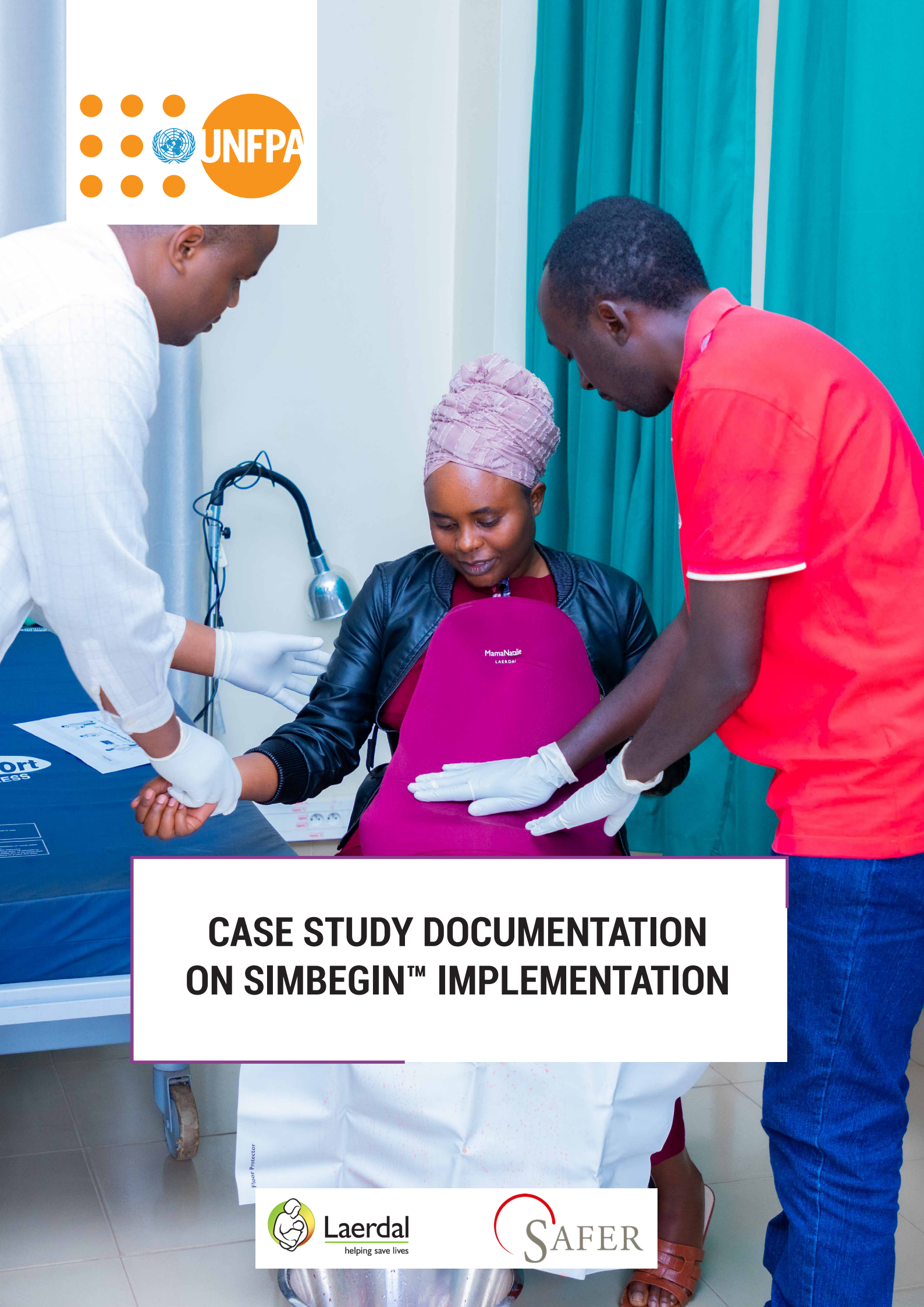

CASE STUDY DOCUMENTATION ON SIMBEGIN™ IMPLEMENTATION

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INTRODUCTION

To enhance the clinical competence of healthcare providers, various strategies are employed, among which simulation-based learning stands out as an effective approach[1,2]. This active pedagogy involves simulated patient case scenarios, facilitating the acquisition of knowledge and skills that significantly contribute to patient safety[3]. The evidence underscores the effectiveness of simulation-based learning in augmenting students' knowledge and skills[4], firmly establishing it as a cornerstone for refining healthcare practices[5].

Furthermore, the cost-effectiveness of simulation-based learning is evident when implemented in both educational and clinical sites[6], making it a particularly valuable tool for low-income settings. Research outcomes demonstrate that simulation-based team training in clinical settings leads to sustained improvements in responding to critically deteriorating in-patients, resutling in enhanced patient outcomes[7,8,9] and cost savings[10].

The integration of regular in-situ simulation training, especially for key healthcare providers such as midwives and involving essential ward staff in routine clinical care, holds promise across acute specialties like maternal healthcare[11]. Preliminary results from the Safer Births Bundle of Care project (SBBC) on SimBegin™ reported a reduction of maternal mortality by 10-20%. Simulation-based training interventions focusing on prevention and treatment of postpartum hemorrhage derived from SimBegin™ training have been the only intervention for this group of patients[12].

The success of simulation-based learning is further underscored by pre-briefing and reflection-based debriefing sessions, recognized as pivotal elements that not only boost student confidence but also contribute to meaningful learning experiences. The impact of student-centered simulation-based learning extends beyond the classroom, fostering professional development and aiding learners in their crucial transition from university students to healthcare professionals[13].

For midwifery students, this approach serves as more than just an educational tool; it becomes a transformative experience, nurturing problem-solving and communication skills within an environment mirroring real-life situations, ultimately enhancing learning in a safe and controlled setting[14,15].

METHODOLOGY

SimBegin™ is an entry level simulation facilitator program using both virtual and in-person methodology. The target audience are healthcare simulation facilitators.

Over time, it has been reported that within the healthcare simulation environment, be it education or hospital training, lack of trained facilitators and time for simulation have been some of the obstacles of simulation based training and education.

One can argue that educating skilled facilitators, who see both the value and potential of low dose high frequency of simulation, will open the doors for more simulation training. Hence, by training more facilitators, we might be able to also mitigate low training volumes. We believe that SimBegin™ furthermore can improve quality of care and patient safety, because simulation based training done right, is changing the way healthcare workers are providing patient care. Hence, we need to ensure that facilitator training and simulation is done right with quality in mind.

Furthermore, we argue there is a need for an evidence based concept that can effectively be scaled up regardless of context. This is what SimBegin™ offers. Finally, experiences so far indicate that the SimBegin™ program is just as relevant for high resource systems as for low and mid resource systems.

The SimBegin™ training program consists of three levels of training with the following learning objectives:

The overarching learning outcomes for the SimBegin program is the following:

- ✓ **SimBegin™ course (Level 1):** At the end of SimBegin™ Level 1, the participants can demonstrate to plan and run premade scenarios and follow the CORE debriefing and briefing structure.
- ✓ **SimBegin™ mentoring (Level 2):** At the end of SimBegin™ Level 2, the participants can mentor new beginners with simulation facilitation and SimBegin™ Level 1 participants. The focus at this level is around different modality and fidelity of simulation sessions skills training and mentoring.
- ✓ **Developing the SimBegin™ faculty (Level 3):** At the end of SimBegin™ Level 3 the participants can run SimBegin™ Level 1 and Level 2 courses for new participants according to this manual developed by SAFER and Laerdal. The participants can also design simulation scenarios and include non technical skills, human factors and crisis resource management (CRM) into the scenarios.

HOW IT STARTED IN RWANDA

The Ministry of Health requested UNFPA to supply the new, and existing teaching institutions in Rwanda with simulation equipment as a way to enhance the quality of education, and consequently the quality of care. UNFPA reached out to Laerdal and were able to receive BOGO donations to supply the institutes with simulation equipment. Once the equipment was distributed, the need for additional training on how to use the equipment efficiently emerged. The discussion started on the introduction of the simulation based training (SimBegin™). UNFPA and Laerdal in collaboration with the University of Rwanda and Ministry of Health embarked on a journey to train the faculty in the existing institutions on SimBegin™.

KEY ACTIVITIES

Below are the steps taken towards establishing the pool of Simbegin™ facilitators and mentors we currently have.

✓ **Development of trained faculty in SimBegin™ level one: Till date we have had three level one trainings.**

The first training consisted of 50 tutors originating from 11 healthcare institutions across Rwanda. This was done in February 2023.

The second training was in July 2023 consisting of 10 participants, who are preceptors from health facilities to build a linkage during clinical practice.

The third training of 25 more tutors from health training institutions took place in November 2023.

The facilitators were followed up over time using a facilitator log book which was developed as a platform where they had to record their simulation sessions they do in their places of work, given short details on how they used their facilitation skills in preparing, running and debrief of their simulation sessions.

✓ **Development of trained faculty in level two**

From the initial group of facilitators, comprising faculty from 11 institutions, a follow-up was conducted to evaluate their ability to deliver high-quality simulation sessions, as documented in the logbook. Ten facilitators were identified and subsequently trained in the level two course. This training was intended to equip them to mentor participants who had completed level one.

Strategically, this approach was considered effective for fostering the development of facilitators at the lower level. Being colleagues, they are likely to understand each other better, enabling them to offer mutual support and share practical tips on utilizing the methodology effectively.

✓ **Capacity building of Simbegin mentors to support Simbegin facilitators**

Enhancing the mentors' ability to provide optimal support to Level 1, facilitators was deemed crucial. A mentoring plan was developed with assistance from simulation experts at SAFER, the Laerdal head office, and the Tanzania country office.

Additionally, a comprehensive situation analysis is being conducted to assess the implementation status of each institution and to facilitate the support process. Following the mentorship plan, virtual support in skills training sessions and a debrief for the mentors were provided by Laerdal Global Health on a weekly basis in between the levels.

✓ **Implementation of skills training and simulation session among other faculty members and students**

The adequacy of learning tools plays a crucial role in enhancing learning outcomes. With this consideration, support was provided to mentors in developing simulation scenarios through a dedicated workshop.

At this workshop, mentors were guided through the steps of designing scenarios, learning from examples prepared in advance and then customizing these to align with the learning objectives of their curriculum. The aim was to illustrate how simulation can be effectively utilized to implement their curriculum and achieve the learning objectives.

✓ Enhanced simulation based learning through the BOGO initiative

The Buy One Gift One (BOGO) initiative operates on a principle where, for every unit purchased, another is gifted, thereby extending the reach and impact of these educational tools to lower income contexts. Throughthe BOGO program from Laerdal Global Health, teaching mannequin units were distributed to all training institutions to enhance hands-on practice among learners. The distribution was aimed at ensuring that the facilitators had access to sufficient and effective learning tools, which are crucial for facilitating the acquisition and retention of skills among learners. By incorporating these models into their teaching, facilitators could offer more interactive and practical learning experiences, which are vital for reinforcing theoretical knowledge and developing practical competencies in their respective fields.

✓ Introduction of SimCapture for Skills Platform at University of Rwanda

Adapting to the rapid pace of technological innovations, Laerdal is actively utilizing a digital assessment and evaluation solution that embraces a competency-based approach along with student-driven learning. This platform is currently being implemented in the University of Rwanda with the support of UNFPA. This platform enables students to learn from their peers while continuously monitoring their progress, offering robust data reporting for verifying competencies. Tutors can review this data at their convenience from any location, providing timely feedback on student performance. This dynamic and interactive process ensures that students receive ongoing support and guidance as they develop their skills.

IMPACT

Since February 2023, training has been provided to 75 faculty members and mentors from 11 distinct institutes, enabling them to reach over 2000 nursing and midwifery students every month through this educational approach. Should these 75 trained instructors conduct one simulation case scenario weekly, it would result in a total of 3900 simulation scenarios annually, benefiting 23500 students, assuming each scenario involves 6 students.

CHALLENGES

- ✓ **Internet:** The internet connectivity was very problematic and in one form or another made the training done online very difficult. It also took a long time to do the training (online) differently than planned which was quite tiresome from both ends.
- ✓ **Language:** The participants are national citizens of Rwanda, which has English as an official language, yet a few of the participants are more fluent in French and Kinyarwanda, making the understanding of some concepts challenging as the language used in the course was English.
- ✓ **Commitment challenges:** At first, some participants had challenges during the online training and face to face workshops. However, as the training has been held frequently, and the information on the training has expanded through the participants, the commitment has changed dramatically, and at the last training all 25 participants showed up for the training.
- ✓ **Continued mentorship:** To ensure effective and on-going mentorship for tutors from the 11 institutions virtually had its challenges. However, including the mentors leading this on the ground has been really helpful.

WAY FORWARD

- ✓ **Train mentors to level 3- Becoming SimBegin™ faculty:** Through continued and structured mentorship, a select group of mentors can be trained as 'SimBegin Faculty' through attaining Level 3. These individuals will then be equipped to own, coordinate and develop a sustainable plan for implementing SimBegin training across the country. The faculty will spearhead the mentorship framework, thereby enhancing the country's ownership and engagement in the process.
- ✓ **Continuous Mentorship and Expansion:** commitment is maintained to continue ongoing mentorship, ensuring participants remain equipped to elevate their simulation based training. Recognizing the current imbalance between the number of mentors and facilitators—currently only 10 mentors for a significantly larger group of facilitators—the aim is to increase the pool of mentors.

- ✓ **Continue supporting scenario development:** The mentors were introduced to the steps of scenario design steps. As they are using the knowledge gained to develop more scenarios based on their curriculum, the Simulation experts from SAFER and Laerdal Global Health plan to provide on-going technical assistance as they embark this journey and guide them as they develop this pool of scenarios.

- ✓ **Joint program to include more partners:** The work achieved so far demonstrates a strong collaboration between UNFPA & Laerdal and together we plan on creating a program where we can lobby other key partners to join and cascade simulation training in the country as well as establish a strong and sustainable systems for the work achieved so far.

THE BENEFITS OF SIMBEGIN™

1. Entry level – focuses on a broader target audience than more advanced facilitator courses, and not digging into complex details that the rest of existing courses are.

2. Mostly online – only 1 full day on-site.

3. SimBegin is not a course, but a program consisting of 3 levels including a sustainable system for institutionalization within an organization where facilitators, mentors and SimBegin faculty are key components to faculty development and quality improvement.
4. Sustainability: Level 3 make organizations able to educate / train their own faculty when needed

5. Well tested to work in a variety of areas, hence SimBegin™ seem to be relevant for a really broad target audience in different cultures
6. Peer-to-peer training: At the University of Stavanger, SimBegin™ Level 1 has been embedded into the Midwifery masters program supporting the students to act as facilitators for peers. This is a solution to the student/teacher ratio barrier utilizing the potential of simulation methodology in healthcare education. Research on this is under way.

7. Evaluation: The DASH assessment tool is embedded (as of Feb 2024) into the program. The DASH tool is a Harvard developed and validated tool to assess debriefing in healthcare simulation: https://harvardmedsim.org/debriefing-assessment-for-simulation-in-healthcare-dash/.

8. INACSL standards alignment: The SimBegin™ program is aligned with the The International Nursing Association for Clinical Simulation and Learning (INACSL) Healthcare Simulation Standards of Best Practice (as of May 2024) https://www.inacsl.org/healthcare-simulation-standards

9. Accreditation - is in progress through a recognized accreditation process.

10. Research is a part of the further development of the program.

11. The program undergoes revision every second year ensuring that it is up-to-date according to the evidence, implementing results of the ongoing research.

VOICES FROM FACULTY AND STUDENTS

We thank the government and UNFPA for equipping us with tools that will advance our professional skills. This equipment will enable quality education through improved practical application of theoretical learning in simulation labs.

Ishimwe Kayumba, S5 student at GSO Butare

I am proud to be among the trainees of SimBegin, I acknowledge the New skills gained during the training. I am confident in using the CORE Model during the simulation. SimBegin workshop, helped me to teach my students at an advanced level in reflection, moreover, I learned how to make low fidelity to high fidelity and also the scenario preparation. I recommend using SimBegin in every simulation session and to train more persons.

KARERA Eric, Ruli Higher Institute of Health Science.

This methodology has impacted my facilitation and has brought more positive impact not only on my side but also to my colleagues. As mentors, we have helped them learn how to use this methodology. Before learning this methodology we used to take the student in a sim lab and do the procedures but sometimes the student couldn't understand in which situations they might apply the skills; but using some scenarios helped them to understand the realistic way of doing procedures. I also learnt fidelity because it helps the learner to link the practice with reality and understand how she/he can intervene the same cases in clinical practice

GASIGWA Novat, GS Gahini

It is with great pleasure that I reflect on my experience with the SimBegin™ courses. They were truly an amazing experience for all participants, myself included. Since completing the program, I have gained the confidence to lead both briefing and debriefing sessions effectively. I can also implement high-fidelity methods while teaching students using mannequins, provide constructive feedback to participants, and develop engaging scenarios for practical courses. Before taking the SimBegin™ courses, I had limited knowledge of briefing and debriefing sessions, scenario development, and high-fidelity teaching techniques. Today, I am actively applying the acquired knowledge to confidently teach practical courses to university students and readily integrate the skills I gained in both SimBegin™ levels (1 & 2) into my teaching. My students have also expressed appreciation for the new teaching methodology I am implementing. I wholeheartedly believe that these valuable courses would benefit all university faculty. Their impact on teaching methods and student engagement is simply remarkable.

UWAMAHORO Pauline, UR School of Nursing and Midwifery.

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