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Assessing staff readiness for simulation in a Health Sciences Institution

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ASSESSING STAFF READINESS FOR SIMULATION IN A HEALTH SCIENCES INSTITUTION

Tolulope Ayomipo Awogbemila

A research report submitted to the Faculty of Health Sciences, University of the Witwatersrand, Johannesburg, in partial fulfillment of the requirements for the degree of Master of Science in Nursing

Johannesburg, 2018

DECLARATION

I, Tolulope Ayomipo Awogbemila declare that this research report (Human Research Ethics Clearance number M170238) is my own work. It is being submitted for the degree of Master of Science in Nursing in the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination at this or any other University.

.....

Signed at Johannesburg

On the ..... day of ....., 2018

DEDICATION

I dedicate this work to the Almighty God for the grace given to study and successfully complete the research work.

PRESENTATIONS ARISING FROM THIS STUDY

Awogbemila, T.A., Thurling, C.H., Armstrong, S.J. & George, A. (2017). Assessing staff readiness for simulation in a health sciences institution. In Sigma Theta Tau International Chi Xi-At Large Chapter first Biennial conference, Swaziland.

Awogbemila, T.A., Thurling, C.H., Armstrong, S.J. & George, A. (2017). Assessing staff readiness for simulation in a health sciences institution. In School of Therapeutic Sciences research day at the University of the Witwatersrand, South Africa.

ABSTRACT

Background: Simulation has been considered a possible solution to the recorded imbalance in the number of students, clinical instructors and clinical placements. The perceived simulation benefits have led to an increase in investment by health sciences institutions through the purchase of equipment and set up of a simulation laboratory, but with a lack of proper planning and structure for its integration into the curriculum. Frotjold (2015) indicated that poor staff preparation and planning can inhibit the adoption of simulation thereby limiting its utilization.

Purpose: To examine the readiness of lecturers from the five departments within the school of therapeutic health sciences at a university in South Africa to adapting simulation-based education and identify factors preventing or promoting the successful use of the new methodology.

Methodology: A quantitative cross-sectional descriptive design was adopted utilizing a validated Simulation Culture Organizational Readiness Survey (SCORS) 24 item, 5-point likert scale. Sections of the survey addressed: Defined need and support for change; readiness for culture change; time, personnel and resource readiness; and sustainability practices to embed culture. A total population sampling method was adopted, and lecturers identified were contacted electronically using the Redcap software.

Result: The results of this study showed that lecturers in The School were "*somewhat ready*" for simulation (107.5). This was due to a lack of strategic vision (2.78), the lack of resources (2.3), and insufficient staff education (2.52). The fact that innovation and experiential learning was central to the institution's mission and philosophy (4.02), the technological proficiency of lecturers (3.56) and positive attitudes (3.5) promoted the use of simulation.

Conclusion/Recommendation: Evaluating staff readiness and providing training to empower staff is recommended for institutions initiating simulation to achieve successful student outcomes with simulation use.

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LIST OF ABBREVIATIONS

CESSM- Center for exercise science and sports medicine

HFS- High Fidelity Simulation

LFS- Low Fidelity Simulation

MFS – Medium Fidelity Simulation

NES – Nursing Educator Stakeholders

NUR- Nursing

OT- Occupational Therapy

PHY- Physiotherapy

PHA- Pharmacy and Pharmacology

SBE- Simulation-Based Education

SCORS - The Simulation Culture Organizational Readiness Survey

The School- School of Therapeutic Sciences

CHAPTER ONE

OVERVIEW OF THE STUDY

1.1 Introduction

Chapter One provides an overview to this study by outlining the following: The background to the study, problem statement, research question, purpose of the study, research objectives, significance of the study, definition of terms as applied in the study, as well as a brief overview of the research design and methodology.

1.2 Background

Simulation is a teaching and learning methodology historically used in the military and aviation industries and currently adopted by the health sciences to mimic real life clinical experiences in the training of health professionals, to improve both patient care and student outcomes (Aebersold & Tschannen, 2013). Gudayu et al. (2015) expressed the opinion that a major aspect of simulation education is the ability to reproduce important aspects of a clinical situation and facilitate better understanding and management of these clinical situations in practice, with the opportunity to repeat tasks to consolidate learning and be competent through instructor feedback and debriefing. Simulation is being used by health sciences institutions, as a teaching tool, and a mechanism for skills assessment during objective structured clinical assessment/examination (OSCA/OSCE) (Galloway, 2009; Stunden et al., 2015).

Simulation-Based Education (SBE) proffers great benefits to student learning in an experiential, safe and constructive environment, helping health professional students to develop critical thinking skills and confidence for the workplace (McGrath et al., 2012). Research findings (Stunden et al., 2015; Ohtake & Erdley, 2013) have shown that the students' engagement in the simulation experience has improved their satisfaction, confidence and self-efficacy in performing skills required for clinical practice.

The benefits of SBE are not only student centered but assists health sciences institutions to provide solutions to issues that arise around or with clinical placements. These issues include: an imbalance of student-patient ratio, students from multiple educational institutions competing for

health facility placements as well as a lack of uniformity of skills learnt amongst students, as students are placed in different units and might not be given an opportunity to experience managing a patient with a particular condition (Rodriguez, 2013; McCabe, 2016). A compounding issue is the lack of sufficient supervisors and preceptors in the wards to supervise learners and coordinate learning activities (The Nursing Education Stakeholders (NES) Group, 2012).

With the development and growth of simulation in health sciences education and training, there has been an increase in investment in the purchase of equipment and setting up of simulation laboratories by nursing education institutions, but with a noticeable lack of proper planning and structure for simulation integration into the curriculum (Leighton & Foisy-Doll, 2016). A lack of planning is reflected in the limited number of staff to champion SBE and a limited number of staff who possess the knowledge and skills needed to use simulation as a teaching and assessment tool (Lazzara et al., 2014; Nehring et al., 2013). This situation may occur where institutions strive to reduce costs by employing a smaller workforce (Lazzara et al., 2014), which could contribute to a possible lack of readiness for simulation and a potential failure in implementing the simulation program (Shea et al., 2014). The lack of planning and readiness for simulation is anticipated to be worse in allied health faculties as simulation is newer for these departments than in nursing (Dennis et al., 2016).

Institutional readiness refers to the adoption of an organizational culture and policy, ensuring the availability of skilled personnel, structure, finance and support to prepare staff psychologically and behaviorally for a change (Society of Hospital Medicine, 2016; Weiner et al., 2009). As postulated by Shea et al. (2014:2), "the higher the organizational readiness, the more the staff is likely to initiate change, exert greater effort, exhibit greater persistence, and display more cooperative behavior, resulting in a more effective implementation of the proposed change. Equally, a low organizational readiness, results in members viewing the change as undesirable and resist planning for the change and engaging in the change process".

1.3 Problem statement

With the amount of investment made by health sciences institutions into simulation, Kenney (2014) claims that the effectiveness of simulation in allied healthcare education is often minimal

due to a lack of staff knowledge or technical know-how of the equipment, how to construct the scenarios, and how to evaluate the simulation. The equipment is being under-utilized, with medical institutions in general, often having the acquired simulator equipment remaining in unopened boxes and not being used for student teaching and learning (Leighton & Foisy-Doll, 2016). Research evidence (Frotjold, 2015) has also shown how a lack of a guiding philosophy and poor staff preparation can inhibit the adoption of simulation thereby limiting its utilization.

The School of Therapeutic Sciences (The School) of a University in South Africa established and equipped a simulation laboratory for use by the health sciences students and staff. The simulation laboratory has been predominantly used by the nursing department (NUR) and to a lesser degree by the physiotherapy department (PT), with simulation training being offered to the other departments; pharmacy and pharmacology (PHA), occupational therapy (OT) and center for exercise science and sports medicine (CESSM) within The School as simulation is a new teaching methodology in The School.

The school has been observed not to have conducted an assessment of readiness prior to the set-up of the laboratory, which signals a possible challenge to integrate simulation. Miller & Bull (2013) have indicated that institutions that embark upon simulation through the purchase of equipment without adequate planning for simulation, often experience staff resistance, and the staff failing to use the equipment.

As emphasized by Miller & Bull (2013), innovations should be surveyed 'through the lens' of the academics to better understand adoptions or rebuffs of a new pedagogy. Miller & Bull (2013) view has informed the researcher's aim to assess the readiness for simulation adoption through the perception of lecturers within the five departments of the School of Therapeutic Sciences of the University. The School of Therapeutic Sciences will be referred to as "*the School*" for the remainder of this report.

1.4 Research question

- What is the extent of readiness of lecturers from the five departments within The School of Therapeutic Sciences at the selected University for the use of SBE?

1.5 Research purpose

- To investigate the readiness of lecturers from the five departments within The School to adopting simulation-based education and identify the factors preventing or promoting the successful use of the new methodology.

1.6 Research objectives

- To determine the extent of readiness of lecturers from the five departments to integrate simulation-based education in The School.
- To investigate the factors that could prevent or promote the full utilization of simulation in The School.

1.7 Significance of the study

It is important to examine the readiness of lecturers within the five departments of The School for the adoption of simulation, as it is the foundation to ensuring successful integration of simulation-based education into the curriculum of The School and facilitating optimum use of the newly set up simulation laboratory in The School. This could in-turn improve the successful outcomes and efficiency of simulation-based programs.

The results of this study stand to provide administrators and educators with insight into organizational readiness factors that either facilitate or challenge the successful utilization of clinical simulation. It will also show that the successful integration of simulation requires a shift in the existing teaching pedagogy from didactic to a more student-centered experiential type of teaching and learning within The School.

1.8 Research setting

The School is one of the seven schools in the Faculty of Health Sciences within the University. The School which comprises of the Departments of Nursing Education (NUR), Occupational Therapy (OT), Physiotherapy (PHY), Pharmacy and Pharmacology (PHA) and the Centre for Exercise Science and Sports Medicine (CESSM) was the chosen setting for the research.

1.9 Population and Sampling

The study population consisted of all full-time and part-time lecturers involved in the teaching of undergraduate students from the five departments within The School of the University. The lecturers had to be employed on a minimum of a 50% post. A total population sampling method was adopted which is "a type of purposive sampling technique where you choose to examine the entire population that have a particular set of characteristics" (Laerd, 2012:25). The researcher chose to study the entire population as the size of the population that had the set of characteristics of interest was very small and because the researcher wanted to establish the readiness of all the lecturers in the school of therapeutic health sciences to simulation.

1.10 Overview of research design and method

A quantitative cross-sectional descriptive design was used, utilizing a validated survey instrument to assess staff readiness for the adoption of simulation in the five departments within The School.

The survey was sent to the research participants electronically via the REDCap® software after permissions had been obtained from all authorities including obtaining participants' voluntary consent to participate in the study. The results were analyzed using descriptive statistics.

1.11 Definition of terms

- **Simulation**: In health professions education, simulation is described as a technique or activity that mimics a clinical setting or its activities, to facilitate practice of procedures, decision-making and critical thinking by participants using role play, video or simulators (Jeffries, 2005).
- **Role play**: entails acting out an event or situation which enables learners to react to the event as they would in a real-life scenario (Galloway, 2009).
- **Standardized patients**: are individuals, also referred to as actors, who play diverse roles such as replicating patient's state of health or family member's behavior to create a learning experience for the learners (Ker & Bradley, 2010).

- **Task trainers:** are parts of a patient simulator used in the teaching and learning of psychomotor skills. A typical example is the torso used in cardio-pulmonary resuscitation training (Ker & Bradley, 2010).
- **Human patient simulator**: is a full-sized patient simulator that can perform the action of eye movement, respiration, and circulation (Lateef, 2010).
- **Simulation-based education**: is referred to as any educational activity that uses simulation aides to imitate clinical situations and is aimed at ensuring learners develop knowledge, skills and attitudes in a safe environment (Al-Elq, 2010; Lateef, 2010).
- **Readiness**: The state of being fully prepared for something or the willingness to do something (Oxford dictionary, 2017). Readiness is the state of preparedness of individuals, systems, or institutions to meet a situation and carry out a planned sequence of actions. Readiness is based on meticulousness of the planning, adequacy and training of the staffs, and supply and reserve of support services or systems (Business dictionary, 2017).
- **Institutional readiness**: relates to whether an institution has the infrastructure and support needed to embark upon a new initiative. It covers not only the presence and availability of skills, finance and infrastructure, but also refers to the culture and policies in place within the organization (Society of Hospital Medicine, 2016).

1.12 Conclusion

In this Chapter, the background of this study, the problem statement, research question, purpose and objectives were explained. Definitions of concepts were provided, and the research design and method were briefly covered, to be explained in detail in Chapter Three.

The following chapters are to follow:

Chapter Two provides a literature review.

Chapter Three describes the research methodology used.

Chapter Four covers the presentation of the findings from the study.

Chapter Five gives a discussion of the findings, the conclusions and the recommendations arising from the study.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents the literature review surrounding simulation and its adoption in health sciences institutions. The readiness factors that could facilitate adoption of simulation and a conceptual framework to support the study are also discussed.

2.2 The concept of simulation

Simulation is a technique that creates a situation or environment to permit individuals to experience a depiction of a real event for practice, learning, evaluation, testing, or to gain an understanding of systems or human actions (Lopreiato et al., 2016).

Simulation's history stems from its use in the military, nuclear power, and aviation industries. Flight simulators are used in the training of pilots, disaster training is conveyed using simulation in nuclear power industries and the use of war games is adopted in military training (Galloway, 2009; Aebersold & Tschannen, 2013). The successful use of simulation in these professions contributed to its adoption in the education and training of health professionals (Galloway, 2009; Harder, 2010).

The education and training of health professionals using simulation enable learners to practice required skills in an environment that provides room for mistakes and professional growth without endangering patient safety (Galloway, 2009; Harder, 2010). Simulation also provides learners with the opportunity to repeat skills for better understanding and be competent through constructive instructor feedback and debriefing (Gudayu et al., 2015). To ensure a meaningful simulation experience, a pattern or plan should be designed by the facilitator to entail introductory learning by the participant before the simulation, followed by the implementation of the simulation, which is then followed by a debriefing session to permit reflection on activities (Aebersold & Tschannen, 2013).

2.2.1 Classification of simulation used in health professions education

Simulation is classified into three different categories; low, medium and high fidelity. The categories are termed according to their likeness to reality. **Low-fidelity simulation (LFS) manikins** are static in nature and deficient in terms of realism or situational milieu. Low-fidelity are referred to as "task trainers", such as a prosthetic arm for intravenous insertion or a prosthetic buttock used for intramuscular injections administration. Task trainers are used in teaching basic technical skills. Role-playing scenarios is also an example of low fidelity simulation. **Medium fidelity simulation (MFS)** portrays more realism with the ability of simulators to produce heart sounds and breath sounds but they are unable to talk, show chest or eye movement. **High fidelity simulation (HFS)** uses computerized human patient simulators and is operated by facilitators to make physiological changes and sounds (Evans, 2017; Shea et al., 2015; Harder, 2010 & Al-Elq, 2010). Standardized patients are also regarded as high-fidelity simulation as the standardized patient reacts to student actions verbally and in context (Ozelie et al., 2016).

Irrespective of the type of SBE or simulator used, proper planning, preparation and understanding of what is to be achieved in the learning experience, is required of educators and administrators to ensure a positive learning experience for the students (Larue et al., 2015; Sowerby, 2015; National League for Nursing, 2015).

2.3 The call for simulation in health professions education

Precipitating factors of learners' poor learning experience and skills acquisition in health sciences institutions, and dissatisfied employers of newly qualified health care practitioners have been linked with the existing nursing and nurse faculty shortage, large student numbers and an insufficient number of clinical sites (Galloway, 2009; Van Graan et al., 2016; Wang et al., 2013; Larue et al., 2015; National League for Nursing, 2015).

Health professionals need to possess critical thinking skills and be competent independent practitioners, who are able to manage varying disease conditions from a diverse patient population in a cross spectrum of healthcare settings (Larue et al., 2015; Rodriguez, 2013; McCabe, 2016; NLN, 2015). Simulation has therefore been considered a possible solution to the recorded disproportion between students, clinical instructors, and clinical placements (Rodriguez, 2013 & McCabe, 2016). This is because simulation possesses the ability to meet the educational

needs of health sciences students by facilitating a learner-centered, constructive, experiential and safe environment for developing the knowledge, skills and attitude required for different clinical setting and population (Aebersold & Tschannen, 2013; Galloway, 2009; McGrath et al., 2012; National League for Nursing, 2015).

2.4 The use of simulation in health sciences professions and its benefits

Since the adoption of simulation by the health sciences professions, research reports have revealed positive outcomes with simulation use, such as increased knowledge and skill competency, increased confidence and satisfaction of learners, with a recorded decreased risk of patient outcomes (Stunden et al., 2015; Ohtake & Erdley, 2013). Similarly, instructors have identified simulation as a standardized way to promote teamwork, collaboration, problem-solving, decision making, and critical thinking in a non-threatening environment among learners (Larue et al., 2015; Naude, 2016). Learners are also able to perform tasks and observe the outcome of the tasks carried out and they are given the chance to reflect on their experience and to engage in discussions about the learning experience at the debriefing phase (Rothgeb, 2008).

The following section will explore the use of simulation as it may be applied within the different departments which make up The School which is the setting for this study.

2.4.1 Simulation and Occupational Therapy education

Although the use of simulation in occupational therapy (OT) education is still growing, positive results have been documented. Research conducted by Shea (2015) & Ozelie et al. (2016) in their study that explored the use of simulation in the undergraduate OT curriculum at Samuel Merritt University (SMU) and a private university showed that the level of confidence in OT students increased in preparation for practice with the adoption of high fidelity simulation, improving critical thinking skills and helping them learn inter-professionally. Shea (2015) & Ozelie et al. (2016) recommend that institutions embrace SBE as it provides learners with opportunities for experiential learning, integrating theory and practice, improving their knowledge and communication skills.

2.4.2 Simulation and Physiotherapy education

Unlike in occupational therapy education, simulation is not regarded as a new concept in physiotherapy, as physiotherapists have often trained students on basic skills such as airway suctioning and hyper-inflation techniques using plastic mannequins with positive reports of critical thinking and decision-making skills developed by learners. The physiotherapy profession adopted the use of simulation to skills teaching and learning for the same reason as other health professions, because of the ethical and organizational issues such as patient safety and constrained clinical sites which are associated with the traditional method of clinical training (Blackstock & Gwendolen, 2007).

The use of high fidelity simulation (HFS) in physiotherapy was also used to expose undergraduate learners to complex cases and allow them a safe environment to engage in the patient's condition and plan the required physiotherapy intervention, during which facilitators could focus on the learners and provide support, rather than focusing on the patient. The adoption of simulation in physiotherapy therefore helped learners achieve learning outcomes and overcome a learning experience that is limited (Blackstock & Gwendolen, 2007).

Despite the benefits that simulation offered, the physiotherapists were concerned about ensuring realism of the environment, the ability to ensure the professional behavior of students to the artificial environment, and the transference of knowledge to the practice settings, with the greatest barrier being identified as the cost of equipment, space, staff and scenarios (Blackstock & Gwendolen, 2007; Jones & Sheppard, 2007). A study conducted by the Australian Catholic University (2017) showed the possibilities achievable with simulation by identifying physiotherapy competencies that can be developed using both LFS and HFS in physiotherapy with the successful transfer of skills to the clinical setting.

An essential competency expected of health science professionals in practice is to be able to work with other professionals through the exhibition of teamwork, communication and understanding of professional roles in patient care. As identified by Dennis et al. (2017), simulation successfully revealed these skills during an interprofessional simulated learning activity offered to physiotherapy and nursing students in their study.

2.4.3 Simulation and Pharmacy and Pharmacology education

In pharmacy and pharmacology education, improved pharmacotherapy knowledge, confidence in interpreting data, and clinical competence have been identified in learners after taking part in a simulation experience which involved the use of a human patient simulator to assist pharmacotherapy students understand the concept of dysrhythmias that seemed difficult when taught in class and cardiovascular medicine in general (Seybert, 2008; Naude, 2016). In the study conducted by Seybert (2008) and Naude (2016), observation sessions were organized for students to be able to see the changes in patient status with a right or a wrong medication administration. This helped prepare the students for future course assessments where they could apply problem-solving skills, with 10 out of the 15 group of students having a 100% pass with an average of > 95% across the group. Specific reference to nursing training in pharmacology with critically ill patients using HFS was made when after the simulation training, a reduced medication error rate (30.4% to 4%) was recorded in the study group, when the impact of training was evaluated in a real hospital environment (Branch, 2013).

2.4.4 Simulation and Nursing education

Simulation in Nursing education is well established (Sivertsen et al., 2016). Simulation was first introduced into nursing in 1911 when the first patient simulator manikin, "Mrs. Chase," was brought to the Hartford Hospital Training School for Nurses (National League for Nursing, 2015), and was used to facilitate experiential learning.

Similar to professions such as occupational therapy, physiotherapy and pharmacy and pharmacology, simulation provides nursing students with a safe environment to practice skills thereby building their confidence level and attainment of competence (Gonzales, 2017). Evidently, nursing participants in a South African qualitative study by Welman and Spies (2016) found that their students' encounter with simulation was beneficial as it helped to better equip them with the necessary skills and knowledge needed in a real clinical environment.

A study by Kim et al. (2016) and Wang et al. (2013) also showed that problem-based learning that is augmented with HFS was embraced by undergraduate nursing students more so than traditional lectures, with increased satisfaction being reported by the students.

2.4.5 Simulation and Sports Medicine

Engaging in sports and exercise often comes with setbacks such as sports injuries being incurred. The role of the sports health professional in such cases is vital as it is expected that a sports professional can identify the extent of the injury and the appropriate intervention required. There are sports conditions where a team approach is necessitated to provide the best patient care, meaning that the sport practitioner should be able to function in a team effectively. These abilities or skills of critical thinking, decision making, problem-solving and functioning in a team are often facilitated in a problem-based learning environment and have been shown to be possible with simulation-based learning (Rothgeb, 2008; Comfort & Abrahamson, 2010).

Currently, there is a dearth of information indicating the underuse of simulation in sports medicine, despite the potential for simulation to assist with achieving the competencies required of the sports health professional.

2.5 Challenges of implementing simulation

In contrast to the identified simulation benefits, Horsley and Wambach (2015) and Gudayu (2015) highlight certain shortcomings with the use of simulation. The researchers reported increased student anxiety during assessment due to instructor presence and claimed that the number of students with increased self-efficacy, confidence, and satisfaction with simulation experience was limited due to insufficient instructor assistance during simulation skills teaching. In pharmacy and pharmacology education, claims of students' limited exposure to simulation experience prior to assessment and being unclear of their roles during the simulation experience were made (Branch, 2013; Eukel et al., 2014). A similar complaint of inadequate theoretical preparation and orientation to the simulation environment was expressed by undergraduate nursing students in the qualitative study by Welman and Spies (2016), which made the students uncomfortable and unsure of the learning expectations.

Setting up a simulation laboratory for use is projected as being expensive as it includes the initial outlay, equipment maintenance, the need for technology experts, getting the needed number of persons to role-play interdisciplinary team members in a simulated learning activity, faculty development and continuing faculty/administrative/technical support. The expense and the lack

of technical support and knowledge about the simulation equipment have been identified as limiting factors for health professions like nursing, occupational therapy and physiotherapy to adopting simulation (Blackstock & Gwendolen, 2007; Jones & Sheppard, 2007; Rothgeb, 2008; Al-Ghareeb & Cooper, 2015; Li, 2017).

As observed by Rothgeb (2008), Kim et al. (2016) and Li (2017), institutions planning to set up a simulation laboratory only come to the realization that they lack the ability to use the simulation equipment, have no idea of the level of learners that would benefit from the experience, are unable to integrate simulation into the curriculum and are unable to enhance the reflective abilities of learners after the selection and purchase of the equipment.

Faculty are faced with fears related to technology, time constraints, and how to incorporate simulation into the nursing curriculum which has resulted in challenges in using the equipment and the reasons why equipment remains underutilized (Burns, 2008; Williams et al., 2016). According to Williams et al. (2016) nurse educators specifically, baby boomers, not technically proficient as other generational groups have been tagged to be faced with the challenge of integrating the use of high fidelity human patient simulators into the curriculum to meet the learning needs and styles of millennials.

As shown that simulation implementation requires educators to be technologically savvy and possess the know-how, the limited number of staff to champion SBE, who possess the knowledge and the skills needed to use simulation as a teaching and assessment tool, further increases the barrier to the adequate use of simulation (Lazzara et al., 2014; Nehring et al., 2013).

The perceptions of staff revealed that prior the introduction of simulation as a teaching methodology, staff were not consulted, felt pressured into using simulation, perceived it was only introduced as the new buzz with institutions aiming to be a part of the new trend and not because the need for simulation had been established which contributes to a low staff uptake of simulation (Miller & Bull, 2013).

Kim et al. (2016) therefore recommends that facilitators should focus on the learning outcomes of a simulation activity rather than on the provision of varied equipment and supplies, and as pointed out by Shea et al. (2014), new programs or practices in organizations often fail because leaders do not ensure sufficient institutional readiness for change. Institutional readiness refers to

the adoption of an organizational culture and policy, ensuring the availability of skilled personnel, structure, finance, and support to prepare staff psychologically and behaviorally to implement a change (Society of Hospital Medicine, 2016; Weiner et al., 2009).

The researcher, therefore, infers that for the benefits of simulation to be properly harnessed health sciences institutions need to ensure staff readiness for the adoption of SBE and requires all members of staff at the institution to tap into the initiative. This is supported by Leighton & Foisy-Doll (2016) who state that staff members need to be adequately prepared and should work together as a team to achieve successful student outcomes.

The researcher believes that the challenges encountered are aspects of simulation that should be properly understood and handled collectively by both the management and staff to ensure readiness for the initiative with subsequent successful implementation. This will be addressed in the next section below.

2.6 Readiness factors for simulation adoption

Due to the challenges encountered by institutions adopting the use of simulation, vital factors have been identified to help guide administrators to plan for the successful implementation of simulation programs and ensuring readiness for the adoption of simulation.

2.6.1 Science

The science of simulation is the hallmark of a simulation experience. This involves ensuring the intended SBE that the institution plans to provide is aligned with the vision, mission, goals and learning objectives of the institution's program. It refers to proper planning and preparation for the simulation experience by ensuring the learning objectives and scenarios used are aligned with the expected learner competencies and ensuring appropriate evaluation tools are designed (Lazzara et al., 2014; Beaubien & Baker, 2004; Galloway, 2009; Motola et al., 2013).

2.6.2 Staff

According to Lazzara et al. (2014) and Williams et al. (2016), a health education institution's workforce is its most important asset and its most expensive outlay. Due to the high cost of staff recruitment, many institutions have reduced their human resources. In addition to this, the staff's

existing workload, the lack of training of faculty members, and poor communication of SBE objectives gives rise to staff resisting the implementation of SBE.

Rothgeb (2008) indicated that the lack of experience of faculty members with the simulation equipment and a lack of training in SBE are the reasons for faculty's negative feelings towards simulation use. Faculty expressed the need for a user guide, training, support and time to plan for simulation, as they felt that their confidence with equipment use will increase with recurrent involvement.

It is therefore important to recruit interested faculty members as simulation champions to promote simulation, to strengthen educators as facilitators, and to implement incentive programs for integrating simulation (Lazzara et al., 2014 & Williams et al., 2016). As stated by Faz et al. (2014), to ensure nurse educators' buy-in, provision should be made for scenario observation in an environment that is non-threatening with an opportunity to ask questions pertaining to the simulation pedagogy. Online training has also been pinpointed as an effective approach to equipping academics (Kim et al., 2017).

2.6.3 Space and Supplies

The availability of a facility or location for SBE and training is vital for the successful implementation of simulation. This could be a dedicated space within a department or outside its walls. Planning for renovation or reconstruction of such a space is based on a needs assessment and should be done proactively. Setting up the designated simulation laboratory is highly expensive as it entails the design and restructuring of rooms, procurement of resources, and equipment. (Rothgeb, 2008; Lazzara et al. 2014). Although this is beyond the scope of the staff, it is important for management to ensure the availability and accessibility of space and supplies as motivating factors that the staff will work with for successful outcomes of simulation use.

2.6.4 Support

Institutional support and high-level management investment is a vital factor in the success of training program initiatives such as SBE. This entails seeking mutual partnerships with individuals who can help in the planning and execution of simulations, as SBE design and delivery require cooperation between technical and audiovisual professionals, experienced

persons in developing learning contexts, and content specialists. The support from these professionals will help ensure the training design is sound for educational instruction and that content is accurate and appropriate (Motola et al., 2013; Lazzara et al. 2014).

2.6.5 Success and Sustainability

Success and sustainability look at evaluating and sharing success stories throughout the institution, which is aimed at maintenance, not just development. It involves measuring pre-set outcomes which will help determine the efficiency of the program and help with future considerations (Motola et al., 2013; Lazzara et al. 2014). Such practices help ensure continuous success stories. This can be facilitated by ensuring there is a committee consisting of key stakeholders to steer the process.

These above-mentioned factors are in line with Seropian et al. (2004a) 8-steps recommendation cited by Rothgeb (2008) on how to establish a successful simulation program:

- Ensuring a vision is developed of the goal, those involved, and the way the laboratory will be used.
- Creating a plan to sketch initial and annual monetary requirements.
- Gaining support from stakeholders.
- The simulation setting construction should be, as per the vision and the plan, including the purchase of equipment.
- Training of all individuals anticipated to be involved.
- Curriculum development and,
- Determining policies and procedures.

2.7 CONCEPTUAL FRAMEWORKS FOR READINESS

A conceptual framework validated by Sharma et al. (2014) through evaluating the organizational readiness of early childhood education settings to implement nutrition and physical activity programs among children, was adapted in this study, by the researcher, to further explain the readiness factors needed to ensure successful implementation of simulation programs. The

framework theorizes that institutional factors and individual factors specific to the program's objectives, jointly contribute towards a person's readiness to implement a program effectively.

The conceptual framework highlights the three main antecedents for readiness that are connected to implementing a new program successfully. These factors are structural and external factors, staff attributes, and other psychological factors. The structural and external factors operate at the organizational level only, while staff attributes and other psychological factors are linked to both the organization and the individuals. It is said that organizational factors influence individual factors, and all these factors are theorized to collectively inform organizational readiness, which in turn influences program implementation. This is represented in Fig 2.1.

Similar to the Sharma et al. (2014) framework is that of Taplay et al. (2015) who discussed in their study the seven-phase process of adopting and incorporating simulation as a teaching strategy. The seven phases include securing resources; leaders working in tandem; getting it out of the box; learning about simulation and its potential for teaching; finding a fit; trialing of the equipment; and integrating into the curriculum. Elements of both theories are discussed in the sections below.

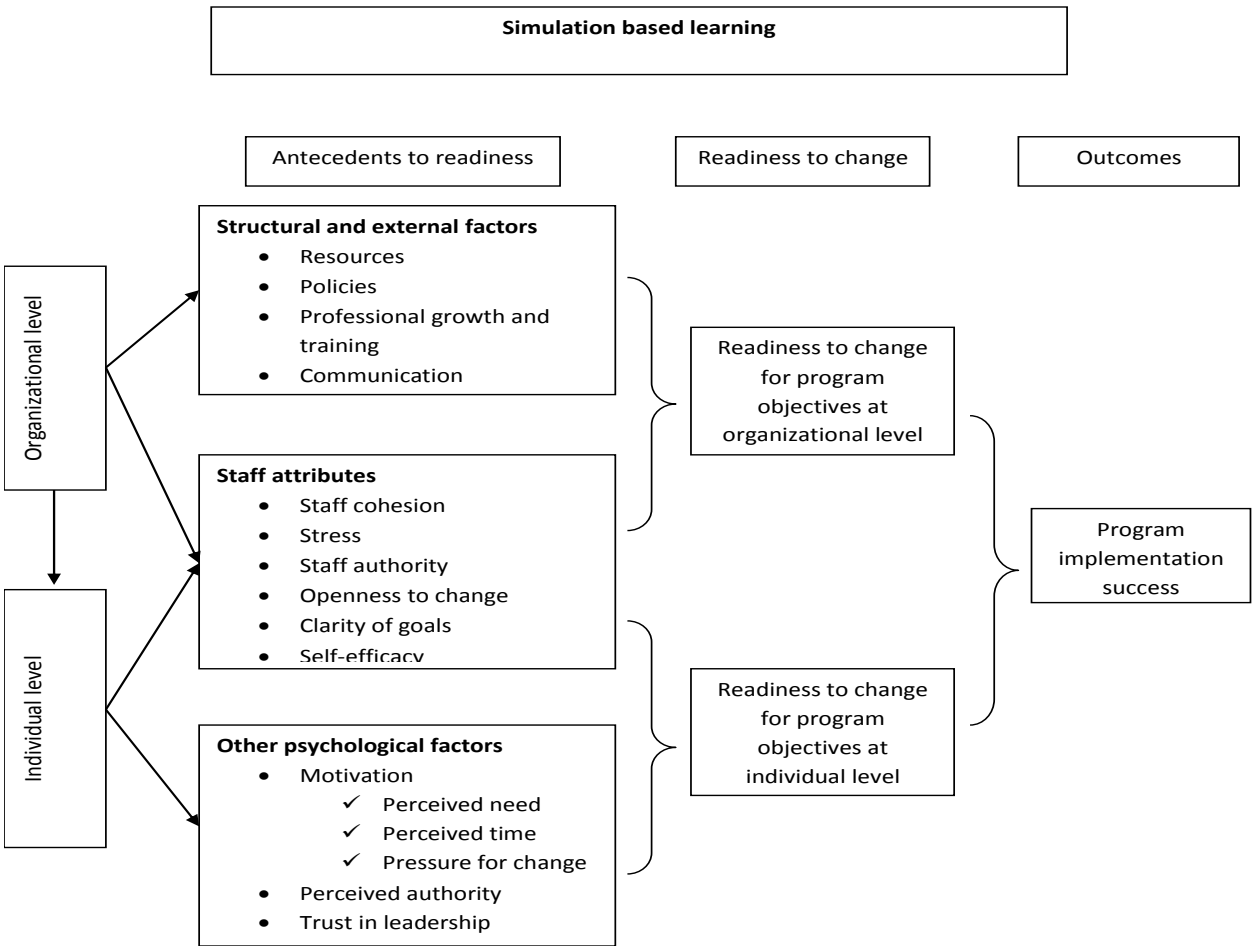


Fig 2.1 Conceptual framework for readiness (adapted from Sharma et al., 2014)

2.7.1 Structural and external factors

The structural and external factors are concepts measured at the organizational level of the framework. They are factors that influence the functioning of an institution and the institution's readiness to change. These factors include resources, policies, professional growth, training, and communication (Sharma et al., 2014). "Resources" include finance, infrastructure, and human resources, which includes the teaching and administrative staff members for the simulation program. This relates to Taplay et al. (2015) first phase of adoption which requires securing resources such as funds and making available a space for simulation set-up. "Policies" refers to the existence or non-existence of written institutional policies on SBE.

"Professional growth and training" relates to making available training for staff to learn about simulation, which is in line with the process of "learning about simulation and its potential for

teaching" identified by Taplay et al. (2015) and "communication" refers to the way institutions communicate information about simulation to their staff (Sharma et al., 2014).

2.7.2 Staff attributes

Sharma et al. (2014) defined staff attributes as attitudinal concepts that could influence the implementation of simulation at the individual and organizational levels. Staff attributes are therefore measured at both the organizational level and at the individual level. The staff attributes address staff cohesion, stress, staff authority, openness to change, clarity of goals and self-efficacy.

"Staff cohesion" refers to how the staff of the institution work together as a team. In Taplay et al. (2015) view, there is a joint effort from both the administrator and the simulation leader, which is referred to as leaders working in tandem. This is aimed at reducing the stress of workload. "Stress" is operationally described as staff members feeling strained and fatigued, which may result in staff resistance and can therefore impede simulation implementation. "Workload" has been identified as a cause of stress in the interpretation of the framework. "Staff authority" is viewed as the opportunity given by the management to staff for the implementation of innovative thoughts and changes.

"Openness to change" mirrors the overall attitude and readiness of the institution and its staff to the adoption of simulation. This requires a shift in thinking requiring staff to believe that the adoption of simulation and integrating into the curriculum is a viable choice for the benefit of students' learning (Sharma et al., 2014; Taplay et al., 2015). "Clarity of goals" shows how well the staff view the objectives of the new simulation program as appropriate with the institution's overall objectives. This relates to "finding a fit" in the proposition made by Taplay et al. (2015). The trialing of equipment is also one of the seven-phase process of adopting simulation which entails getting acquainted with the equipment through practice which gives rise to self-efficacy (Taplay et al., 2015). "Self-efficacy" according to Sharma et al. (2014) therefore measures capacity and ability of the institution and staff to implement simulation.

2.7.3 Other psychological factors

Psychological factors are referred to as the individual beliefs and attitudes influencing the acceptance and support for any change in the institution. These factors which include motivation, trust in leadership and perceived authority, are primarily measured at the individual level with the focus on lecturers involved in the implementation of simulation. “Motivation to change” is expressed as the staff member’s perception of need (that is, do they value simulation?), the time required to make the change (is there release time for simulation), and pressure to implement simulation. These factors are seen to be vital in motivating the staff in “getting the equipment out of the box” for use (Sharma et al., 2014; Taplay et al., 2015). “Trust in leadership” is the extent of belief staff members have in the choice made by management to adopt simulation. Finally, “perceived authority” is the staff members’ perception of their own authority in decision making in the institution (Sharma et al., 2014).

The framework is therefore adopted as it clearly supports the notion that readiness for change should be collective (institutional and individual) and should be assessed before embarking on the implementation of a program, as this will aid the prompt recognition of possible barriers to execution. The elements of this framework discussed are also reflected in the items on the instrument used for this study thus linking the elements of the study to the framework.

2.8 Conclusion

In this chapter, literature surrounding simulation and preparing for its use through adequate staff involvement has been explored. The next chapter will discuss the research methodology used in this study.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This section addresses the research design, research setting, population, sampling technique, data collection method, instrument, validity and reliability, data analysis and ethical considerations.

3.2 Research design

The research method shows how the research was carried out and the approach through which the research questions were answered (Brink et al., 2015). It involves a dense description of the research design. The research design is described as the steps taken by the researcher to answer the research question. It details the plan for gathering, measuring, and analyzing data. (De Vaus, 2001 & Brink et al., 2015).

A **quantitative cross-sectional descriptive design was used in this study,** as data was collected from different participants at a specific point in time within a limited duration (Olsen & George, 2004; Brink et al., 2015). Due to the dearth of information regarding staff readiness for simulation and limited research done to assess the readiness of staff for simulation within medical education, a **descriptive design** was chosen. This design is used where there is need for information regarding a phenomenon and helps in providing a picture of the concept as it occurs naturally (Brink et al., 2015).

3.3 Research setting

The research setting is described by Brink et al. (2015:59) as 'a specific place or places where the data are collected'. The choice of setting is dependent on the research question. The School, situated within the university, and comprised of the Departments of Nursing Education,
Occupational Therapy, Physiotherapy, Pharmacy and Pharmacology and the Centre for Exercise Science and Sports Medicine (CESSM), was the selected setting for the research, as there is an established simulation laboratory with potential participants being the stakeholders in any simulation development in The School.

3.4 Population and sample

The population of the study were the individuals who had met the criteria that was of interest to the researcher (Brink et al., 2015). The potential participants in this study were all employed as either full-time or part-time lecturers in the setting. The population was further delineated by applying the following inclusion and exclusion criteria.

3.4.1 Inclusion criteria

All participants had to be full-time or part-time lecturers with at least a 50% post and involved in the teaching of undergraduate students from the five departments within The School of the University.

3.4.2 Exclusion criteria:

- Lecturers who only teach postgraduate students in the five departments.
- Lecturers on a contract of less than 50%

These set of individuals were excluded as the study sought to explore *undergraduate* lecturers' readiness for simulation, and those on a contract less than 50% are assumed to have limited knowledge about the activities in their department that could help answer the research question.

3.4.3 Sampling technique

Sampling is the process of choosing individuals from a population of interest (Williams, 2006 & Brink et al., 2015). A non-probability sampling technique was chosen for the study as it permits the selection of persons knowledgeable about the phenomenon being investigated (Brink et al., 2015).

A total population sampling method was adopted which is a type of purposive sampling technique that entails choosing to examine the total population that possess a particular set of characteristics (Laerd, 2012). The researcher chose to study the entire population of lecturers employed in a 50% or greater post at the school of Therapeutic Health Sciences, as the size of the population that had the set of characteristics of interest, was very small.

3.4.4 Estimated sample size

The total sample size was reached by adding up the total number of lecturers who met the inclusion criteria from the five departments. The number of lecturers from each department that made up the sample are presented below:

Nursing (16 lecturers), Physiotherapy (13 lecturers), Pharmacy and Pharmacology (25 lecturers), Occupational Therapy (14 lecturers), Center for Exercise Science & Sports Medicine (4 lecturers). A total of 72 lecturers.

3.5 Data collection procedure

Permission to conduct the study was sought from the University Ethics Committee and the Postgraduate Assessors Committee. Once the required permissions had been obtained, the researcher introduced herself to the Heads of the five departments and explained the purpose of the study to them, requesting their permission to contact their full-time and part-time undergraduate lecturers and inviting them to participate in the study.

The lecturers identified were contacted electronically through email to explain the study, the data collection method and time required to complete the survey, after which the survey (Appendix E) was electronically sent using the REDCap® software. When a low response rate was observed, a meeting was arranged for the delivery of a self-administered questionnaire, to encourage participation. This was to facilitate a higher participation rate and ensure maximum data collection.

Confidentiality and anonymity was assured as no lecturer's name was required, only the departmental specialty.

3.5.1 Instrument

Wilkinson & Birmingham (2003) describe a research instrument as a tool for collecting data that is of interest to the researcher. The Simulation Culture Organizational Readiness Survey (SCORS) (Appendix F) instrument was used in data collection. It is a 24-item, 5-point Likert scale with scores ranging from 1 = none at all to 5 = very much, with higher scores indicating a higher level of readiness for simulation.

The SCORS had four main sections:

Section A: Defined Need and Support for Change

Section B: Readiness for Culture Change

Section C: Time, Personnel, and Resource Readiness

Section D: Sustainability Practices to Embed Culture

The possible range of scores from the SCORS instrument is 36 to 180 and helps in determining the extent of readiness:

0---36 shows "**Not ready**"

37--72 shows "**A little ready**"

73-108 shows "**Somewhat ready**" 109-144
shows "**Moderately ready**"
145-180 shows "**Very much ready**".

The SCORS instrument was a modification of an instrument first developed by Fineout-Overholt & Menlnyk (2006) to assess organizational readiness. Leighton & Foisy-Doll (2016) adopted the instrument specifically to measure organizational readiness for SBE. Permission was obtained for its use from the authors (Leighton & Foisy-Doll, 2016). A demographic section was included in the survey to help identify responses from the five selected departments which would reflect on the extent of readiness for simulation for each department. The position of some questions was changed to help with imputation unto the REDCap® software. Instead of having questions 19, 20, 21 and 22 in ascending order in *"section c",* the questions appeared in the following order: 20, 21, 19 and 22.

3.5.2 Validity and reliability

The instrument was validated by the original author (Fineout-Overholt & Menlnyk, 2006) using an expert panel of simulation educators and researchers and was further tested by Leighton & Foisy-Doll (2018). Fineout-Overholt and Menlnyk (2006) search to evaluate "Organizational Culture & Readiness for System-Wide Integration of Evidence-based Practice" states that both face and content validity of the instrument was established with internal consistency reliabilities >.85. The results of the test conducted by Leighton & Foisy-Doll (2018) also proves the instrument to be reliable with an internal consistency of .96.

3.6 Data analysis

Descriptive statistics were used to describe and summarize data using tabulated description (tables), and statistical comments (discussion of the results).

This statistical analysis was used, as the study adopted a non-experimental descriptive design, with the aim of exploring and describing the phenomena and the ability to identify problems with current practice or justify their practice (Brinks et al., 2015).

Due to the close range of the results gathered from the five departments within The School, inferential statistics were also used to test if there was a significant difference in the results.

The four sections of the survey instrument were analyzed to determine the extent of readiness as per the four sections of the SCORS questionnaire viz:

a) Defined need and support for change,

b) readiness for culture change,

c) time, personnel and resource readiness and

d) sustainability practices to embed culture.

The facilitating and limiting factors were determined based on the items reflected in the SCORS questionnaire and supported by a discussion of findings and an in-depth literature review.

3.7 Ethical considerations

Brink et al. (2015) clearly states that the onus lies on the researcher to ensure the research is conducted ethically from the phase of conceptualization until the research findings are disseminated.

3.7.1 Permission to conduct the study

The proposal was presented to the Department of Nursing Education for peer review after which the necessary permissions were sought and obtained to gain permission to proceed with the study.

Permission to conduct the study was sought and obtained from the following:

- The University Postgraduate Assessor's Committee (Appendix A).
- The University's Human Research Ethics Committee (Medical), Protocol number: M170238 (Appendix B).
- The Heads of Department of the five departments to gain access to the lecturers.
- Permission to use the SCORS instrument was obtained from the original authors (Appendix C).

3.7.2 Informed consent

Voluntary informed consent was established as outlined by Brink et al. (2015): to ensure that the potential participants fully understand what is expected of them and are then able to decide if they choose to participate.

- In this study, the prospective participants were full-time and part-time undergraduate lecturers in the five departments within The School. They had a good comprehension of the information given by the researcher as it was related to them in English, which is the common language in the selected university.

- The information was conveyed in written form to all the potential participants by the researcher via electronic (email) this included: the information document and invitation to participate (Appendix D).
- A clear detailed description of the purpose of the study, the proposed plan for sending out the surveys were explained to all participants prior to them consenting to participate.
- Participants were informed of the nature and benefits of the research and notifying them that there would be no risk to themselves if they chose to volunteer.
- The potential participants were given an opportunity to ask any questions about the study to the researcher by making available the email addresses and contact numbers of the researcher and her supervisors.
- Participants were informed of their right to withdraw from the research without any adverse consequences to themselves.

3.7.3 Confidentiality and Anonymity

Confidentiality refers to the researcher being responsible for keeping safe the details of participants during the research, and anonymity refers to namelessness and keeping participants characteristics a secret (Brink et al., 2015).

- Confidentiality and anonymity were ensured as participants' names were not included on the survey, only names of the department where they were currently lecturing at the time of data collection, was identified in the resulting research report.
- Data gathered from participants were kept safe with only the researcher and her supervisors being able to access the data.

3.7.4 Non-maleficence

Non-maleficence refers to the participant's right to protection from any discomfort and harm (Burns & Grove, 2001).

- Participants were assured there was no harm in taking part in the study and could withdraw at any time of the data collection period, with no penalty to themselves.

3.7.5 Justice

Ensuring justice in research refers to the right to participants being selected and treated fairly. Participants ought to be selected based on the criteria relating to the research problem and not because of their availability (Burns & Grove, 2001; Brink et al., 2015).

- Participants were selected based on the formal inclusion and exclusion criteria for this study.
- Participation was voluntary.
- All participants were asked the same questions and every participant's opinion was regarded as of equal importance.

3.7.6 Respect

This refers to the participant's right to self-determination, which must be maintained by ensuring voluntary consent, permission to withdraw and avoiding coercion on behalf of the researcher (Burns & Grove, 2001; Brink et al., 2015).

- Participants were informed of their right to choose to voluntarily participate in the study.
- Participants were treated with respect, during all the interaction with the researcher.

3.8 Conclusion

This chapter provided an overview of the research design and data collection methods as used in this study. The data analysis and interpretations of the findings from the study are presented in the next chapter.

CHAPTER FOUR

DATA ANALYSIS AND RESULTS

4.1 Introduction

This chapter presents the findings of this research. The data that was gathered was analyzed based on the objectives of the research which were:

- To determine the extent of readiness of lecturers from the five departments to integrate simulation-based education in The School.
- To identify/determine factors that will prevent or promote the full utilization of simulation in The School.

The survey instrument was divided into two parts. The first part elicited the demographic information of the respondents while the second part, which consists of the four sections of the SCORS instrument, addressed the objectives of this research as stated above. The possible range of scores from the SCORS instrument is 36 to 180 and determined the extent of readiness of the School for simulation: 0 to 36 shows "**Not ready**", 37 to 72 shows "**A little ready**", 73-108 shows

"**Somewhat ready**", 109-144 shows "**Moderately ready**", 145-180 shows "**Very much ready**".

The guidebook which accompanied the SCORS instrument provided guidance on how the results gathered from the instrument used were interpreted. The participants' responses were registered on a 5-point Likert scale. The mean of the scores for each item on the instrument was calculated to identify the factors that promoted the use of simulation within The School, as well as the factors that prevented The School from being fully ready to use simulation. As determined by the SCORS guidebook, a mean score of 3 and above is favorable while a mean score below 3 indicates area to be focused on by each department or The School.

The results gathered from the study show that findings from the five departments were within close range. This led to the need to use inferential statistics to test if there was a significant difference in the readiness for simulation amongst the five departments within The School. An

analysis of variance (ANOVA) and Tukey test was used to determine the significance in the results and difference in readiness. According to Andale (2017), ANOVA test is used to determine the overall significance of the results while the Tukey test will help identify where differences lie and which specific department's means when compared, are different. The research results are presented below.

4.2 Response rate

Table 4.1 presents a summary of the respondents to the distributed survey instrument. With the use of the REDCap® software, 72 surveys were sent out. Of the 72 surveys sent out, 50 completed surveys were returned and analyzed. A response rate of 69.4% was achieved in this study. According to Mundy (2002), an acceptable response rate for a population survey is 60%. This shows that this study had a good response rate.

Table 4.1 Respondents to the distributed survey

Number of surveys distributed	72
Returned surveys	50
Questionnaires used in analysis	50
Percentage of actual respondents	**69.4%**

4.3 Demographic information

The respondents were requested to provide information on their age, gender, department, employment status and years of working in their respective departments.

4.3.1 Age distribution

Table 4.2 provides an overview of the age distribution of the respondents, with 19 (38%) respondents in the age group 31 to 40 years, 10 (20%) respondents were in the age group 41 to 50 years, and 9 (18%) in the age range of 20 to 30. Only 6 (10%) respondents each were in the age groups 51 to 60, and older than 60.

Table 4.2 Age group of participants

Age group	Frequency (n= 50)	Percentage (%)
20-30	9	18
31-40	19	38
41-50	10	20
51-60	6	12
>60	6	12

4.3.2 Gender

Of the 50 respondents presented in Table 4.3, 41 (82 %) were female and 9 (18%) were male.

Table 4.3 Gender of respondents

Gender	Frequency (n=50)	Percentage (%)
Male	9	18
Female	41	82
Total	**50**	**100**

4.3.3 Department

Table 4.4 shows the number of respondents from the five departments. It is indicated that 15 (93.75%) of the respondents were from the department of nursing education while 11 (44%) of the respondents were from the department of pharmacy and pharmacology.

Table 4.4 Number of respondents from each of the five departments

Department	**Frequency of surveys distributed (n=72)**	**Frequency of surveys returned (n=50)**	**Percentage of the surveys returned/distributed (%)**
Nursing	16	15	93.75
Occupational therapy	14	10	71.43
Physiotherapy	13	10	76.92
Pharmacy and pharmacology	25	11	44
CESSM	4	4	100

4.3.4 Employment status

From the available data shown in Table 4.5, 11 (22%) were part-time undergraduate lecturers (employed on a 50% or more post) while majority, 39 (78%) of the respondents were full-time undergraduate lecturers.

Table 4.5 Employment status of respondents

Employment status	**Frequency (n=50)**	**Percentage (%)**
Full-time	39	78
Part-time	11	22

4.3.5 Years of service of respondents in their departments

Table 4.6 shows that the majority of the 50 respondents appeared to have between 1 year to 10 years of working experience, of which 13 (26%) were in the range of 1 to 5 years and 13 (26%) in the group of 6 to 10 years.

Table 4.6 Years of service of respondents

Years of service	Frequency (n=50)	Percentage (%)
1-5	13	26
6-10	13	26
11-15	8	16
16-20	4	8
21-25	5	10
> 25	7	14

4.4 Readiness of lecturers within The School

The School had a score of 107.52 which showed that The School is "somewhat ready" (73-108) for simulation.

4.4.1 The readiness of lecturers in the five departments within The School

Fig 4.1 shows that the departments of nursing (109.9), physiotherapy (112.8) and pharmacy and pharmacology (113.8) are "moderately ready" for simulation, and while the department of occupational therapy (106.2) is "somewhat ready", the center for exercise science and sports medicine (71.5) is "a little ready" for simulation.

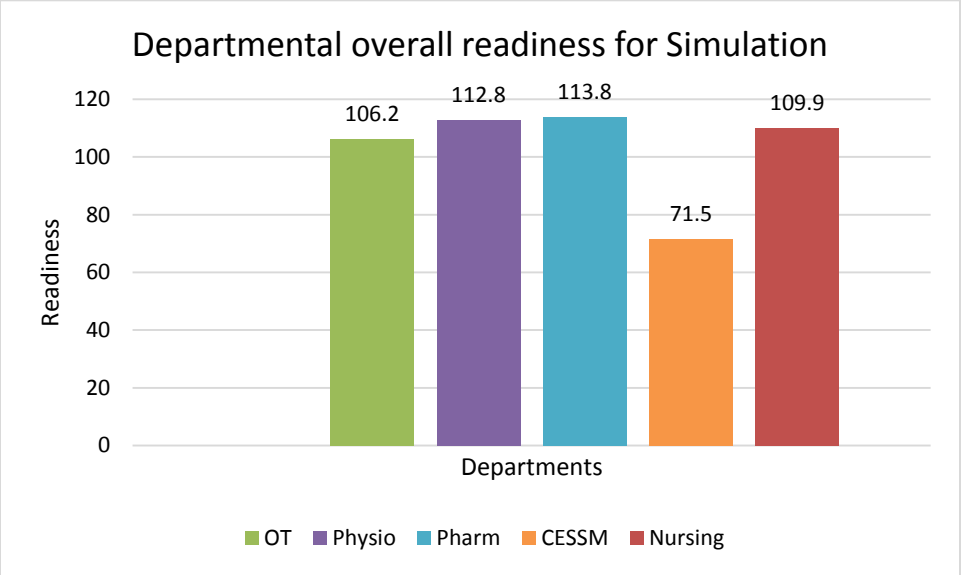


Fig 4.1 Departmental readiness for simulation

4.5 Factors preventing or promoting the readiness of lecturers to use simulation within the School.

The results pertaining to this part of the research are presented according to the four sections of the SCORS instrument and are analyzed with regards to the demographic variables (department, age, gender, years of service and employment status).

4.5.1 Section A: Defined need and support for change within The School.

As indicated in Table 4.7 below, the lack of adequate communication of a clear strategic vision for SBE (mean=2.78) (see question 3), the lack of provision of a written commitment to SBE (mean=2.34) (see question 4), and insufficient provision of funds to support the commitment to SBE (mean=2.42) (see question 5) were factors which prevented the lecturers within The School from being fully ready for simulation. The School having innovation, experiential learning and quality student experiences clearly described as central to the mission and philosophy of the institution (mean=4.02) (see question 1), having clearly defined the need to consider SBE integration (mean=3.64) (see question 2) and educators articulating a need for SBE integration into the curriculum (mean=3.5) (see question 8) suggest there was a defined need and support for change which promoted their readiness to use simulation.

Table 4.7 Defined need and support for change within The School.

S/n	SECTION A: DEFINED NEED AND SUPPORT FOR CHANGE	Item mean
1	To what extent are innovation, experiential learning and quality student experiences clearly described as central to the mission and philosophy of your institution?	4.02
2	To what extent has your department clearly defined the need to consider SBE integration?	3.64
3	To what extent have administrators within your department communicated a clear strategic vision for SBE?	2.78
4	To what extent have administrators within your department provided a written commitment to SBE?	2.34
5	To what extent have administrators within your department provided funding to support the commitment to SBE?	2.42
6	To what extent does your department promote the need for SBE based on current evidence, standards, and guidelines?	3.18
7	To what extent is SBE currently being used as a teaching modality in your department?	3.06
8	To what extent have the educators you work with articulated a need for SBE integration into the curriculum?	3.5
9	To what extent have the educators in your department verbalized a commitment to SBE integration into the curriculum?	3.38

4.5.2 Section B: Readiness for culture change within The School

Table 4.8, below, shows that the limiting factors for simulation readiness were poor availability of credentialed or trained simulationists who could mentor/coach others (mean = 2.54), in question 12; the inadequate numbers of individuals who model SBE best practice (mean = 2.58), in question 13; as well as graduate-level prepared researchers available to assist in research to develop new knowledge, appropriate to each department's mission (mean = 2.78), in question 15.

The lecturers within The School have a strong belief that it is the right time to implement simulation as indicated in question 18, with a mean of 4.18. This factor, alongside the proficiency of lecturers in the use of technology (mean = 3.56) in question 14 are both enabling factors for simulation.

Table 4.8 Readiness for culture change within The School.

	SECTION B: READINESS FOR CULTURE CHANGE	**Item Mean (5)**
10	To what extent is there a critical mass of professionals who already possess strong SBE:	
a	Knowledge	3.02
b	Skills	2.74
c	Positive Attitudes	3.5
11	To what extent do administrators support culture change including the efforts required to implement and sustain SBE program integration?	3.12
12	To what extent are there credentialed or trained simulationists who mentor/coach others, including, other simulationists?	2.54
13	To what extent does your department have individuals who model SBE best practice?	2.58
14	To what extent are staff/faculty proficient in the use of technology? (i.e. computer systems, AV and IT systems)	3.56
15	To what extent are there graduate level prepared researchers available to assist in research to develop new knowledge, appropriate to your department's mission?	2.78
16	To what extent are librarians available within your institution to help search for evidence based-practice and related simulation resources?	3.5
17	To what extent are your librarians accessed to search for evidence-based practice and related simulation resources?	3.12
18	To what extent do you believe that now is the right time to implement a culture change to support SBE?	4.18

4.5.3 Section C: Time, Personnel and Resource Readiness

Although the lecturers agreed that they have access to technology (mean = 4.04) in question 20 and are provided with support with technology use, in question 21 with a mean of 3.98, there is an insufficiency with human resources (simulation personnel) (mean = 2.3), release time for educators to lead the integration of SBE (mean = 2.2), development of physical learning spaces (2.82) and equipment (mean = 2.7) in questions 19a, 19b, 19c, 19d and 19e, all of which impact on the readiness of lecturers to use simulation within The school.

Table 4.9 Time, personnel and resource readiness within The School.

	SECTION C: TIME, PERSONNEL AND RESOURCE READINESS	Item Mean (5)
20	To what extent do employees in your department have access to quality technology, including computers, audiovisual equipment, and other institutional technologies?	4.04
21	To what extent is support available to learn and manage technologies that support education?	3.98
19	**To what extent are fiscal resources available to support SBE in the following areas:**	
a	Human resources (simulation personnel)?	2.3
b	Education?	2.52
c	Release time to lead integration of SBE?	2.2
d	Development of physical learning spaces?	2.82
e	Equipment?	2.7
22	**To what extent are there existing simulation champions (people who will go the extra mile to advance simulation) in the current environment among:**	
a	Administrators?	2.24
b	Clinicians?	2.22
c	Educators?	2.84
d	Technology Specialists?	2.48
e	Administrative Assistants and Support Staff?	1.88

4.5.4 Section D: Sustainability practices to embed culture within The School.

The section on "*sustainability practices*" indicated that decisions regarding SBE influenced by clinicians (mean = 2.54) in question 24a and administration (mean = 2.74) in question 24c was limited. A promoting factor was the fact that measurement and sharing of outcomes is part of the culture of The School. This is presented in table 4.10 below.

Table 4.10 Sustainability practices to embed culture within The School.

	SECTION D: SUSTAINABILITY PRACTICES TO EMBED CULTURE	Item Mean (5)
23	To what extent is the measurement and sharing of outcomes part of the culture of the department in which you work?	3.34
24	To what extent are decisions regarding SBE influenced by:	
a	Clinicians?	2.54
b	Educators?	3.72
c	Administration?	2.74

4.5.5 Readiness of lecturers within The School by sections

Table 4.11 shows that the section with the highest need of intervention is "*Section c*", which requires time, personnel and resources to facilitate lecturers' readiness to use simulation (2.69).

Table 4.11 An overview of readiness of lecturers within The School by sections

SCORS QUESTIONNAIRE	**SCHOOL'S SECTION MEAN**
Section A: Defined need and support for change	3.15
Section B: Readiness for culture change	3.15
Section C: Time, personnel and resource readiness	2.69
Section D: Sustainable practices to embed culture	3.09

4.6 Factors preventing or promoting the readiness of lecturers to use simulation within each department of The School.

4.6.1 Section A: Defined need and support for change by department

All the five departments as indicated in Table 4.12 below, appear to be insufficiently aware of a written commitment to SBE and seem to require more funds to support the commitment to SBE (questions 4 and 5). The center for exercise science and sports medicine is the only department with the need for the greatest intervention as they only recognize that innovation and experiential learning is central to their mission and philosophy (mean = 3.5) as indicated in question 1.

Table 4.12 Defined need and support for change by department

S/n	SECTION A: DEFINED NEED AND SUPPORT FOR CHANGE	ITEM MEAN (5)				
		NUR	**OT**	**PHY**	**PHA**	**CESSM**
1.	To what extent are innovation, experiential learning and quality student experiences clearly described as central to the mission and philosophy of your institution?	4.13	4.5	3.5	4.09	3.5
2.	To what extent has your department clearly defined the need to consider SBE integration?	3.93	3.7	3.9	3.64	1.75
3.	To what extent have administrators within your department communicated a clear strategic vision for SBE?	3	2.8	3.1	2.7	1.3
4.	To what extent have administrators within your department provided a written commitment to SBE?	2.33	2.7	2.6	2.18	1.25
5.	To what extent have administrators within your department provided funding to support the commitment to SBE?	2.93	2.5	2.3	2.18	1.25
6.	To what extent does your department promote the need for SBE based on current evidence, standards, and guidelines?	3.47	3.6	3.4	2.82	1.5
7.	To what extent is SBE currently being used as a teaching modality in your department?	3.4	2.3	3.7	3.36	1.25
8.	To what extent have the educators you work with articulated a need for SBE integration into the curriculum?	3.8	3.7	3.6	3.5	1.5
9.	To what extent have the educators in your department verbalized a commitment to SBE integration into the curriculum?	3.67	3.8	3.6	3.18	1.25

4.6.2 Section B: Readiness for culture change by department

All the departments except pharmacy and pharmacology (mean = 3, see question 10b), lack professionals who already possess strong SBE skills. In question 10c, the positive attitudes of lecturers and lecturers' proficiency with the use of technology in question 14, facilitated the readiness of lecturers for simulation. Table 4.13 highlights these factors.

Table 4.13 Readiness for culture change by department

	SECTION B: READINESS FOR CULTURE CHANGE	**ITEM MEAN (5)**				
		NUR	**OT**	**PHY**	**PHA**	**CESSM**
10.	To what extent is there a critical mass of professionals who already possess strong SBE:					
a	Knowledge	3.27	2.8	2.8	3.36	2.25
b	Skills	2.87	2.8	2.6	3	1.75
c	Positive Attitudes	3.4	3.9	3.6	3.6	2.3
11	To what extent do administrators support culture change including the efforts required to implement and sustain SBE program integration?	2.8	3.3	3.6	3.45	1.75
12	To what extent are there credentialed or trained simulationists who mentor/coach others, including, other simulationists?	3.07	1.4	3.1	2.82	1.25
13	To what extent does your department have individuals who model SBE best practice?	3.13	1.8	3	2.64	1.25
14	To what extent are staff/faculty proficient in the use of technology? (I.e. computer systems, AV and IT systems)	3.67	3.7	3.5	3.64	2.75
15	To what extent are there graduate level prepared researchers available to assist in research to develop new knowledge, appropriate to your department's mission?	2.87	2.5	3	3	2
16	To what extent are librarians available within your institution to help search for evidence-based practice and related simulation resources?	3.53	3.7	3.6	3.55	2.5
17	To what extent are your librarians accessed to search for evidence-based practice and related simulation resources?	3	3	3	3	2
18	To what extent do you believe that now is the right time to implement a culture change to support SBE?	4.6	4.4	4.2	4.18	2

4.6.3 Section C: Time, personnel and resource readiness by department

In Table 4.14, question 19 shows that all the departments have insufficient fiscal resources, but nursing (mean = 3.07) and physiotherapy (mean = 3.1) in possession of equipment for SBE, and only nursing having physical learning space for simulation (mean = 3.4). Simulation champions' existence in the five departments is limited with only the departments of physiotherapy (mean = 3.1) and pharmacy and pharmacology (mean = 3.18) having sufficient educators to champion simulation.

In this section, CESSM have access to technology (mean = 3.25) and are provided with support to learn and manage technologies that support education (mean = 4), just like other departments.

Table 4.14 Time, personnel and resource readiness by department

	SECTION C: TIME, PERSONNEL AND RESOURCE READINESS	**ITEM MEAN (5)**				
		NUR	**OT**	**PHY**	**PHA**	**CESSM**
20	To what extent do employees in your department have access to quality technology, including computers, audiovisual equipment, and other institutional technologies?	3.73	4.5	4.2	4.18	3.25
21	To what extent is support available to learn and manage technologies that support education?	3.4	4.4	3.9	4.5	4
19	**To what extent are fiscal resources available to support SBE in the following areas:**					
a	Human resources (simulation personnel)?	2.33	2.4	2.5	2.36	1.25
b	Education?	2.67	2.5	2.6	2.55	1.75
c	Release time to lead integration of SBE?	2	2	2.4	2.64	1.75
d	Development of physical learning spaces?	3.4	2.6	2.7	2.55	2.25
e	Equipment?	3.07	2.4	3.1	2.64	1.25
22	**To what extent are there existing simulation champions (people who will go the extra mile to advance simulation) in the current environment among:**					
a	Administrators?	2	2	2.7	2.55	1.75
b	Clinicians?	2.27	1.6	2.6	2.45	2
c	Educators?	2.93	2.4	3.1	3.18	2
d	Technology Specialists?	2.27	2.8	2.7	2.64	1.5
e	Administrative Assistants and Support Staff?	1.47	1.5	2.2	2.55	1.75

4.6.4 Section D: Sustainability practices to embed culture by department

Measurement and sharing of outcomes of simulation practices is being carried out in all departments except for nursing (mean = 2.87) which fell below expectation. Educators are the major individuals influencing the decisions regarding SBE in nursing, occupational therapy, physiotherapy and pharmacy and pharmacology, except for the center for exercise science and sports medicine (mean = 2.75). It is only pharmacy and pharmacology that involves clinicians (3.55) and administrators (3.36) in decisions regarding SBE. This is presented in Table 4.15 below.

Table 4.15 Sustainability practices to embed culture by department

	SECTION D: SUSTAINABLE PRACTICES TO EMBED CULTURE	Item Mean (5)				
		NUR	OT	PHY	PHA	CESSM
23	To what extent is the measurement and sharing of outcomes part of the culture of the department in which you work?	2.87	3.2	3.7	3.73	3.5
24	To what extent are decisions regarding SBE influenced by:					
a	Clinicians?	2.33	2.1	2.2	3.55	2.5
b	Educators?	3.8	3.6	3.7	4.09	2.75
c	Administration?	2.47	2.9	2.4	3.36	2.5

4.6.5 Sectional readiness of lecturers by department

As shown below in Table 4.16, all the five departments require the provision of time, personnel and resources to be ready for simulation use. While the department of nursing and occupational therapy need to adopt sustainability practices, the center for exercise science and sports medicine require intervention in all sections to ensure they are ready for simulation.

Table 4.16 Sectional readiness of lecturers in specific departments

SCORS QUESTIONNAIRE	DEPARTMENTAL SECTION MEAN				
	NUR	OT	PHY	PHA	CESSM
Section A: Defined need and support for change	3.41	3.29	3.3	3.08	1.61
Section B: Readiness for culture change	3.29	3.06	3.31	3.33	1.93
Section C: Time, personnel and resource readiness	2.63	2.59	2.89	2.89	2.04
Section D: Sustainable practices to embed culture	2.87	2.95	3	3.68	2.81

4.6.6 The difference in the readiness for simulation in the five departments

From the ANOVA results as shown in Table 4.17, there was a statistically significant difference (p-value=0.0346) in readiness among the different departments.

Table 4.17 Difference in the readiness for simulation in the five departments

	Df	**SS**	**MS**	**F-value**	**p-value**
Department	4	6005	1501.2	2.847	0.0346
Residuals	45	23726	527.2		

The results of a Tukey test indicated that there were statistically significant readiness differences between nursing department and CESSM (p-value=0.036), CESSM and physiotherapy department (p-value=0.031) and between CESSM and pharmacy and pharmacology department (p-value=0.023).

The results indicate that there were no statistically significant differences in readiness values between nursing education and occupational therapy (p-value=0.994), nursing education and physiotherapy (0.997), nursing education and pharmacy and pharmacology (0.992), physiotherapy and occupational therapy (0.967), pharmacy and pharmacology and occupational therapy (0.94), pharmacy and pharmacology and physiotherapy (0.999). CESSM is therefore the outlier.

4.7 Factors preventing or promoting the readiness of lecturers to use simulation by age group.

Across the four sections of the SCORS instrument, factors identified to be impacting on readiness to use simulation by age group is the same as those factors indicated and interpreted in the sections above. Importantly, as shown in Table 4.18 (question 14) and Table 4.19 (questions 20 & 21) below, lecturers have access to technology, were provided with support to manage technology, and were found to be technologically proficient across all age group.

Table 4.18 Readiness for culture change by age group

	SECTION B: READINESS FOR CULTURE CHANGE	**Item Mean (5)**				
		20-30	**31-40**	**41-50**	**51-60**	**>60**
10.	To what extent is there a critical mass of professionals who already possess strong SBE:					
a	Knowledge	3.33	2.89	2.6	3	3.67
b	Skills	3	2.68	2.4	2.67	3.17
c	Positive Attitudes	3.78	3.26	3.3	3.5	4.17
11	To what extent do administrators support culture change including the efforts required to implement and sustain SBE program integration?	3.22	3.16	2.8	2.83	3.67
12	To what extent are there credentialed or trained simulationists who mentor/coach others, including, other simulationists?	2.33	2.79	2.4	2.17	2.67
13	To what extent does your department have individuals who model SBE best practice?	2.89	2.47	2.2	2.33	3.33
14	To what extent are staff/faculty proficient in the use of technology? (I.e. computer systems, AV and IT systems)	3.78	3.63	3	3.33	4.17
15	To what extent are there graduate level prepared researchers available to assist in research to develop new knowledge, appropriate to your department's mission?	3.22	2.74	2.3	2.67	3.17
16	To what extent are librarians available within your institution to help search for evidence-based practice and related simulation resources?	3.44	3.26	3.6	4	3.67
17	To what extent are your librarians accessed to search for evidence-based practice and related simulation resources?	2.89	3.21	3	3.33	3.17
18	To what extent do you believe that now is the right time to implement a culture change to support SBE?	4.44	4.21	3.8	4.5	4

Table 4.19 Time, personnel and resource readiness by age group

	SECTION C: TIME, PERSONNEL AND RESOURCE READINESS	**Item Mean**				
		20-30	**31-40**	**41-50**	**51-60**	**>60**
20	To what extent do employees in your department have access to quality technology, including computers, audiovisual equipment, and other institutional technologies?	4.33	4.11	3.9	3.83	3.83
21	To what extent is support available to learn and manage technologies that support education?	4.11	4.11	3.9	3.67	3.83
19	**To what extent are fiscal resources available to support SBE in the following areas:**					
a	Human resources (simulation personnel)?	2.33	2.37	1.9	2.67	2.33
b	Education?	2.33	2.74	2.4	2.17	2.67
c	Release time to lead integration of SBE?	2.11	2.37	1.9	2.5	2
d	Development of physical learning spaces?	3.11	2.95	2.4	2.5	3
e	Equipment?	2.67	2.68	2.5	2.5	3.33
22	**To what extent are there existing simulation champions (people who will go the extra mile to advance simulation) in the current environment among:**					
a	Administrators?	2.56	2.32	2	2.17	2
b	Clinicians?	2.56	2.11	1.8	2.33	2.67
c	Educators?	2.89	2.79	2.3	3.17	3.5
d	Technology Specialists?	2.67	2.79	2	1.83	2.67
e	Administrative Assistants and Support Staff?	2.33	1.89	1.5	1.67	2

4.7.1 Sectional readiness by age group

Table 4.20 shows that readiness for culture change is lowest in the age group of 41-50 and highest in the age group >60. In addition, across all the age group, a need for time, personnel and resource has been identified.

Table 4.20 Sectional readiness by age group

SCORS	Section mean by age group				
	20-30	**31-40**	**41-50**	**51-60**	**>60**
Section A: Defined need and support for change	3.14	3.22	3	3.04	3.3
Section B: Readiness for culture change	3.3	3.12	2.85	3.12	3.53
Section C: Time, personnel and resource readiness	2.83	2.77	2.38	2.58	2.82
Section D: Sustainable practices to embed culture	3.17	3	2.88	3.33	3.33

4.7.2 The difference in the readiness for simulation by age group

The p-value (0.7) for the ANOVA test shows that there is no statistically significant difference among the different age categories regarding readiness.

4.8 Factors preventing or promoting the readiness of lecturers to use simulation by employment status.

Across the four sections, an important point to note in "Section b" as presented in Table 4.21 is that in questions 10a and 10b, full-time lecturers expressed a lack of sufficient knowledge (mean = 2.9) and skills (mean = 2.69) to use simulation as opposed to part-time lecturers. These are limiting factors to use simulation.

Table 4.21 Readiness for culture change by employment status

	SECTION B: READINESS FOR CULTURE CHANGE	**Item Mean (5)**	
		FT	**PT**
10.	**To what extent is there a critical mass of professionals who already possess strong SBE:**		
a	Knowledge	2.9	3.45
b	Skills	2.64	3.09
c	Positive Attitudes	3.41	3.82
11	To what extent do administrators support culture change including the efforts required to implement and sustain SBE program integration?	3.05	3.36
12	To what extent are there credentialed or trained simulationists who mentor/coach others, including, other simulationists?	2.49	2.73
13	To what extent does your department have individuals who model SBE best practice?	2.51	2.82
14	To what extent are staff/faculty proficient in the use of technology? (I.e. computer systems, AV and IT systems)	3.54	3.64
15	To what extent are there graduate level prepared researchers available to assist in research to develop new knowledge, appropriate to your department's mission?	2.79	2.73
16	To what extent are librarians available within your institution to help search for evidence-based practice and related simulation resources?	3.38	3.91
17	To what extent are your librarians accessed to search for evidence-based practice and related simulation resources?	3.05	3.36
18	To what extent do you believe that now is the right time to implement a culture change to support SBE?	4.21	4.09

4.8.1 Sectional readiness by employment status

Table 4.22 shows that part-time lecturers had a more positive view of The school's readiness for simulation.

Table 4.22 Section readiness by employment status

SCORS	Section mean by employment status	
	FT	**PT**
Section A: Defined need and support for change	3.1	3.31
Section B: Readiness for culture change	3.09	3.36
Section C: Time, personnel and resource readiness	2.65	2.83
Section D: Sustainable practices to embed culture	2.95	3.7

4.8.2 The difference in the readiness for simulation by employment status

The study found out that there is no statistically significance difference in readiness between fulltime and part-time workers (t-value=-1.0079, df=12.889, p-value=0.3321). That is, the average readiness for full-time workers (105.2564) is not statistically different from the average readiness for part-time workers (115.5455).

4.9 Sectional readiness by years of experience

Table 4.23 shows that lecturers who have worked between 6 and 10 years within The School have indicated that all sections require attention to facilitate readiness for simulation use.

Table 4.23 Sectional readiness by years of experience

SCORS	Sectional mean by years of experience					
	1-5	**6-10**	**11-15**	**16-20**	**21-25**	**>25**
Section A: Defined need and support for change	3.16	2.79	3.6	3.67	3.09	3
Section B: Readiness for culture change	3.2	2.8	3.44	3.18	3.16	3.35
Section C: Time, personnel and resource readiness	2.96	2.54	2.51	2.38	3.05	2.56
Section D: Sustainable practices to embed culture	3.29	2.81	2.75	2.44	3.85	3.43

4.9.1 The difference in the readiness for simulation by years of experience

The p-value (0.693) for the ANOVA test shows that there is no statistically significant difference among the different years of experience regarding readiness.

4.10 Conclusion

This chapter presented the findings of data collected from 50 respondents who are lecturers in the five departments within the School of the University. The chapter began by discussing the response rate and the sequence in which the results were analyzed and would be presented. Research findings were then presented in tabular and written form. The discussion of the results presented will be addressed in the next chapter.

CHAPTER FIVE

DISCUSSION OF FINDINGS, CONCLUSION, AND RECOMMENDATIONS

5.1 INTRODUCTION

In the previous chapter, the findings of the study were stated. In this chapter, the researcher will discuss the findings, and the conclusions drawn from the findings of the research conducted. The recommendations arising, and the limitations of the study will also be stated in this chapter.

5.2 DISCUSSION OF FINDINGS

The purpose of this research was "*to examine the readiness of lecturers from the five departments within The School where the research took place to adapting simulation-based education and to identify factors preventing or promoting the successful use of the new methodology*". The findings of this study revealed the extent of readiness of The School and its five departments. The research results also revealed areas that promoted the lecturers' readiness to use simulation and the factors that prevented The School from being fully ready for simulation.

The following discussion of the SCORS findings in this study, on the factors that promoted the lecturers' readiness to use simulation and the factors that prevented The school from being fully ready for simulation are guided by elements of the framework, the SCORS instrument and readiness factors for simulation adoption identified in reviewed literature.

5.2.1 Readiness of the school to integrate SBE

The SCORS instrument used in this study helped determine the extent of readiness of The School to integrate SBE. The instrument had four sections which elicited responses to various factors that could determine readiness for SBE. According to the results, The School had an overall score of 107.52 which showed that The School is "somewhat ready" for SBE but not fully ready.

Within The School, five departments were surveyed and yielded varied scores showing they fared differently on their readiness for SBE. While the departments of nursing (109.9), physiotherapy (112.8) and pharmacy and pharmacology (113.8) were "moderately ready" for SBE, occupational therapy (106.2) was "somewhat ready" for SBE and CESSM (71.5) was "a little ready" for SBE.

As per the sections on the SCORS instrument, it was revealed that The School requires more time, personnel and resources to be ready for simulation. The department of nursing and occupational therapy need to adopt sustainability practices for simulation, with the center for exercise science and sports medicine requiring intervention in all sections to ensure they are ready for simulation.

For an organization or school to be institutionally ready refers to the adoption of an organizational culture and policy, ensuring the availability of skilled personnel, structure, finance and support to prepare staff psychologically and behaviorally to be able to implement a change (Society of Hospital Medicine, 2016; Weiner et al., 2009). This description of institutional readiness can be linked to Sharma et al. (2014) framework of readiness where certain factors such as structural and external factors; staff attributes; and psychological factors are grouped as antecedents to readiness and successful implementation for change.

5.2.2 Antecedents of readiness supporting SBE

5.2.2.1 Structural and external factors

Lazzara et al. (2014) states that the hallmark of a simulation experience is the "science" behind it, which is explained as ensuring the intended SBE that the institution plans to provide is aligned with the vision, mission, goals and learning objectives of the institution's program which is tagged as "policies" in Sharma et al. (2014) framework. Based on the results of this study, having innovation, experiential learning and quality student experiences central to the mission and philosophy of the institution, prepares lecturers to use simulation, as these are educational qualities that are inherent in SBE.

Employees across the five departments in The School had access to quality technology, including computers, audiovisual equipment, and other institutional technologies and were provided with support to learn and manage technologies that support education. These are promoting factors for readiness to expand their education methods to include simulation.

5.2.2.2 Staff attributes

Sharma et al. (2014) theorize that staff attributes such as their "openness to change", and "self-efficacy", are antecedents to readiness. "Openness to change", mirror the overall attitude and readiness of the institution and staff to adopt simulation, while "self-efficacy," looks at the capacity

and ability of the institution and staff to implement simulation. Based on the attribute of being open to change, this study's results show that educators verbalized a commitment to SBE integration into the curriculum, indicating there is a value to change and a shift in thinking to incorporating initiatives which facilitates the readiness of staff for simulation (Taplay et al., 2015).

A category of simulation (high fidelity simulation) which is computerized and is currently adopted by most institutions requires technological skills which have often been cited as a barrier to simulation use, as lecturers, especially baby boomers, often express that they are not technologically savvy (Evans, 2017; Williams et al., 2016). In contrast, lecturers within The School, indicated technology proficiency across all age groups, and are ready to embark on the use of high fidelity simulation.

Staff authority according to Sharma et al. (2014) is the opportunity given by the management to staff for the implementation of innovative thoughts and changes. In this study, educators had considerable influence in decisions regarding SBE within The School as revealed in the research results. The authority given serves to trigger change readiness in the staff for the implementation of simulation.

5.2.2.3 Psychological factors

As identified from the study's results, The School had a defined need to consider SBE integration which motivates the staff to embrace the initiative, with the potential for a successful implementation of SBE. This is supported by the conceptual framework adapted from Sharma et al. (2014) and Taplay et al. (2015) that highlights that having a perceived need motivates staff to get the equipment out of the box for use which is a solution to the issue of under-use of simulation equipment.

5.2.3 Antecedents to readiness hindering SBE

5.2.3.1 Structural and external factors

Within The School, the lack of adequate communication of a strategic vision and written commitment for simulation, limited the lecturers' use of simulation. "Communication" is, as operationally defined in the framework by Sharma et al. (2014), an antecedent to readiness, and refers to the way institutions communicate information about simulation to their staff. The School's poor communication of a clear strategic vision for SBE was a factor identified to have prevented the lecturers from being fully ready to use simulation.

Adequate funding is a vital factor identified by Lazzara et al. (2014) for readiness and successful implementation of an initiative like SBE. As seen from the research results, the insufficient provision of funds to support the commitment to SBE prevented the lecturers within The School from being fully ready to implement simulation.

Asides from resources referring to availability of funds, it also refers to the availability of skilled personnel, and according to the results, the limiting factor for simulation readiness is the poor availability of credentialed or trained simulationists who could mentor/coach others. The inadequate numbers of individuals who model SBE best practice as well as graduate-level prepared researchers available to assist in research to develop new knowledge, appropriate to each department's mission, hinders the uptake of simulation. The presence of these personnel within The School would help to ensure there is a well thought out plan to balance the workload of interested lecturers wanting to introduce simulation, thereby reducing stress which can hinder the staff from embracing the change to SBE (Sharma et al., 2014; Taplay et al., 2015; Lazzara et al., 2014; Williams et al., 2016).

The study's results revealed that some of the staff in The School, except for the department of pharmacy and pharmacology were knowledgeable, but had limited SBE skills. It is also interesting to note that full-time lecturers expressed a lack of sufficient knowledge and skills to use simulation as opposed to part-time lecturers. These are limiting factors to use simulation which therefore hints at the need for professional growth and training to equip the staff for the successful implementation of SBE (Faz et al., 2014; Sharma et al., 2014, Kim et al., 2017).

To ensure total readiness for simulation, it is therefore important to ensure lecturers are skilled to use simulation. This would require attention to be paid to the specialist training of credentialed simulationists to provide support to simulation users. The skills of lecturers to use simulation is very important as it directly impacts on the clinical learning of students. These skills entail the ability to plan, implement, evaluate the simulation experience, and the debriefing of students, post simulation. When planning for simulation, facilitators need to ensure learners are orientated to the simulation environment and are informed of their roles prior to the simulation experience. The facilitator is also expected to adopt a debriefing style that best suits the situation in which the simulation experience had been organized and be able to ascertain that learning had occurred through the development of reflective thinking practice in learners (Beaubien & Barker, 2004).

The lack of these skills was identified in a study by Branch (2013) & Eukel et al. (2014), where students were unsure of their roles during the simulation experience due to limited prior exposure to simulation before assessment. The inability of facilitators to enhance reflective abilities of learners during the debriefing phase of simulation has been highlighted (Kim et al., 2016 & Li, 2017). The negative impact of the staff of The School's lack of SBE and debriefing skills on students' learning therefore requires that adequate steps be taken to ensure lecturers are skilled to facilitate simulation-based learning as well as ensuring the availability of support to effectively implement simulation practices (Al-ghareeb & Cooper, 2015).

5.2.3.2 Staff attributes

To ensure the simulation training design is sound for educational instruction, it is recommended that support from experts are sought in decisions regarding SBE (Motola et al., 2013; Lazzara et al., 2014). Lazzara et al. (2014), suggest that partnerships with individuals who can help in the planning and execution of simulations should be sought, as SBE design and delivery requires cooperation between technical and audio-visual professionals, experienced persons in developing learning contexts, in conjunction with experts in the course content area. A professional team approach ensures simulation training is instructionally sound and that content is accurate and appropriate to help achieve successful student outcomes.

The results from this study indicate that within The School, the major decision makers are educators with only pharmacy and pharmacology involving clinicians and administrators in decisions regarding SBE. This according to Sharma et al. (2014) shows there is a strain in "staff cohesion" within the other departments in decisions regarding SBE.

5.2.3.3 Psychological factors

"Perceived time" is a motivating factor of readiness of staff for SBE (Sharma et al., 2014). Based on the result, release time for educators to lead the integration of SBE was perceived to be insufficient and has been identified as one of the factors that prevented the lecturers from being fully ready for simulation.

According to Lazzara et al. (2014), planning towards establishing successful outcomes with SBE is important. This entails ensuring the success and sustainability of programs which are inclusive of measuring and sharing of outcomes and collaborating with experts regarding the creation and

implementation of the simulation experience. Despite nursing being the profession in the health sciences to first introduce simulation as a teaching pedagogy (National League for Nursing, 2015), the nursing department in this study fell short in measuring and sharing their outcomes in comparison to the other departments included in the study. The researcher believes this lack of measurement of simulation outcomes could impede the opportunity to identify the potential of SBE in helping students transfer skills to practice, as well as preventing further growth of the pedagogy through the dissemination of outcomes and student results.

5.3 Limitation

The setting of this study was one selected school, where the participants were lecturers from the five departments (Nursing, Occupational therapy, Physiotherapy, Pharmacy and pharmacology, and the Center for Exercise Science and Sports Medicine). In addition, although a total sample was used, the sample size was relatively small. Therefore, the findings of this study cannot be generalized to the readiness of lecturers in a different context. A wider survey of the entire faculty would assist in this regard, although The School does provide for its own needs at present with regards to simulation resources.

While anonymity was guaranteed, the fact that the research was confined to one School may have led to participants believing their responses may be identifiable, even if only by means of the department where they work. As a result, there is a possibility that this may have led to social desirability bias (Smith, 2007).

A further limitation may have been attribution bias (Carroll, 2014), either due to respondents trying to justify or blame issues on their own or other people's behaviors, or even have been self-serving bias (Boyes, 2013), if they thought that certain responses may improve their access to simulation in the future.

5.4 Conclusion

The research question that guided this study was, "What is the extent of readiness of lecturers from the five departments within The School at the selected University for the use of SBE?"

With limited research having been done in the South African context on readiness factors for simulation, the researcher embarked on this research in an endeavor to investigate the extent of

readiness of lecturers within one school in a university to use simulation, and identifying factors influencing their readiness to use simulation. From the research findings, a perceived need and time for simulation, the availability of skilled teaching and administrative staff, educational opportunities for staff, and collaboration with experts facilitated by management should be planned for when preparing to adopt the use of simulation as these are some of the factors that could facilitate or hinder readiness for SBE.

A major aspect of simulation adoption is having a strategic vision and mission statement towards simulation. As it may seem difficult to change the university's vision and mission statement, the vision and mission statement towards simulation can be put into The School's policy document and be communicated to the members of staff.

The proposed clinical training model in South Africa clearly stipulates that 30% of nursing students' learning be dedicated to theoretical learning, while 70% be directed towards practical aspects of learning. Out of the 70%, 40% is for role taking in the clinical setting and 30% for experiential learning, of which, 20% is for simulation (The Nursing Education Stakeholders (NES) Group, 2012). To ensure role taking (where learners become socialized to the profession and function as part of the health care team) of learners in clinical settings, learners are prepared in skills and simulation laboratory to obtain skills needed in the practice setting (The Nursing Education Stakeholders (NES) Group, 2012). As recommended by the proposed clinical training model, it is observed that simulation takes a large percentage of experiential learning for learners' preparation for clinicals. This makes it important for adequate investment to be made towards simulation in The School.

The issue of funding has also been raised as an impacting readiness factor in this study which is not a direct responsibility of lecturers but of higher level management. A major source of funding could be obtained from the clinical grants for clinical training released by the National Department of Health (NDOH), to increase SBE. Similarly, institutions of learning have a part to play to motivate for the clinical training grant funding to be spent on simulation. This entails the involvement of stakeholders at management level with the capacity to develop policies, plan towards simulation and drive funding processes. It also involves facilitators recording and measuring positive student outcomes with simulation use which will serve as evidence to motivate stakeholders to advocate for funds and to gain the government's buy-in for SBE.

From literature reviewed, faculty's fear of technology, with specific reference to baby boomers not being technologically savvy, was identified as a reason for the underuse of high fidelity simulation (Williams et al., 2016). In this study, it is interesting to point out that lecturers, including baby boomers, were technologically proficient, which is vital for the use of high fidelity simulation like patient simulators.

It is also important to note that simulation does not have to be expensive as the major focus should be the objective of the simulation and choosing the type of simulation that best meets the objective (Kim et al., 2016). The misconception of simulation being equated with high tech equipment needs to be cleared up through training. This is because simulation is not restricted to the use of equipment, but it also includes role-playing and the use of standardized patients.

This research has shown that The School is somewhat ready for simulation and the readiness varied from department to department. The center for exercise and sports medicine (CESSM), which was one of the departments assessed in this study, was found to be "a little ready" for simulation based on the results. When the results gathered from CESSM department were compared with those of other departments, CESSM was the only department with a statistically significant difference in results. From anecdotal evidence, CESSM was the only department that has not started using the simulation laboratory despite the benefits it offers. The result is therefore, a true reflection of the department and serves as a valuable measure that can help guide the department to focus on areas of need when they plan to embark on simulation use.

5.5 Recommendations

It is therefore recommended that to initiate simulation and improve The School's degree of readiness, The School does the following:

Evaluate the readiness of their lecturers: This will help identify areas of need that can be addressed to facilitate a successful simulation experience for both the learners and facilitators and all participants involved. The SCORS instrument used in this study is a valuable tool that can be adopted by institutions to evaluate their readiness, prior to the purchasing of equipment and the building of simulation centers. As this marks the first time of staff readiness for simulation being assessed within The School, it is recommended that the exercise be repeated upon acting on the areas of need of The School to help identify improvement on their degree of readiness.

This should not be a once-off event but a continuous one to ensure The School is fully ready and to ensure there is a sustenance of the positive result.

Involve staff in the planning for simulation: Upon the decision to adopt simulation, staff especially lecturers should be consulted about their views and need for simulation and how they perceive simulation-based learning fulfilling an educational gap and improving their student outcomes. Staff involvement through consultations will help promote staff commitment to the use of simulation, thereby limiting resistance and the underuse of resources through non-use of equipment and supplies. This aspect is one that is embraced by The School to an extent and has proven to facilitate The School's readiness for simulation.

Provide training to empower staff for the implementation of the initiative: As revealed by the research results, skilled simulation personnel are limited within The School. It is therefore recommended that personnel are made available. The need for the presence of a simulation expert within the institution is valuable as he or she can provide guidance on the simulation initiative. Staff members who are interested in simulation should also be identified and work as a team with the simulationist. Interested members should be trained with opportunities to learn and manage simulation which can be provided for by management through financing conference or workshop attendance. On-line webinars should be promoted, and attendance encouraged, as this form of training does not require lecturers to be absent from their offices for an extended period of time. This set of interested staff can in turn act as simulation champions for The School. Simulation knowledge and skills acquisition by staff is essential to ensure facilitators can develop, implement and evaluate their own simulation-based experiences for successful clinical learning of students in preparation for practice.

As there is one simulation laboratory available within The School, with certain departments being less aware of what it offers, there is a need to break the silos of departmental learning activities and having resources being available to all departments and not only accessible to certain departments within the broader university. This also refers to inter-professional teaching and training where simulation successes can be shared and adopted. The employment of a simulation coordinator assists in reducing the silo mentality, ensuring the simulation resources within The School are enjoyed by all departments.

The different departments within the university should be made aware of new teaching and learning resources by advertising through editorials, news flashes, lunch time training sessions and demonstrations. Creating awareness informs the lecturers of what is available in the institution to be incorporated into teaching and learning.

Since simulation is taking a great part in the clinical learning of learners in this present day, it is important for The School adopting simulation to ensure adequate preparation of their staff and setting for simulation use. This will help ensure the full benefits of simulation are harnessed in equipping learners that are satisfied with their learning experience and fit for practice.

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APPENDIX A

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

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12 June 2017
Person No: 1392573
PAG

Miss TA Awogbemila
Unit 33
21 Barnowl Street
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Dear Miss Awogbemila

Master of Science in Nursing: Approval of Title

We have pleasure in advising that your proposal entitled *Assessing staff readiness for simulation in a Health Sciences Institution* has been approved. Please note that any amendments to this title have to be endorsed by the Faculty's higher degrees committee and formally approved.

Yours sincerely

Mrs Sandra Benn
Faculty Registrar
Faculty of Health Sciences

APPENDIX B

R14/49 Miss Tolulope Awogbemila

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)

CLEARANCE CERTIFICATE NO. M170238

NAME: (Principal Investigator)	Miss Tolulope Awogbemila
DEPARTMENT:	Nursing Education University of the Witwatersrand
PROJECT TITLE:	Assessing Staff Readiness for Simulation in a Health Sciences Institution
DATE CONSIDERED:	24/02/2017
DECISION:	Approved unconditionally
CONDITIONS:	Title Change (24/05/2017)
SUPERVISOR:	Hilary Thurling
APPROVED BY:	Professor P. Cleaton-Jones, Chairperson, HREC (Medical)
DATE OF APPROVAL:	24/04/2017

This clearance certificate is valid for 5 years from date of approval. Extension may be applied for.

DECLARATION OF INVESTIGATORS

To be completed in duplicate and **ONE COPY** returned to the Research Office Secretary in Room 10004,10th floor, Senate House/3rd floor, Phillip Tobias Building, Parktown, University of the Witwatersrand. I/We fully understand the conditions under which I am/we are authorised to carry out the above-mentioned research and I/we undertake to ensure compliance with these conditions. Should any departure be contemplated, from the research protocol as approved, I/we undertake to resubmit to the Committee. **I agree to submit a yearly progress report**. The date for annual re-certification will be one year after the date of convened meeting where the study was initially reviewed. in this case, the study was initially review February and will therefore be due in the month of February each year. Unreported changes to the application may invalidate the clearance given by the HREC (Medical).

Principal Investigator Signature Date

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES

APPENDIX C

From: Hilary Thurling <Hilary.Thurling@wits.ac.za>
Date: Tuesday, September 20, 2016 at 4:45 AM
To: "Leighton, Kim" <kleighton@devrygroup.com>
Subject: RE: Request Permission to your the SCORS instrument.

Dear Kim,

Thank you for your reply, and forwarding the SCVORS instrument and guide book to us.

My student is in the process of putting together her proposal for the Post Graduate Assessors Committee.

I am sure she will only be ready for data collection in January/February 2017.

We are hoping to assess the organizational readiness of nursing, pharmacy, physiotherapy, occupational therapy and sports medicine.

I will be in touch and let you know how we are progressing.

Many thanks

Hilary

WITS UNIVERSITY

Hilary Thurling
Simulation Coordinator
Tel: 011 717-2548
Email: hilary.thurling@wits.ac.za
Medical School, 4nd Floor Room 4B20

CHSE
CENTRE FOR HEALTH SCIENCE EDUCATION

From: Leighton, Kim [mailto:kleighton@devrygroup.com]
Sent: 11 September 2016 09:54 PM
To: Hilary Thurling
Cc: Colette Foisy-Doll
Subject: Re: Request Permission to your the SCORS instrument.

Hello Hilary,

So sorry to not have responded sooner—I did get your first email. I've had a lot of international travel this past month and I'm behind!

We are happy to have your student use the SCORS instrument for her Masters work. I'm wondering what your timeline is? The tool is still undergoing data collection as we have had a very low response rate. The data collection is due to end on 10/31/16 and then we will quickly determine whether we have a reliable tool. How does that fit into your student's timeline? Meanwhile, if you'd like to take a closer look at the survey and guidebook, it can be found here: https://sites.google.com/site/scorsfile/

Thanks for your inquiry!
Kim

Kim Leighton, PhD, ANEF

Assistant Dean
Research & Simulation Faculty Development

DeVry Medical International's Institute for Research & Clinical Strategy
485 US Highway 1 South
Building B, Floor 4
Iselin, NJ 08830

c: 402-617-1401
e: KLeighton@devry.edu

From: Hilary Thurling <Hilary.Thurling@wits.ac.za>
Date: Friday, September 9, 2016 at 3:59 AM
To: Kim Leighton <kleighton@devrygroup.com>
Subject: Request Permission to your the SCORS instrument.

Dear Kim,

I am a member of the NLN 2015 Simulation leadership programme, and attended your presentation on the development of your SCORS Instrument, at the INACSL conference in Dallas this year.

I am the simulation coordinator for the University of Witwatersrand in Johannesburg, South Africa.

I have a postgraduate MSc student (Nursing) who is interested in assessing organizational readiness of nursing education institutions, for simulation based education.

This will be her research component of her MSc Course work.

I would like to request your permission to use your SCORS instrument with the guideline hand book for her data collection, if possible?

If you are willing for us to use your instrument, could I request that you send us the instrument and access to the guide book plus the correct citation.

We are happy to send you the research proposal and the results of the data collection – if we can assist you in any manner please let us know.

If you require any further information please do not hesitate to contact me at the email address in this correspondence.

With thanks and appreciation

Hilary Thurling

WITS UNIVERSITY
Hilary Thurling
Simulation Coordinator
Tel: 011 717-2548
Email: hilary.thurling@wits.ac.za
Medical School, 4NS Floor Room 4B20
CHSE
CENTRE FOR HEALTH SCIENCE EDUCATION

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APPENDIX D

PARTICIPANT'S INFORMATION DOCUMENT AND CONSENT FORM ASSESSING STAFF READINESS FOR SIMULATION IN A HEALTH SCIENCES

INSTITUTION

Dear Respondent,

My name is Miss Tolulope A. Awogbemila, a master's student in the Department of Nursing Education at the University of the Witwatersrand conducting a research study on: "Assessing staff readiness for simulation in a health sciences institution"

This study is designed to examine the readiness of lecturers from the five departments within The School of Therapeutic Sciences to adapting simulation-based education and identify factors preventing or promoting the successful use of the new methodology.

Participation in the study involves completion of a 24-question survey to assist with this investigation which will take approximately 15 minutes to complete. There are no risks or discomforts that are anticipated from your participation in the study. The information obtained has the potential to improve the successful outcomes and efficiency of simulation-based programs.

Confidentiality is assured as names are not required, only the departmental specialty for statistical purposes and information will only be included in the findings.

Participation in this study is voluntary and refusal to participate will involve no penalty. If you have any questions about this project, feel free to contact Miss T.A. Awogbemila, on 0789589221 or Mrs. Hilary Thurling on 0825557003. If you choose to participate, please sign and date the consent form and return it along with the survey to the researcher.

Thank you in advance for the time and effort required to fill out the survey and to assure you that your participation is greatly appreciated.

I have read the above information and hereby freely consent to participate in this study.

_____ _____

Participant's signature Date

APPENDIX E

Confidential

SIMULATION CULTURE ORGANIZATIONAL READINESS SURVEY

Please complete the survey below.

Thank you!

Tolulope Awogbemila

MSc Nursing student

Dear lecturer,
This survey forms part of my MSc Research titled: "Assessing staff readiness for simulation in a health sciences institution"
This study is designed to examine the readiness of lecturers from the five departments within the School of Therapeutic Sciences to adapting simulation-based education and identify factors preventing or promoting the successful use of the new methodology. The information obtained has the potential to improve the successful outcomes and efficiency of simulation-based programs.
Please respond to the questionnaire below.

DEMOGRAPHIC INFORMATION

1) Please select your age group
- ◯ 20-30 years
- ◯ 31-40 years
- ◯ 41-50 years
- ◯ 51-60 years
- ◯ Above 60 years

2) Please indicate your gender
- ◯ Male
- ◯ Female
- ◯ Bisexual

3) Please select your department
- ◯ Exercise Science and Sports Medicine
- ◯ Nursing Education
- ◯ Occupational Therapy
- ◯ Pharmacy and Pharmacology
- ◯ Physiotherapy

4) Please select your employment status
- ◯ Part-time
- ◯ Full-time

5) Please select the years of experience that applies to you

- ○ 1-5 years
- ○ 6-10 years
- ○ 11-15 years
- ○ 16-20 years
- ○ 21-25 years
- ○ Above 25 years

SECTION A: DEFINED NEED AND SUPPORT FOR CHANGE

	None at All	A Little	Somewhat	Moderately	Very Much
6) To what extent are innovation, experiential learning and quality student experiences clearly described as central to the mission and philosophy of your institution?	○	○	○	○	○
7) To what extent has your department clearly defined the need to consider simulation--based education (SBE) integration?	○	○	○	○	○
8) To what extent have administrators within your department communicated a clear strategic vision for SBE?	○	○	○	○	○
9) To what extent have administrators within your department provided a written commitment to SBE?	○	○	○	○	○
10) To what extent have administrators within your department provided funding to support the commitment to SBE?	○	○	○	○	○
11) To what extent does your department promote the need for SBE based on current evidence, standards, and guidelines?	○	○	○	○	○
12) To what extent is SBE currently being used as a teaching modality in your department?	○	○	○	○	○

13)

To what extent have the educators you work with articulated a need for SBE integration into the curriculum?	○	○	○	○	○
14) To what extent have the educators in your department verbalized a commitment to SBE integration into the curriculum?	○	○	○	○	○

SECTION B: READINESS FOR CULTURE CHANGE.

To what extent is there a critical mass of professionals who already possess strong SBE:

	None at All	A Little	Somewhat	Moderately	Very Much
15) Knowledge	○	○	○	○	○
16) Skills	○	○	○	○	○
17) Positive Attitudes	○	○	○	○	○

Section B: Readiness for Culture Change -continues

	None at All	A Little	Somewhat	Moderately	Very Much
18) To what extent do administrators support culture change including the efforts required to implement and sustain SBE program integration?	○	○	○	○	○
19) To what extent are there credentialed or trained simulationists who mentor/coach others, including, other simulationists?	○	○	○	○	○
20) To what extent does your department have individuals who model SBE best practice?	○	○	○	○	○
21) To what extent are staff/faculty proficient in the use of technology? (I.e. computer systems, AV and IT systems)	○	○	○	○	○
22) To what extent are there graduate level prepared researchers available to assist in research to develop new knowledge, appropriate to your department's mission?	○	○	○	○	○
23) To what extent are librarians available within your institution to help search for evidence---based practice and related simulation resources?	○	○	○	○	○
24) To what extent are your librarians accessed to search for evidence based practice and related simulation resources?	○	○	○	○	○
25) To what extent do you believe that now is the right time to implement a culture change to support SBE?	○	○	○	○	○

SECTION C: TIME, PERSONNEL AND RESOURCE READINESS

	None at All	A Little	Somewhat	Moderately	Very Much
26) To what extent do employees in your department have access to quality technology, including computers, audiovisual equipment, and other institutional technologies?	○	○	○	○	○
27) To what extent is support available to learn and manage technologies that support education?	○	○	○	○	○

To what extent are fiscal resources available to support SBE in the following areas:

	None at All	A Little	Somewhat	Moderately	Very Much
28) Human resources (simulation personnel)?	○	○	○	○	○
29) Education?	○	○	○	○	○
30) Release time to lead integration of SBE?	○	○	○	○	○
31) Development of physical learning spaces?	○	○	○	○	○
32) Equipment?	○	○	○	○	○

To what extent are there existing simulation champions (people who will go the extra mile to advance simulation) in the current environment among:

	None at All	A Little	Somewhat	Moderately	Very Much
33) Administrators?	○	○	○	○	○
34) Clinicians?	○	○	○	○	○
35) Educators?	○	○	○	○	○
36) Technology Specialists?	○	○	○	○	○
37) Administrative Assistants and Support Staff?	○	○	○	○	○

SECTION D: SUSTAINABLE PRACTICES TO EMBED CULTURE

	None at All	A Little	Somewhat	Moderately	Very Much
38) To what extent is the measurement and sharing of outcomes part of the culture of the department in which you work?	○	○	○	○	○

To what extent are decisions regarding SBE influenced by:

	None at All	A Little	Somewhat	Moderately	Very Much
39) Clinicians?	○	○	○	○	○
40) Educators?	○	○	○	○	○
41) Administration?	○	○	○	○	○

APPENDIX F

SCORS: Simulation Culture Organizational Readiness Survey							
A.	Defined Need and Support for Change	None at All	A Little	Somewhat	Moderately	Very Much	Scores
1	To what extent are innovation, experiential learning and quality student experiences clearly described as central to the mission and philosophy of your institution?	1	2	3	4	5	
2	To what extent has your organization clearly defined the need to consider simulation---based education (SBE) integration?	1	2	3	4	5	
3	To what extent have administrators within your organization communicated a clear strategic vision for SBE?	1	2	3	4	5	
4	To what extent have administrators within your organization provided a written commitment to SBE?	1	2	3	4	5	
5	To what extent have administrators within your organization provided funding to support the commitment to SBE?	1	2	3	4	5	
6	To what extent does your organization promote the need for SBE based on current evidence, standards, and guidelines?	1	2	3	4	5	
7	To what extent is SBE currently being used as a teaching modality in your institution?	1	2	3	4	5	
8	To what extent have the educators you work with articulated a need for SBE integration into the curriculum?	1	2	3	4	5	
9	To what extent have the educators in your institution verbalized a commitment to SBE integration into the curriculum?	1	2	3	4	5	
	Subtotal Section A					Potential Score 45	
B.	Readiness for Culture Change	None at All	A Little	Somewhat	Moderately	Very Much	Scores
10	To what extent is there a critical mass of professionals who already possess strong SBE:						
a.	Knowledge	1	2	3	4	5	
b.	Skills	1	2	3	4	5	
c.	Positive Attitudes	1	2	3	4	5	
11	To what extent do administrators support culture change including the efforts required to implement and sustain SBE program integration?	1	2	3	4	5	
12	To what extent are there credentialed or trained simulationists who mentor/coach others, including, other simulationists?	1	2	3	4	5	
13	To what extent does your organization have individuals who model SBE best practice?	1	2	3	4	5	
14	To what extent are staff/faculty proficient in the use of technology? (I.e. computer systems, AV and IT systems)	1	2	3	4	5	
15	To what extent are there graduate level prepared researchers available to assist in research to develop new knowledge, appropriate to your organization's mission?	1	2	3	4	5	
16	To what extent are librarians available within your organization to help search for evidence-based practice and related simulation resources?	1	2	3	4	5	
17	To what extent are your librarians accessed to search for evidence--- based practice and related simulation resources?	1	2	3	4	5	
18	To what extent do you believe that now is the right time to implement a culture change to support SBE?	1	2	3	4	5	
	Subtotal Section B					Potential Score 55	

C.	Time, Personnel, and Resource Readiness	None at All	A Little	Somewhat	Moderately	Very Much	Scores
19	To what extent are fiscal resources available to support SBE in the following areas:						
a.	Human resources (simulation personnel)?	1	2	3	4	5	
b.	Education?	1	2	3	4	5	
c.	Release time to lead integration of SBE?	1	2	3	4	5	
d.	Development of physical learning spaces?	1	2	3	4	5	
e.	Equipment?	1	2	3	4	5	
20	To what extent do employees in your institution have access to quality technology, including computers, audiovisual equipment, and other institutional technologies?	1	2	3	4	5	
21	To what extent is support available to learn and manage technologies that support education?	1	2	3	4	5	
22	To what extent are there existing simulation champions (people who will go the extra mile to advance simulation) in the current environment among:						
a.	Administrators?	1	2	3	4	5	
b.	Clinicians?	1	2	3	4	5	
c.	Educators?	1	2	3	4	5	
d.	Technology Specialists?	1	2	3	4	5	
e.	Administrative Assistants and Support Staff?	1	2	3	4	5	
	Subtotal Section C					Potential Score 60	

D.	Sustainability Practices to Embed Culture	None at All	A Little	Somewhat	Moderately	Very Much	Scores
23	To what extent is the measurement and sharing of outcomes part of the culture of the organization in which you work?	1	2	3	4	5	
24	To what extent are decisions regarding SBE influenced by:						
a.	Clinicians?	1	2	3	4	5	
b.	Educators?	1	2	3	4	5	
c.	Administration?	1	2	3	4	5	
	Subtotal Section D					Potential Score 20	
	Not Ready: 0—36 ------*A Little:* 37—72---------*Somewhat:* 73—108 --------*Moderately:* 109—144----*Very Much:* 145—180 *Please refer to the SCORS Companion Guidebook for scoring options before you begin scoring your organization.*				TOTAL OVERALL SCORE (potential score = 180)		

	SCORS SUMMARY IMPRESSION	Not Ready	Getting Ready	Been Ready But Not Acting	Ready to Start to Act	Past Ready & Into Action Planning	
25	Considering all of the SCORS indicator scores, how would you rate your organization's readiness for SBE integration?	1	2	3	4	5	
26	Looking back 6 months, how would you have rated your organization's readiness for SBE integration?	1	2	3	4	5	
	Plot your overall readiness level by marking an "X" on the adjacent continuum.	NOT READY.....					.....A GREAT DEAL

To cite, please use:

Foisy—Doll, C., & Leighton, K. (2016). SCORS: Simulation culture organizational readiness survey©. An adaptation with permission of the "Organizational Culture & Readiness for System—Wide Integration of Evidence—based Practice Survey©" Fineout—Overholt, E., & Melnyk, B. M. in B. M. Melnyk, & E. Fineout—Overholt. (Eds.). (2015). *Evidence—based practice in nursing & healthcare: A guide to best practice.* (3rd Ed.). Philadelphia, PA: Lippincott, Williams, & Wilkins.

For permission to use the SCORS tool, please contact either:

Colette Foisy—Doll: foisydc@gmail.com or Kim Leighton: huskerrn@gmail.com