



UNIVERSITY *of*  
RWANDA

**RWANDAN MIDWIFERY STUDENTS BENEFITS AND BARRIERS IN THE USE OF  
SIMULATION BASED LEARNING REGARDING NEONATAL RESUSCITATION**

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**MASTER OF SCIENCE IN NURSING  
(EDUCATION, LEADERSHIP AND MANAGEMENT TRACK)**

**2019**



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**BY**

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**A dissertation submitted in partial fulfillment of the requirements for the degree of  
MASTER OF NURSING EDUCATION, LEADERSHIP AND MANAGEMENT**

**In the College of Medicine and Health Sciences**

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**September 2019**

## **DECLARATION**

I, Marie Aimee MUKAREMERA, declare that this dissertation titled Rwandan midwifery students benefits and barriers in the use of simulation based learning regarding neonatal resuscitation. A descriptive cross section survey is my original work. It has never been submitted for other purpose or at any university .Sources of information utilized in this work has been acknowledged in the reference list.

Marie Aimée MUKAREMERA

215042754

Signature.....

Date:...../...../.....

## **DEDICATION**

This dissertation is dedicated to my husband Byuma S.Gaston, and my children Caroline, Jessica, Ishimwe, Shema and Mugisha, my brother and sisters and other friends all their love, support and encouragement.

## **ACKNOWLEDGMENTS**

I would like to thank the Almighty God, our Lord Jesus Christ for their love and being with me each step of the way. I gratefully acknowledge my supervisors: Rebecca L. White, Professor Oluyinka Adejumo for their support, and encouragement. Warm appreciation to all members of the School of Nursing and Midwifery/University of Rwanda.

I would like to thank my colleagues and students for their special support. My gratitude goes to my mother for your psychological support and advice during this course, thank you. My greatest thanks to my brothers and sisters in Jesus Christ for your prayers. To my children for their patience, love and encouragement.

## **ABSTRACT**

**Background:** Simulation is a teaching pedagogy commonly utilized to educate healthcare providers on neonatal resuscitation. Simulation-based Learning (SBL) provides opportunities for Midwifery Nursing Students to practice, upgrade, and refine performance in Emergency Neonatal Resuscitation (NNR). Neonatal Resuscitation emergency management is a primary problem that unnerves all midwifery students.

**Aim:** The study aim is to explore the benefits and barriers in the use of SBL in NNR with level three midwifery students attending the University of Rwanda at Huye campus in Southern Rwanda by May 2019.

**Methodology:** This study used a cross-sectional one-time survey study methodology. Cultural relevant tool, used in research previously in Rwanda, was revised and pretested for this study. Data collection included demographic characteristics of participants, and questions assessing the participants' perceptions of the benefits and barriers in neonatal resuscitation using SBL.

Data was analyzed using SPSS version 22. **Results:** 84% perceived benefits of simulation in a controlled and safe environment, 77% gained competency and master complicated procedure on mannequin but the similar proportion (77%) of wishes to have the NNR practice on real patient just after SBL to master the skills. **Conclusion.** A big proportion of the participants perceive the benefits of SBL in competency and skill acquisitions. This survey research supports the need for patient contact and skills at the bedside after SBL. Upgrading to high fidelity simulation may increase bedside competency and may decrease the participants insecurity around skill acquisition. The need for increased time of SBL in curriculum will provide more opportunities for all midwifery students to be trained in these essential lifesaving skills.

**Keywords:** Barriers, Benefits, Simulation-based Learning (SBL), Midwifery student, Neonatal Resuscitation.

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## **LIST OF ACRONYMS AND ABBREVIATIONS**

CMHS-College of Medicine and Health Sciences

EBP- Evidenced Based Practice

HBS-Helping Baby Survive

HCC -Health Care Centers

MOH-Ministry of Health

NLN- National League of Nursing

NNR- Neonatal Resuscitation

PI-Principal Investigator

SBL-Simulation based Learning

SONM- School of Nursing and Midwifery

SPSS-Statistical Package for Social Sciences

UR- University of Rwanda

WHO-World Health Organization

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# **CHAPTER 1.INTRODUCTION**

## **1.1Introduction**

Worldwide, about one –quarter of all newborn deaths are caused by birth asphyxia and consequences of hypoxia. Birth asphyxia is defined as the failure to establish and maintain breathing at birth (Shikuku, Milimo, Ayebare, Gisore, &Nalwadda, 2018). Adequate resuscitation at birth can prevent a large proportion of neonatal demise (WHO, 2016). Approximately 10% of all newborns require some stimulation and respiratory support to encourage adequate respiratory effort upon delivery (Saeidi&Gholani,2017).

Effective and efficient neonatal resuscitation training of nurses and midwife’s in-service and pre-service is one of the necessary elements in the transformation of theoretical procedures into clinical practice. Simulation-based learning (SBL) provides opportunities for midwifery and nursing students to practice, upgrade, and refine performance in Emergency NNR(Carolan-olah, Kruger, Brown, Lawton, & Mazzarino, 2016a). Birth complications and infant mortality are primary situations that stress all healthcare providers. This research study aims were to examine the Rwandan midwifery students’ benefits and barriers in the use of simulation-based learning regarding neonatal resuscitation (Abdelalla, Howaida, & Ahmed, 2016).

## **1.2. Background**

Simulation in teaching and learning in nursing practices supports students in obtaining psychomotor as well as critical thinking skills and allows educators to evaluate nursing competencies. Nursing education utilizes simulation for student remediation in a safe environment for clinical performance deficiencies. SBL enhances skills in critical expertise, which supports the development of clinical judgment when practicing with rare, high-risk patient situations seen in the clinical setting. (Martins, et al., 2012) World Health Organization (WHO) has provided standards for nursing education and recommended the use of simulation (WHO, 2016).

Research indicates that Simulation-based Learning (SBL) is an excellent teaching and learning method for midwifery nursing students. In evidenced based nursing care principles, SBL will enhance didactic and critical thinking skills acquisition while safely using simulation. The use of simulation for nursing/midwifery students facilitates understanding, improve skill attainment, promote harmless practices , critical thinking, enhances team work, and increases cooperation(Ali et al., 2014). SBL aids in the bridging the gap between theory and performance.

SBL experiences in undergraduate Nursing and Midwifery clinical practice prepares students to practice safely. Graduate Midwives support SBL as helpful, practical, and a unique teaching methodology. SBL supports critical learning experiences ensuring the development of adequate skill sets, a professional understanding of their roles and responsibilities, and full accountability as a graduate midwife (A & Applied, 2015).

In developed countries, simulation based learning is commonplace in Gynecology ,Obstetrical healthcare students, as well as health care professionals in NNR. Morris &Rushwan (2015) addressed emergency obstetrical care using simulation as a teaching pedagogy. They found that SB improved clinicians' critical thinking skills without the risk of harm to actual patients (Carolan-Olah, Kruger, Brown, Lawton, &Mazzarino, 2016a).

Worldwide, SBL is used in nursing education to overcome barriers and limitations in low to middle-income countries. These limitations and barriers include limited resources in the areas of materials management, human resources, time constraints, and cost issues (Mckenzie, 2017).SBL allows real-time assessment of midwifery students in a comprehensive manner and allows practice and reevaluation. Current research indicates that management of Obstetrical and Neonatal emergencies is a daunting challenge to all nurses and healthcare providers. The procedural stress in performing newborn resuscitation in developing countries is due to limited access, educational opportunities, and resources (Carolan-Olah et al, 2016a).

In Africa, Saeidi&Gholani (2017 )conducted a study in Egypt showed that SBL has an important role for training neonatal resuscitation and technical skill education is a highly supported pedagogy. Saedi et al (2017) conducted research following a sole simulation based learning session, examining cognitive skills acquisition, self efficacy there is also an increase in self confidence regarding newborn resuscitation. A study conducted by Lee et al. (2011) found that traditional Neonatal Resuscitation Program (NRP) with an added simulation-based training session significantly improved performance and confidence as compared to a traditional NRP course alone (Lee et al., 2011).

In Sub-Saharan Africa, studies indicated that students'knowledge, skills, and self reliance increased after SBL. Students have spoken happiness with SBL as a pedagogical methodology when compared to other educational methods. Simulation based learning is a didactical method, allow students to become skilled and enables nursing /midwifery students to connect the break

involving applicability of speculation throughout role play and presentation of clinical cases(Homaifar et al., 2013). The students work as a team in a compassionate skills guidance setting, at the same time as educators and instructors assisting the SBL sessions (Tjoflåt&Våga, 2017).

Historically, Rwandan medical and nursing students trained and practiced with actual patients with limited direct supervision, and indirect classroom learning were the norms before SBL was adopted(Mukamana, Uwiyeze, & Sliney, 2015). Direct patient hands-on care is standard in low to middle-income countries worldwide. These skills are not easy to facilitate in the in-service or a classroom, but moderately easy with simulation. Recognizing the benefits of SBL, the shortage of clinical facilitators, and the significance of hands-on skills, Rwandan educators established simulation centers. (Bailey, Ntakiyiruta, Whynot, Scotia, & Authority, 2014).

Simulation-based learning (SBL) at the University Rwanda (UR) has been upgraded and enhanced by the acquisition of simulation equipment through the Human Resources for Health Program. There has been no research conducted in Rwanda examining the midwifery nursing student's perspective on the effectiveness and role of simulation in NNR skill development. This research will explore the Rwandan midwifery students' perceptions in the use of simulation-based learning regarding neonatal resuscitation. Helping Babies Survive (HBS) has been taught to many graduate nurses but is a basic level of care. The NNR program has advanced skills acquisition and with increased competency levels that need to be taught initially using SBL to ensure proficiency and self-confidence in these much-needed skill sets(Turk & Colbert, 2018).



### **1.3. Problem Statement**

Rwandan Midwifery Nursing students' benefits and barriers in the use of simulation-based learning regarding newborn resuscitation is unknown.

According to Rwandan Demographic Health Survey (RDHS) infant mortality (65%) and neonatal death in the first month of life is 40%. (RDHS, 2014-2015) In Rwanda in 2012, (94%) of neonatal demise occurred in the early neonatal period, and of these, 68% occurred at the time of birth. Perinatal mortality, regarded in research, as a critical indicator of neonatal post-delivery care and the first week of life status related to morbidity and mortality. (Musafili et al., 2017).

The Ministry of Health and University of Rwanda are upgrading access to healthcare facilities and training levels of current midwives and nurses at the healthcare center level. Not all Rwandan Health Care Centers (HCC) have a midwife in attendance yet and have not been nurses have not been trained in the advanced skill about newborn emergency care (Musafili et al., 2017). Helping baby survive teaches birth attendants how to care for the newborn at birth. All babies needs to be kept warm ,dry, and encouraged to breastfeed(Patel, Khatib, Kurhe, Bhargava, & Bang, 2017).

When a baby is not breathing, this neonate require further assistance in the earlier minutes immediately once the baby is out. NNR interventions are possible if there is a skilled attendant by the mother's side. Despite all of these current knowledge around the use of SBL, no research has defined the benefits and barriers of the nurse using SBL to acquire NNR skills. Nurses having the skills in NNR may decrease perinatal mortality(Nye, Campbell, Hebert, Short, & Thomas, 2019).

Current research in Rwanda indicates that the proper handling of an emergency condition is complicated, and teaching this skill in during an actual emergency is not ideal. (Musafili et al., 2017). Preparation is essential in the form of lectures and performance. Nurses and midwives from many specialties take advantage of the courses offered through the SBL(Mukamana et al., 2015). SBL as an evaluation and educational methodology increases midwifery students' knowledge and assesses clinical skills in emergencies situations such as neonatal resuscitation.

#### **1.4.Aim of the study**

The intention of this quantitative descriptive cross-sectional survey is to identify the benefits and barriers of level three students' midwives in the advanced diploma program, on the use of simulation based learning regarding newborn resuscitation at the University of Rwanda at the Huye campus in Southern Rwanda by May 2019.

#### **1.5. Research Objectives**

1. To make out students midwives' perceptions of the benefits in the use of SBL in performing Neonatal Resuscitation by May 2019 .
2. To explore the students 'perceptions on skills acquisition following Simulation Based Learning in Neonatal Resuscitation
3. To describe possible perceived barriers to access the Neonatal Resuscitation Simulation Based Learning at the University of Rwanda.

#### **1.6. Research Questions**

1. What is the third year Rwandan Midwifery students 'perceptions of the benefits in use of SBL regarding neonatal resuscitation at the University of Rwanda?
2. What the skills acquired after following SBL in NNR?
3. What are perceived barriers to access NNR SBL at the University of Rwanda?

#### **1.7.Significance of the study**

In Rwanda, this survey is the primary research study examining benefits and barriers of Rwandan midwifery students in the use of SBL in Neonatal Resuscitation. Hypoxemia is the second source of Newborn morbidity as well as mortality. The number one issue is prematurity. Newborn resuscitation skills are crucial for all health care providers at health facilities in Rwanda where deliveries occur. These skills would significantly contribute to the reduction of newborn Hypoxemia(Gupta et al., 2018).Supporting SBL in NNR may save lives and decrease disability related to birth trauma.

A large amount of newborn hypoxemia can be effectively managed if the infant is directly dried, as well simultaneously is evaluated about respiratory effort plus its effectiveness. If found with poor respiratory effort or not breathing at all then newborn baby needs assistance begin by using an ambubag and mask for airing respiratory ways, augmentation, and support newborn

resuscitation is a high-impact intervention post-delivery and is an essential newborn care intervention which every neonate deserves(Maurya, 2015).

### **1.8. Definition of concepts**

**Barriers:** Limitations which hinder the clinical instructors to access the simulation based learning center(Alhassan, Fuseini, Osman, & Adam, 2019).

**Benefits:** Profits that established to the effective use of simulation into the nursing /midwifery education(Au, Lo, Cheong, Wang, & Van, 2016).

**Birth asphyxia :**Breakdown in opening airways and maintain breathing at birth(Alhassan et al., 2019).

**Midwifery nursing student:** studying for a degree in midwifery courses(Attendants,2014).

**Neonatal Resuscitation:** Avoidance of passing away or damage to neonate baby by mean of different procedures to maintain the neonate respiration and warmth (Lee et al., 2011).

Simulation-based Learning (SBL):SBL is an educational pedagogy to build up health care providers' awareness, skills, as well as attitudes at the same time as defending clients from preventable risks. (A & Applied, 2015)

### **1.9. Structure/Organization of the study.**

This research was composed by all full-time third-year midwifery students who have already been trained by midwifery faculty on neonatal resuscitation, advanced diploma program who registered in the first semester,2018 at the University of Rwanda /College of Medicine and Health Sciences, University of Rwanda, College of Medicine and Health Sciences, School of Nursing and Midwifery, in the midwifery department at Huye Campus.

### **1.10. Conclusion**

In conclusion, the simulation based education have an influence in increasing skills and competency among undergraduate midwifery students in performing neonatal resuscitation. The teaching and learning through simulation based learning has a number of benefits and limitation.

## **CHAPTER 2: LITERATURE REVIEW**

### **2.1 Introduction**

This chapter includes hypothetical and pragmatic text review using learning theories that supports the use of SBL in Neonatal Resuscitation. The literature review examined simulation practice, evaluation, and conceptual framework supporting SBL regarding NNR. The comprehensive literature review used online resources within the last ten years. Search engines reviewed were Google, Google Scholar, Hinari, and PubMed.

### **2.2 Benefits of SBL among undergraduate midwifery students in performing Neonatal Resuscitation.**

Study done in Ethiopia showed that the majority of midwifery staff graduated newly have not essential hands-on experience to carry out quality nursing care procedures in Neonatal Resuscitation. SBL is supported in research to enhance nursing education and to increase competency in skills and performance at the bedside. Studies have shown that it is a useful evaluation tool to assess practical skills, especially in Neonatal Resuscitation(Reisman, Arlington, Jensen, & Louis, 2016).Self-confidence of students during their clinical practices, influence the feeling of efficacy, self-esteem and ability to play their role as nurse /midwife (Valizadeh, 2013). It is agreed that training and mentorship mainly on managing common obstetric and neonatal complications enhance the skills of the health care providers. And it is also a key facilitator in evidence-based care provision.

A study done in India indicated that the student have improved the skills and confidence of neonatal and resuscitation, it helped them to know when to ask for help, they also become aware of resuscitation principles and tailoring simulation (Patel et al., 2017). In order to keep this simulation skill, constant practice is recommended aided by simulation maintenance training(Lawn et al., 2013).

Study done in Rwanda shown that SBL allows students to practice and master problem-solving skills, enhance communication skills, increase self-confidence in decision-making, and hands-on skills in the management of patients(Bailey, Ntakiyiruta, Whynot, Scotia, & Authority, 2014). The compensation for SBL , enhancing the learners' ability to remember what they were taught.

SBL allows for a review of faculty teaching techniques and identification of gaps in the curriculum (Bailey et al., 2014). During examination phase performance should be measured by a team of many examiners in-charge of the numerous stations in the SBL (Au et al., 2016). SBL and multiple examiners are advantageous for the subject and the faculty, supporting training standards of the organization as the outcomes of the assessment will lack bias, prejudice, and will uphold high standards. (Carolan-Olah et al., 2016a).

Study done in India highlights simulation as an essential educational methodology and pedagogy to support health care providers and benefits nursing students.(Bansal et al., 2014) The importance of SBL in undergraduates students of developed countries is well studied but in low to middle-income countries SBL utilization has not been studied(Manji, Sciences, & Kidanto, 2013)

According to WHO, it is evidenced that health care providers, including nurses and midwives, of middle income countries are not sufficiently trained to meet the health needs of society they serve (WHO,2016). A capable health worker is dominant to achieve global health coverage and overcome barriers to access to care. The largest part of recently graduated nurses and midwives lack the needed skills set to carry out quality nursing care procedures(Valizadeh, 2013).

Saeidi and Gholami in the study done in Iran showed that there is no enough information that simulation-based Neonatal Resuscitation training alone can be sufficient to keep Simulation Based Learning skills. To perform Neonatal Resuscitation with no continuous mentoring, monitoring, and practice in real-life settings lead to lack of knowledge in Neonatal Resuscitation (Saeidi&Gholami, 2017a). Attendant's research(2014) indicated issues of moving theory to practice, as the skills in Neonatal Resuscitation did not translate into the enhancement of clinical practices of neonates in detected clinical running evaluation at the bedside. The Providers competence and performance is sustained by regular training, supervision and mentoring methods mixed with simulated and real-life resuscitations (Attendants, 2014).

A large study conducted by Msemo et al in Tanzania supporting SBL (N = 8124) and (N=78500) indicated that SBL and reminder training delivered by selected higher lanked midwives lead to a constant decrease (47% ) in one day newborn deaths (Msemo et al,2013).Participant' beliefs regarding the importance of SBL compared to the traditional methods of assessment, participant stated that SBL enhanced their learning capacity, facilitated theory to practice, made examinations easier, elevated their decision-making capacity, and enhanced assessment when compared to traditional educational pedagogy.

Munshi,Lababidi and Alyousef found that the use of interactive and supportive sessions in SBL may be an essential element to the preparing of the right health care professional(Munshi, Lababidi, & Alyousef, 2015).

In Rwanda adaptation and applicability of Simulation-Based Learning (SBL) was implemented, but nursing education using SBL needs improvement. A research study conducted by Homaifar et al among 67final-Year Rwandan Medical Learners after completing prepared emergency obstetrics practice session .Participants comprehension linking enhanced after attending the Advanced Life Support Obstetrics (ALSO) practice session. Students (87.7%) obtained theoretical knowledge and their scores became better from the previous test to final evaluation and 49.2% of participants gained practical knowledge and skills(Homaifar et al., 2013).

In Egypt The study done by Shadia, Eldarir, and Nagwa supported SBL as an effective modality to assess clinical competencies. Also, this help student to enhance critical thinking skills and knowledge acquisition. Simulation supports safe, and supportive learning environment enhances the learner's ability to comprehend theory to practice (Shadia A, Eldarir, Nagwa A, 2013).

### **2.3. Skills acquisition Following SBL in NNR**

Dr. Patricia Benner developed a model for education, identifying the acquisition of skills for nurses and health care providers. Benner's five levels or stages included novice, beginning learner or Advanced learner, competent, proficient, an expert. As discussed, simulation-based learning should include the first three levels of her Theory of skill development and mastery (A & Applied, 2015).

Skill development in the first stage includes novice or the beginner. This student nurse/midwife has no skills in situations they are expected to perform. This nurse/midwife lacks confidence and would be unable to display harmless performance, this requires constant oral as well as body cues. Stage two of Benner's Model, the advanced beginner, demonstrates slightly satisfactory performance. This student nurse might have some earlier experience this student may have been in simulation before or at the bedside, yet to be capable and skillful, practice is required with occasionally supportive verbal cues. The student's knowledge is starting to develop, and the learner becomes a more efficient and critical thinker (Abdelalla, Howaida, & Ahmed, 2016).

Aligning with simulation-based learning and the first three stages, are fully supported by SBL. The fourth stage of Benner's model is confidence. The nurse has been on the job for two to three years and can demonstrate effective coordination and confidence in their care modalities. The confident nurse will be able to establish solid perspectives of what is occurring within a given scenario. This confidence can also be evaluated safely by simulation-based learning (Alhassan et al., 2019).

The plan of care by a stage four nurse uses critical thinking skills to formulate a plan around the problem this thoughtful planning supports competency and effective skill level achievement. Competency allows the nurse to complete patient care within a suitable and robust time frame without needing to have verbal cues. Competency, when achieved, allows real-time evaluation by faculty through simulation-based learning. The evaluator can assess for this efficiency and competency through the use of case scenarios in neonatal resuscitation is an essential skill, and midwives there for simulation-based learning is essential (Ali et al., 2014).

Though not part of simulation stage four learner is a proficient nurse who looks at the situation as a whole rather than dividing parts. This proficient nurse will comprehend the situation and then perceive its meaning over long-term. The professional nurse will have experience and many given situations and plans her responses to each situation. (Article, 2011).

Stage 5 the expert nurse has the most accurate region of the problem or area does not waste a significant amount of time or energy with alternative diagnosis and solution this expert has a profound understanding of the event. This kind of nurse/midwife from stage five would be an excellent mentor at the bedside or in the simulation laboratory(Carolan-olah et al., 2016a). This stage five learner would be excellent faculty or preceptors for students in their clinical skill acquisition.

In social cognitive theory Albert Bandura discusses positive attributes or traits, behaviors of the learner. The learner who possesses a sense of efficacy and self-confidence their capabilities, this learner tends to take on more challenges and recover more quickly from failure. A strong sense of self-efficacy develops from this 'mastery experience.'(Mendhi, Cartmell, Newman, Premji, & Pope, 2019). Piaget's Constructivism Theory focuses on how learners construct their meaning. Through this theory, learning occurs when new knowledge is incorporated into existing knowledge and practice, and when the instructor facilitates this learning into a simulation experience(Tosterud, Hedelin, & Hall-lord, 2013).

The principles of constructivism, when applied to SBL, are based on real-world cases, this theoretical framework fosters reflection on the experience. In SBL, students collaborate, and when prior knowledge integrates into the educational pedagogy of the learning experience, then learning is a success and will occur commonly for the learners in simulated practice(Schaik, Plant, Diane, Tsang, & Sullivan, 2011).

The process of studying through experience is explained by Kolb learning theory and it begins with the students having an experience. The students reflect on their individual experience and glean from the experience with new insight and reflection. This increase skills and intellectual framework practical to new situations that allow the learner to gain experience, reflect, conceptualize, and incorporate these insights into the new knowledge base(Clary-muronda& Pope, 2016). The learner gains knowledge during as well as on or after practice (Zhang, 2017).

Simulation-based learning provides a face to face positive learning experience. Learning-based simulations provide an opportunity to enhance higher-order thinking and critical problem-solving while supporting the assessment of conceptual learning. Conceptual learning provides the nurse educator with the opportunity to recognize and evaluate what knowledge level a student possesses. (A & Applied, 2015).



However, assessing why the student took these actions necessitates a learning approach to concept development. In this way, simulation can substitute for conceptual learning as well as the teaching of psychomotor tasks or the evaluation of self-efficacy(Au et al., 2016).

According to Fiona & Applied,2015 reported that simulation is a valid clinical evaluation tool to assess practical skills. They continue to say that, in nursing care principles, simulation can also be used in a formative way to enhance skills acquisition. Simulation is being used in undergraduate nursing and midwifery clinical practices as an educational platform to prepare students to practice safely; it has the essential to ensure graduate nurses/midwives who are suitable for taking the full responsibilities and accountabilities of a nurse/ midwife on graduation. (A & Applied, 2015).SBL enables healthcare providers, both pre-and in-service to practice their skills in a controlled environment. SBL program in obstetrics has been shown to improve health care providers' knowledge, skills, and confidence in the management of obstetrical emergencies cases.

In developed countries, a good number of highly regarded colleges of medicine, simulation based learning is a gold regular instructional method. Simulation-based learning is highly effective in the evaluation of capability, experiential skills, and counseling courses. SBL complements cognitive understanding assessment in performance evaluation (Ali et al., 2014).

A study conducted in Rwanda by Kelly et al shown that, the simulation process has been adapted to test trainees from different healthcare-related disciplines. Also, SBL methods have attracted considerable attention because of the high level of reliability, creditability, and objectivity, content validity of the achieved skills, fairness, creating motivation for learning, and instructors' and students' satisfaction(Kelly et al., 2016). Simulation based learning has been utilized to assess the majority of important cases in health care providers practices. SBL allows an enhanced ability to obtain or interpret data, support critical thinking or problem-solving skills. SBL supports each learner in communication and builds problem-solving skills and thought process to handle unpredictable patient behaviors (Mckenzie,2017).

A study conducted in Egypt by 2013 by Shadia et al. revealed that students perceived SBL as an accurate measure of essential clinical skills and aligned with enhanced standardization of education and skills acquisition.

SBL is not affected by a student's personality or social relations. Simulation-Based learning provides an integrated unbiased measure of learning outcomes. The SBL sessions not only help students in determining their weaknesses but also enable examiners to understand what the current students' level of understanding is(Shadia A, Eldarir, Nagwa A, 2013).

A quantitative study conducted in China regarding SBL showed that, training and evaluation will be easily organized to address skills deficient or remuneration through simulation. There is widespread use of SBL in general nursing specialties. SBL is a valuable strategy to assess 'fitness to practice' at the students' expected level of clinical practice within a nursing context(Au et al., 2016).

Observation in SBL was highlighted in several research studies. SBL is vital to preserve and support health care providers, educators and increase the skill set of graduates from healthcare educational programs(Jones et al., 2016). The WHO (2016) recorded SBL's advantages for undergraduate learners in low-to middle-income states. There is proof that health care providers, including nurses and midwives, may not be specifically trained to satisfy society's health requirements, particularly in middle and low-income countries.

In addition, the literature demonstrates a better retention of understanding and abilities among birth attendants at higher-volume organizations, implying that the more frequent use of newborn resuscitation methods avoids fallout. These variations should be taken into consideration in training design, including more extensive instruction and more frequent exercise and refresher training for those providers from those small health centers(Vail et al., 2018).

#### **2.4 Barriers: Access to Neonatal Resuscitation in Simulation-Based Learning**

A study done by Reisman et al(2016) shown that the slow decline of skills and knowledge after neonatal resuscitation training is well documented in developed countries. There is limited data on educational modalities and retention for NNR from low to middle-income countries and no information found in the literature research involving Rwanda. In low to middle-income countries, the baseline skill level in NNR is not well studied, but also training is limited. The ability to train nurses will be enhanced with SBL and allow comprehension and retention of these essential skills(Reisman, Arlington, Jensen, & Louis, 2016).

A study done in India by Morgan et al showed that the Lack of qualified well-trained mentors or training specialist coupled with limited evidence-based practice adoption in the workplace in

healthcare settings all poses significant barriers to care provision and mentorship. (Morgan et al., 2018) Supporting supplier NNR skills and exclusive requirements based execution after starting preparing presents one of kind difficulties when contrasted with the arrangement of routine consideration intercessions in obstetrics (Lawn et al., 2013).

Barriers to educational support for NNR includes governmental and policy restrictions. Rwanda has strong policies to target neonatal and infant mortality. The decrease in childhood mortality in Rwanda is attributed to the increased access to health care. Research by Gupta et al (2018) indicated a significant proportion of neonatal and childhood mortality at home. Neonatal death and unattended giving birth at home is important risk factor alongside with avoidable communicable diseases. Household characteristics, of low socioeconomic status and well-known lack of care-seeking behaviors, remain a risk factor for neonatal death in Rwanda. Mothers arrive late in, which also aligns with birth issues, thus supporting NNR needs in rural areas. The literature discusses issues such as national policy barriers, leadership incongruently, and lack of accountability mechanism within the care of high acuity conditions is lacking(Gupta et al., 2018).

Research by Morgan et al (2018) noted that a lack of physical facilities, Health information systems in Low and Middle Income Countries, lacks standardization of healthcare quality and lack of quality improvement programs to assess Neonatal Resuscitation services. Provider competencies seem to emphasize knowledge, yet theory to skills performance and maintenance of skills after training needs support through SBL. Essential commodities to align with healthcare delivery include a lack of functional equipment or limited supplies. Organization of care processes includes lack of central communication, weakens the healthcare processes, and then healthcare providers continue with a concept of “practice as usual.”(Morgan et al., 2018).

A research by Alghareeb and Cooper (2016) in the United States of America showed that the perception of undergraduate nursing learners about obstacles to access SBL lacks time to familiarize themselves with technology, fear of technology, absence of human resources, absence of qualified employees, space and equipment deficiencies, absence of economic assistance, inadequate simulation manikins, extra workload, Manikin maintenance, Not relevant to the course of study(Al-ghareeb& Cooper, 2016).

A qualitative study undertaken by Zhang in China, the learners noted that the gap in cooperation between learners and teachers was highlighted as a major obstacle to SBL. More than half felt that younger mentors were commonly perceived as lacking experience by students and were therefore resistant to learning from them. In particular, 80% of respondents had no previous teaching experience and 50% had recently graduated from nursing school. The mentor requires assisting students function in a social learning community, putting pressure on preparing, providing feedback, and organizing simulation sessions (Zhang, 2017). Saeidi and Gholami have shown that managers at all levels of the health scheme often lack the abilities needed to evaluate the neonate. Monitoring quality improvement and strengthening of the health system is a critical area of necessary assistance, increasing efforts to enhance newborn results (Saeidi & Gholami, 2017a).

Walker et al noted that poor care process organization often presents major but simple obstacles to providing efficient neonatal care services. For instance, it is necessary to lack an equipped resuscitation area and skilled, skilled employees available in instant healthcare around the clock. If available, this care would discourage both child and mother from receiving Emergency care to save their lives (Walker et al., 2014).

Morgan et al showed that resuscitation commodities in recent years, Birth caregivers train to use bad quality and low-cost resuscitation equipment donated or inexpensive. Infant mannequins, which are cheap and inferior quality lack realism. Contrary to previous attempts in which costly mannequins were often only accessible as part of advanced training, these low budget products stand. The provision of comparatively low-cost "mannequin and resuscitation equipment training kits" for trainees to return to their health centres has demonstrated to be an important innovation in equipping installations with resuscitation equipment. Infant mannequins required as part of casual or organized simulations for the periodic exercise of abilities. Factor affecting the use of mannequins for routine exercise may be provider motivation for ongoing exercise. (Morgan et al., 2018)

In the study done by Vail et al, Several participants stated that nurses feared being blamed by doctors or authorities or being punished by patients' families if something goes wrong. As a result, nurses often refused to manage complicated patients, instead referring them to another facility (Vail et al., 2017).

Participants described how resistance to change made mentorship challenging, especially at the beginning. In some cases, mentees refused to participate in training sessions due to arrogance and disinterest(Morgan et al., 2018).

## **2.5. Critical Review and Research Gap Identification**

A Quantitative study conducted in Rwanda regarding SBL showed that adaptation and applicability of SBL were implemented, but we still need to work towards improvement (Homaifar et al. (2013) conducted a research action conducted in relationship with the University of Rwanda, University Teaching Hospital-Kigali, and Duke Global Health University, Durham, United States of America. Study of Rwandan medical students using simulation. The course entitled Advanced Life Support Obstetrics (ALSO) Participants were registered to do practical skills examination. The exam evaluated critical situations especially bellow speciality:assessment of a woman in labor, assisted normal delivery, manual vacuum extraction ,diagnose and perform shoulder dystotia,and management of third stage of labor according standardized checklist about normal and abnormal obstetrics. Marks were distributed for every important tasks and every learner a full score of one hundred was calculated. Participants knowledge marks has been enhanced by 38.0% generally. Post teaching written testing showed 87.7 % retention of material and 49.2% of participant retained high level practical skills sets (Homaifar et al., 2013).

SBL in medical education can provided own stream outcomes. Such results derive from integrated education and health services research program that are ,continued and cumulative. The new regulation of implementation discipline assure promise to make clear why medical learning innovations are adopted and how to hurry innovation dissemination(Schaik et al., 2011). A quantitative study done in India was demonstrated that SBL is an objective tool for assessing clinical skills. Chongloi et al. have focused on the need to integrate SBL into the curriculum in combination with other evaluation methods(Chongloi et al., 2017). Their study also showed that OSCEs could be used in undergraduate nursing curricula to assess safe practice in terms of performance of psychomotor skills, as well as the declarative and schematic knowledge associated with their application. As a nurse educator, we are going to use our voice in advocating for SBL utilization in undergraduate nursing/midwifery students who contribute to

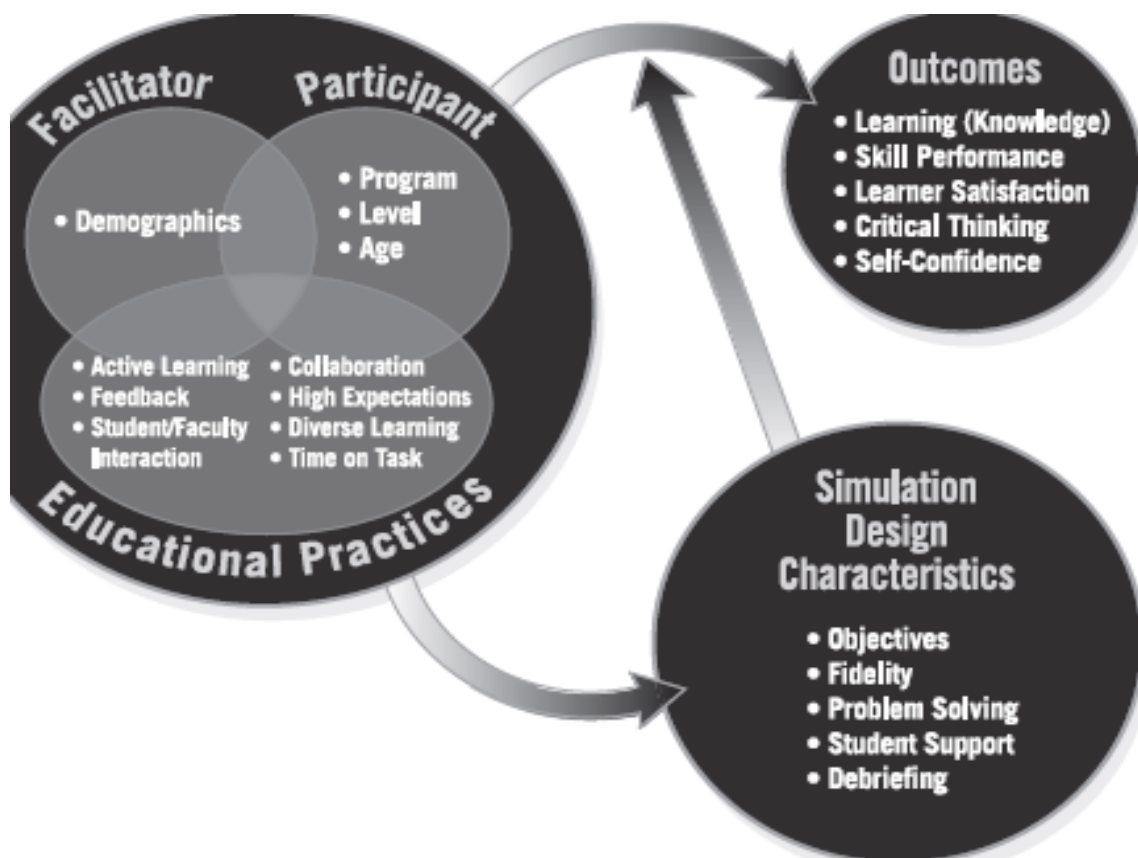
achieving high-quality education and producing effective, efficient and qualified nurses and midwives capable of responding to the health requirements of the communities they serve(Valizadeh, 2013).

However, the most frequently reported obstetric emergency training. Non-technical skills training is not recorded in undergraduate in midwifery literature but is recorded in postgraduate literature.(A & Applied, 2015).

## 2.6. Conceptual Framework

This conceptual framework was based on Midwifery clinical skills/ Neonatal resuscitation practice, and SBL: frequency ,Performance ,Satisfaction.

**Figure 1. Jeffries simulation model**



The model/Jeffries created a framework for developing variables in simulation based learning and providing an structured guide (Ravert, Cne, Faan, Mcafooes, & Cne, 2014).

## **2.7. Conclusion**

This section reveal the use of SBL its benefit, its limitations and measures to solve clinical problems in NNR as midwifery students when graduating and joining the workforce, they are anticipated to be able to participate in skilled and secure practices. However the little is said about midwifery students in the literature review. The majority of the research was done in medical teaching and learning. The input of this research is to tackle on this gap partly. This research will look at the benefits and barriers of midwifery students on the use of SBL regarding NNR.

## **CHAPTER 3: METHODOLOGY**

### **3.1. Introduction**

This research study used a quantitative descriptive design to explore the benefits and barriers of SBL in enhancing the newborn resuscitation among level 3 Midwifery Nursing students attending the University of Rwanda SONM.

### **3.2. Study Design and Approach**

This research was carried out by mean of cross-sectional study with a qualitative research. Data in survey research is collected through questionnaire, dependant variables and independant variables are considered.

### **3.3. Study setting**

The study was conducted in the University of Rwanda, College of Medicine and Health Sciences, School of Nursing and Midwifery, Huye campus in south province of Rwanda . The campus is located in 126 km south of Kigali ,the capital of Rwanda.

### **3.4. Population**

The population in this study comprised of all full-time level 3 midwifery students who have already been trained by midwifery faculty on neonatal resuscitation, advanced diploma program who registered in the first semester, 2018 at University of Rwanda, College of Medicine and Health Sciences, School of Nursing and Midwifery.

### **3.5. Sample and sampling procedure**

Due to the quite small number of target population, the principal investigator adopted the census approach to choose the participants. Its means that all midwifery students level three who accepted to participate in this research were concerned.

### **3.6. Validity and reliability of research Instrument**

A structured questionnaire was used to collect data for the study. The questionnaire comprised two main parts designed to capture data about participants' demographic features and their benefits and barriers in the use of SBL regarding resuscitation of a newborn.



Benefits of coming in SBL to practice practical skills in NNR, management of the baby require NNR, the SBL location, self directed learning, connecting theory to performance and barriers. A 5 points Likert scale was used to rate the views (strongly Agree, Agree, Neutral, Disagree, Strongly disagree) . This section contained 46 Items in all. Some options in this survey have been adapted following the framework of the current study. The tool adapted in this research was established to be trustworthy it was used by Uwimana,2009 in Rwandan context. The researcher however, did piloted that instrument as it was used in Rwandan context. Cronbach' Alpha that measures the internal consistency (Reliability) is 0.895 which gives enough confidence that the data were collected from a reliable sample.

### **3.7. Data collection procedure**

First of all I got an ethical clearance from the participating organization ,the questionnaire ,along with a consent form to introduce the research aim and participant's rights were personally administered to the participant by a principal investigator. Once a participant read the consent and agreed to participate in the research study ,he /she directed to go ahead and complete the attached questionnaire ,within 30-50 minutes in the presence and under supervision of principal investigator. The participants were requested to full and fall the questionnaires in a reserved container on the same day.

#### **3.7.1. Inclusion criteria**

Sampling inclusion criteria for participants was level three Midwifery students enrolled the UR SONM. All participants signed an informed consent form (see appendix ), be aged of 21 or over, and able to read and write English. They should be able to complete the tool.

#### **3.7.2 Exclusion criteria**

The study exclusion criteria was non-level three midwifery students, those who couldnot give informed consent, students less than age 21, and those students not able to read or write English.

### **3.8. Data analysis**

The data entered by means of the Statistical Package for the Social Sciences (SPSS) Version 22 . It has been used to analyze data from the study .Descriptive statistics like frequencies, percentages ,means as well as medians were used to summarize the background characteristics of participants. Midwifery students benefits with barriers in the use of SBL in NNR was computed from 3 main objects, that is ,perceived benefits of simulation in a controlled and safe environment , Skills acquisition following SBL and barriers to access the NNR SBL at UR/ SoNM. A value of strongly agree(SA) ,agree(A),neutral(N),disagree(D),strongly disagree(SD) was allocated for every statement. These value was putted together where SA&A=yes and N,D&SD=no . It targets the elements that provided relevant to Rwandan midwifery students benefits and barriers in the use of simulation based learning regarding newborn resuscitation.

### **3.9. Ethical consideration**

We sought approval for the study from the University of Rwanda .College of Medicine AND Health Sciences /Institutional Review Board (IRB). Principal investigator also obtained written permission from the CMHS Principal to conduct the survey. Participation in the study was absolutely voluntary and participants were made aware of their right to refuse to participate in the study .For those who agreed to participate were made to sign a written informed consent ,in order to maintain anonymity of participants. The questionnaire once completed were immediately added to a big box of other competed questionnaires in a random fashion.

### **3.10. Data management**

After completing admission of each individual questionnaire, it was marked as entered to avoid double entry. To protect the participants' confidentiality, a random three digit study identification (SID) numbers, rather than names or other personal identifiers was used to identify participants 'study materials. The consent forms and the list that linked the names of the participant will be kept in the locked cupboard. When all questionnaires were accomplished, they were bagged in the envelop and labeled completed and locked away in the office for 10 years and thendamaged.

### **3.11. Data Dissemination**

Data will be distributed to the College of Medicine and Health Sciences ,simulation staff ,director, and Rwanda medical journal .

### **3.12. Challenges and Limitations of the study addressed**

The initial research submitted to IRB was focused on the identification of the effects of SBL in increasing competency in NNR knowledge and practical skills. The research methodology was to conduct a pre and post-simulation evaluation following NNR training modules. Due to time limitations and school schedule, students were not in simulation at the time the PI was to collect data. Therefore this researcher decided to change methodology to a cross sectional survey using a convenience sample utilizing the same validated tool. Research objectives were changed to support the investigation of the benefits and barriers of the 3rd year midwifery students in the use of SBL in NNR.

### **3.13. Conclusion**

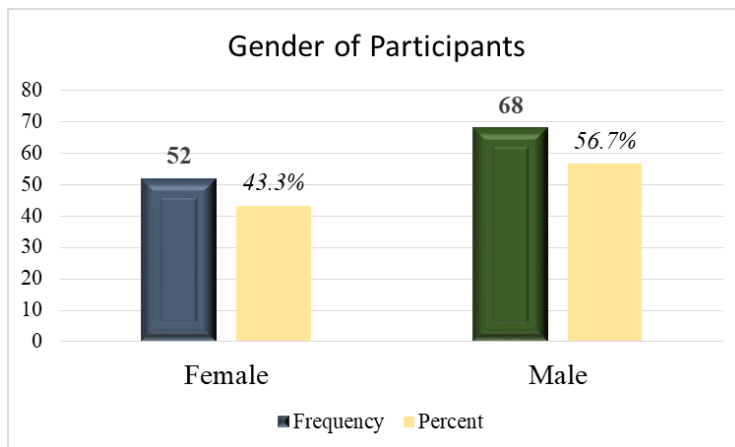
Learners taught in simulation based learning regarding neonatal resuscitation contribute much dynamically in the clinical areas. Simulation training is beneficial to learn neonatal resuscitation skills in a minimal risk environment ,students demonstrate competency gained, confidence and also there is an increase in critical thinking and clinical judgment. Adopting high fidelity simulation may increase bedside competency and may decrease the participants insecurity around skill acquisition. The need for scheduling ease and increased adaptation of SBL in curriculum will offer more opportunities for all midwifery students to be taught in these essential life saving skills regarding newborn.

## CHAPTER 4. DATA ANALYSIS AND INTERPRETATION OF THE RESULTS

### 4.1. Introduction

This chapter deals with the analysis of data collected, presentation, interpretation of data collected from completed questionnaires. Data is presented and analyzed using tables, charts, percentages and frequencies by MS Excel and SPSS software. The data presented was collected from the third-year Midwifery Nursing students who have already been trained by the Midwifery faculty on the neonatal resuscitation procedure in level three. These study participants are advanced diploma students enrolled at the University of Rwanda, College of Medicine and Health Sciences, School of Nursing and Midwifery. In total of 120 questionnaires were distributed to participants after their voluntary consent, 120 were returned to data collectors, giving a return rate of 100%.

### 4.2. Demographic Characteristics of Respondents.



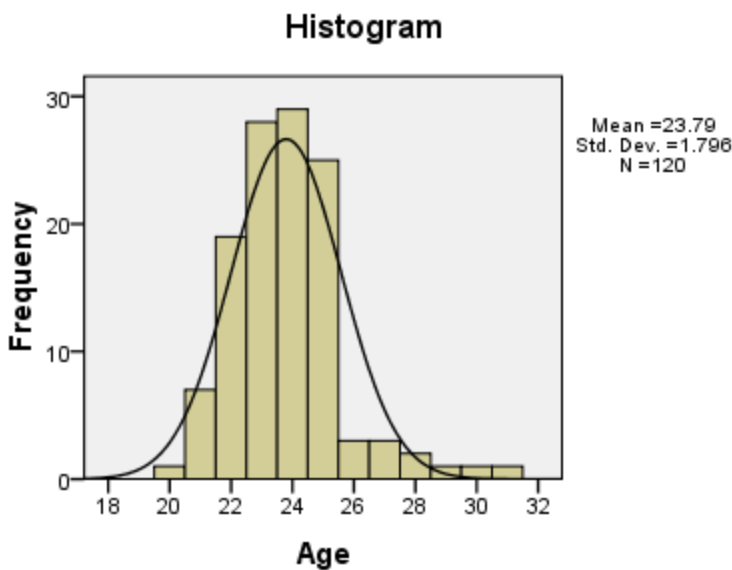
**Figure 2. Gender of Participants.**

The figure above indicates 56.7% (N=68) participants were male. The female participant ratio was 43.3% (N=52).

**Table 1. Marital status**

Marital Status	Frequency	Percent(%)
Single	111	92.5
Married	9	7.5
<b>Total</b>	<b>120</b>	<b>100</b>

The table above shows that 92.5 % (N=111) of 120 participants were unmarried; 7.5% (N=9) of our participants are married.



**Figure 3. Age of students**

Figure3. Describes the age distribution of the study participants. The largest age group is 70.0% (N= 84) between 20-24 years of age, whereas 28.3% (N=34) is between 25-29 years of age, and 30 years and above is 1.7 % (N=2). The histogram explains the variability of ages in the class, since the students are in their twenties. The distribution of ages in the class is left-skewed to show the high frequency of students below thirty years old.

### **4.3. Midwifery Students Benefits and Barriers In The Use Of Simulation Based Learning Regarding Neonatal Resuscitation**

#### **4.3.1. Students midwives' perceptions on the benefits in the use of SBL in performing NNR**

The findings in this survey revealed that 87.5% respondents with yes that there is the benefits of attending SBL are to practice neonatal resuscitation practical skills. Respondents that had no opinion were 12.5%. Students were asked if practicing neonatal resuscitation in the Simulation-Based Learning allowed them to refer to teaching and learning to instruction as they go along. Results showed that 91.7% respondents with yes ,8.3% respondents with no opinion .

Respondents were asked if they book time in the Neonatal Resuscitation Simulation-Based Learning to develop their practice. Out of 120 participants in the study, 80.8% . Those with no opinion were 19.2% with booking time in the Neonatal Resuscitation Simulation-Based Learning to develop their practice .Among the benefits of SBL practice, students can make mistakes, and there is no risk, and no one will get hurt, 69.2% strongly agreed / agreed to this statement, 30.8% professed no to the statement that SBL enables students.About 90.0% strongly agreed /agreed that there a substantial benefit of coming to the Neonatal Resuscitation Simulation-Based Learning session to get some peace and quiet.10.0% professed no.The results revealed that Respondents in 84.2% with yes that they come here for tutors to teach them Neonatal Resuscitation's theory .Those that no opinion was 15.8%.

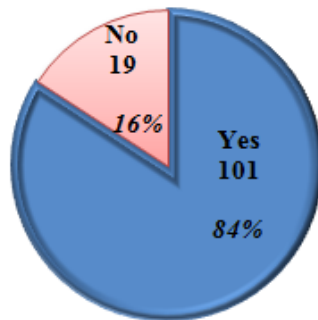
**Table 2. The benefits that students got from NNR SBL teaching methods.**

<b>Perceived Benefits Of Simulation In A Controlled And Safe Environment</b>				
<b>Items</b>	<b>No</b>		<b>Yes</b>	
	<b>Frequency</b>	<b>Percent</b>	<b>Frequency</b>	<b>Percent</b>
Benefit of coming in Simulation Based Learning is to practice neonatal resuscitation practical skills.	15	12.5%	105	87.5%
Practicing neonatal resuscitation in the Simulation Based Learning allows student to pass on educational instruction when student go along.	10	8.3%	110	91.7%
I book time in the Neonatal Resuscitation Simulation Based Learning to improve my performance in things that have caused me problems in clinical areas.	23	19.2%	97	80.8%
It is fine to do mistakes and recognize that nobody will harm you.	37	30.8%	83	69.2%
A substantial benefit of coming Neonatal Resuscitation Simulation Based Learning is to get some peace and quiet.	12	10.0%	108	90.0%
Student appears in SBL for instructors to train them Neonatal Resuscitation .	19	15.8%	101	84.2%

**Students midwives ‘perceptions on the benefits in the use of SBL in performing NNR**

The majority of participants 101/120(84.0%) agreed that there is the benefits that students got from NNR SBL teaching methods in a controlled and safe environment Sixteen students 16% had no view (Fig.4/Table2).

### Perceived Benefits Of Simulation In A Controlled And Safe Environment



**Figure 4. Students midwives' perceptions on the benefits in the use of SBL in performing NNR.**

#### 4.3.2. Perceived Student's Skill Acquisition Following SBL

The purpose of this section is to explore the student's perceptions following SBL in NNR in the areas of skills improvement, accessible income, and information of how to get assistance in NNR simulation.

Respondents were asked if Simulation-Based learning helped them to master long, or complicated procedures or assessments about Neonatal Resuscitation, The results showed that 73.3% of participants respondent yes and 26.7% respondent no. About half of respondents 81.7% yes ,18.3%no. Concerning if in experimental setting students often apply Neonatal Resuscitation skills learned within Simulation-Based Learning, 76.7% yes and 23.3%no. Things I do in the Neonatal Resuscitation Simulation Based Learning assist me to increase NNR skills. 90.0%yes and 10.0% no. About the use of timetabled sessions in the Neonatal Resuscitation Simulation Based Learning to enhance performance, the findings revealed that 71.7%yes and 28.3% no. Practice Neonatal Resuscitation, Simulation based learning improves student practice in experiential setting. Results showed 59.2% answered yes and 40.8% no .

Practice Neonatal Resuscitation in the Simulation Based Learning is too artificial to be useful. The results showed that 88.3% Strongly agreed/ Agreed and 11.7% no. Student perform better Neonatal Resuscitation with real patients than in the Simulation Based Learning. 77.5%yes and 22.5% no. Student come in Simulation Based Learning for Neonatal



Resuscitation to revise for the OSCE. Findings revealed that 75.8% answered with yes and 24.2% no option. Participant come in Simulation Based Learning for Neonatal Resuscitation to prepare for work in clinical areas. The results showed that 80.8% answered yes and 19.2 no.

<b>Items</b>	<b>Yes</b>		<b>No</b>	
	<b>Frequency</b>	<b>Percent</b>	<b>Frequency</b>	<b>Percent</b>
In the Simulation Based learning we study extended techniques about Neonatal Resuscitation.	88	73.3%	32	26.7%
Simulation Based Learning feedback assist me in my Neonatal resuscitation practices.	98	81.7%	22	18.3%
Clinical environment offer opportunities to apply Neonatal Resuscitation practices seen in the Simulation Based Learning.	92	76.7%	28	23.3%
Things I do in the Neonatal Resuscitation Simulation Based Learning assist me to carry out NNR procedures	108	90.0%	12	10.0%
I use timetabled sessions in the Neonatal Resuscitation Simulation Based Learning to promote my knowledge in practical settings	86	71.7%	34	28.3%
It is fine to do error and make out that nobody will be harmed	71	59.2%	49	40.8%
Practice Neonatal Resuscitation in the Simulation enhance practices	106	88.3%	14	11.7%
Practice Neonatal Resuscitation in the Simulation Based Learning is too artificial to be useful.	81	67.5%	39	32.5%
Carrying out Neonatal Resuscitation is better with real baby than in the Simulation Based Learning	93	77.5%	27	22.5%
I come in Simulation Based Learning for Neonatal Resuscitation to revise for the OSCE	91	75.8%	29	24.2%
I come in Simulation Based Learning for Neonatal Resuscitation to prepare for work in clinical areas	97	80.8%	23	19.2%

#### **4.3.2.1. Accessibility on Support Staff For Educational Opportunities**

The results revealed that student may be assisted if he /she is need help in Neonatal Resuscitation Simulation based learning,80.0% answered yes and 20.0% no.

The Facilitator scientifically expand the range in Neonatal Resuscitation hand on. Findings showed that72.5% was yes and 27.5 no .

In the Neonatal Resuscitation Simulation Based Learning, student discover feedback from their colleagues concerning the area to recover, Results showed that 68.3% of students answered yes and 31.7% no.Evaluation of their clinical practice in Neonatal Resuscitation assist them to develop practices. Findings showed that 93/120(77.5%) respondent yes while 22.5% respondent no .I come for Neonatal Resuscitation in Simulation Based Learning because the sessions are timetabled here. 69.2% respondent yes 30.8% their answer is no. Results in this study pointed out that 70.0% of student come in Simulation based Learning for tutors to teach them neonatal resuscitation skills,30.0% their answer is no. The finding this study showed that 80.8% of student come in Simulation Based Learning for Neonatal Resuscitation .

<b>Table 4. Accessibility On Support Staff For Educational Opportunities</b>				
<b>Items</b>	<b>Yes</b>		<b>No</b>	
	<b>Frequency</b>	<b>Percent</b>	<b>Frequency</b>	<b>Percent</b>
May got assistance if you need it in Neonatal Resuscitation Simulation based learning.	96	80.0%	24	20.0%
The Facilitator scientifically expand the range in Neonatal Resuscitation hand on.	87	72.5%	33	27.5%
I book time in the Neonatal Resuscitation Simulation Based Learning to enhance practices	82	68.3%	38	31.7%
In the Neonatal Resuscitation Simulation Based Learning, student discover feedback from their colleagues concerning the area to recover.	106	88.3%	14	11.7%
Evaluation of their clinical practice in Neonatal Resuscitation assist them to develop practices.	93	77.5%	27	22.5%
I come for Neonatal Resuscitation in Simulation Based Learning because the sessions are timetabled here.	83	69.2%	37	30.8%
I come in Simulation based Learning for tutors to teach me neonatal resuscitation skills.	84	70.0%	36	30.0%
I come in Simulation Based Learning for Neonatal Resuscitation to practice	97	80.8%	23	19.2%

#### **4.3.2.2. Connection between Simulation And Real Time Practice**

About connection between simulation and real time for practice the participants agreed that Simulation Based Learning regarding Neonatal Resuscitation. Fifty nine participant agreed /Strongly Agree (49.2%).Sixty one neutral , disagreed ,strongly disagreed(50.8%).

Things they do in the Neonatal Resuscitation Simulation Based Learning help them to behave ethically in clinical areas. Eight six participant Strongly Agreed / agreed(71.7%) .Thirty four participants were neutral, disagreed, and strongly disagreed. Neonatal Resuscitation they do in the Simulation Based Learning help them to make sense of clinical experience.

One hundred five participants Strongly Agreed /agreed (87.8%) .Fifteen participants professed neutral ,disagreed and strongly disagreed .Practice Neonatal Resuscitation in the Simulation Based Learning is too artificial to be useful. Eight one participants Strongly Agreed /agreed(67.5%).Thirty nine participants have not option, disagreed and strongly disagreed).Practicing Neonatal Resuscitation in the Simulation enhance awereness.Ninety one participants Strongly Agreed /agreed(75.8%) .Twenty nine participants, neutral ,disagree and strongly disagreed. Neonatal resuscitation enhancement in the Simulation based Learning a real patient is also necessary. Ninety six participants Strongly Agreed/ agreed (80.0% ),Twenty four participants were neutral , disagreed and strongly disagreed .Usage of true apparatus in a Neonatal Resuscitation simulation areas is supportive. One hundred three participants Strongly Agreed /agreed (85.8% ) ,Twenty seven participants neutral, disagreed and strongly disagreed. The mannequins are practical facilitate their Neonatal resuscitation practices.Eigth six participants Strongly Agreed/ agreed(71.7%) ,Thirty four participants neutral ,disagreed, strongly disagreed (Table 5).

<b>Table 5.Connection Between Simulation And Real Time Practice</b>				
<b>Items</b>	<b>Yes</b>		<b>No</b>	
	<b>Frequency</b>	<b>Percent</b>	<b>Frequency</b>	<b>Percent</b>
Simulation Based Learning regarding Neonatal Resuscitation did not connect with the things taught.	59	49.2%	61	50.8%
Neonatal Resuscitation Simulation Based Learning use time table to enhance practices	86	71.7%	34	28.3%
Things I do in the Neonatal Resuscitation Simulation Based Learning assist me to conduct myself morally in clinical settings.	105	87.5%	15	12.5%
Neonatal Resuscitation performed in the Simulation Based Learning assist me in practical setting.	105	87.5%	15	12.5%
Practice Neonatal Resuscitation in the Simulation Based Learning is too artificial to be useful.	81	67.5%	39	32.5%
Practicing Neonatal Resuscitation in the Simulation improve the awareness	91	75.8%	29	24.2%
Neonatal resuscitation skill in the Simulation based Learning exercises with real patient	96	80.0%	24	20.0%
Equipment usage in a Neonatal Resuscitation simulation based learning is useful.	103	85.8%	17	14.2%
Manikins' are realistic enough to help development practices in neonatal resuscitation skills	86	71.7%	34	28.3%

#### 4.3.2.3. Theory to Practice/ Self Evaluation

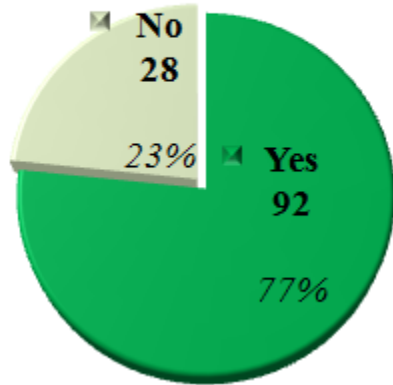
Things they do in the Neonatal Resuscitation Simulation Based Learning require them apply theoretical knowledge taught. One hundred five participants Strongly Agreed / agreed ( 87.5%) ,Twenty five participants ,neutral ,disagreed and strongly disagreed.

Things they do in the Neonatal Resuscitation Simulation Based Learning help to link theory and practice. In the Neonatal Resuscitation Simulation Based Learning, participants keep in mind procedures learnt in clinical settings. One hundred two participants strongly Agreed/ agreed (85.0%), Eighteen participants, neutral, disagreed, and strongly disagreed. In the Neonatal Resuscitation Simulation Based Learning, they discover that helpful in their learning .One hundred two participants Strongly Agreed/ agreed(85.0%),Eighteen participants ,neutral, disagreed, and strongly disagreed. The mannequins are sufficiently true that its helpful in Neonatal resuscitation performance.Eigthy six participants Strongly Agreed /agreed 71.7%),Thirty four participants neutral ,disagreed, and strongly disagreed(Table 6).

<b>Items</b>	<b>Yes</b>		<b>No</b>	
	<b>Frequency</b>	<b>Percent</b>	<b>Frequency</b>	<b>Percent</b>
Things I do in the Neonatal Resuscitation Simulation Based Learning necessitate the use of theory learnt.	105	87.5%	15	12.5%
Things I do in the Neonatal Resuscitation Simulation Based Learning help to link theory and practice.	105	87.5%	15	12.5%
In the Neonatal Resuscitation Simulation Based Learning, I keep in mind procedures happened in clinical setting.	105	87.5%	15	12.5%
Neonatal Resuscitation done in Simulation Based Learning assist me understand the theory learnt in class.	102	85.0%	18	15.0%
In the Neonatal Resuscitation Simulation Based Learning, assist me in evaluating my performance.	105	87.5%	15	12.5%
The mannequins are sufficiently true that its helpful in Neonatal resuscitation performance.	86	71.7%	34	28.3%

Just the majority 92/120(77.0%) reported that following simulation based learning in neonatal resuscitation there is competency gained and complicated procedure mastery(Fig.5/Table3).

**Competency Gained And Complicated Procedure Mastery**

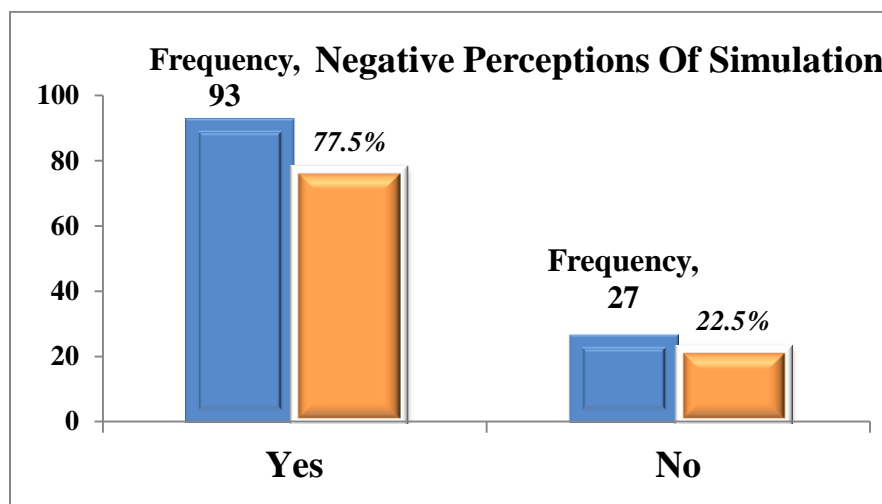


**Figure 5. The students ‘perceptions on skills acquisition following Simulation Based Learning in Neonatal Resuscitation.**

#### **4.3.3. The Barriers to Access the NNR SBL At UR/ SONM.**

Neonatal Resuscitation done in Simulation Based Learning aid me to understand the theory learnt in class, The results showed that 85.0% of participant Strongly Agree/ agreed with this statement,15.0% of students did not helped to apply theory learnt in class. A substantial benefit of coming in SBL was to practice without patients, findings showed that70.0% of students respondent yes with this statement,30.0% did not felt a substantial benefit of coming in SBL for NNR. Practicing Neonatal Resuscitation in the Simulation .Ninety nine participants Strongly Agreed/ agreed(82.5%).Twenty one professed no for the statement. Gaining ability to be competent about Ninety six participants said yes (80.0%).Twenty four said no(20.0%) to the statement . I perform better Neonatal Resuscitation in the Simulation Based learning ,Eighty two participants respondent yes (68.3%).Thirty eight students reported no(Table 7).

<b>Table 7. Negative Perceptions Of Simulation/Barriers</b>				
<b>Items</b>	<b>Yes</b>		<b>No</b>	
	<b>Frequency</b>	<b>Percent</b>	<b>Frequency</b>	<b>Percent</b>
Neonatal Resuscitation done in Simulation Based Learning aid me to understand the theory learnt in class.	102	85.0%	18	15.0%
A substantial benefit of coming in Simulation Based Learning for Neonatal Resuscitation is to practice without patients.	84	70.0%	36	30.0%
Practicing Neonatal Resuscitation in the Simulation Based Learning help me to be competent with real patient.	99	82.5%	21	17.5%
Being competent in NNR in simulation does not mean being competent in clinical area.	96	80.0%	24	20.0%
Performing better Neonatal Resuscitation in the Simulation Based learning than does not the same with the real patient.	82	68.3%	38	31.7%



**Figure 6. Barriers to access the NNR SBL At UR/ SONM.**

Ninety three participants (77.5%) perceived barriers to access the neonatal resuscitation at the University of Rwanda ,School of Nursing and Midwifery .Twenty seven did not perceived barriers (Fig.6.).



## **CHAPTER FIVE: DISCUSSION**

### **5.1. Introduction**

This section presents a discussion of results and interpretation of results concerning reviewed literature and study conducted in this domain. The main goal of this research is to make out perceptions of level three learners midwives advanced diploma program, on the benefits and barriers of SBL related to NNR skills enhancement at the UR/SONM at the Huye campus in Southern Rwanda by May 2019.

In this chapter, the discussion of results will be categorized according to the study's specific objectives. There are three specific objectives to focus on: to identify the perceived benefits with the NNR SBL ,To explore the student's perceptions on skills acquisition following Simulation Based Learning in Neonatal Resuscitation, and perceived barriers to access NNR SBL at University of Rwanda / School of Nursing and Midwifery. Variables are the properties that the researcher studies (Millar,2015,p.55).

The research tool was a survey evaluating the perceptions of level three students' midwives on the benefits and barriers of SBL in NNR skills enhancement conducted at the UR/SONM, Huye campus in Southern Rwanda, by May 2019.The independent variable in this research was the benefits and barriers of SBL and was manipulated. In this survey NNR enhancement(dependent variable) will vary with frequency, performance, and satisfaction following SBL.

### **5.2. The benefits and barriers of Simulated Based Learning in Neonatal Resuscitation (NNR).**

Worldwide, about a quarter of million neonatal deaths are the results of birth asphyxia. The majority of these deaths occurs in low-income countries and are preventable.

Approximately 5%–10% of neonates require some support to adapt to the extra uterine life upon delivery. It is imperative to establish regular respiratory effort with simple resuscitative measures within the neonatal assessment in the first golden minute.

If the baby is not breathing, stimulation and assisted ventilation can save a life, and the nurse uses suction, a bag valve mask, and oxygen.

NNR respiratory efforts and measures are often enough to resuscitate newborns at birth. Studies have shown that this is only possible if there is a skilled attendant by the mother's side (Patel et al., 2017). In low and middle-income countries, measures to improve resuscitative efforts through SBL, which trains the nurse in the necessary steps of NNR are expected to reduce birth asphyxia and neonatal mortality (Reisman et al., 2016).

Current researchers support the proper handling of an emergency condition as NNR is complicated to teach during the actual emergency (Musafili et al., 2017). Preparation is essential in the form of lectures but also hands-on training, and skill performance and evaluation. Nevertheless, limited retention of knowledge and skills after attending a training course in NNR likely represents a significant barrier to improving NNR (Vail et al., 2018). The present descriptive exploratory survey examines the University of Rwanda undergraduate Midwifery students' perceptions on the use of SBL regarding NNR skills enhancement and describes possible perceived barriers to access the NNR and SBL.

The findings discussed in this chapter are composed of results from the level three Midwifery students who have already been trained by the Midwifery faculty on the neonatal resuscitation procedure in their level three. These study participants are advanced diploma students enrolled at the University of Rwanda, School of Nursing, and Midwifery. In total, 120 survey questionnaires were distributed to participants after their voluntary consent. All 120 were returned to data collectors with a completion rate was 100%.

### **5.3. Demographic Characteristics**

Participants in this study are full-time students in their third-year midwifery, studies. These participants are completing an advanced diploma program UR/CMHS/ SoNM /Midwifery department. The male participants were 68 of 120 participants equivalent to 56.7%, while 52 of 120 participants equivalent to 43.3% were females.

About their marital status, 111 of 120 participants are single equivalent to 92.5%, and this explains that the research conducted with students who are still single, only 7.5% of the participants were married.

The age of participants are 70.0% between 20 to 24 years of age, whereas 28.3% are aged 25 to 29, and 1.7 % are 30 years and over. The histogram explains the variability of ages in the class since the students are in their twenties. The distribution of ages in the class is left-skewed to show a large majority of students are below thirty years old.

#### **5.4. Students midwives' perceptions on the benefits in the use of SBL in performing NNR**

The research survey examined the perceptions on the benefits with the NNR SBL teaching and learning methods. The areas examined included: the benefit of coming in SBL is to practice NNR, Practicing NNR in SBL helps student to prepare for work in clinical areas.

Concerning whether the benefit of coming to Simulation-Based Learning is to practice neonatal resuscitation practical skills, the findings in this study revealed that out of 120 participants, The majority of participants 101/120 (84.0%) agreed that there is the benefits that students got from NNR SBL teaching methods in a controlled and safe environment Sixteen students 16% had no view (Fig.4/Table2). However, in conformity with the study of Li, in the research of SBL use was found to be very helpful for nursing students in skill acquisition and to become more confident and to develop critical thinking skills during emergency situations. SBL helps the student to gain confidence in performing NNR (Li, 2016).

Participants discuss the issue of SBL as a means to help them in learning and allow them to refer to mentors and instructional manuals as they were performing the task in the controlled environment of the SBL lab.

Practicing neonatal resuscitation in the Simulation-Based Learning allows them to refer to teaching and learning to instruction as they go along, 110/120 participants strongly agreed/agreed (91.7%) and Ten participants not agreed. These positive responses support SBL as a positive environment for learning and skill mastery in a low-stress environment. The finding is consistent with the finding of (Reisman, Arlington, Jensen, & Louis, 2016).

Respondents were asked if they booked time in the Neonatal Resuscitation Simulation-Based Learning to develop their practices in the clinical areas. The ability to practice skill without risk of harm or injury to a patient was well supported in this survey.

Eighty three participants strongly agreed and agreed to this statement(69.2%), thirty seven of all participants strongly disagreed /disagreed to the statement that SBL enable students to have self efficacy. The findings however similar to the study done by Patel et al who studied the Effect of neonatal resuscitation trainings on neonatal and perinatal mortality( Patel et al., 2017).Using the Neonatal Resuscitation Simulation-Based Learning environment to get some peace and quiet with was supported by about One hundred eight (90.0%) of the respondents as a strong indicator. The rest supported the peace and quiet but it was not the driving force in the use of SBL.

The need for mentorship or face to face hands on education in that SBL was supported in this survey. At 84.2 % of the respondents having positive responses to SBL as a site for strong mentorship at the UR.Respondents strongly agreed that they attended the here for tutors to teach them Neonatal Resuscitation's theory and for tutors to teach them Neonatal Resuscitation' theory and didactic tools Similar to the study done by Applied in Afghanistan studied on learning by simulation(A & Applied, 2015).Moving theory to practice 91.7% if the respondents felt simulation based Learning help them to make sense of some of the theory they have been taught in class. However in conformity with the findings studied by Abdelalla, Howaida, & Ahmed (2016) on the effect of simulation training on nurses and Intern nursing students skill, confident and satisfaction regarding neonatal resuscitation.

In Bihar, India there is a range of similar evidenced that SBLin midwifery skills is beneficial .SBL has a big impact in clinical teaching and learning in midwifery program (Vail et al., 2017) . Where clinical practice is infrequent ,obstetric emergencies, simulation is an essential component of curricula. Simulation does enhance practice and therefore may reduce the time taken to achieve competency but there is no evidence from the literature that simulation should replace clinical practice(A & Applied, 2015).Midwives, nurses, obstetricians and teams are taught arrange of skills through simulation including communication, decision making, and management of labor and delivery(Abdelalla et al., 2016). Benefits over lecture style delivery and educational impact have been demonstrated in numerous studies for management of laborand obstetric emergencies(Page-cutrara, Lecturer, & Turk, 2017). Research evidence suggests that obstetric emergency simulations improve communication skills and confidence, with potential improvements in the safety of women and their infants (Attendants, 2014).

## **5.5. Student's skills following SBL in NNR**

This section on the student's skills following SBL in NNR has four sub-sections; one with competency gained and complicated content mastery in NNR, accessibility on support staff for educational opportunities, connection between simulation and real time practice, and theory to practice/ self-evaluation.

### **5.5.1. Competency gained and complicated procedure mastery**

The majority 92/120(77.0%) reported that following simulation based learning in neonatal resuscitation there is competency gained and complicated procedure mastery(Fig.5/Table3).

The survey findings revealed that in the Simulation Based learning mastery of long or complicated procedure was well supported at 73.3%. The use of SBL allows learners to take the long procedures and complicated interventions and practice until they have mastered this. Constant support and evaluation is key in SBL to overcome the fear related to these complicated procedures The findings however similar to study in Australia evaluated on development and evaluation of SBL exercises to prepare midwifery students for neonatal resuscitation (Carolan-olah, Kruger, Brown, Lawton, & Mazzarino, 2016b).

The researcher wanted to know if Time spent in the Simulation Based Learning results in a progressive improvement in Neonatal resuscitation skills, about a half of respondents 98/120 (81.7%)strongly agreed and agreed. 22 out of 120 respondents disagreed that things they do in the simulation based Learning help them to link the theory they learnt in class conformity with the study done in Northwest Ethiopia on knowledge and skills of neonatal resuscitation of health professionals at the University teaching hospital(Gebreegziabher, Aregawi, & Getinet, 2014).

Concerning experiential learning students use Neonatal Resuscitation skills learned and mastered in Simulation Based Learning, 92/120(76.7%)strongly agreed and agreed ,twenty eight were neutral, other participants including strongly disagreed and also disagreed. Regarding procedures Neonatal Resuscitation Simulation Based Learning helped them to develop general patient management skills 108/120 (90.0%) of the respondents agreed and 12 (10.0%) were

neutral, On other side of the remaining students strongly disagreed and slightly disagreed similar study done on Simulation-Based Clinical Skill Training to Promote Effective Clinical Learning with Simulation Evaluation Rubrics in Nursing Education(Li, 2016).

The researcher wanted to know if the students use timetabled sessions in the Neonatal Resuscitation Simulation Based Learning to enable their development in practical skills .Eighty six participants (71.7%) agreed and 34(28.3%) disagreed (Chongloi, Thomas, Ara, & Deepak, 2017).Competency gained and complicated procedure mastery also have a link with making errors and know that nobody will harmed, Practice Neonatal Resuscitation within Simulation based learning improves performance in practical areas, I come in Simulation Based Learning for Neonatal Resuscitation to revise for the Objective Structured clinical exam, and coming in Simulation Based Learning for Neonatal Resuscitation to prepare for work in clinical areas(Table 3).Similar study done by Kelly et all on OSCE best practice guidelines applicability for nursing simulations revealed that the students strongly agreed that they come in Simulation Based Learning for Neonatal Resuscitation to revise for the OSCE(Kelly et al., 2016).According to Valizadeh (2013) SBL Regarding whether learner carry out Neonatal Resuscitation with real patients than in the Simulation Based Learning.(Valizadeh, 2013).

### **5.5.2. Accessibility On Support Staff For Educational Opportunities**

According Vail et al (2018)in simulation based learning the students can get adequate help when they are struggling with something in Neonatal Resuscitation Simulation based learning(Vail et al., 2018).The Facilitator systematically extend our repertoire (number, range, Variety) in Neonatal Resuscitation practical skills. When the students book time in the Neonatal Resuscitation Simulation Based Learning to improve their performance in things that have caused them problems in clinical areas.Availability of facilitator any time in Simulation center improve their performance in neonatal resuscitation skills or emergency neonatal skills.however similar study done by Surcouf,Chauvin ,Ferry,Yang&Barkemeyer(2013) showed that In the Neonatal Resuscitation Simulation Based Learning, student discover feedback from their colleagues regarding his/her performance.Reviewing video tapes of their performance in Neonatal Resuscitation helps them also to improve and students come in Simulation based Learning for tutors to teach them neonatal resuscitation skills(Surcouf, Chauvin, Ferry, Yang, & Barkemeyer, 2013).

### **5.5.3. Connection between Simulation and Real Time Practice**

Using timetabled sessions in the Neonatal Resuscitation Simulation Based Learning improve cognitive development of a student in practical settings (Utz, 2015). Fifty nine participants did not see any connection between the different things they learnt in SBL regarding Neonatal Resuscitation they do in the Simulation Based Learning help them to make sense of clinical experience 105/120(87.5%) participants agreed on this statement, SBL allows students to behave ethically in clinical area. Even when they get good at a Neonatal resuscitation skill in the Simulation based Learning need practice with a real patient, safety before attempting a procedure on the real patient. Using real apparatus in a Neonatal Resuscitation simulation based learning is necessary. Eighty six participants 71,7% answered that The mannequins are sufficiently true carry out Neonatal resuscitation techniques (Table 5).

According to Morgan et al., (2018), Kim et al., (2013), and Musafili et al., (2017) conform that in the Neonatal Resuscitation Simulation Based Learning, students keep in mind things that happened in practices and found out what they could improve next time.

### **5.5.4. Theory to Practice/ Self Evaluation**

Findings of this study showed that One hundred five participants (87.5%) agreed that SBL help them to remember neonatal procedures learnt in clinical areas (Table 6). Similarly to the study done by Ward and Whyte (2013), shown that neonatal resuscitation practices require to use the theory taught in class. SBL help to link theory and practice (Gebreegziabher et al., 2014). Also in the Neonatal Resuscitation Simulation Based Learning, students get chance to evaluate themselves (Ward & Whyte, 2013). Practicing Neonatal Resuscitation in the Simulation Centre makes them more sensitive, empathetic when they do the same thing with a patient (Alhassan et al., 2019).

The mannequins are realistic enough to help develop their Neonatal resuscitation skills (Carson & Harder, 2016). In the Neonatal Resuscitation Simulation Based Learning, researcher want to know if they keep in mind procedures carried out during practical exercises and learn where they could improve next time, 105 out of 120 participants strongly agreed /agreed (87.5%) whereas 15 provided no reaction (Table 6).

Concerning Neonatal Resuscitation they do in the Simulation Based Learning help them link the theory they learnt in class with real practice, 102/120 (85.0%) strongly agreed and agreed as well but 18 (15.0%) were neutral, strongly disagreed and slightly disagreed that Neonatal Resuscitation they do in the Simulation Based Learning help them to make sense of some of the theory they have been taught in class. Controversy to the study done by Leader (2017) about To know if In the Neonatal Resuscitation Simulation Based Learning, students get it useful about their learning to evaluate their performance (Leader, 2017).

Research intended to know if the mannequins are realistic enough to help develop their Neonatal resuscitation skills, 86/120 strongly agreed and agreed 71.7% whereas 34 become neutral, on other side strongly disagreed and also disagreed that the mannequins are realistic enough to help develop their Neonatal resuscitation skills (Page-cutrara et al., 2017).

#### **5.6. The barriers to access the NNR SBL AT UR/ SONM**

Recent resuscitation guidelines suggest the use of simulation-based medical education as an instructional methodology to improve patient safety and health (Milder, Urlesberger, Szyld, & Roehr, 2014).

The results from this research reveal that there are many barriers linked with the negative perceptions of Simulation Based Learning for Neonatal Resuscitation. Those include substantial benefit of coming in Simulation Based Learning for Neonatal Resuscitation is to practice without patients (Roh & Issenberg, 2014). Practicing Neonatal Resuscitation in the Simulation Centre makes students more skillful when they do the same thing with a patient.

Attaining proficiency in a Neonatal Resuscitation skill in the Skills Centre does not imply that a student will be proficient in a clinical setting, perform better Neonatal Resuscitation in the Simulation Based learning than they do with real patients, (Morgan et al., 2018). Ninety three participants (77.5%) perceived the above barriers to access the neonatal resuscitation at the University of Rwanda School of Nursing and Midwifery. Twenty seven did not perceived barriers (Fig.6.).



**Conclusion**

The findings in this survey shows that the Neonatal Resuscitation Simulation Based Learning, find it really helpful in teaching and learning process by improving self-assessment and own performance, competency gained and complicated content mastery in NNR, accessibility on support staff for educational opportunities, connection between simulation and real time practice, and theory to practice/ self-evaluation.

## **CHAPTER 6.CONCLUSION AND RECOMMENDATIONS**

### **6.1. Introduction**

This section presents recommendations and conclusion. To recap this survey aimed to exploring Rwandan midwifery students' benefits and barriers in the use of simulation-based learning regarding neonatal resuscitation.

### **6.2. Conclusion**

Most of the students perceived SBL to be fair, useful, good, effective, varied, active, exciting and interesting but also taxing. The study also revealed that there is strong influence between Neonatal Resuscitation done in the Simulation Based Learning and clinical experience. The midwives' perceptions in this survey were valuable in terms of benefits and barriers in the use of SBL regarding NNR skills improve in performing NNR for Midwifery students in the areas of identifying students midwives' perceptions of the benefits in the use of SBL in performing Neonatal Resuscitation by May 2019 , exploring the students 'perceptions on skills acquisition following Simulation Based Learning in Neonatal Resuscitation and describe possible perceived barriers to access the Neonatal Resuscitation Simulation Based Learning at University of Rwanda. However, they gained confidence in handling emergency equipment, understanding the role of the student midwife/midwife in neonatal resuscitation. The findings of this study showed that level three midwifery students generally the single teaching method ,SBL regarding NNR was insufficient while doing with the real patient. Most of the participants related perceptions that supported the benefits of SBL in competency and skill acquisitions. The perception of barriers were identified as negative perceptions regarding neonatal resuscitation. This survey research supports the need for enhanced SBL yet 77% related concerns needing patient contact and skills at the bedside. Upgrading to high fidelity simulation may increase bedside competency and may decrease the participants insecurity around skill acquisition. The need for scheduling ease and increased adaptation of SBL in curriculum will provide more opportunities for all midwifery students to be trained in these essential lifesaving skills.

### **6.3. Recommendation**

#### **6.3.1 .Institutional level**

Repeated simulation exercises about NNR over a longer period of time may facilitate greater preparation for neonatal emergencies. Interprofessional education may also support confidence and team work for healthcare providers during NNR.

#### **6.3.2. Future study**

For further studies should focus on the outcomes research, can provide useful information about the benefits and barriers of simulation-based learning on neonatal outcomes.

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## **APPENDICES**

## ANNEXE 1. LETTER OF APPROVAL FOR DATA COLLECTION



**COLLEGE OF MEDICINE AND HEALTH SCIENCES**

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**OFFICE OF THE PRINCIPAL**

Kigali, March 11, 2019

Ref. N° 149/UR-CMHS/2019

**“To Whom It May Concern”**

**Re: LETTER OF APPROVAL FOR DATA COLLECTION**

This is to certify that Mrs. MUKAREMERA Marie Aimée registered with the University of Rwanda, College of Medicine and Health Sciences (CMHS), School of Nursing and Midwifery for a Master's Degree in Nursing, Education, Leadership and Management and has the registration number **215042754**. She is expecting to conduct a research and has completed her research proposal entitled **“The Effect of Simulation Based Learning in Midwifery Students Skills Regarding Neonatal Resuscitation in Rwanda”**. This research proposal was evaluated by CMHS Institutional Review Board in its meeting held on 14<sup>th</sup> January, 2019 for its scientific validity and Ethical appropriateness.

Mrs. MUKAREMERA expects to start conducting her research in March 2019 at University of Rwanda/CMHS. In this regard, we would appreciate it, if she could be facilitated by the School of Nursing and Midwifery by availing Year-three students in Midwifery department who are a target population in her research.

Yours Sincerely,

**Dr. Jeanne Kagwiza (PhD)**  
**Ag. Principal, University of Rwanda-College of Medicine and Health Sciences**



## **ANNEXE 2.RESEARCH INSTRUMENTS**

### **Informed Consent**

Dear Participant,

You have been invited to take part in a research study being conducted by Mrs.**Marie Aimée MUKAREMERA**, Master's student in the School of Nursing and Midwifery /College of Medicine and Health Sciences(CMHS),University of Rwanda. Before joining the study in question, you need to read this information form ,since it contains important information to assist you in deciding whether or not signing up to participate is in your best interests. We request that you ask many questions as you wish in order to make sure that you understand the procedure for the study. If you have a question about document that has not been sufficiently answered or explained ,do not hesitate to ask one of the research team members for more information.

This study has been approved by the Ethics Committee of CMHS/University of Rwanda.

#### **Purpose of the Study**

This research study aim is to identify the effects of Simulation Based Learning related to skills enhancement and competency among undergraduate midwifery students in performing neonatal resuscitation.

#### **The study Procedure**

As a participant, you will be asked to complete a questionnaire after your simulation experience in performing neonatal resuscitation, gender, age, marital status, status in the University.

#### **Voluntary Participation**

Your participation in this research is entirely voluntary. It is your choice whether to participate or not. Whether you choose to participate or not, all the services you receive at this school will continue and nothing will change. If you choose not to participate in this research project, you may change your mind later and stop participating even if you agreed earlier.

#### **Confidentiality**

The information that we collect from this research project will be kept confidential. Information about you that will be collected during the research will be put away and no one, but the researcher will be able to see it. Any information about you will have a number on it instead of your name.

Only the researcher will know what your number is, and we will lock that information up with a lock and key. It will not be shared with or given to anyone except a researcher who will have access to the information.

**Contact For Further Information**

If you have any questions you may ask them now or later, even after the study has started. If you wish to ask questions later, you may contact any of the following: Phone 0788443566 or on email:marieaimem@gmail.com. If you have questions about your rights as a research participant or the conduct of this study ,you may contact the Office of Research Centre of CMHS/University of Rwanda,Email:researchcenter@ur.ac.rw,phone number 0788490522 or Deputy chairperson of the CMHS Ethics Committee at 0783340040.

I have read the foregoing information, or it has been read to me. I have had the opportunity to ask questions about it and any questions. These questions that I have asked to have been answered to my satisfaction. I consent voluntarily to participate as a participant in this research.

Name of Participant\_\_\_\_\_

Signature of Participant \_\_\_\_\_

Date \_\_\_\_\_

Day/month/year

## Questionnaire

**Study Title:** THE EFFECT OF SIMULATION BASED LEARNING IN MIDWIFERY STUDENTS SKILLS REGARDING NEONATAL RESUSCITATION IN RWANDA

**Questionnaire No:**

### Part 1: Demographic Data

1. Level:
2. Marital status:
3. Age:
4. Gender: Female   
Male

### Part 2: Information On The Effect Of Simulation Based Learning In Midwifery Students Skills Regarding Neonatal Resuscitation

5. Please rank the effect of the Simulation Based Learning by ticking the responses of your Choice

1= strongly disagree, 2=disagree, 3=neutral, 4=agree, 5= strongly agree

Item	SD 1	D 2	N 3	A 4	SA 5
5.1. Benefit of coming in Simulation Based Learning is to practice neonatal resuscitation practical skills.					
5.2. Practicing neonatal resuscitation in the Simulation Based Learning allows me to refer teaching and learning to instruction as I go along.					
5.3. In the Simulation Based learning, I can practice Neonatal Resuscitation skills slowly until I become proficient enough to do them at normal speed.					
5.4. In the Simulation Based learning we learn a long or complicated procedure/assessment about Neonatal Resuscitation.					
5.5. Can get adequate help when I am struggling with something in Neonatal Resuscitation Simulation based learning.					
5.6. The Facilitator systematically extend our repertoire (number, range, Variety) in Neonatal Resuscitation practical skills.					
5.7. Time spent in the Simulation Based Learning results in a progressive improvement in my Neonatal resuscitation skills.					
5.8. I do not see any connection between the different things I have learnt in the Simulation Based Learning regarding Neonatal Resuscitation.					
5.9. I am taught theory and practice about Neonatal Resuscitation but I find it hard to integrate them					
5.10. In clinical areas I often make use of Neonatal Resuscitation skills learnt in the Simulation Based Learning.					
5.11. Things I do in the Neonatal Resuscitation Simulation Based Learning require me to use some of the theory I have been taught					
5.12. Things I do in the Neonatal Resuscitation Simulation Based Learning help me to develop general patient management skills					
5.13. Things I do in the Neonatal Resuscitation Simulation Based Learning help to link theory and practice.					
5.14. I use timetabled sessions in the Neonatal Resuscitation Simulation Based					

Learning to improve my performance in things that have caused me problems in clinical areas					
5.15.I book time in the Neonatal Resuscitation Simulation Based Learning to improve my performance in things that have caused me problems in clinical areas.					
5.16.It is good to be able to make mistakes and know that no one will get hurt					
5.17.Practice in the Neonatal Resuscitation Simulation Based Learning makes my conduct on clinical placements/rotations safer for myself and colleagues.					
5.18. Practice Neonatal Resuscitation in the Simulation Centre improves my performance in clinical areas.					
5.19. Things I do in the Neonatal Resuscitation Simulation Based Learning help me to behave ethically in clinical areas.					
5.20.In the Neonatal Resuscitation Simulation Based Learning, I remember things that happened in clinical areas and learn what I could do better next time					
5.21. Neonatal Resuscitation I do in the Simulation Based Learning help me to make sense of some of The theory I have been taught in class.					
5.22. Neonatal Resuscitation I do in the Simulation Based Learning help me to make sense of clinical experience.					
5.23. In the Neonatal Resuscitation Simulation Based Learning, I find it really helps my learning to try to self assess my own performance.					
5.24.In the Neonatal Resuscitation Simulation Based Learning, I find suggestions from my peers about how I can improve what I do, really helpful.					
5.25. Neonatal Resuscitation done in simulation Based Learning could equally well be done elsewhere.					
5.26. Neonatal Resuscitation done Simulation center would be better done in a clinical area					
5.27. Neonatal Resuscitation done in my Simulation Based Learning sessions would be better done in the clinical setting					
5.28. A substantial benefit of coming Neonatal Resuscitation Simulation Based Learning is to get some peace and quiet.					
5.29. A substantial benefit of coming in Simulation Based Learning for Neonatal Resuscitation is to practice without patients.					
5.30. Practice Neonatal Resuscitation in the Simulation Based Learning is too artificial to be useful.					
5.31. Practicing Neonatal Resuscitation in the Simulation Centre makes me more sensitive, empathetic when I do the same thing with a patient.					
5.32.Practicing Neonatal Resuscitation in the Simulation Centre makes me more skillful when I do the same thing with a patient.					
5.33. Attaining proficiency in a Neonatal Resuscitation skill in the Skills Centre does not imply that a student will be proficient in a clinical setting					
5.34.Even when I get good at a Neonatal resuscitation skill in the Simulation based Learning need practice with a real patient					
5.35.Handling real equipment in a Neonatal Resuscitation simulated setting is helpful					
5.36.The mannequins are realistic enough to help develop my Neonatal resuscitation skills					
5.37. I perform better Neonatal Resuscitation in the Simulation Based learning					

than I do with real patients					
5.38. I perform better Neonatal Resuscitation with real patients than in the Simulation Based Learning					
5.39. Reviewing video tapes of my performance in Neonatal Resuscitation helps me to improve					
5.40. When I practice a Neonatal resuscitation skills I review my performance and try it again if necessary.					
5.41. I come for Neonatal Resuscitation in Simulation Based Learning because the sessions are timetabled here.					
5.42. I come in Simulation based Learning for tutors to teach me neonatal resuscitation skills.					
5.43. I come here for tutors to teach me Neonatal Resuscitation's theory					
5.44. Unless it is for a time-tabled session, I only come to revise Neonatal Resuscitation for the OSCE					
5.45. I come in Simulation Based Learning for Neonatal Resuscitation to revise for the OSCE					
5.46. I come in Simulation Based Learning for Neonatal Resuscitation to prepare for work in clinical areas					
5.47. I come in Simulation Based Learning to improve my clinical skills in Neonatal Resuscitation.					
5.48. School of Nursing and Midwifery is a convenient location for the Simulation Based Learning for Neonatal Resuscitation.					

## ANNEXE 3. ETHICAL CLEARANCE



CMHS INSTITUTIONAL REVIEW BOARD (IRB)

Kigali, 14/01/2019  
Ref: CMHS/IRB/010/2019

**Mukaremera Marie Aimée**  
School of Nursing and Midwifery, CMHS, UR


Dear Mukaremera Marie Aimée

**RE: ETHICAL CLEARANCE**

Reference is made to your application for ethical clearance for the study entitled "*The Effect Of Simulation Based Learning In Midwifery Students Skills Regarding Neonatal Resuscitation In Rwanda*"

Having reviewed your protocol and found it satisfying the ethical requirements, your study is hereby granted ethical clearance. The ethical clearance is valid for one year starting from the date it is issued and shall be renewed on request. You will be required to submit the progress report and any major changes made in the proposal during the implementation stage. In addition, at the end, the IRB shall need to be given the final report of your study.

We wish you success in this important study

  
Professor Jean Bosco GAHUTU  
Chairperson Institutional Review Board,  
College of Medicine and Health Sciences, UR



Cc:

- Principal College of Medicine and Health Sciences, UR
- University Director of Research and Postgraduate studies, UR



## ANNEXE 4.MAP OF RWANDA

(UNIVERSITY OF RWANDA COLLEGE OF MEDECINE AND HEALTH SCIENCES /SCHOLL OF NURSING AND MIDWIFERY /HUYE CAMPUS)

