse educators should not only be role models as researchers, but they must also possess skills to supervise research proposals for student nurses (Roets & Bhembe, 2016). According to the new nursing curriculum, research has been made the critical component of nurse training. The new research officer position has been approved and made part of the new organogram as indicated in Fig. 1.

The purpose of the research office is to support nurse educators to address challenges encountered when implementing research supervision for undergraduate nursing students.

3. Problem statement

The researchers, who are also nurse educators, have observed that nurse educators have inadequate research supervision capacity. The study, conducted by Roets and Bhembe (2016) in one of the South African PNCs, indicates that nurse educators at some education institutions, who have recently entered the higher education sphere and do not have master's or doctoral degrees, lack research backgrounds. Nurse educators are expected to have adequate knowledge of research so that a professional nurse capable of undertaking and utilising research findings is produced at the end of training. However, there are currently no guidelines on research supervision designed or developed for nurse educators. The researcher's observation is confirmed by a research study conducted by Seekoe (2015) in South Africa, which revealed that all 11 nursing colleges' understudy indicated that they did not have mentoring programmes on research supervision resulting in the lack of sound research supervision.

Nurse educators must be research savvy (South African Nursing Council [SANC], 2014). However, they lack research knowledge and skills, with some of them reporting that they encountered problems in research supervision without such skills, while others reported having master's degrees and exposure to research, but they do not feel confident in undertaking all research steps (Oprescu, McAllister, Duncan & Jones, 2017; Wyllie, Digiacomo, Jackson, Davidson & Phillips, 2016). This trend is also supported by a study conducted by Squires, Chitashvili, Djibuti, Ridge and Chyun (2017), which discovered that research skills, particularly in areas of research proposal development, statistical analysis and knowledge distribution were the aspects that nurse educators lacked. Therefore, this study aimed to explore challenges encountered by educators when implementing research supervision for undergraduate nursing students.

4. The objectives of the study

In order to achieve the aim, the objectives of the study were to:

- Explore experiences of nurse educators regarding research supervision of student nurses
- Determine problems encountered by nurse educators during the supervision of undergraduate research projects

5. Theoretical foundation

A theoretical framework provides structure, direction and methods to address research questions. The researcher used Benner's (1984) Novice to Expert Theory to guide the study. Researchers' worldviews and philosophies determine how they conduct research.

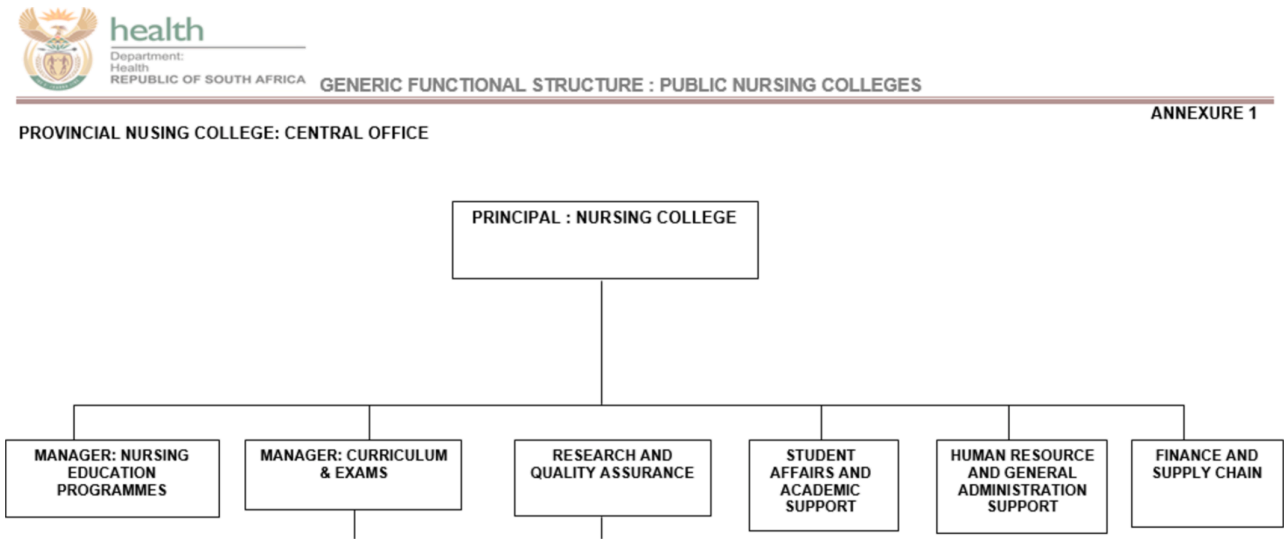

Fig. 1. Provincial Nursing College generic functional structure (Department of Health, 2020).

5.1. Theoretical framework

The Novice to Expert Theory is a construct theory that was first proposed by Dreyfus and Dreyfus (1980) as the Dreyfus model of skills acquisition was later applied and modified to nursing by Benner (1984). The theory comprises five phases or stages: novice, advanced beginner, competent, proficient and expert (as shown in Fig. 2). In this study, the novice was the nurse educator with no master's degree, the beginner was the nurse educator possessing an honours degree and pursuing a master's degree, the competent was the one who had a master's degree, the proficient was the one pursuing a doctoral study, and the expert was the one who completed their doctoral studies. The contribution of the participants and their level of knowledge in research supervision were scaled utilising the phases according to Benner's (1984) Novice to Expert Theory as explained above. The application of this theory to the study assisted the researchers in categorising the participants' level of knowledge in research supervision. This information was more crucial in identifying the type of challenges and problems encountered by undergraduate supervisors occupying a specific phase in applied theory.

6. Research methodology

The researcher used an exploratory-descriptive qualitative research design. Using an exploratory-descriptive qualitative research design allowed the researcher to assess and explore the problems associated with research supervision by nurse educators. The study was conducted at the PNCs in two provinces in South Africa, namely, KwaZulu-Natal (KZN) and the Eastern Cape. The KwaZulu-Natal College of Nursing (KZNCN) has ten campuses, and the Eastern Cape Nursing College has five campuses, respectively. In the unified educational system, each college is considered the head office of the PNC within each province, and its campuses are spread all over the province where it is situated. The population for the study comprised approximately 138 nurse educators who were currently working at the selected nursing campuses with a teaching experience of two years and above and are involved in student nurses' research supervision. The reason for selecting this population is that they are involved in the supervision of students' mini-research projects within the campuses. They had the appropriate experience for providing relevant and first-hand information that the researchers were looking for, and to answer the research questions.

The researcher had two sampling techniques for the study. One was applied in the selection of the campuses, and one was used in the selection of the participants.

Sample 1: Sampling of campuses

The researcher used a fishbowl technique in the selection of campuses. The names of campuses in each college under study were written on separate pieces of paper. The pieces of paper were then placed in an empty bowl. The first two names of campuses from each college to be drawn out of a bowl were included in the study, except for KZN because the PNC in the province has ten campuses. Out of ten campuses in KZN, the researcher selected four, utilising the same fishbowl technique. The campuses that were selected from each province were coded as, for example: A for the first selected campus, and B for the second campus selected, instead of using their names to maintain both confidentiality and anonymity. Therefore, the selected campuses were then coded A, B, C, D in KwaZulu-Natal, and E and F in the Eastern Cape (Table 1).

Sample 2: Sampling of participants

The researcher used a non-probability sampling method for the selection of the participants. Non-probability sampling is used in

Table 1
Sampling of participants.

Selected nursing college campuses per province	Nurse educators per campus	Participants per campus
Province 1 campuses		
A	12	7
B	30	7
C	27	6
D (Data saturation reached)	23	N/A
Province 2 campuses		
E	19	7
F (Data saturation reached)	27	N/A
Accessible campuses: 4	Total nurse educators: 138	Accessible participants: 27

Fig. 2. Benner's novice to expert theory (Benner, 1984).

qualitative research. With non-probability sampling, only a specific population is recruited by the researchers to investigate a specific topic (Botma, Greeff, Mulaudzi & Wright, 2015). Purposive sampling was chosen to select participants for this study based on their knowledge of the phenomena under study and that they were able to share enough challenges they encountered during the supervision of undergraduate research projects. The study comprised four focus group discussions with members that ranged from six to seven in each group. These participants were purposively selected based on the researcher's judgment that they would provide the researcher with the best information. Therefore, after data saturation the sample size for the study comprised 27 nurse educators.

Data was collected through focus group discussions. Polit and Beck (2017) state that focus group sessions are planned discussions that take advantage of group dynamics to access rich information economically. People tend to feel more at ease expressing their experiences when they share a similar background with the other members. The researcher conducted a pilot study with seven participants who were excluded from the main study. The pilot study results resulted in the modification of the research questions to ensure clarity and specificity. The final questions post pilot study were the following: Describe your experiences regarding research supervision of student nurses? Kindly share the problems you have encountered during the supervision of undergraduate research projects.

All group discussions were conducted in large venues maintaining a 1.5-meter distance between the participants to comply with the level-one coronavirus 2019 (COVID-19) guidelines. A digital recorder was used. Collection of data continued for six months. The researcher was permitted to collect data, assisted by trained research assistants from all the nursing campuses under study since the country was on lockdown level 2. Each campus had a person who was elected as a research assistant. The research assistant communicated with the researcher for the proper arrangements for data collection. To minimise constant visitation to the campuses under study, the research assistants assisted with the introduction of the study to the target population. The first data collection commenced on 19 March 2021 in Province 1, Campus A. The participants were informed that they would be addressed as participants 1, 2, 3, 4, 5, 6 and 7 instead of their names for accurate tracking during transcription of data and to maintain confidentiality and anonymity. The researcher then started the recordings and initiated focus group discussions utilising the FGD guide with predetermined questions. The developed FGD guide was used to maintain consistency throughout focus group discussions of the study. Saunders (2018) describe data saturation as point in data collection when new information no longer brings fresh insights to the research questions. The researchers terminated data collection after the fourth group discussion when no new additional information was coming out of the focus group discussions.

The researcher utilised a notebook to write the field notes. The field notes included the qualifications and gender of the participants, the follow-up questions, and the observation of the researcher while participants were discussing. The last date of data collection was 5 September 2021.

Data analysis commenced after the first focus group discussion utilising thematic data analysis. The researcher carried out data collection and analysis concurrently until data saturation was reached. The researcher listened to all the recordings and transcribed all the digital data. After transcription, the data was read again to create understanding. The researcher highlighted all the participants' responses that were similar utilising highlighters. All the similar responses were grouped creating themes and sub-themes as indicated in Table 2. An independent co-coder was contracted to listen to the recordings to identify key themes and sub-themes followed by a consensus meeting to arrive at the final themes and sub-themes arising from the study.

Table 2
Themes and sub-themes.

Themes	Sub-themes
7.2.1. Lack of research knowledge and skills	7.2.1.1 Inadequate nurse educators' research skills
7.2.2 Student's' behaviours	7.2.2.1 Lack of students' commitment
7.2.3 Resource constraints	7.2.3.1 Inadequate infrastructure
	7.2.3.2 Staff shortage
	7.2.3.3 Time constraint

6.1. Rigour of the study: trustworthiness

Standards of trustworthiness of qualitative research are similar to the standards of reliability and validity in quantitative research. Polit and Beck (2017, p. 979) describe trustworthiness as the degree of confidence qualitative researchers have in their data. The researchers ensured trustworthiness through credibility by ensuring that a research methodology was followed. The study was supervised by an experienced researcher, and transferability was ensured through the maintenance of an audit trail, while dependability was promoted by undertaking a pilot study and ensuring that the research questions were asked consistently to all the participants. Confirmability was ensured through member-checking and the use of a co-coder as suggested by Lincoln and Guba's framework.

6.2. Ethical considerations

The researcher obtained permission to conduct the study, obtained informed consent from the participants, and observed the ethical principles of approval and permission, right to full disclosure and self-determination, confidentiality, anonymity and privacy, beneficence and non-maleficence, justice and fidelity.

6.2.1. Approval and permission

The researcher obtained ethical clearance from the College of Human Sciences, Research and Ethics Committee of the Department of Health Studies, University of South Africa (Rec-240816-052). Permission to conduct the study was requested and granted by the National Health Research Database Board (KZ_202101_013); (EC_202101_006), the provincial principals of the selected PNCs, and the principals of the nursing campuses.

6.2.2. Right to full disclosure and self-determination

The researcher informed the participants that there were no risks or benefits associated with participation and that the findings would be made available to them upon request.

6.2.3. Confidentiality, anonymity and privacy

The participants were assured of privacy, confidentiality and anonymity. Anonymity was assured as participants were addressed as Participant 1 (P1), Participant 2 (P2) and so on during group discussions.

6.2.4. Beneficence and non-maleficence

The participants were protected from COVID-19 infection through the application of the coronavirus guidelines. There was no coercion to participate.

6.2.5. Justice

The researcher used purposive sampling to ensure that everyone who was available and who met the inclusion criteria in the selected settings participated in the study. No preference was given to participants.

6.2.6. Fidelity

The researcher made sure that all the information or data obtained

from the participants was only used for research purposes and that no participants' data was discussed with anyone other than the supervisor.

7. Presentation and discussion of findings

7.1. Demographic data

The majority of the participants were Africans, and the remainder were Indians. A total of 13 had Bachelor's degrees in Nursing Science, specialising in different fields of nursing. Five of those had Bachelor's degrees in Nursing Education and Administration, five had Bachelor's degrees in Nursing Education alone, and three had Bachelor's degrees in Nursing Education, Administration and Community Health. Ten of the participants had a Master's degree in Nursing, four of those specialising in Nursing Education, three specialising in Public Health, and three in Community Health. Two had a Master of Technology in Nursing, one of those specialising in Nursing Administration and one in Primary Health Care. Two of the participants had Diplomas in Nursing Education. The majority of the participants had more than ten years of experience as nurse educators. A few had more than five years of experience as nurse educators and only two of all the participants had a minimum of two years of experience.

The participants were coded as AP1-AP7 for campus A, BP1-BP7 for campus B, CP1-CP6 for campus C and EP1-EP7 for campus E. The first letter in each code stand for the campus codes, "P" stands for the participant and the number stands for the number allocated to each participant during group discussions.

7.2. Challenges associated with research supervision

The qualitative data collected from the focus group discussions utilising the open-ended questions were classified into themes and sub-themes in the first two sections below relating to the participants' challenges encountered during the supervision of undergraduate research projects. There were three themes that emerged from the data source (see Table 2).

7.2.1. Theme 1: Lack of research knowledge and skills

The sub-theme that emerged from theme 1 was inadequate nurse educators' research skills and lack of research supervision experience. Participants alluded that the supervision of student nurses was negatively influenced by a lack of research knowledge and skills.

7.2.1.1. Sub-theme 1: Inadequate nurse educators' research skills. Lack of research knowledge and skills which involved inadequate nurse educators' research skills was highlighted by some of the participants. Others stated that poor coordination negatively influenced student research supervision by nurse educators. These findings were stated by nurse educators in a study conducted by Roets and Bhembe (2016), where they highlighted a lack of research skills and competency in research supervision.

This is supported by the following verbatim quotes:

> "And you'll find that I've done my supervision for the group and I'm happy with the work, but when it goes to the coordinator of the research, then she finds that she's not happy about my work, and that leaves me feeling like, I'm, incompetent" (CP3)
> "Okay, not everybody has that experience of doing the masters and having that, you know, those skills, therefore supervisors need to be empowered; they need to develop the skills to supervise." (AP4)

The research participants expressed that they were not well equipped with research supervision. The research supervision process is anticipated to change research candidates into knowledge creators, with research supervisors playing an informed, supportive role in students' research journey (Muraraneza et al., 2016). It emerged from data sources that despite the expectations that are posed to people who are called research supervisors, lack of supervisory skills in research supervision was the greatest concern. The findings are supported by Wyllie et al. (2016), who stated that despite the exposure that some nurse educators had to research, they did not feel confident in undertaking all research steps. It emerged from the study that having master's degrees did not indicate that the individuals were automatically competent in research supervision. The research participants highlighted that they required their research skills to be developed. These findings are fully supported by the findings in the study conducted by Gullick and West (2017) on building research capacity and productivity among advanced practice nurses, which reveal that the nurse educators expressed that their research skills and knowledge required improvement.

7.2.2. Theme 2: Students' behaviour

Some of the participants reported that students' behaviour influenced research supervision. The sub-theme that emerged from theme 2 was the lack of students' commitment.

7.2.2.1. Lack of students' commitment. It emerged from a data source that the majority of students portrayed a lack of commitment in that they would opt for shortcuts where they want to copy data from existing literature regardless of being taught the right way. Poor research culture and preparation for research undertakings were also noted in students' behaviour.

This is supported by participants in the following verbatim quotes:

> "Lack of commitment from students themselves. You'll find that you're allocated a group of students who just do not come to you at all. You should be the one who goes to them and says, I'm still waiting for you to come and present your work. And then you'll find that maybe in that group, there's only one student who is committed. If she's not around, everything does not go forward." (BP6)
> "So, they go with the short route, short cut, so that they then finish fast." (BP4)
> "The students are a little bit lazy and there are those that are in the forefront of working. From that, I've had groups that would not want to share work with the other one. For instance, some would be down for a literature review. Some would be down for data collection and analysis and whatever. So, you would find that during the write-up phase, some do not want to share what they have and they would squabble a little bit and you've got to come in and do that." (CP1)

The research participants stated that lack of dedication from students themselves appeared as a challenge that research supervisors faced in research supervision. Additionally, students portrayed a lack of commitment in such a way that they would opt for shortcuts where they would attempt to copy data from previously completed research projects regardless of being taught the right way. According to Kakupa and Xue (2019), students' lack of commitment is prevalent as the feelings of fear, discomfort and worry (anxiety) can breed negative attitudes toward research leaving students feeling depressed, and unable to fulfil the research requirements of their degree programmes on time. This trend is a global phenomenon, as expressed by Saeed, Khan, Bari and Khan (2018) that although Pakistani students are always willing to study and portray a positive attitude toward learning, they are unable to progress in this field of research due to multiple factors.

7.2.3. Resource constraints

Data from the participants have revealed that resource constraints also pose challenges in research supervision. Three sub-themes have merged from the participants' arguments. The following are the sub-themes arising from resource constraints: (1) inadequate infrastructure, which in this data denotes a lack of libraries, computers and connectivity which are essential elements for research, (2) staff shortage, which was also viewed as a major concern leading to limited time in

both research supervision and the actual projects conducted by students, and (3) time constraint.

7.2.3.1. Sub-theme 1: Inadequate infrastructure. According to Al-Doubi et al. (2019), undergraduate research forms an integral part of higher education, and the research project signifies a vital component of the undergraduate qualification. Research relies on literature search which requires three main things, namely, libraries, computers used for searches, connectivity to the internet, and books and/or articles. The majority of participants reported of the absence of such important material.

One participant alluded that:

> "Even when students were given time to go to the library, there were not enough, computers and the journals, to get all the information. Internet was also a problem. Consequently, as nursing supervisors we had to assist students with their own personal data search." (AP5)

This is supported by one participant:

> "Because the number of students was more than the resources that were available, I had to offer them my office computer to work." (CP2)

The lack of computers posed a major challenge for supervisors across the campuses under study. A certain participant vowed that:

> "There aren't enough resources for students to do their research project. We do not have enough computers for the students to use." (BP6)

Research modules and projects are a part of teaching and learning activities that are offered within almost all education institutions, which requires three main materials, namely, libraries, computers used for searches, connectivity for the internet and books and/or articles. Public nursing colleges are currently under-resourced to provide such services to their students. This is confirmed by the findings in the study conducted by Ekpoh (2019) and Okoli (2019), which reveal that lack of infrastructure that is essential for research has been noted in many institutions of learning. This problem of computer shortages did not only affect students but also posed a challenge to supervisors who would end up lending students their computers for them to work on. The lack of infrastructure is a global problem that has affected many international institutions as stated by Alsied and Ibrahim (2017), whose study revealed that in Libyan higher education institutions, students faced several different challenges during their research. In the current study, the research supervisors did not have computers and if they did have, those computers were not connected to the internet; therefore, research processes would be difficult to perform. In addition, Roets and Bhembe (2016) state that their study participants viewed having one librarian for an entire institution and that the books kept in the library were considered too old. Therefore, it remained a difficult activity for students to compile their work using an appropriate resource, for example, computers and books from the library.

7.2.3.2. Sub-theme 2: Staff shortage. The nursing colleges are affected by the shortage of nurse educators as they retire and some resign, and their vacancies are left unfilled. Therefore, the remaining nurse educators were overloaded with work, and therefore could not cope (Rikhotso, 2019). Some participants supported this statement as they voiced that staff shortage does influence the supervision of research among student nurses.

This is supported by the verbatim quotes from three participants:

> "The people who are supervising students have got a bigger load on them to be teaching a lot of modules So, it means we are extremely short-staffed. Maybe if we were not extremely short staffed the lecturers would have time enough to supervise students." (EP5)
>
> "I know we have a responsibility to be…to be involved in research as a requirement from the South African Nursing Council, but given the fact that in here in nursing education we are overwhelmed and overworked, maybe the department should increase the posts for nurse educators, because look, we are so overwhelmed and overworked." (AP5)
>
> "Most of the time we are in and out of the campus so when the students are bringing this research, maybe they are going to find one somebody or one lecturer or two lecturers, the other one is not there, and then when they come now, the one was not available." (AP2)

The nursing campuses are reported to be affected by the shortage of nurse educators as they retire and some resign, and their vacancies are left unfilled. Therefore, the remaining nurse educators were overloaded with work of research mentoring and supervision to students, and they could not cope with the work assigned to them.

The shortage of research supervisors negatively influenced research supervision as they had to attend to clinical accompaniment as well. This ended up creating a problem, as sometimes students would come during that period for consultations and would find some supervisors not available. According to Haddad, Annamaraju and Toney-Butlerm (2022), there is a remarkable shortage of nurses in the whole country and worldwide. Roets and Bhembe (2016) expressed that the supervisor-student ratios should be manageable, and research supervisors should not be allowed to supervise more than six research projects at any given time. The study reveals that the problem is compounded by the resignation of nurse educators who leave with their expertise and skills thus compromising the provision of quality teaching and learning. All the vacant posts for such staff have been frozen due to a lack of money in government. Since the report of the moratorium in the government sector all the vacant positions have been frozen (SAnews, 2016).

7.2.3.3. Sub-theme 3: Time constraint. The majority of participants cited time shortages as the main challenge for them in conducting research supervision. Time frames allocated for students to complete their theory components and reports were regarded as very limited. Qasem and Zayid (2019:34) confirm that the most common challenges that the participants encountered about research projects were mostly associated with a lack of time to conduct research projects.

This was also noted by the participants who were heard saying:

> "The main, main challenge, for me, is time. There is no time allocated for doing research supervision. So, you have to try and find time, whether during lunchtime or teatime or even after hours, to sit with students, so that you can assist them with a topic, with their research." (BP3)
>
> "You have to make lots and lots of time for them to make lots of corrections but again you find out that there is not enough time for them. Also, because we are very busy. We also don't have enough time but you have to meet them many times to make sure that they do those corrections because they don't know how to reference." (EP7)
>
> "When I say time, the time-frame from when they start doing their theory, up to report, the time was very limited." (BP7)
>
> "You find out that they are taking a lot of time and there's no time because the same person still has other things to look after concerning the same students. So, there's no time aside for specifically this research supervision." (EP1)

The research participants indicated that the time frames allocated for students to complete their research theory and projects were very limited.

Qasem and Zayid (2019) confirm that the most common challenges that the participants in their study encountered concerning research projects were mostly associated with a lack of time to conduct research projects. The periods allocated to teach specific content to students are regarded as being too short for them to understand all the content.

Consequently, recurring explanations have to be given to students several times to ensure that they relate the research theory to the project. Similarly, Ebadi and Pourahmadi (2019) state that the lack of time was one of the challenges reported in their study by the majority of participants. Furthermore, the study conducted by Konwar and Kalita (2018) on the barriers and challenges of conducting nursing research and communicating research findings into practice revealed that lack of time in conducting research was one of the challenges that were expressed in the findings. Bhembe (2014) concurs with the findings that "the time given to the project was very short, especially now during the semesterisation, so that students did not comprehend the instruction, then the timing makes it difficult to apply".

8. Contributions, limitations and recommendations

This study contributes to the body of knowledge by exposing challenges that the nurse educators encounter during the supervision of student nurses' research projects in nursing colleges. The findings could be used to develop an action plan to uplift and enhance research supervisory skills of nurse educators. The strength of the study was the population directly involved in supervising undergraduate nursing students and the data collection process, which included campuses from rural, semi-urban, and urban regions.

The following were the limitations of the study

The study was limited to the two provinces out of nine in the country. The findings of the study were limited to the public nursing institutions and did not include the universities where undergraduate research is also done. The nursing students who were involved in research projects did not form part of the study; therefore, the findings could not be balanced as they only involve data from the nurse educators as research supervisors.

To tackle the identified challenges, the recommendations of the study include

1) enhancing students' interest in research by:
   - allowing students to engage early in research activities to instil a research culture in the growing professional
   - offering lessons about scientific writing (that includes in-text citations and creating arguments utilising literature from different sources) for their assignment as this might increase research exposure and interest as early as possible
   - protecting research periods by allocating research projects on the clinical master plan so that students would be allowed to take at least one day off during their clinical placements to continue with their projects
2) enhancing nurse educators' research supervision skills through the following:
   - public nursing colleges or campuses should have journal clubs where nurse educators would be supported when it comes to research including critique articles, write papers and research supervision
   - novice nurse educators who have just joined nursing education institutions or who have not yet done a master's degree should be encouraged and be motivated to register for such degree, as they will learn more about the research process
   - mentors should be appointed to mentor the novice nurse educators in research supervision. This will enhance the supervisory skills of nurse educators.

The following further research studies are recommended

- Research should be done in the institutions of higher learning (universities and universities of technology) where research projects are conducted at undergraduate levels. These studies should be on the exploration of the challenges encountered by undergraduate students on research projects.
- Research should be done on the experiences of undergraduate students with research supervision for the development of other strategies to enhance research in the colleges and institutions of higher learning.
- Research should be done on strategies to enhance research supervision among undergraduate students.

9. Conclusion

This study confirmed that there are challenges encountered by nurse educators when conducting research supervision for undergraduate nursing students. The challenges include inadequate nurse educators' research skills, lack of students' commitment to research activities, inadequate infrastructure, staff shortage and time constraints.

Declaration of competing interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: Dr S. Zuma reports administrative support and writing assistance were provided by University of South Africa. If there are other authors, they declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgment

The authors would like to acknowledge the input of the late Prof TE Masango, who also played a crucial role in this study.

References

Al-Doubi, S. H., Fawzi, H., & Walters, J. (2019). Undergraduate research supervision: a case study of supervisors' perceptions at Yanbu University College. *Higher Education Studies, 9*(4), 112–119.

Al-Muallem, A. 2016. Research supervision: faculty perspective. Doctoral dissertation. From: https://ses.library.usyd.edu.au/handle/2123/18927 (accessed 13 August 2020).

Alsied, S. M., & Ibrahim, N. W. (2017). Exploring challenges encountered by EFL Libyan learners in research teaching and writing. *IAFOR Journal of Language Learning, 3*(2), 143–158.

Ayoola, A. B., Adams, Y. J., Kamp, K. J., Zandee, G. L., Feenstra, C., & Doornbos, M. M. (2017). Promoting the future of nursing by increasing zest for research in undergraduate nursing students. *Journal of Professional Nursing, 33*(2), 126–132.

Benner, P. (1984). From novice to expert. *Menlo Park, 84*(1480), 10–1097.

Beyea, S. C., & Slattery, M. J. (2006). *Evidence-based practice in nursing: A guide to successful implementation*. Massachusetts: HC Pro.

Bhembe, T. M. (2014). *Challenges faced by nurse educators in teaching research to undergraduate nursing students (Doctoral dissertation)*. Pretoria: Unisa.

Botma, Y., Greeff, M., Mulaudzi, F. M., & Wright, S. C. D. (2015). *Research in health sciences*. Cape Town: Pearson.

Brew, A., & Mantai, L. (2017). Academics' perceptions of the challenges and barriers to implementing research-based experiences for undergraduates. *Teaching in Higher Education, 22*(5), 551–568.

Cleary, M., Sayers, J., & Watson, R. (2016). Essentials of building a career in nursing research. *Nurse Researcher, 23*(6), 8–13.

Department of Health (2020). *Generic functional structure: Public nursing colleges*. From: https://www.hst.org.za/publications/NonHST%20Publications/Strategic_Plan_for_Nurse_Education_Training_and_Practice.pdf (accessed 12 September 2020).

Dreyfus, S. E., & Dreyfus, H. L. (1980). *A five-stage model of the mental activities involved in directed skill acquisition*. California University Berkeley Operations Research Center.

Ebadi, S., & Pourahmadi, F. (2019). Exploring Challenges in Writing EFL Master Theses: Students and Supervisors' Perspectives. *Journal on English Language Teaching, 9*(2), 42–51.

Ekpoh, U. I. (2019). Postgraduate studies: The challenges of research and thesis writing. *Journal of Education and Social Research, 6*(3), 42–51.

Grove, S. K., & Gray, J. R. (2018). *Understanding nursing research: Building an evidence-based practice*. Missouri: Elsevier.

Gullick, J. G., & West, S. H. (2017). Building research capacity and productivity among advanced practice nurses: An evaluation of the Community of Practice model. *Journal of Advanced Nursing, 72*(3), 605–619.

Haddad, L. M., Annamaraju, P., & Toney-Butler, T. J. (2022). Nursing shortage. *StatPearls [Internet]*. StatPearls Publishing. From: https://www.ncbi.nlm.nih.gov/books/NBK493175/ (accessed 5 June 2022).

Hadi, N. U., & Muhammad, B. (2017). Role of supervisor in the performance of postgraduate research students. *Journal of Research and Reflections in Education, 11*, 178–186.

Kakupa, P., & Xue, H. (2019). Students' attitudes towards research: A study of graduate education students at a Chinese normal university. *Educational Process: International Journal, 8*(2), 97–110.

Konwar, G., & Kalita, J. (2018). The barriers and challenges of conducting nursing research and communicating research findings into practice. *Nurse Researcher, 8*, 6–9.

Murararaneza, C., Mtshali, F., & Mthembu, S. Z. (2016). Research supervision: Perceptions of postgraduate nursing students at a higher education institution in KwaZulu-Natal, South Africa. *African Journal of Health Professions Education, 8*(2), 135–139.

Okoli, M. (2019). Doctoral research supervision experience experiences of business education students in Nigeria. *Journal of International Gender Studies, 7*, 134–158.

Oprescu, F., McAllister, M., Duncan, D., & Jones, C. (2017). Professional development needs of nurse educators. An Australian case study. *Nurse Education in Practice, 27*, 165–168.

Polit, D. F., & Beck, C. T. (2017). *Nursing research: Generating and assessing evidence for nursing practice* (10th edition). Philadelphia, PA: Wolters Kluwer.

Qasem, F. A., & Zayid, E. I. M. (2019). The challenges and problems faced by students in the early stage of writing research projects in L2, University of Bisha, Saudi Arabia. *European Journal of Special Education Research, 4*(1), 32–47.

Rikhotso, E. T. (2019). *Challenges in the recruitment and retention of nurse educators: A case of Limpopo College of Nursing, South Africa.* University of Limpopo. Doctoral dissertation.

Roberts, L. D., & Seaman, K. (2018). Students' experiences of undergraduate dissertation supervision. *Frontiers in Education, 3*, 109.

Roets, L., & Bhembe, T. M. (2016). Teaching and supervising research: Challenges of novice educators. *African Journal of Nursing and Midwifery, 18*(2), 211–225.

Saeed, I., Khan, N. F., Bari, A., & Khan, R. A. (2018). Factors contributing to the lack of interest in research activities among postgraduate medical students. *Pakistan Journal of Medical Sciences, 34*(4), 913.

SAnews (2016). *Government to freeze non-critical vacancies*. From: https://www.sanews.gov.za/south-africa/government-freeze-non-critical-vacancies (accessed 26 August 2022).

South African Nursing Council (2014). *Competencies for a nurse educator*. From: http://www.sanc.co.za/pdf/Competencies/SANC%20 Competencies-Nurse%20Educator%202014-07.pdf (accessed 23 June 2020).

South African Nursing Council. (2022). *Research priorities*. Pretoria: SANC.

Seekoe, E. (2015). The availability of mentoring programmes in higher education and nursing education institutions in South Africa. *African Journal for Physical, Health Education, Recreation and Dance, 2*, 111–112.

Squires, A., Chitashvili, T., Djibuti, M. L., Ridge, M. L., & Chyun, D. (2017). Health research capacity building in Georgia: A case-based needs assessment. *Public Health, 147*, 1–7. From: https://doi.org/10.1016/j.puhe.2017.01.024 (accessed 18 November 2021).

Wyllie, A., Digiacomo, M., Jackson, D., Davidson, P., & Phillips, J. (2016). Acknowledging attributes that enable the career academic nurse to thrive in the tertiary education sector: A qualitative systemic review. *Nurse Education Today, 45*, 212–218.