



The development and validation of an intervention for the improvement of academic performance and success of nursing students at a university in the Western Cape, South Africa

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ABSTRACT

A three round Delphi study aimed at developing and validating the intervention for improving the academic performance and success of undergraduate nursing students at a university in the Western Cape, South Africa was undertaken. This study forms the last phase of a larger study. The first round of the Delphi process used a self-developed semi-structured questionnaire focusing on rating the pre-developed prescriptive intervention statements that were identified from the preceding phases of the larger project as well as to obtain further recommendation from the panel of experts. The second round of the Delphi process focused on reviewing the items that did not reach the desired consensus ($\geq 80\%$) as well as presenting the newly formulated prescriptive intervention statements based on the panel's recommendations provided in the first round of the Delphi process. The last round validated the intervention statements that reached the desired consensus ($\geq 80\%$). The intervention highlighted that students need support in various aspects including: financial support, English language support, family support, theoretical and clinical support. Furthermore, the university has the responsibility to ensure the following: selection of quality prospective students, class attendance, university residence for nursing students, a student-friendly programme, uniformity and consistence in learning and teaching and lastly provide support to the educators.

1. Introduction and background

Schools of nursing around the world are tasked with the responsibility of graduating well-educated and competent graduate nurses. This desired outcome can be achieved by ensuring satisfactory academic performance and academic success. Studies from around the world suggest that nursing student attrition is a global problem with attrition rates reported over 30% (Abele, Penprase, & Ternes, 2013; Dante, Valoppi, Saiani, & Palese, 2011; Fowler & Norrie, 2009; O'Donnell, 2008). Rodgers, Stenhouse, McCreddie, and Small (2013) reported that in 2010 the United States recorded a high attrition rate of 42% among undergraduate nursing student while the United Kingdom recorded 25–30%.

Jeffreys (2012) argued that without extra effort from educators and nursing schools, students are at risk of unsatisfactory academic performance and ultimately this may increase the attrition rate in the education of nurses. According to Buerhaus, Auerbach, and Staiger (2009) the demand for competent nurses is escalating at a rate of 2–3%

per year. To ease this demand, Staiger, Auerbach, and Buerhaus (2012) reported that the intake of nursing students should increase by 40% per year.

In South Africa, the South African Nursing Council (SANC) reported that in 2017 approximately 21 286 undergraduate nursing students were registered in their student register. Of the 21 286 students, 3 829 (17.99%) were first admissions (first-year nursing students) and 17 457 (82.01%) were re-admissions of both the students who were repeating a study year as well as those who progressed to the next study year (South African Nursing Council (SANC), 2017). However, it is anticipated that not all students admitted into the undergraduate nursing programme will perform academically well and successfully complete the programme. Two independent studies conducted at two different schools of nursing in the Western Cape (WC), South Africa (SA) by Mc Lachlan (2010) and Jephtha (2008) reported high attrition rates among nursing students. According to Jephtha (2008) of the 206 first year nursing students that were admitted for the undergraduate nursing programme at Western Cape College of Nursing at the beginning of 2005, only 71

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(34.5%) managed to complete the programme with in the minimum prescribed duration. An unpublished master's study conducted by Mthimunye (2015) revealed that 52.21% of students registered for second year of Bachelor of Nursing programme at the identified university for the year 2012–2013 had difficulties in progressing to the next level of study on first attempt. The current paper reports on expert consensus about an intervention to improve the academic performance, and success of undergraduate nursing students.

This study forms part of a larger project that employed an intervention research (IR) design and a multi-method research approach with the aim of developing an intervention for the improvement of academic performance and success of nursing students at a university in the Western Cape, South Africa. Thomas and Rothman (2013) defined intervention research (IR) as research endeavours that aim to develop and validate innovative and realistic interventions in order to solve a given problem. Marlow (2005) referred to intervention as the modification of the recommendations that emerge from a study. The larger project was conducted in three phases and this paper reports on the final phase which is based on an adapted version of Intervention Design and Development (DD) by Thomas and Rothman (2013).

1.1. Preceding phase one: Problem analysis and information gathering

Phase one was adapted from Thomas and Rothman (2013) and focused on problem analysis, planning and information gathering. The larger project was guided by a "Framework for Reducing the College Success Gap and Promoting Success for All" (Perna & Thomas, 2006), and was adapted to the nursing education context. This framework was used to guide data collection, data analysis and the discussion of study findings. According to Perna and Thomas's (2006) success model, student success is determined by the interaction of multiple layers of context namely: 1) internal context; 2) family context; 3) school context and; 4) social, economic and policy context.

Problem analysis and information gathering was conducted through 1) a systematic review; 2) a cross-sectional descriptive survey; 3) focus group discussions with undergraduate nursing students and; 4) face to face in-depth interviews with undergraduate nurse educators (Mthimunye, 2019) Table 1 below presents the key findings and the concluding statements from phase one categorised using the framework by Perna & Thomas (2006).

1.2. Preceding phase two: Design and early development of the intervention

Phase two of the project focused on the early design and development of the intervention subsequent to the systematic application of

Table 1
Key findings and the concluding statements from phase one.

Conceptual framework	Key findings/Concluding statements (Phase 1)
Layer 1- Internal context	Student's readiness for tertiary education influences class attendance and academic engagement. Creating an environment that promotes academic engagement is pivotal. The selection criteria for entry to the undergraduate nursing programme do not guarantee the admission of students who have potential for satisfactory academic performance and success. Poor socio-economic status and resultant part-time employment influences the academic performance and success of undergraduate nursing students. English as second language (ESL) and poor English language proficiency of undergraduate nursing students places them at risk of unsatisfactory academic performance and success.
Layer 2- Family context	Residing off campus with family and resultant reduced time for studying has a negative impact on the academic performance and success of undergraduate nursing students.
Layer 3- School context	The curriculum design and delivery of the undergraduate nursing programme affects the academic performance and success of undergraduate nursing students. The learning and teaching environment has a direct effect on learning and teaching and ultimately impacts the academic performance and success of nursing students. Learning and teaching strategies used, and the support provided in the delivery of the theoretical and clinical components of the programme affects the academic performance of undergraduate nursing students. Class size and the educator's workload influence the quality of the learning and teaching process.

scientific process of intervention DD as argued by Thomas and Rothman (2013) in Intervention Research (IR) design. The researcher adapted these two primary events (designing an observational system and specification of procedural elements) of the design phase, as recognised by Fawcett et al. (1994) in Thomas and Rothman (2013). During this stage, the information gathered in phase one was manipulated and transformed and organised in a manner that produced practical design concepts that informed the current study (Marlow, 2005; Mthimunye, 2019; Thomas & Rothman, 2013).

2. Problem statement

Although efforts have been made both globally and nationally to ensure academic performance and success of nursing students for the past decades, the reality is that nursing students' performance and success continues to be on the decline (Harris, Rosenberg, & O'Rourke, 2013; Mthimunye, 2015; Roos, Fichardt, MacKenzie, & Raubenheimer, 2016). If efforts to improve the academic performance and success of nursing students are not prioritised and maintained, schools of nursing risk not meeting the demands of the much-needed nursing workforce, with potential threats of a collapse in the health system (World Health Organization, 2010). Literature reveals an enormous interest by researchers to understand the factors that promote academic performance and success of nursing students (Beauvais, Stewart, DeNisco, & Beauvais, 2014; Jeffreys, 2012; Mthimunye, Daniels, & Pedro, 2018). However, literature has not been clear on educational recommendations or the interventions required to ensure satisfactory academic performance and success of undergraduate nursing students. The obvious lack of research on intervention measures supports the need for researchers to develop evidence-informed interventions focusing on improving the academic performance and success of nursing students.

3. Purpose of the study

The study aimed to develop and validate an intervention for the improvement of academic performance, and success of undergraduate nursing students at a university in the Western Cape, South Africa.

4. Methodology

4.1. Research design

A three-round Delphi methodology was used to develop and validate the intervention for the improvement of academic performance and success of nursing students at a university in the Western Cape,

South Africa. Keeney, McKenna, and Hasson (2011) defined the Delphi method as a repetitive method of structuring communication between a group of people who can provide valuable contributions in order to resolve a complex problem. Likewise, the Delphi method was applied in this study to gain consensus, from experts in the field of nursing and education, on the intervention designed in phase 2 based on the findings of phase 1, as well as to gather recommendations on how the academic performance and success of undergraduate nursing students can be improved.

There are different types of Delphi techniques in research. As suggested by Hasson and Keeney (2011) the classic Delphi, which aims to prompt opinion and gain consensus among a group of experts, was used. The Delphi process comprised of a first round, using a self-developed semi-structured questionnaire with both quantitative and qualitative questions; a second round using a more structured questionnaire; and a third round where items that reached highest consensus ($\geq 80\%$ agreement) were reviewed. The process was halted once agreement was achieved, which signified that theoretical saturation was accomplished (Keeney et al., 2011).

4.2. Participant selection

Purposive sampling was used to select participants who are experts, knowledgeable about the phenomena being studied and who were willing to provide the information and experiences the researcher sought (Etikan, Musa, & Alkassim, 2016). A list of eligible participants ($n = 25$) using purposive sampling technique was compiled and were invited via email in January 2018 to participate in the study. Eight participants ($n = 8$) agreed to participate. Of the 17 that were excluded, 16 did not respond while one stated that he was unable to participate due to other commitments. The experts were from 7 different institutions in 3 provinces of South Africa. The provinces included: Free State, Gauteng and Western Cape province. The eligible experts have a background in nursing education with a focus on curriculum development as well as learning and teaching in nursing. The inclusion criteria were set as: (i) expertise in the field of nursing; (ii) qualified with a bachelor's degree or higher; (iii) have conducted research in the education of nurses; (iv) employed as a nurse educator or clinical facilitator in a university, nursing college or hospital based. Participants were briefed about the study and the Delphi process before they consented to participate. The findings of the preceding phases were communicated to the study participants as background and to ensure that the development and validation of the intervention was focused and relevant.

4.3. Data collection

Data was collected in two rounds between March and May 2018 while the third round was used to validate items that reached the desired level of consensus ($\geq 80\%$).

Round 1: Boulkedid, Abdoul, Loustau, Sibony, and Alberti (2011) recommend a self-administered questionnaire as an effective tool for use in a Delphi study. A self-developed semi-structured questionnaire was administered to the participants, using Google forms. The questionnaire comprised both quantitative and qualitative components. Participants were asked to rate, comment and/or provide recommendations on the items. The aim of the qualitative component therefore was to generate ideas, comments and recommendations from the experts to ensure that an inclusive and innovative intervention was developed. This facilitated further refinement of the intervention statements or the addition of new statements. In round 1, the questionnaire comprised two sections with a total of 33 items: section one focused on the demographic information of participants and section two on the prescriptive intervention statements developed from the preceding phase one and phase two. The items (prescriptive statements) were rated using a

five-point Likert scale where 1 = not at all important; 2 = slightly important; 3 = moderately important; 4 = very important; and 5 = absolutely essential. The following 11 sub-sections of section 2 were developed based on the preceding phases: 1) select high quality prospective nursing students; 2) provide English language support; 3) promote class attendance; 4) provide financial support to deserving students; 5) provide university residence to undergraduate nursing students; 6) encourage family support and involvement; 7) make the undergraduate nursing programme student-friendly; 8) ensure a conducive learning and teaching environment; 9) enhance theoretical and clinical support to undergraduate nursing students at all times; 10) ensure uniformity and consistency in the process of learning and teaching as well as; 11) provide support to nurse educators and clinical supervisors.

Consensus ($\geq 80\%$) was reached on 29 of the 33-item questionnaire (Text Box 1: item 1–4, 6–9, 11–13 15–21, 19–20, 23–24, 30–31, 33–36, 39–41). The expert panel could not reach consensus on four prescriptive statements (Text Box 1: item 5, 43, 44, 45). Thematic analysis according to Braun and Clarke (2013) was used to analyse the qualitative data obtained in round 1: familiarisation with the data; generating initial codes; discovering themes/searching for themes; reviewing themes; defining and naming themes and; producing the report. This qualitative data analysis process resulted in the formulation of additional 12 prescriptive intervention statements (Text Box 1: items 10, 14, 22, 25–29, 32, 37–38 and 42).

Round 2: The second round of the Delphi study was therefore aimed at providing participants with feedback on the previous round; conducting a follow up on the 4 prescriptive statements that did not reach consensus and allowing participants to change their scores if they so wished. The participants were also asked to rate, comment and/or provide recommendations on the 12 new prescriptive statements that were developed based on the qualitative responses in round 1. This was done through a self-developed questionnaire consisting of 16 items and was administered to the panel of experts via Google forms. Participants were asked to rate the items using a five-point Likert scale as described in round 1.

Round 3: This round aimed at validation of the intervention statements that reached the desired level of consensus ($\geq 80\%$) to determine whether it was an accurate reflection of what the participants agreed on in rounds 1 and 2. The intervention statements that reached the desired consensus level were adapted to form the intervention that should be implemented to improve the academic performance and success of nursing students at a university identified in this study. The researcher set the agreement level at 80% consensus. All items (Text Box 1 – item 43, 44, 45) which did not achieve agreement of 80% consensus were removed from the list of intervention statements. In round 3, the expert participants were asked to check the appropriateness of the intervention in relation to their rating.

4.4. Rigor

Rigor was ensured by using Rebar and Macnee (2010) four criteria of trustworthiness as well as by ensuring the validity of the questionnaire.

Credibility was ensured through providing participants with a detailed description of the background to ensure that they understood the research context that led to the development of the prescriptive intervention statements. Furthermore, member checks of data collected were done during the Delphi process by allowing the participants the opportunity to confirm the data.

Transferability was safeguarded by providing a detailed description of the research setting, and of the phenomenon.

Dependability was ensured through the verification processes

conducted by the research supervisor who ensured that the procedures used by the researcher were acceptable.

Confirmability was maintained through safekeeping of the completed questionnaires, transcripts and the researcher's reflective report which is available on request for audit purposes.

Validity of the questionnaire was ensured by means of content validity. Content validity of the questionnaire was established by the research supervisor (an expert in teaching and learning as well as in quantitative studies).

4.5. Data analysis

Quantitative data were analysed by means of descriptive statistical analysis using the IBM Statistical Package for Social Sciences (IBM SPSS-24). Responses were thoroughly checked for completeness and correctness. There were no missing data. Percentages (%) of agreement, median scores as a measure of central tendency including percentiles ranges which are the preferred consensus measures used in Delphi studies were calculated (von der Gracht, 2012). Qualitative responses were analysed using the six steps of thematic analysis as identified by Braun and Clarke (2013) using Atlas, ti. Mac Version 1.6. Software.

4.6. Research ethics

Permission to conduct this study was obtained from the University of the Western Cape Research Ethics Committee (Ethical Clearance Number: HS17/1/42). Written consent was obtained from all participants and all participants were informed of their right to withdraw from the study without any consequence. Confidentiality was maintained by ensuring email communication was sent to individual participants rather than through mass emails. Expert identification (i.e. name, contact details and the institution of affiliation) are withheld to ensure anonymity.

5. Results

The youngest participant was 29 years old and the oldest was 52 years old. The average age was 40 years. One of the participants withheld his age two (25%) participants were male and 75% ($n = 6$) participants were female.

Table 2 provides the demographic information and field of expertise per participant:

5.1. Results of Delphi round 1

In the first round, 8 participants responded to a 33-item questionnaire. At the end of every section in the questionnaire and at the end of round 1, participants had the opportunity to provide recommendations which the researcher could take into consideration about the content as well as the process being undertaken. In round 1, consensus ($\geq 80\%$) was reached on 29 items (Text Box1: item 1–4, 6–9, 11–21, 23–24, 30–31, 33–36, 39–41). The following are the qualitative

Table 2

Expert panel demographical details.

Code	Gender	Age	Experience in years	Title	Speciality
P1	Female	45	12	Mrs	Researcher, educator/lecturer
P2	Female	44	12	Dr	Researcher, educator/lecturer, learning and teaching expert
P3	Male	35	4	Mr	Educator/lecturer, registered nurse, learning and teaching expert, critical care child nurse expert
P4	Female	52	19	Mrs	Researcher, educator/lecturer, registered nurse
P5	Female	47	13	Mrs	Researcher, educator/lecturer, clinical facilitator, registered nurse, learning and teaching expert, curriculum development expert
P6	Male	n/a	10	Mr	Educator/lecturer
P7	Female	29	4	Mrs	Clinical facilitator
P8	Female	30	6	Dr	Researcher, educator/lecturer, learning and teaching expert

results that emerged from round 1.

5.1.1. Qualitative responses from experts

- a) Selection of high-quality prospective nursing students (entry requirements for admission)

Five experts gave recommendations and suggestions on the selection and recruitment of prospective nursing students. The experts shared the sentiment that recruitment of prospective undergraduate nursing students should be done while they are still in high school.

One expert stated:

"Start recruitment while they are still in high school. Have the current nursing students and staff conduct activities at high school to provide role model for the prospective students." (P2)

Another expert said:

"...I think a more intentional focus should be geared toward awareness at high schools (open days) regarding the nursing profession, and professional pathways one can explore on completion of the BNurs degree." (P3)

5.1.1.1. *Lessons learnt/statement summary.* Based on the frequency in expert suggestions, the researcher concluded that it is essential that recruitment of nursing students should begin at secondary school level as well as during university open days with the hope of attracting high quality prospective students to the nursing profession.

- b) Promote class attendance

Seven experts provided comments and suggestions on how class attendance can be enhanced. The two main suggestions that emerged from this section were that performance and class attendance should be rewarded.

One expert said:

"...Give certificates of full attendance to students who attend all the time." (P2)

While another expert believes that:

"...Merit awards at the University can also promote positive competition amongst learners and establish a good climate for learning." (P3)

5.1.1.2. *Lessons learnt/statement summary.* Based on the expert responses, the researcher concluded that positive reinforcement such as rewarding class attendance and academic performance can enhance the overall class attendance of nursing students. Likewise, this could enhance the development of professionalism, which is core to nursing practice.

- c) Encourage family support and involvement

Four experts provided comments and suggestions in this section. The experts agreed that family support plays a vital role in the academic performance and success of nursing students. The main theme that emerged from the responses emphasizes the importance of family involvement in the academic growth of students.

These are some comments from the experts:

"Family should provide a good learning environment." (P7)

"have open days for staff members to be able to share with the parents about the requirements of the course" (P2)

"It is of paramount importance that there should always be communication amongst the student and the family regarding his/her studies and all related activities. However, family time is also important as it enhances bonding and provides additional support (a sense of belonging) to the student. Nursing is a very demanding profession, with the focus on theory (lectures) and practice (clinical hours). Recommendation: Student to publish and provide family members weekly/monthly study schedules regarding academic activities. This would empower family members to participate and providing support to the student. It also gives them (the family) a sense of inclusiveness." (P3)

5.1.1.3. *Lessons learnt/statement summary.* Based on the responses provided the researcher concluded that family members should be involved as much as possible in the school activities, which includes inviting them to open days. The researcher also concluded that the nursing school plays a role in providing information about the demands of the programme and the students' need for family support.

d) Make the undergraduate nursing programme student friendly

Seven experts provided comments and suggestions on how to ensure a "friendly" undergraduate nursing programme taking cognisance of the current generation of students in the classrooms. The experts agreed on incorporating innovative techniques in learning and teaching of nursing students. One theme that emerged from this section was that online teaching should be strengthened.

These are some comments from the experts:

"Administrative and technological support should be strengthened." (P4)

"Online tutoring should be available to students." (P7)

5.1.1.4. *Lessons learnt/statement summary.* Based on the expert responses, the researcher concluded that promoting online teaching and tutorials for all lessons can play a vital role in improving the academic performance of undergraduate nursing students.

e) Enhance theoretical and clinical support to undergraduate nursing students at all times

Eight experts provided suggestions on how theoretical and clinical support can be provided to improve the academic performance and success of undergraduates nursing students. Five important intervention statements reflected the implementation of a variety of teaching strategies, effective use of technology in the classroom, course evaluation, adequate support for students in the clinical setting as well as preceptor training to registered nurses involved in the training of undergraduate nursing students.

These are some comments from the experts:

"...A psychologically safe teaching and learning environment is essential." (P4)

"The incorporation of various teaching strategies for various learners (e.g. Kinaesthetic, Visual, Auditory), also to incorporate technology in the classroom, since health fraternities are evolving in technology." (P3)

"Effective and appropriate use of electronic devices in classrooms and practice areas should be promoted. Google searches of content. Embrace

the benefits of electronic teaching and learning equipment." (P6)

"Firstly, consider identifying registered nurses in wards, where students are placed, that are eager and willing to provide support to these students. Secondly, empower these registered nurses by providing them with support e.g. preceptor training or clinical teaching courses." (P8)

5.1.1.5. *Lessons learnt/statement summary.* Based on the expert responses the researcher concluded that the application of various teaching strategies, effective use of technology in the classroom, adequate support for students in the clinical setting, effective use of course evaluation to improve learning and teaching, as well as preceptor training for registered nurses involved in the training of undergraduate nursing students should be viewed as essential in enhancing theoretical and clinical support for nursing students.

f) Ensure uniformity and consistency in the process of learning and teaching

Two experts provided responses in this section. The main recommendation that emerged from the responses was that a student-centred approach should be implemented to deal with individual learning needs of students.

One expert said:

"...standardization of teaching and learning practice should no longer be the focus, more a student-centred approach. awareness that all students are different and unique and should thus become the focus/object of teaching and learning. Equip educators with a variety of teaching strategies and educational tools to support any learning style in any teaching and learning encounter. Encounters can happen anywhere – and should thus have an impact on the student. Teaching and learning expectations to become the new norm. Students to have confidence that any educator will be able to assist them in their learning needs." (P5)

5.1.1.6. *Lessons learnt/statement summary.* Based on the recommendation, the researcher concluded that a student-centred approach to learning and teaching should be viewed as pivotal in improving the academic performance and success of nursing students.

g) Provide support for nurse educators and clinical supervisors

Two experts provided responses in this section. The recommendation addressed the importance of active involvement by the head of the department in supporting nurse educators so that they perform their duties with high levels of commitment.

One expert reported:

"Head of Departments to consult with nurse educators on a regular basis to establish areas where support is needed. Also, having a career path for nurse education at educational institutions is of paramount importance." (P3)

5.1.1.7. *Lessons learnt/statement summary.* Based on the recommendation, the researcher concluded that the school management and particularly the head of the school of nursing should provide necessary support to nurse educators and ensure a favourable work environment.

5.2. Results of Delphi round 2

In the second round, eight participants responded to a 16-item questionnaire which consisted of four prescriptive statements from round one (Text Box 1 – items 5, 43, 44 and 45) and 12 new prescriptive statements (Text Box 1 – items 10, 22, 25–29, 32, 37–38 and 42) that were developed based on the qualitative response in round 1. Of the 16

items that were distributed, 13 items reached the desired consensus level ($\geq 80\%$) while three items (Text Box 1 – items 43, 44 and 45) fell short and were excluded from the prescriptive intervention statements. Of the 4 prescriptive intervention statements that were recirculated in round 2, only one statement (Text Box 1 – item 5) reached expert consensus ($\geq 80\%$). The remaining 12 new items achieved the desired agreement level set for this study. At the end of round 2, a total of 42 out of 45 items reached the desired consensus level ($\geq 80\%$) set for the study.

5.3. Round 3: Final round

In round 3, a summary of the results was circulated via email to the study participants to review their agreement level and to confirm if the final product reflects their views. All eight experts that participated responded in round 3. The experts reported that they were satisfied with their responses and the agreement level.

6. The designed intervention

Given the phenomenon of unsatisfactory academic performance and attrition, designing an effective and innovative intervention to improve the academic performance and success of undergraduate nursing students should be the utmost priority for all involved. An effective intervention should have multi-components to ensure that it is integrated. The intervention was formed by incorporating only the prescriptive statements that reached the desired consensus level ($\geq 80\%$) in round 1–3. Text Box 1 below summarise the intervention that should be implemented to ensure improved academic performance and success of undergraduate nursing students at the identified school of nursing.

Text Box 1

The designed intervention.

Internal context with input from the school context:

- A. Provide financial support to deserving students
 1. A comprehensive financial needs assessment should be conducted: needy students and deserving students should be provided with customised funding according to their individual needs – (R1 = 88.6%)
 2. The institution should consider ways in which the financial burden on students can be reduced through targeted additional financial support (i.e. Scholarships, hardship funds, subsidised accommodation) and by providing assistance to access financial aid or contingency funds – (R1 = 85.7%)
 3. The institution should provide paid student assistant positions such as peer tutoring/mentoring and research assistant positions to needy students that perform well academically – (R1 = 85.7%)
 4. The school of nursing should consider approaching companies and businesses for sponsorship to provide food drives (feeding schemes) for needy students – (R1 = 82.5%)
- B. Provide university residence to undergraduate nursing students
 5. University residence should be available to all undergraduate nursing students – (R1 = 70%; R2 = 80%)
 6. Ensure reliable transport to and from campus/clinical placement for students residing in off-campus accommodation – (R1 = 80%)
- C. Academic support
 7. Students with no previous physical science knowledge should be identified, closely monitored and given the necessary support – (R1 = 85%)
 8. Provide English language support – English for academic development as a compulsory module at first-year – (R1 = 85%)

Family context

- D. Encourage family support and involvement
 9. Family should allow students time to engage with his/her academic responsibilities – (R1 = 92.5%)
10. *Invite parents and family members to open days and programme orientations to share with them the challenges of the programme and what role they can play in ensuring satisfactory academic performance and success among undergraduate nursing students – (R2 = 86.7%)

School context

- E. Selection of high-quality prospective nursing students: Admission requirements
 11. Provide a prerequisite physical science module to prepare students who are provisionally accepted into the undergraduate nursing programme to ensure that they are better prepared for the mainstream physical science module – (R1 = 80%)
 12. Compulsory tutoring sessions for students with no physical science backgrounds or to those who obtained a low score – (R1 = 85%)
 13. Prospective nursing students who indicate nursing as their first choice on the application form should be given priority on admission over those who indicate nursing as second of third choice of study – (R1 = 90%)
 14. *Recruitment of undergraduate nursing students to start in high school: Current nursing students and educators should conduct activities, motivational talks and provide role modelling in schools – (R2 = 88.7%)
- F. Ensure a conducive learning and teaching environment
 15. The school of nursing should ensure provision of a physical environment that promotes physical comfort in classrooms (adequate space, enough chairs to sit, minimal noise, adequate ventilation and temperature regulation) – (R1 = 95%)
 16. The school of nursing should ensure provision of the physical environment that promotes physical comfort in skills laboratories (adequate space and enough chairs to sit, adequate ventilation and temperature regulation) – (R1 = 95%)
 17. The institution should ensure that students have reliable access to digital resources such as secure WIFI access points and fully functional computer labs that can accommodate the number of undergraduate nursing students. – (R1 = 92.5%)
- G. Make the undergraduate nursing programme student friendly
 18. Timetable arrangement should take into consideration both the clinical and theoretical components of the undergraduate nursing programme – (R1 = 87.5%)
 19. Distribution of modules across the undergraduate nursing programme should be done taking into account the relationship between modules, the module content, complexity of each module, and the clinical requirements – (R1 = 87.5%)
 20. Assessment planning should be done in advance and students should be provided with the assessment plan (e.g. date, time, content to be covered) prior to commencing with the module that is to be studied – (R1 = 92.5%)
 21. The institution should offer academic support and development to improve students study skills and to ensure deep learning takes place – (R1 = 92.5%)
 22. *Online tutoring should be available to students – (R2 = 94.3%)
- H. Enhance theoretical and clinical support to undergraduate nursing students
 23. The school of nursing should ensure that clinical supervisors/preceptors are available and visible to all undergraduate

- nursing students in clinical placements at all times to ensure clinical support – (R1 = 95%)
24. Professional nurses in the hospital should provide clinical support for undergraduate nursing students – (R1 = 92.5%)
 25. *Nurse educators should include a variety of teaching strategies to accommodate diverse learning styles (e.g. kinaesthetic, visual, auditory) and to promote interactive activities in class – (R2 = 91.4%)
 26. *Nurse educators should incorporate the effective and appropriate use of technology (electronic devices) in the classroom – (R2 = 91.4%)
 27. *Provide nurse educators with the opportunity to consult student's course evaluation at the end of every module and make the relevant and appropriate changes where necessary – (R2 = 94.3%)
 28. *Preceptor training or clinical teaching courses should be provided to registered nurses based in the hospitals – (R2 = 80%)
 29. *Encourage regular communication between nursing staff and clinical supervisor regarding the learning needs of individual students – (R2 = 94.3%)
- I. Ensure uniformity and consistency in the process of learning and teaching
30. Regular workshops to promote innovative learning and teaching strategies should be provided to all nurse educators and clinical supervisors – (R1 = 97.5%)
 31. Nurse educators and clinical supervisors should receive appropriate and ongoing professional training and development to ensure standardisation of teaching practices – (R1 = 85%)
 32. *Promote a more student-centred approach where students are allowed to be different and unique while focusing on the objectives to be achieved – (R2 = 91.4%)
- J. Promote class attendance
33. Student support services should provide all students with regular academic, psychological and emotional support to improve motivation – (R1 = 85%)
 34. Student's class attendance should be made compulsory – (R1 = 87.5%)
 35. The school of nursing should provide a platform for peer mentoring. i.e. Providing a platform for high achievers to share their experience and guidance with underperforming students – (R1 = 82.5%)
 36. The school of nursing should provide a platform for graduates who are successful and are role models in the field of nursing to share their success and to inform current students of the prospects within the profession – (R1 = 87.5%)
 37. *Annual merit awards at the university faculty and/or departmental level should be implemented to promote positive competition among nursing students – (R2 = 88.6%)
 38. *Reward class attendance: Students with 100% class attendance should be awarded a certificate of full attendance – (R2 = 80%)
- K. Provide support for nurse educators and clinical supervisors
39. Nurse educators should be allowed to teach or facilitate modules based on their experience and area of interest and specialization – (R1 = 82.5%)
 40. Workload for nurse educators and clinical supervisors should be reviewed on a regular basis to ensure that work is distributed equally – (R1 = 85%)
 41. More administrative support such as marking and research assistance should be provided to relieve the burden on nurse educators. (R1 = 80%)
 42. *Head of Departments (HoDs) to consult with nurse educators on a regular basis to identify areas where support is needed – (R2 = 97.1%)
 43. **Prospective nursing students who have demonstrated an aptitude to pass physical science subject from high school or equivalent should be given first priority/preference above

those without physical science subject for admission into undergraduate nursing programme – (R1 = 70%; R2 = 54.3%).

44. **The required clinical hours should be split across the programme to allow for 6–8 h clinical shift per day instead of 12-hour clinical shifts – (R1 = 60%; R2 = 60%).
45. **The intake (selection target) of nursing students should be decreased to reduce the workload – (R1 = 55%; R2 = 68.6%).

*intervention statements which were generated from the experts' recommendation

**intervention statements which consensus could not be reached (removed after round 2).

Level of consensus in round 1 (R1)

Level of consensus in round 2 (R2)

7. Discussion

Overall, a total of 42 items gained agreement based on the consensus level ($\geq 80\%$), median values, and interquartile ranges (Text Box 1). This intervention can be viewed as an initial support for nursing students, nurse educators as well as the school of nursing to assist in dealing with the challenges that have a negative impact on the academic performance and success of nursing students. The findings emphasise that the intervention towards improving the academic performance and success among nursing students is a phenomenon that is influenced by multiple layers of context.

Shortlisting of high-quality prospective students is a goal of most HEIs. However, literature is not clear on what specific characteristics or combination of characteristics define a high-quality student. Several studies focused on the student profile characteristics such as the student's demographics, affective factors and academic factors (Abele et al., 2013; Alshammari, Saguban, Pasay-an, Altheban, & Al-Shammari, 2017; Mthimunya et al., 2018). Therefore, it is important that the selection of prospective nursing students should not only focus on the applicant meeting the minimum academic requirements, but also ensure that prospective nursing students who indicate nursing as their first choice should be given priority on admission in to the undergraduate nursing students as agreed on by the experts who participated in this study

While there are a few studies contradicting English language support for academic use, many studies provide evidence of positive results (Everett, Salamonson, Trajkovski, & Fernandez, 2013; Glew et al., 2015; Timer & Clauson, 2011). In this study, the experts agreed that undergraduate nursing students should receive English language support in order to ensure improvement in their academic performance and success. This finding is supported by a quantitative study conducted by Baik and Greig (2009) with the aim of developing specific language academic study skills revealed that the programme had a positive impact on the student's academic performance as evidenced by the improved academic performance of those students who attended regularly.

The findings of the current study revealed that experts in this study agreed on improving class attendance would have a positive influence on the academic performance of students. The findings are consistent with previous studies such as a meta-analysis conducted by Credé, Roch, and Kieszczyńska (2010) which revealed that class attendance has a stronger positive correlation with academic performance than any other known predictor variables.

Economics is one of the biggest challenges that has a direct or indirect negative impact on students (Goldrick-Rab, Kelchen, Harris, & Benson, 2016; Roderick, Nagaoka, & Coca, 2009). Hossler, Ziskin, Gross, Kim, and Cekic (2009) and Goldrick-Rab et al. (2016) compared the academic performance of students who received financial aid with

those that did not. The results revealed that non-recipients of financial aid are likely to produce unsatisfactory academic results. Likewise, the findings of this study indicate that experts agreed that financial support is vitally important when endeavouring to achieve satisfactory academic performance and success.

Literature further reveals the effects of educators on students' academic performance (Dale, Leland, & Dale, 2013). Although much is known about these effects, they seem to be underrated, given some of the conditions educators find themselves working under including a lack of professional development opportunities (Tack, Valcke, Rots, Struyven, & Vanderlinde, 2018). This study identified that providing specific support to nurse educators and clinical supervisors is vital in ensuring satisfactory academic performance of nursing students. Further findings of this study revealed experts in this study agree that enhancing theoretical and clinical support as well as ensuring uniformity and consistency in the process of learning and teaching are crucial measures in ensuring satisfactory academic performance and success among students. A study conducted by Dale et al. (2013), aimed at exploring "what bachelor students' in nursing perceived to be important for having good learning experiences in clinical studies", highlighted the importance of professional nurse competence and qualifications as a pivotal requirement for a good clinical supervisor. This is in line with the findings of this study and suggests that the undergraduate nursing programme should employ adequate staff to support nursing students during their clinical placements.

Previous studies reported that the learning and teaching environment has an influence on the students' academic performance (Hamid, Faroukh, & Mohammadhosein, 2013; Kohli & Dhaliwal, 2013). In the current study, the experts agree that a favourable physical learning and teaching environment must be in place for students to succeed. Arzuman, Yusoff, and Chit (2010) have advocated that students' contentment with their learning environment is associated with the depth and quality of learning. Furthermore, the improvement of the learning environment is likely to result in satisfactory academic performance of nursing students (Arzuman et al., 2010; Hamid et al., 2013).

Literature has not been conclusive on the effect of university residence on the academic performance of nursing students. However, due to the benefits that come with residing in university residence such as 24-hour access to university resources, it would be highly probable that students who reside in university residence would yield satisfactory results as compared to their counterparts who reside off-campus. Previous studies such as those conducted by Snyder, Kras, Bressel, Reeve, and Dilworth (2011) and Vieira, Vieira, and Raposo (2018), found that there is a significantly positive correlation between students living in university residence and academic performance. The findings of the current study reveal that experts in this study concur that the institution should ensure that nursing students are housed in university residences. These results, however, should be implemented with caution as previous research has revealed that students living in university accommodation are at risk of suffering from stress related conditions due to a lack of family support (Magerman, 2011). Similarly, the findings of the current study revealed that family support and involvement should be encouraged.

8. Conclusion

The purpose of this research study was to develop and validate an intervention for improving the academic performance and success among nursing students through a consultative process with a panel of experts. The intervention statements highlighted that besides the need for student's readiness for the programme, students have multi-level needs for support from the family and the higher education institution. In addition, the intervention statements suggest that the higher education institution as well as the school of nursing are responsible for ensuring the selection of quality prospective students, class attendance, university residence for nursing students, a student-friendly

programme, uniformity and consistence in learning and teaching as well as providing support to the educators. The developed intervention may help promote a better understanding of the factors that place students at risk of poor academic performance. Moreover, it is hoped that this study will serve as the basis for future studies aimed at assisting higher education institutions and schools of nursing to address the struggle with the unsatisfactory academic performance of nursing students in South Africa. Further exploration should be conducted to appraise the effectiveness of this intervention.

9. Study limitations

As with many Delphi studies, the shortfall of this study is that the sample size was smaller than anticipated and thus the findings may not be generalizable beyond the context of this study. For future studies the researcher recommends a larger sample as well as the involvement of other stakeholders such as nursing students, where possible, to ensure the reliability of the finding. However, the foundation of the intervention was grounded on the empirical findings of preceding studies.

Author contributions

K.D.T.M. (University of the Western Cape): Primary student researcher; was responsible for the conceptualisation of the study, data collection, data analysis and discussion.

F.M.D. (University of the Western Cape): was the study leader, supervised the conceptualisation of the study and guided the methodology for the study.

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Disclaimer

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.ijans.2019.100156>.

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