EFFECTIVENESS OF SIMULATION AND VIDEO BASED TRAINING ON NEONATAL RESUSCITATION SKILLS ACQUISITION AND RETENTION AMONG NURSES AT MNAZI MMOJA HOSPITAL IN ZANZIBAR.

Rashid Zedi Moh'd, MD

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By

Dr Rashid Z. Moh'd.

(HD/MUH/T.13/2021)

A dissertation Submitted in (Partial) fulfillment of the requirement for the Degree of Master of Medicine in Anaesthesiology at

Muhimbili University of health and Allied Sciences

October, 2024

CERTIFICATION

The undersigned certify that they have read and hereby recommend for examination by Muhimbili University of Health and Allied Sciences a dissertation entitled **"The effectiveness of simulation and video-based training on neonatal resuscitation skills acquisition and retention among nurses at Mnazi Mmoja Hospital in Zanzibar"** in partial fulfilment of the requirement for the degree of Master of Medicine in Anaesthesiology of the Muhimbili University of Health and Allied Sciences.

_____

Dr. Edwin Lugazia
(Supervisor)

Date_____

_____

Dr. Salehe Mrutu
(Co-Supervisor)

Date_____

DECLARATION AND COPYRIGHT

I, **Dr Rashid Z Mohamed** hereby declare that this dissertation is my own original work and that it has not been presented and will not be presented to any other university for a similar or any other degree award.

Signature _____ Date _____

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DEDICATION

To my late biological father and my role model, Mr. Zedi Mohamed Mshenga.

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ABBREVIATIONS

AAP	American Academy of Paediatrics
ANO	Assistant Nursing Officer
BA	Birth asphyxia
BVM	Bag-Valve-Mask
BVMV	Bag Valve Mask Ventilation
EN	Enrolled Nurse
HBB	Helping Babies Breathe
MMH	Mnazi Mmoja Hospital
MUHAS	Muhimbili University of Health and Allied Sciences
NO	Nursing Officer
NR	Neonatal resuscitation
NRP	Neonatal Resuscitation Program
NRT	Neonatal Resuscitation Training
PPV	Positive Pressure Ventilation
SD	Standard Deviation
SE	Standard Error
SPSS	Statistical Package for Social Sciences
WHO	World Health Organization

DEFINITIONS OF TERMS

Skill is an ability to perform a function or procedure effectively or in a competent manner

Neonate is a newborn baby of 28 days (four weeks) old or younger.

Neonatal resuscitation (NR) is the package of supportive interventions offered to a newborn at birth to help initiate and maintain breathing and circulation.

NR skills acquisition is the process of learning, understanding and be able to perform proper skills on neonatal resuscitation after training.

NR skills retention is the degree to which someone remembers how to perform the acquired skills on neonatal resuscitation after an elapsed period of time.

A simulation is described as a learning process that aims to replicate a patient care situation in a realistic setting for the purposes of feedback and assessment.

Fidelity is a concept used in the simulation field to explain the level of realism and technical sophistication of models.

High-fidelity Simulation is the use of manikins that looks and acts like living patients with integrated technology to stimulate the disease or physical findings.

Low-fidelity simulation, this simulation can be paper or computer-based or using a basic mannequin that provides no visual or auditory feedback.

Video based training is a training modality that relies on the use of live or pre-recorded moving pictures demonstrating a particular clinical skill(s).

Deliberate Practice is processes where trainees are encouraged to improve by accomplishing pre-stated objectives in a standard way with immediate feedback to upgrade skills and knowledge

Nurse: in this study, the term nurse includes general nurse and nurse midwives working in delivery suites.

ABSTRACT

Background: Nurses should be skilled and competent to provide quality neonatal resuscitative measures to prevent complication and deaths related to births asphyxia (BA). Incorrect, ineffective or unsafe forms of practice are widespread in new-born care. Neonatal resuscitation (NR), routine trainings play key role on reinforcing appropriate neonatal resuscitation (NR) skills practices and consequently lead to reduction of neonatal morbidity and mortality.

Simulation and video assisted training have been widely introduced particularly in new-born delivery units worldwide as an effort to reinforce skills acquisition and retention.

Neonatal resuscitation skills decay over time post training but the optimal period and impact of simulation and video-based training among nurses attending newborn delivery low-resource settings is not well established. Similarly, there is no previous study conducted on the use of video assisted and simulation training as the modalities to train nurses on NR skills that has been conducted in Zanzibar.

Aim of the study: We aimed to determine the effectiveness of simulation and video-based training on neonatal resuscitation skills acquisition and retention among nurses at Mnazi Mmoja Hospital (MMH) in Zanzibar.

Methodology: Randomized control trial was used to assess the effectiveness of simulation and video-based training on skills acquisition and retention. A consecutive sampling technique was used to enroll 56 nurses to participate in the study, the participants were randomized into two groups followed by assessment of their baseline neonatal resuscitation skills. One group as the control arm was given simulation training modality and the other group as the intervention arm was exposed to both simulation and video assisted training modality. Both groups received immediate posttest and later on two months posttest assessment on neonatal resuscitation skills. The analysis was conducted using SPSS v. 26. Frequency distribution tables and statistical diagram was used to summarize categorical variables. Continuous variables were described using means and standard deviations, t-test was used to compare mean scores between two groups and between the assessments period.

The association between categorical variables were described using chi-square tests. The repeated measures ANOVA was used to test for the effectiveness of the simulation and video based training over two months period. Significant difference was established based on 5% level of significance and 95% confidence interval.

Result: A total of 56 nurses were included in this study. The study shows that only 39% (22/56) nurses demonstrated adequate baseline neonatal resuscitation skills according to standard guidelines. Simulation and video-based training was effective on neonatal resuscitation skills acquisition and retention over two months compared to baseline($p<0.001$). There is no significant difference in NR skills acquisition on immediate post-test between the intervention and control group($p=0.448$). Both groups experienced a marked skills deterioration over two months period post training where the mean score declined from 94.07% to 82.76% ($p<0.001$) and mean score of 92.90 to 77.89% ($p<0.001$) for intervention and control group respectively. Despite the decline in skills observed in both groups, there was a significant difference in mean skills gain over two months compared the skills prior training ($p<0.001$). The intervention arm showed superior positive effect over the control arm in the two months skills performance with significant difference ($p=0.038$)

Conclusion and recommendation: This randomized control trial demonstrated that simulation and video based training modality has shown to be effective on training neonatal resuscitation skills, adding video to the simulation-based training have positive effect on reinforcing neonatal resuscitation skills retention post training. The study also demonstrated that there is significant decline in neonatal resuscitation skills that occurred as early as two months post training, so frequent booster sessions are of paramount important in maintaining good performance of neonatal resuscitation skills. A mixed method study on a bigger population and longer duration should be embarked upon to assess the effectiveness of adding video to standard neonatal resuscitation simulation training on the competence of frontliners working at delivery suits.

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background

Various methods have been employed in training skills of NR with the aim to reinforce quality care among practitioners and help to improve newborn outcome in delivery suites. These modalities include lectures, simulation, video, physical demonstration, bedside, game based and role play.

In a simulation, the trainees experience practices on mannequins rather than actual patients, they take on the roles of relatives or medical professionals based on a scenario created by the instructor; and finally, there is a quick debriefing where the instructor reviews the scenario and gives the trainees immediate feedback(1). Simulation can be combined with video so as to improve the skills acquisition and retention outcome, the added educational value of those video has been previously studied and found to have positive influence(2).

Using simulation and video based training will influence quality care on neonatal resuscitation in delivery suites. It is known that about 136 million new-borns are delivered per year worldwide, and 7.4% of these babies needs stimulation at birth to support initiation of breathing, while 4.4% need basic resuscitation with bag-valve-mask ventilation (BVMV)(3). Evidence has shown that one million neonatal mortalities happen on the day of delivery annually. Approximately two millions new-borns die within seven days of life and four million dies within twenty-eight days of life, which contributes for 46% of deaths among under-five children(4).

Prevalence of neonatal deaths is estimated to rise in 2030(5,6), unless special strategic interventions are considered which include the use of effective training modality in reinforcing skills acquisition and retention. About ninety nine percent of neonatal mortality occurs in resources limited countries(3), where refresher training program are scarce. Nigeria and Kenya with neonatal mortality rate of 36 and 21 neonatal deaths per 1000 live births in 2019 respectively, are at high risk of not attaining the United Nations Sustainable

Development Goal 3 to reduce neonatal mortality rate to 12 per 1000 live births by the year 2030(7).

A study done in five rural districts in southern Tanzania found that, among the 219 neonatal deaths which occurred between 2004 and 2007, birth asphyxia was the second leading cause of new-born deaths (22%) (11). Other complications related to birth asphyxia includes hypoxic ischemic encephalopathy and multiorgan failure(12).

Birth asphyxia (BA) and failure or delay to begin or maintain resuscitation at the time of delivery remains the major causative factors of neonatal fatalities globally(8). The statistic is even higher in developing countries. For instance, in Zanzibar, where there are 28 newborn deaths for every 1,000 live births, up to 60% of these deaths are attributable to BA(9,10).

Neonatal resuscitation is a critical intervention for asphyxiated babies, emphasizing the need for effective training through Neonatal Resuscitation Program (NRP) for health care workers to improve their skills and reduce significantly new-born deaths which traditionally were often miscategorized as stillbirths(13).

Reinforcing health care workers' neonatal resuscitation skills acquisition and retention using the NRT programs builds competent capability and decreases significantly neonatal morbidity and mortality(9,14–16).

However, the trained NR skills are rapidly lost post trainings that employ the traditional modality of small group facilitated lecture training(17,18). Therefore, continuous refresher simulation based training is recommended for effective NR skills retention(19–21). According to American Academy of Paediatrics (AAP), instructor led, simulation based and video assisted training is the standard modality of teaching NRP(22). On the other hand, video based training has shown to be a powerful training tool as it influences good impact on medical resuscitation knowledge and skills, however consideration should be kept on selecting relevant video clip and comply with copyright laws(2).

1.2 Problem Statement

Neonatal resuscitation (NR) skills among health care provider (HCP) is a great challenge, as most HCPs have poor practice or ineffective form of NR. Trainings on NR skills in developing countries are not consistent and they depend much on funds from developed countries. Neonatal resuscitation skills are of great value, however the need for this intervention is usually not anticipated before delivery, because of the relative infrequent occurrence of such interventions. It is unlikely that HCP will encounter these situations on a regular basis. When such measures are required, it is crucial that medical experts who have had proper training with adequate skills retention in newborn resuscitation are available(23).

Lack of effective skills on neonatal resuscitation contributes significantly to neonatal morbidity and mortality, and this occurs mainly in low to middle income countries where NR trainings remains low(24,25). In Tanzania for example, it has been found that only 41% of nurses and midwives who routinely attend to newborn deliveries have adequate NR skills(26). Facility based NR trainings have shown to reduce intrapartum related neonatal deaths by 30%(24).

Up to date, there is limited evidence of the effectiveness of simulation and video based training on knowledge and skills retention as well as the frequency of neonatal resuscitation training program in Zanzibar(21).

Due to observed inefficient practices of NR skills and limited training resources, officials from Zanzibar highlighted a great demand for NRT for medical and nursing professionals, however, a small number of studies have been undertaken to evaluate the NRT(21).

Furthermore, studies revealed that there is tremendous skills deterioration post training that occurs as early as two months and, this silent decline in skills qualities often goes unnoticed by healthcare providers themselves(23).

Previous studies have been done in the other settings to assess the effectiveness of simulation and video based training as the modalities to reinforce NR skills acquisition and retention among nurses but none has been conducted in Zanzibar.

1.3 Rationale

The goal of this study was to determine the role of simulation and video assisted training on neonatal resuscitation skills acquisition and retention among nurses at MMH

Findings from this study revealed current status of NR skills among nurses at Mnazi Mmoja Hospital in Zanzibar

Training offered during study will help to improve NR skills among participants as a result it will contribute to quality practice in their clinical setting and contribute to reduce neonatal morbidity and mortality.

Findings from this study will provide evidence based data to know effective way of training NR skills acquisition and retention among nurses which will help to guide future interventions such as trainings modalities and guidelines.

Also, findings obtained from this study will serve as a reference for other consecutive studies and NRT program in Zanzibar.

This study is also a part of partial fulfillment of my course of MMED in Anaesthesiology at MUHAS.

1.4 Conceptual Framework

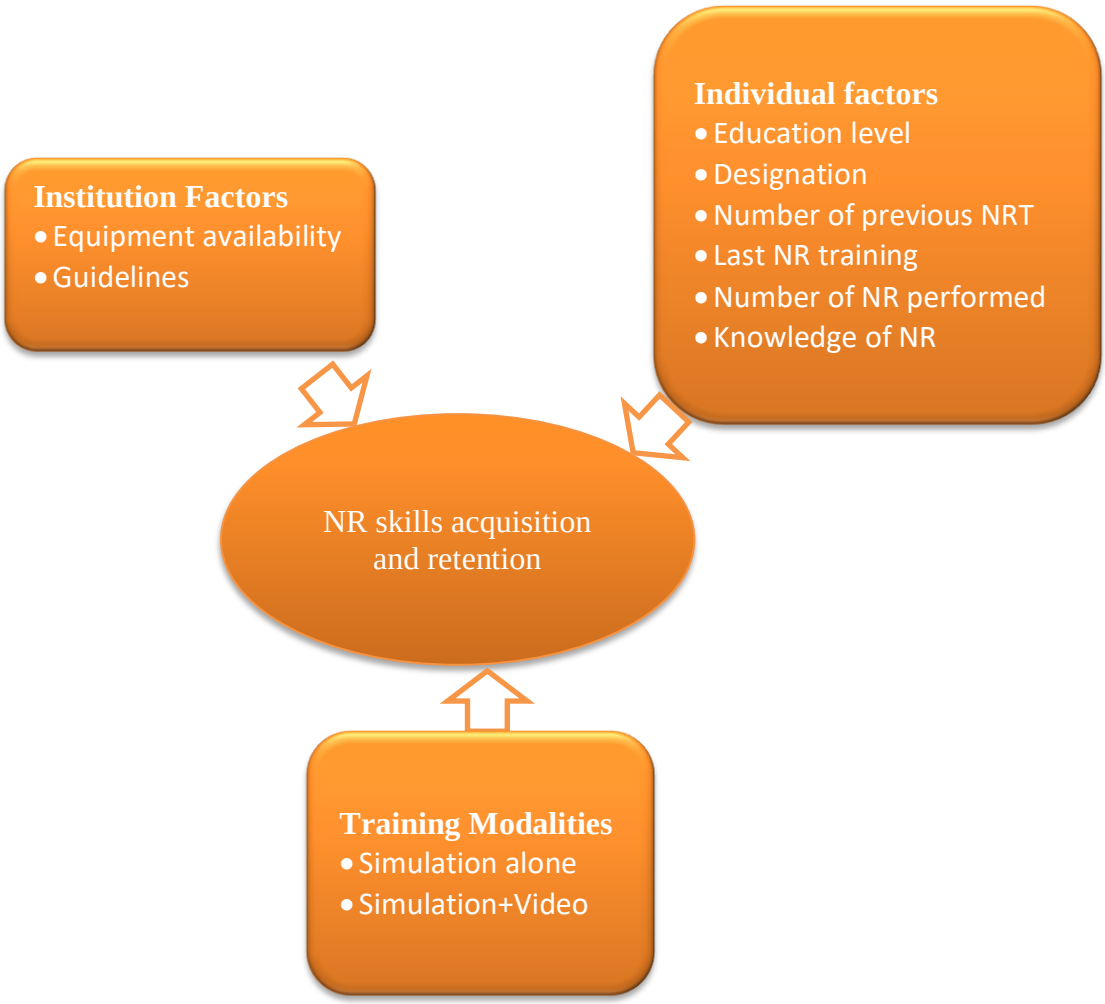


Figure 1: Conceptual frame work

Source: Conceptualized by author.

1.5 Narration Of Conceptual Framework

The conceptual framework describes the relationship between NR skills acquisition and retention as the outcomes and the training modalities as independent factors which will influence the outcomes.

Individual and institution factors such as education level, knowledge of NR, previous training on NR, institution policy, availability of equipment and guidelines may also influence both baseline NR skills among nurses before training and NR skills acquisition and retention following training.

This study will mainly focus on assessment of effectiveness NR skills acquisition and retention following training that employs simulation alone or combination of simulation and video.

1.6 Study Questions

1. What is the effectiveness of simulation and video based training on neonatal resuscitation skills acquisition among nurses at Mnazi Mmoja Hospital in Zanzibar?
2. What is the effectiveness of simulation and video based training on neonatal resuscitation skills retention among nurses at Mnazi Mmoja Hospital in Zanzibar?

1.7 Objectives

1.7.1 Broad objective

To determine the **effectiveness** of simulation and video based training on neonatal resuscitation skills acquisition and retention among nurses at Mnazi Mmoja Hospital in Zanzibar.

1.7.2 Specific objective

1. To determine NR skills status among nurses at MMH in August 2023.
2. To determine the effectiveness of simulation and video based training on NR skills acquisition among nurses at MMH in August 2023.
3. To compare NR skills retention between simulation alone versus a combination of simulation and video based training among nurses at MMH from August to October 2023.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Neonatal Resuscitation

Neonatal resuscitation is a vitally important life-saving interventional measure for birth asphyxia, a major factor in neonatal death(4). It involves immediate recognition of the new-born who fails to breathe and taking timely appropriate measures including stimulation to initiate breathe, drying, keeping warm, chest compression and provision of PPV to asphyxiated neonates. Some neonates may require resuscitative fluid and emergency drug intervention.

It has been found that accurate BVM ventilation on NR is a high-impact intervention that can decrease neonatal mortality in resource poor countries(27). Studies have shown that health facility based NR may prevent 30% of intrapartum-related neonatal deaths in low to middle income countries(24,28).

Different training programs have been globally implemented especially in resources limited settings to reinforce knowledge and skills acquisition and retention on NR. However, NR skills retention remains a big challenges among health care providers, especially in areas where providers attend to few deliveries, resuscitate neonates infrequently, and have inadequate exposure to refresher training program(28,29).

2.2 Simulation In Neonatal Resuscitation

Simulation is an instructional method that aims to supplement real experience using guided practice that replicates key elements of the real environment in a fully interactive manner. It was first incorporated to new-borns resuscitation training in the1990s due to its successful outcome for training and assessing pilots in the aviation field. Realistic simulation assisted training in NR is feasible using recent technology, is highly accepted by trainees, and provides superior advantages not achieved in traditional modalities of medical education(30).

Simulation allows for the strengthening of both theoretical knowledge and practical skills in a risk free educational situation where the trainee is the priority. Simulation portrays an educational scenario whereby the trainee can practice their skills without the time pressure and extra stress of a clinically ill baby. Important features of effective simulation based medical training include deliberate practice, outcome assessment and appropriate, timely feedback(23).

Simulation may be categorized as high and low fidelity. High fidelity involves using an electronic-controlled mannequin to simulate a patient's condition, such as audible and palpable pulses, heartbeats and breathing pattern, and it is possible to perform procedures such as cannulation and intubation. Several studies have been conducted to compare the performance of high versus low fidelities, but many of them showed no significant difference between two fidelities in training medical education(31–33).

2.3 Skills Acquisition and Retention After Training

Simulation based training has great benefit on acquisition and improvements of quality resuscitation skills. However, retaining the skills by trainee is still a big challenge. Studies found that there is tremendous skill deterioration post training that occurs as early as two months, and this silent decline in skills qualities often goes unnoticed by healthcare providers themselves(23,34).

A study done by Yitagesu Sintayehu et al in Ethiopia revealed that only 11.2% among trained nurses and midwives had good skills retention on NR(4).

However, it has been shown that simulation and video assisted training on NRP has significant impact on reinforcing neonatal resuscitation skills acquisition and retention among medical personnel. Retention measures include simulation, video assisted training, low dose high frequency booster sessions and board games or computer based games(22).

In order to achieve sustainable NR skills acquisition and retention, continuous NRT to medical practitioners must be maintained at all level of health care facilities.

A study conducted by Heideh H. et all in 2017 highlighted that simulation based training for paediatric residents maintained NR skills in a variable extent, and frequent booster sessions have shown to be significant supplements and extend considerable duration and quality of NR skills retention(35).

A study done by Akash et al in 2016 in Helping Baby Breathe training, assessed what happened over time to knowledge and skill after training. The study revealed that neonatal resuscitation skills decline more rapidly than knowledge after simulation training, and recommended periodic refresher training with low dose high frequency manikin based simulations to potentiate neonatal resuscitation skills retention(19).

2.4 Simulation Versus Other Training Modalities

A randomized controlled study by Miriam Ruesseler et al. to evaluate the effectiveness of simulation-based training in enhancing trainees' capacity to manage medical emergencies at Frankfurt Medical School, reported that simulation was more effective in enhancing students' skills in identifying and handling medical emergencies than the control group, which received a lecture-based and practical session(36).

Another study by Clara J. et al. at Northwestern Memorial Hospital in Chicago discovered that residents who received simulation based training had significant improvement in their knowledge to manage patients in medical intensive care when compared to the group who received traditional and bedside instruction(37).

On the other hand, a study done by Padilha et al in 2019 demonstrated that the introduction of virtual simulation training in nursing education provided potential improvement of retention of knowledge, clinical judgment and learners' satisfaction compared to low-fidelity simulation(38).

2.5 Video Assisted Training

Video assisted trainjng is a powerful training and learning aid as it can effectively enhance capacity building in knowledge, skills and attitude acquisition and it influences trainees with various styles of learning and communicating. Because of pedagogical, technical and copyright issues, trainers must consider sources of appropriate videos, choose effective

video clips, apply different strategies for introducing videos into the general educational process, refine the message, surmount technological obstacles and adhere to copyright regulations(2). Video assisted training has the potential influence on gaining trainee attention, providing a visual lesson or reinforcement of a concept and creating an emotional response. A study done by Geri Fox in 2003 revealed that using video assisted training has great impact on knowledge and skills retention in phsychaitric education(39).

2.6 Video With Other Training Modalities.

There is conflicting evidence in the literature about the advantages of video assisted training. Some studies substituted video for other teaching methods, while others added it with other modalities as a teaching tool.

A randomized control trial done in Uganda in 2020 by Odongkara B. et al assessed the impact of adding video debriefing to HBB simulation-based training compared to routine HBB training using simulation alone. This study revealed that combining simulation with video had a superiority in both immediate skills acquisition and six months skills retention. However, there was no statistically significant difference between the two modalities on skills retention at a duration of one month and three months(40). This may be due to the short interval between training and assessment time and the frequency of assessment repetition.

Kommalage M et al, carried out a study in 2011 at the University of Ruhuna Medical School in resource-constrained settings, which demonstrated how using videos helped students to retain the relevance of pre-clinical training materials for clinical skills, sparked their interest, and potentiated a better grasp of pre-clinical training materials to improve sympathy later in clinical education(41).

Pilieci SN et al. (2018) conducted a randomized control study on the effectiveness of video versus traditional skills demonstration in teaching aseptic surgical practices to medical students. In terms of utility, accessibility, and performance, video-assisted instruction outperformed traditional illustration. Additionally, video was more selected for its ease of

completion and ability to retain knowledge and skills. The students agreed that video-assisted presentation was an effective way to teach sterile surgical procedures.

According to FM Dwyer in his study of teaching methods, demonstrated that telling alone, showing video alone, and combined telling and showing all resulted in at least 70% retention at 3 hours. However, post three days, retention was 10% for telling alone and 20% for showing alone, versus 65% for combined telling and showing(23,39).

CHAPTER THREE

3.0 METHODOLOGY

3.1 Study Design

A randomized controlled trial was conducted in which the participants were randomly selected and allocated into two arms. The intervention group was exposed to video assisted and low fidelity simulation-based training for skills in equipment preparation, timely recognition of baby requiring help, baby stimulation, keeping warmth, opening airway, BVM, chest compression and post resuscitation care. The control group was exposed to low fidelity simulation alone for the same skills as in the intervention arm. Both groups were given pre and post training tests to assess level of NR skills acquisition and retention.

3.2 Study Duration

This research was carried out in a period of one year and four months from January 2023 to May 2024. Data collection and analysis was done in a period of three and two months respectively

3.3 Study Area

The study was carried out in Mnazi-Mmoja Hospital (MMH) located in the urban district, urban west region of Unguja. The hospital has bed capacity of 776 spread over three campuses. The main campus, MMH located within the Stone Town area, has 630beds, Mwembe Ladu Maternity campus has 36 beds, and Kidongo Chekundu Mental hospital has 110 beds. The hospital has 30 neonatal beds, both maternity and mental campuses are located within the city of Stone Town but outside the downtown area. It attends to an average of 74,975 outpatient, 27,185 inpatients and 12,658 deliveries per year. The hospital has 10 delivery beds and 2 obstetric theatres. There are 72 nurses working in delivery suites, 64 nurses in main campus and 8 nurses in Mwembe Ladu Maternity campus.

MMH is a government tertiary teaching hospital which is the highest hospital in rank in Zanzibar. It serves a Zanzibar population of approximately 1.9 million, it receives referral cases from all district and peripheral hospitals within Unguja and Pemba islands, and also it serves as a main center for research and training of medical field in Zanzibar.

The hospital receives pregnant mothers requiring delivery services and those who are in labour are admitted to labour wards where they are attended to by nurses for deliveries. There is a group of pregnant women attending the hospital who need elective or emergency caesarean deliveries.

Some of the delivered newborns may fail to initiate breathing and they will require proper neonatal resuscitation skills to help to initiate breathe and maintain adequate circulation. Nurses who provide care to the delivering mothers are the primary responders in the provision of such help when the need arises.

3.4 Study Population

The study population included nurses and nurse midwives working in the delivery suites at MMH. There are 72 nurses and nurse midwives working in delivery suites, 11 nursing officers (NO), 35 assistant nursing officers (ANO) and 36 enrolled nurses (EN). Nurses working in delivery suites are the ones that play key roles in receiving and caring for newborns during delivery. They are the first line health care workers providing neonatal resuscitation care when babies fail to initiate breathe during the first minutes of life. NR skills set is fundamental and part of nursing practice and nurses receive this set of skills during their academic curriculum and refresher training courses(4,42).

3.5 Sampling Methods and Randomization

Consecutive sampling technique was used to attain the total number of 56 participants to participate in this study. This is nonprobability sampling procedure in which every subject who met inclusion criteria was enrolled until the desired number was attained. After attaining the desired number, the list of participants was randomized to either the control or the intervention arm.

Randomization of study participants was done by using the Microsoft Excel number generator, the generated numbers were divided equally in two groups, one for intervention and the other for control. The numbers were kept in sealed opaque envelopes, which were shuffled and picked by study participants before starting training. The participant was allocated to either the control or the intervention arm depending on the number inside the picked envelope**.**

3.6 Estimation Of Sample Size

A randomized control trial done in 2020 by Odongkara B. et al in Uganda was used to calculate the minimum sample size. This study assessed the effect of adding video debriefing to HBB simulation-based training compared to routine HBB training using simulation alone(40). In this study, 86 skilled birth attendants were assigned randomly to either intervention arm (45 trainees) or the control arm (41 trainees). The intervention group had a mean score of 93.85 with standard error (SE) 0.9 and the control group had a mean score of 90.52 with standard error of 1.4, their calculated standard deviation (SD) is 6.04 and 8.96 respectively. Pooled Standard deviation (Sp) for both groups was 7.57

The calculation of sample size for this research is based on mean difference of 6 with 95% CI with a two-sided level of alpha of 0.05 and power of study (1-beta) of 0.80 using the formula for two means.

$$n = \frac{2\,\sigma^2\,(Z_{\alpha/2}+Z_{\beta})^2}{(\mu_1-\mu_2)^2}$$

Whereby

n = minimum sample size for each arm

$Z_{\alpha/2}$ = critical value of the normal distribution at α/2 (for a confidence level of 95%, α is 0.05 and the critical value is 1.96)

Z_{β} = critical value of the Normal distribution at β (for a power of 80%, β is 0.2 and the critical value is 0.84)

σ = pooled standard deviation

$\mu_1-\mu_2$ is the mean difference.

$$n = \frac{2x7.57^2\,(1.96+0.84)^2}{6^2} = 25$$

The minimum sample size is 25 study subjects in each arm, making a total of 50 study subjects.

Adjusted sample size for nonresponse = n x $\frac{1}{R}$

Whereby;

n = calculated sample size

R=Response rate,

Approximating Non-response = 10%, then response rate is 90%

Adjusted sample size = 50 x $\frac{1}{0.9}$ = 55.55 = 56

Thus, the final minimum sample size estimated to be 56nurses, with 28nurses in each arm.

3.7 Inclusion Criteria

Nurses and nurse midwives in delivery suites at Mnazi Mmoja Hospital in Zanzibar with at least six months of working experience and who consented to participate in the study.

3.8 Exclusion Criteria

Nurses and nurse midwives working in delivery suites who were not available during the data collection period.

3.9 Variable Of Interest

3.9.1 Dependent variables

Neonatal resuscitation skills acquisition and retention

3.9.2 Independents variables

1. Age
2. Sex
3. Educational qualification
4. Working station

5. Working experience in delivery suites
6. Previous number of NRT
7. Duration since the last NRT
8. Monthly number of NR practice prior this study
9. Training modality offered

3.10 The Control ARM

HBB curriculum was used to train NR skills for the duration of two days, the additional part of neonatal chest compression was added to the curriculum to fit the investigator requirement. On the first day, all participants received a pre-test to assess their baseline, based on WHO NR skills checklist. Following pre-test, the participants were given interactive lectures and demonstrations on NR skills with the use of a manikin. Steps which were observed during training include equipment preparation, immediate recognition of the new-born who failed to initiate breathing, stimulation to initiate breathing, drying, keeping warm, ventilation, chest compression, post resuscitation care and documentation. The trainees were divided into four groups of seven nurses for more practical illustration and group performance. A rapid cycle deliberate practice was observed to provide feedback and improvement during individual and group demonstration. Participants were encouraged to ask questions and clarifications whenever they faced difficulties or uncertainties throughout the training period.

On Day 2, after all participants had deliberately practiced on neonatal resuscitation skills techniques, they were given immediate post-test in the same way as pre-test so as to assess NR skills acquisition. Two months post training, the participants were given another post-test to assess NR skills retention.

3.11 Intervention ARM

The participants were exposed to simulation based NRT in the same way as in the control group followed by watching a video demonstrating NR skills practice. Current available NR skills training video was obtained from the Department of Anaesthesiology, demonstrating basic skills on neonatal resuscitation such as equipment preparation, timely recognition and

helping the baby, keeping the baby warm, stimulation, opening airway, ventilation, chest compression, post resuscitation care and documentation.

To avoid contamination among participants, video was only displayed to the intervention during the skills demonstration session and it was not shared to participants before and after training. The training was organized with MMH in such away the participants in both arms did not receive other trainings prior to the final skills retention assessment.

3.12 Data Collection Tool And Procedure

For each arm, NR skills was assessed using a neonatal manikin before and after training. Prior to training, there was a pre-test to assess baseline NR skills among participants, which was followed by immediate post training test that assessed skills acquisition and two months post training test that assessed skills retention, as several studies have adopted this approach during evaluation of NRT(7,23,40,43). The WHO standard check list for assessment of NR skills was modified and adopted as a data collection tool. This checklist has two parts, the first part for demographic information and the second part for filling the scores during skills assessment. Assessment was done whereby the study participants were given a scenario requiring them to demonstrate NR skills using a neonatal manikin. The same scenario was applied to both pre and post training tests. Steps of NR skills assessed included recognition of a new-born requiring help, equipment preparation, timings, keeping baby warm, stimulation, opening airway, ventilation, and provision of chest compression, post resuscitation care and documentation.

Two research assistants observed the NR skills performance during the assessment and scored the trainees using NR skills checklist independently, with the average score from assessors taken as the final score. The assessors were blinded to which training modality the trainees received. During skills assessment, two marks were awarded for correctly performed skills, 1 mark for incorrectly performed skills and zero mark for skills not performed. During NR skills assessment at baseline, score of at least 75% was considered as adequate skills. The mean score for each group was used to assess the effectiveness of the training modalities.

3.13 Recruitement Of Research Assistants

Research assistants trained on NR skills were enrolled and approved by the department of anaesthesiology. Four research assistants supervised the simulation-based training on NR skills to all study participants and one assistant supervised additional video assisted training to the intervention arm. The research assistant also supervised and scored the trainees during skills assessments.

3.14 Data Management And Analysis

Data was entered, cleaned and analyzed using the SPSS version 26 program. To prevent data loss, there was software backup and email sharing with supervisors.

Only the primary investigator, study supervisors, and IRB for review and approval have access to the obtained data. The authorization to use this data is adhered to recommended standards for data sharing and reuse.

Frequency distribution tables and statistical diagrams were used to summarize categorical variables. Continuous variables were described using mean and standard deviation. The association between categorical variables was described using chi-square tests. To test for the effectiveness of the two arms (intervention versus control), repeated measure ANOVA was used. Furthermore, to compare mean scores between the two groups, t-test was conducted. Statistical significance was established based on 5% level of significance.

3.15 Plan For Results Dissemination

Muhimbili University of Health and Allied Science (MUHAS) repository will be provided with a copy of the completed dissertation work for reference. Additionally, the study's results will also be presented in MUHAS scientific conference. A manuscript will be written and submitted for publication to a peer-reviewed journal. A copy will also be shared to Mnazi Mmoja Hospital, Zanzibar.

3.16 Ethical Consideration

Ethical clearance was requested from MUHAS ethical research committee to conduct this study, and permission was also obtained from the MMH Executive Director to carry out the research at MMH.

Participation in this research was voluntary, study participants were provided with a written informed consent. Study subjects were given a unique ID. Confidentiality was maintained throughout the study. Participants were free to leave the study at any time.

CHAPTER FOUR

4.0 RESULTS

A total of 67 nurses working in the delivery suites at MMH were eligible of these, 11 (19.64%) either did not consent or were not available during the study period, hence they were excluded, and the remaining 56 (83.58%) nurses consented for study and were randomized either into the intervention group who received simulation and video training or the control group who received simulation alone into a ratio of 1:1. All included nurses were assessed for baseline skills, they received training according to allocated arm, followed by immediate and two months post training assessment. All included nurses were available during the whole period of data collection.

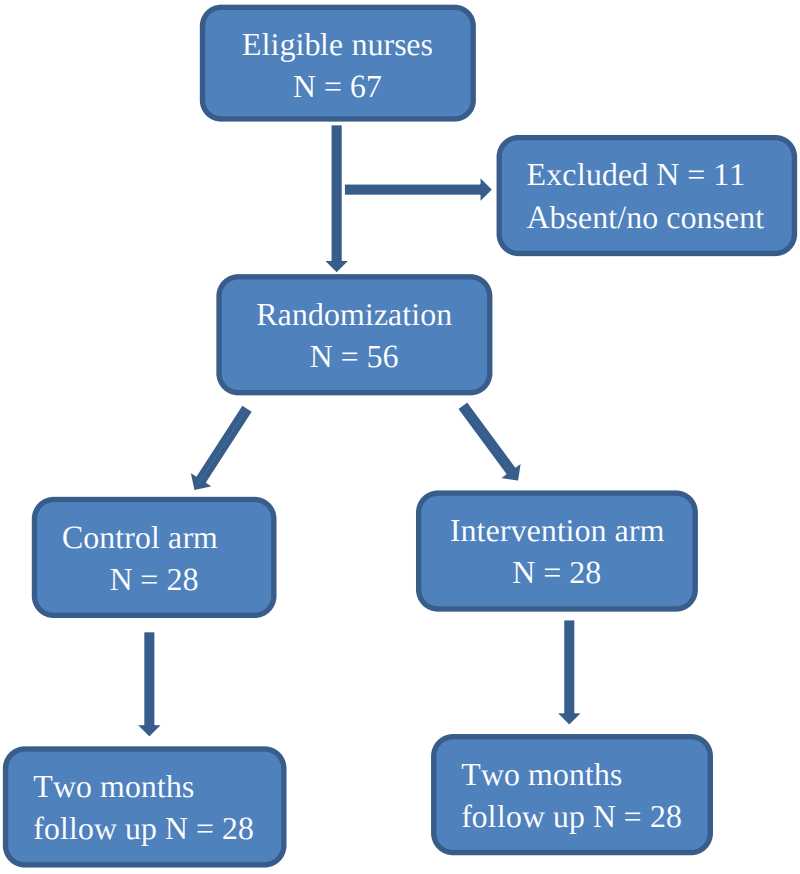


Figure 2: Consort flow chart for study participants

4.1 Sociodemographic characteristics of the study participants

We enrolled 56 nurses in this trial, 28 (50%) nurses as control group and 28 (50%) nurses as intervention group. All nurses from intervention and control arm completed two months follow up duration.

Three (10.3%) and two (7.1%) study participants were male from control and intervention arm respectively. The control arm had 15(53.6%) midwives, 13(46.4%) general nurses (ANO and NO) while intervention arm had 16 (57.1%) midwives, 12 (42.9%) general nurses. Among study participants, 43 (76.8%) worked at labour wards and majority of them 41(72%) had diploma level of education, the remaining have a bachelor degree. Forty-four (78.6%) nurses had five years working experience and below and 36 (64.3%) participants had at least one training on neonatal resuscitation. There was no statistical difference of the social demographic data between the two groups. (Table 1)

Table 1: Sociodemographic characteristics of the study participants

Characteristic	All N=56 n (%)	Control N=28 n (%)	Intervention N=28 n (%)	p-value
Gender				
Male	05 (8.9)	03 (10.7)	02 (7.1)	
Female	51 (91.1)	25 (89.3)	26 (92.9)	0.669
Designation				
Midwife	31 (55.4)	15 (53.6)	16 (57.1)	0.881
General nurses	25 (44.6)	13 (46.4)	12 (42.9)	
Education level				
Diploma	40 (71.4)	21 (75)	19 (67.9)	
Degree	16 (28.6)	07 (25)	09 (32.1)	0.501
Working station				
Labour ward	43 (76.8)	23 (82.1)	20 (71.4)	
Obstetric theatre	13 (23.2)	05 (17.9)	08 (28.6)	0.308
Working period				
5 years and below	44 (78.6)	21 (75)	23 (82.1)	0.381
Above 5 years	12 (21.4)	07 (25)	05 (17.9)	
Previous training				
Yes	36 (64.3)	18 (34.5)	18 (64.3)	
No	20 (35.7)	10 (27.6)	10 (35.7)	0.501

Last training				
1 year and above	24 (42.9)	12 (42.8)	12 (42.8)	
Below one year	15 (26.8)	08 (28.6)	07(25)	0.925
Not applicable	17 (30.3)	08 (28.6)	09 (32.1)	
Monthly deliveries				
10 and above	45 (80.4)	24 (82.8)	22 (78.6)	
Below 10	11 (19.6)	05 (17.2)	06 (21.4)	0.914
Monthly NR				
At least one	54 (96.4)	27 (96.4)	27 (96.4)	
None	02 (3.4)	01 (3.6)	01 (3.6)	0.679

4.2 Baseline NR skills status among nurses.

The proportion of nurses who had adequate skills prior to intervention training was only 39% (Figure 4). Baseline performance on NR skills among nurses prior to training on combining simulation with video modality had means score of 49.00% versus simulation alone, mean score of 50.53% did not differ significantly between the groups (p = 0.830). (Table 2)

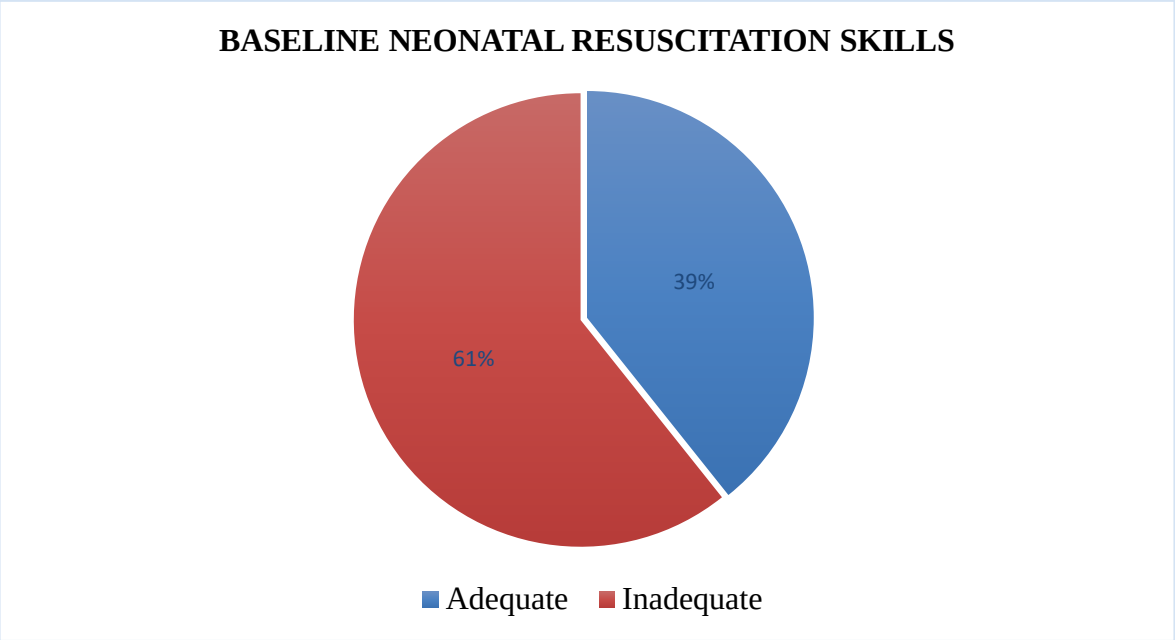


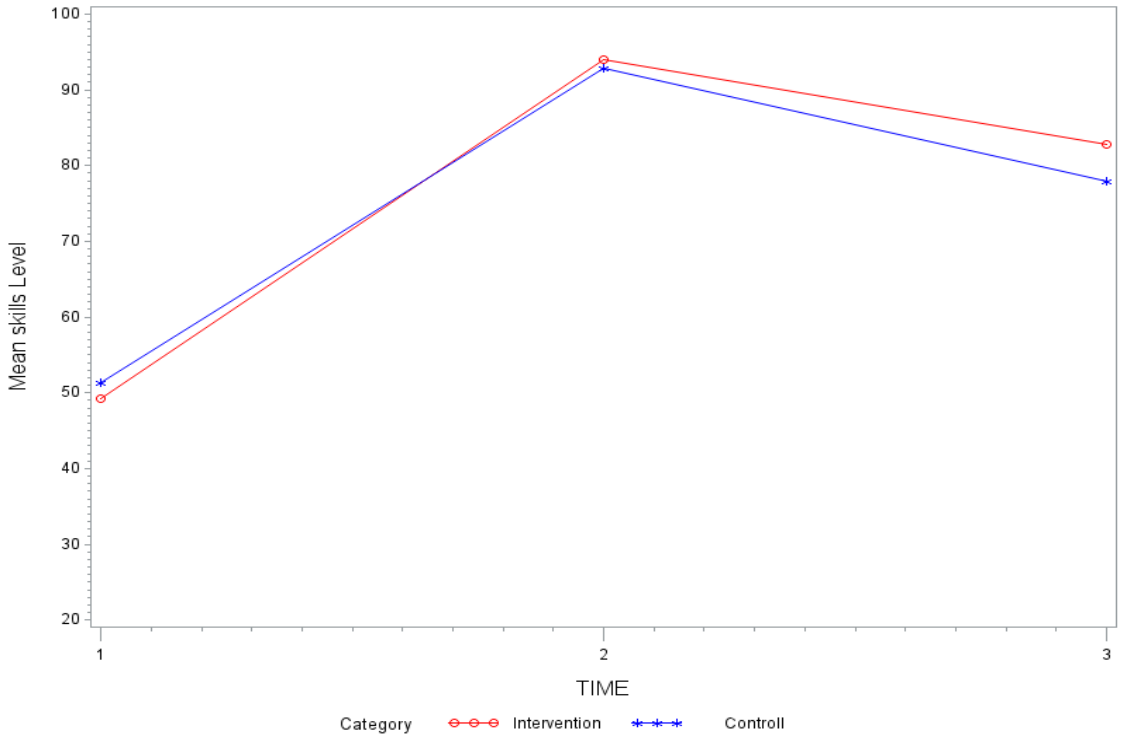
Figure 3: Baseline NR skills among nurses

4.3 Effectiveness of simulation and video-based training on NR skills acquisition and retention among nurses

An increase in skills level was observed immediately post-training, however, there was a marked decrease in skills level two months post training in both groups. Both groups had skills level higher than the baseline at two months post training. There was a slight difference in mean skills gained between the intervention and the control groups. The control had a slightly higher mean skills level at baseline; however, the intervention group had a slightly higher mean skills level immediately post training compared to control group with no significant statistical difference between the group($p=0.830$). However the intervention group retained more mean skills compared to the control group at two months post-training, independents sample t-test showing a significant statistical difference between the groups ($p=0.038$). (table2)

Table 2: Score level between treatment arms from baseline to two months skills

Skills	Category	N	Mean	Std Dev	Min	Max	p-value
1. Baseline	Intervention	28	49.00	26.71	5.00	78.85	0.830
	Control	28	50.53	26.06	7.00	77.70	
	Total	56	49.77	26.16	5.00	78.85	
2. Immediately post training	Intervention	28	94.07	4.99	82.68	100	0.412
	Control	28	92.80	6.59	80.80	100	
	Total	56	93.44	5.83	82.68	100	
3. Two months post training	Intervention	28	82.76	8.69	63.23	96.15	0.038
	Control	28	77.81	8.78	57.69	96.84	
	Total	56	80.29	9.00	57.69	96.84	



Time 1=baseline, Time 2= immediate post training, Time 3= two months post training

Figure 4: Mean skills trend at baseline, immediate and two months post training

The effectiveness of simulation and video-based training was measured using mean score between the groups. The group that had simulation alone had a mean score of 92.9% whereas the simulation combined with video had a mean score of 94.07 with mean difference of 1.17%. There is no significant difference between the two groups on immediate skills acquisition. (p=0.448) (Table 3).

4.4 Repeated measure analysis of the skills changes

Repeated measure ANOVA was used to compare the difference of skills from baseline, immediate post training to two months period over two months period. Training in both arms was significantly associated with the mean change in skills level at a 5% significance level. Specifically, all groups had a gain in skills both immediately and two months post training compared to baseline ($p<0.001$ and $p<0.001$ respectively) (Table 3). The results also showed a significant decline of skills between immediate and two months post training period($p<0.001$) (Table 3).

Table 3: Pairwise comparison of skills from baseline to two months post training

Skills (I)	Skills (J)	Mean difference (I-J)	Standard Error	p-value
1	2	-43.66	3.56	<0.001
	3	-30.52	3.58	<0.001
2	1	43.66	3.56	<0.001
	3	13.14	1.41	<0.001
3	1	30.52	3.38	<0.001
	2	13.14	1.41	<0.001

Key: 1=baseline skills, 2=post training skills, 3= two months skills

CHAPTER FIVE

5.0 DISCUSSION, STRENGTH AND LIMITATIONS

5.1 DISCUSSION

This trial aimed to determine the effectiveness of simulation and video-based training on neonatal skills acquisition and retention among nurses at Mnazi Mmoja hospital in Zanzibar. Before training, we assessed the baseline neonatal resuscitation practice among nurses.

5.1.1 Baseline NR skills among nurses at Mnazi Mmoja Hospital

This study found that majority (61%) of nurses had inadequate NR skills at baseline, this may contribute to overall poor practice and bad outcome during neonatal resuscitation and contribute to an increase in neonatal morbidity and mortality. Similar findings was shown by the study done by Mbinda M et al in Tanzania whereby 59% of nurses had inadequate NR skills(26). Also, an observational study done in Ethiopia by Yitagesu revealed only 11.3% of all nurses had adequate neonatal resuscitation skill retention(4). Similarly several studies shown overall inadequate neonatal resuscitation skills among nurses and health care workers in East Africa (44) and in Nepal(45).

5.1.2 Effectiveness simulation and video-based training on NR skills acquisition

There was significant NR skills acquisition both immediately and two months post training compared to baseline skills (p-value < 0.0001) in both groups. Simulation and video based training has demonstrated effective skills acquisition on new born resuscitation performance among nurses and play great role on prevention of neonatal morbidity and mortality following birth asphyxia(20,40,46).

In this study, simulation combined with video-based training was as effective as using training modality with simulation alone in NR skills acquisition. There is no statical difference between the two modalities (p-value 0.752).

A study done by Taylor Sawyer et al on assessing the effectiveness of adding video on debriefing did not reveal any significant difference over oral debriefing alone on neonatal resuscitation performance(47). The finding from this study also is supported by randomized

control trial done by Aghababaeian H et al which compared use of lectures modality versus use of video podcast which revealed no statistical difference between the two modalities(48). Several studies also have shown no superiority on effectiveness of video-assisted debriefing in simulation-based health professions education over using simulation alone(49).

On other hand, the finding of this study was in contrast with a study conducted in Uganda which have showed a significant statistical superiority of adding video debriefing following simulation over simulation alone modality on immediate NR skills acquisition post training(40). The difference in findings may be due to the difference in sample size enrolled; the study conducted in Uganda had bigger sample size compared to our study. Another reason may be due to the fact that the video debriefing used by Odongkara B et al in Uganda was recorded during the performance of skills by the study participants which showed their own actual correct and incorrect practice performance during training. Whereas our study used pre-available video which showed the standard NR skills practice to the study participants and it was projected after simulation training.

5.1.3 Effective of simulation alone versus simulation combined with video on NR skills retention.

Independent sample t-test in this research revealed a significant difference between the two training modalities, simulation alone versus simulation combined with video training modality over two months retention of skills (p-value 0.038). The findings are comparable with the randomized control trial conducted in Uganda which assessed the effectiveness of adding video debriefing on simulation training for NR skills and knowledge which reported that adding video to simulation had significant difference of NR skills retention over a period of six months versus that modality of simulation alone(40).

Other studies also have shown comparable results with this study showing that adding video to the simulation was associated with significant long term skills retention on maneuver for shoulder dystocia among obstetric residents(50), and other simulation based health profession education(49,51–53).

5.1.4 NR skills deterioration post training.

This study has shown that there is a significant skill decline in NR skills among nurses within two months post training in both groups whereby score decreased from mean score of 94.07% to 82.76% ($p<0.001$) and mean score of 92.80 to 77.81% ($p<0.001$) for modality of simulation with video and simulation alone respectively. Findings from this study add an evidence to the study done in Tanzania that revealed specifically from low- and middle-income countries that a significant fall-off in skills can be identified even earlier after initial training, within 4–6 weeks(43). These findings are also comparable with the finding obtained from the study done by Patel J et al which assessed the proficiency and retention of neonatal resuscitation skills by paediatric residents and concluded that skills starts to deteriorate shortly after training(19,34). This is pertinent as this deterioration occurs unnoticed by health practitioner themselves(54). Frequent booster sessions have been shown to improve skill retention among medical practitioners(35,55). The importance of constructive debriefing including use of a video are effective on improving NR skills retentions(40,56,57).

5.2 Study Strength

This was a randomized control trial whereby all nurses in both groups were exposed to simulation-based training on NR skills which have improved their NR skills performance during their routine clinical practice. Only intervention arm was exposed to additional video-based training.

The study assessed baseline skills whereby all nurses demonstrated newborn resuscitation skills without interference which allowed them to show their daily clinical practice prior training.

This study used standard curriculum and standardized checklist which are used in regular neonatal resuscitation training programmes.

Nurses were not aware of date for assessment of two months skills retention hence it reduced the possibility of making revision prior to assessment.

5.3 Study Limitation

This trial only trained and assessed nurses from one medical facility, it might not be true representative of the baseline NR skills status and acquisition and retention pattern to other nurses in general population in Zanzibar

Also, the study did not involve other health care professionals such as doctors who are also involved in caring for the neonates and they may likely encounter birth asphyxia in delivery suites.

The study assessed skills retention only once, two months post training which is a short period and does not give clear pattern of skills decay over long period of at-least six months to one year.

CHAPTER SIX

6.0 CONCLUSION AND RECOMMENDATION

6.1 Conclusion

This study demonstrated that there is overall inadequate baseline NR skills performance among nurses working at delivery suites. Simulation and video-based training modality is effective on training NR skills, adding video to the simulation-based training is associated with significant difference in two months NR skills retention post training. Study also demonstrated that there is a big decline of NR skills that occurs as early as two months post training irrespective of training modality. Therefore frequent booster sessions are of paramount important in maintaining good performance of NR skills among health care providers particularly those working in delivery suites.

6.2 Recommendations

There is a need for continuous simulation and video-based training among nurses for long period of time. More studies are needed to establish the effect of adding video on simulation training on long term skills acquisition and retention and should include other health care providers working at delivery suites. A mixed method study on a bigger population and longer duration should be embarked upon to assess the effectiveness of adding video to standard neonatal resuscitation simulation training on the competence of frontline working on delivery suites.

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Appendix I: Nr Skills Checklist

ID NO: ……

Part A: Demographic information

1. Sex: a. M b. F
2. Designation
    a. Midwife
    b. ANO
    c. NO
    d. Others (specify)……..
3. Level of Education
    a. Certificate
    b. Diploma
    c. Bachelor degree and above
    d. Others (specify)…….
4. Working Station: a. Labour ward b. obstetric theatre
5. Working period in the delivery suites
    a. Below 1 year
    b. 1-5 years
    c. 6-10 year
    d. Above 10 years
6. Number of previous official trainings on neonatal resuscitation
    a. Once
    b. Twice and above
    c. Never
7. Duration from Last NRT was
    a. 1 year and above
    b. Below 1 year
8. Monthly number deliveries
    a. 10 deliveries and above
    b. Below 10 deliveries

c. None

9. Monthly number of neonatal resuscitation: a. >1 b. 1 c. none

Part B: Skills assessment

ESSENTIAL SKILLS FOR RESUSCITATION	DONE CORRECTLY	DONE INCORRECTLY	NOT DONE
1. Equipment preparation			
2. Call for help			
3. Start the clock/timer			
4. Maintain warmth			
• **Dries Baby**			
• **Discard wet cloth**			
• **Wrap the baby in a dry cloth**			
• **Put on the warm surface**			
5. Assess the Baby for Breathing and Heart Rate*			
6. Open the Airway			
• **Put the baby in neutral position**			
• **Gently suction if needed**			
7. Ventilation			
• **Initiated within Golden Minute**			
• **Choose the correct size mask**			
• **Place mask to cover chin, mouth and nose**			
• **Good firm seal formed***			
• **Give 5 rescue breaths**			

• **Evaluates for Chest rise with each breath***			

• **Reassessment**
  ○ **Breathing**
  ○ **Heart Rate**			

• **Repeats 5 rescue breaths if no response (Reapplies mask and Repositions head) ***			

• **Reassessment**
  ○ **Breathing**
  ○ **Heart Rate**			

• **Give 30 breaths/min (If HR>60BPM)**			
• **Bag squeezed gently. 1 breath for 3 seconds**			
8. Chest compression (If HR<60bpm)			
• **Correct hand placement**			
• **Ratio 3:1**			
• **Observe for chest rise**			
• **Reassess for breathing and heart rate every 30 sec.**			
9. Post resuscitation care			
10. Documentation			

Appendix II: Consent Form-English Version

My name is Rashid Zedi Moh'd, a second year post graduate student undertaking Master of Medicine in Anesthesiology at Muhimbili University of Health and Allied Sciences. I am doing a research study titled as **Effectiveness of simulation and video based training on neonatal resuscitation skills acquisition and retention among health care providers at Mnazi Mmoja Hospital in Zanzibar-2023.** This study aims to know the impact of simulation and video assisted training on NR skills acquisition and retention to health care providers at MMH, it will give additional training exposure to the study participants and contribute to the provision of quality practice on NR skills.

I am humbly requesting for your voluntary participation in this study, information obtained will be used for study purposes only. Your participation in this study will involve answering a standard questionnaire that will extract demographic information, you will be given training on basic neonatal resuscitation skills, and observational standard checklist will be used to assess your NR skills using a mannequin before and after training.

Confidentiality:

Information obtained in this study will be highly **confidential** and will be used for research purposes only. Your name will not appear on the observation checklist. All information collected from the study will be entered into computers with identity codes known by the researcher alone.

Participation in the study:

Participation in this study is voluntary, you will be given training on NR skills with pre and post course tests, there is no any harm or penalty for your refusal to participate or withdrawal from the study. You are free to ask any question at any point of the study, you are free to withdraw your participation in this study at any time.

Risk:

No risks or harm anticipated for your participation in this study.

Benefits:

Participating in this study will help to find out the impact of neonatal resuscitation training programme on skill acquisition and retention, it will provide additional training exposure to NR skills and improves quality on NR practice hence it can contribute to the reduction of neonatal morbidity and mortality

Contact Person

If you have any questions about this study, please contact the principal investigator Dr Rashid Moh'd through 0653746352 or you may contact with my supervisor Dr Edwin Lugazia through 0754(0713) 283 900

For further information about your rights as a research subject or if you are not satisfied with the manner in which this study is being conducted, you may contact the director of research and publications, MUHAS P.O.BOX 65001, Dar es Salaam. Telephone; 2150302-6

SIGNING CONSENT.

Please sign below if you agree to participate in this study

I (initials)…… have read and understood the contents of this form and I have been given a satisfactory explanation with all my questions answered. I, therefore, consent to participate in this study.

Participant's Signature …….

Date…….

Appendix III: Consent Form – SWAHILI VERSION

Utangulizi

Jina langu ni Dkt. Rashid Zedi Moh'd, mtafiti kutoka chuo kikuu cha afya na sayansi shirikishi kutoka Muhimbili. Ninaomba ushiriki wako katika utafiti ninao fanya unaoitwa **"Effectiveness of simulation and video based training on neonatal resuscitation skills acquisition and retention among health care providers at Mnazi Mmoja Hospital in Zanzibar-2023"**

Ushiriki wako katika tafiti hii

Unaombwa kushiriki katika utafiti huu. Kama utakubali kushiriki taarifa zako zitachukuliwa na kutumika kwa ajili ya utafiti huu tu na hili halitakusumbua wala kukusababishia madhara yoyote. Tafadhali umalize kujaza dodoso na haitachukua zaidi ya dakika 20 kujaza dodoso. Usiweke jina lako kwenye dodoso. Majibu yako kwenye dodoso hayataonwa na mtu yoyote na hakuna atakaejua kuwa ni yako. Una haki ya kuacha kuendelea kushiriki utafiti huu wakati wowote bila adhabu yoyote na pia una haki ya kuondoa kibali cha kushiriki.

Usiri

Unahakikishiwa kuwa taarifa zako zitakazokusanywa zitatumika kwa utafiti huu tu na zitakuwa ni za siri wakati wote kuanzia kukusanya taarifa mpaka kufanya majumuisho wakati wa kuandika ripoti. Na pia jina lako halitatakiwa kutumika katika dodoso, na pia ninaamini kutumika kwa usiri kutafanya majibu yajibiwe kwa usahihi zaidi.

Athari kwa mshiriki

Hakuna athari zozote zitakazo weza kutokea kwa mshiriki. Ushiriki wako hautakuwa wa kulazimishwa hata kidogo na pia hakutakuwa na adhabu yoyote kama ukikataa kushiriki. Uko huru kuuliza swali lolote na pia unaweza kuacha kushiriki wakata wowote.

Mawasiliano

Kama utakuwa na maswali yoyote kuhusu utafiti huu tafadhali wasiliana na mtafiti Dkt. Rashid Zedi Moh'd kwa simu 0653746352 au unaweza kuwasiliana na msimamizi wa mtafiti Dkt Edwin Lugazia kwa simu 0754(0713) 283 900. Kwa taarifa zaidi kuhusu haki zako kama mshiriki wa tafiti hii au kama haujaridhishwa na jinsi ambavyo utafiti huu

unavyofanywa unaweza kuwasiliana na mwenyekiti wa kamati ya tafiti na machapisho ya chuo kwa anuani: S. L. P 65001, MUHAS, Dar es Salaam au kwa simu 2150302-6

Utiaji sahihi wa kibali cha ushiriki

Kama unakubali kushiriki tafadhali tia sahihi yako katika kibali hiki.

Mimi (Herufi tu za mwanzo wa jina na mwisho)…… nimesoma na kuelewa taarifa za hii fomu na nimepatiwa maelezo yanayojitosheleza. Kwahiyo ninakubali kushiriki katika utafiti huu.

Sahihi ya mshiriki.....……

Tarehe.....

Appendix Iv: Ethical Clearance from Muhas-IRB

UNITED REPUBLIC OF TANZANIA

MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGY

MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES

OFFICE OF THE DIRECTOR – RESEARCH, INNOVATION AND PUBLICATIONS

In reply quote;
Ref. No.DA.282/298/01.C/1577

Date:14/03/2023

MUHAS-REC-03-2023-1577

Rashid Zedi Moh'd
Mmed Anesthesiology
School of Medicine, ,
MUHAS.

RE: APPROVAL FOR ETHICAL CLEARANCE FOR A STUDY TITLED: EFFECTIVENESS OF SIMULATION AND VIDEO BASED TRAINING ON NEONATAL RESUSCITATION SKILLS ACQUISITION AND RETENTION AMONG NURSES AT MNAZI MMOJA HOSPITAL IN ZANZIBAR.

Reference is made to the above heading.

I am pleased to inform you that the Chairman has on behalf of the University Senate, approved ethical clearance of the above-mentioned study, on recommendations of the Senate Research and Publications Committee meeting accordance with MUHAS research policy and Tanzania regulations governing human and animal subjects research.

APPROVAL DATE: 14/03/2023
EXPIRATION DATE OF APPROVAL: 13/03/2024

STUDY DESCRIPTION:
Purpose:
The purpose of this randomized control trial is to determine the effectiveness simulation and video based training on neonatal resuscitation skills acquisition and retention among nurses at Mnazi Mmoja hospital in Zanzibar.

The approved protocol and procedures for this study is attached and stamped with this letter, and can be found in the link provided:
https://irb.muhas.ac.tz/storage/Certificates/Certificate%20-%2013692.pdf and in the MUHAS archives.

9 United Nations Road; Upanga West; P.O. Box 65001, Dar Es Salaam: Tel. G/Line: +255-22-2150302/6; Ext. 1038; Direct Line:+255-22-2152489;Telefax:+255-22-2152489;E-mail:drp@muhas.ac.tz;Web:https://www.muhas.ac.tz

The PI is required to:

1. Submit bi-annual progress reports and final report upon completion of the study.
2. Report to the IRB any unanticipated problem involving risks to subjects or others including adverse events where applicable.
3. Apply for renewal of approval of ethical clearance one (1) month prior its expiration if the study is not completed at the end of this ethical approval. You may not continue with any research activity beyond the expiration date without the approval of the IRB. Failure to receive approval for continuation before the expiration date will result in automatic termination of the approval for this study on the expiration date.
4. Obtain IRB amendment (s) approval for any changes to any aspect of this study before they can be implemented.
5. Data security is ultimately the responsibility of the investigator.
6. Apply for and obtain data transfer agreement (DTA) from NIMR if data will be transferred to a foreign country.
7. Apply for and obtain material transfer agreement (MTA) from NIMR, if research materials (samples) will be shipped to a foreign country,
8. Any researcher, who contravenes or fail to comply with these conditions, shall be guilty of an offence and shall be liable on conviction to a fine as per NIMR Act No. 23 of 1979, PART III section 10 (2)
9. The PI is required to ensure that the findings of the study are disseminated to relevant stake holders.
10. PI is required to be versed with necessary laws and regulatory policies that govern research in Tanzania. Some guidance is available on our website https://drp.muhas.ac.tz/.

Dr. Nahya Salim Masoud
Chairman, MUHAS Research and Ethics Committee

Muhimbili University of Health and Allied Sciences
DIRECTOR
Research & Publications
Box 65001

9 United Nations Road; Upanga West; P.O. Box 65001, Dar Es Salaam: Tel. G/Line: +255-22-2150302/6; Ext. 1038; Direct Line:+255-22-2152489;Telefax:+255-22-2152489;E-mail:drp@muhas.ac.tz;Web:https://www.muhas.ac.tz

Appendix V: Clearance from Zanzibar Health Research Institute

REVOLUTIONARY GOVERNMENT
OF ZANZIBAR

Ministry of Health,
P. O. Box 236,
Street: Mnazi Mmoja - Zanzibar
Tel: +255-24-2231614
Email: info@mohz.go.tz
Website: www.mohz.go.tz

Zanzibar Health Research Institute,
P.O. Box 236,
Street: Binguni – Zanzibar
Fax: +255 – 24 – 2231613
Tel: +255(0) 776 264 880
Email: estudent@zahri.go.tz

R Ref: NO. ZAHREC/05/ST/MAY/2023/101 30th May, 2023

Rashid Zedi Moh'd,
Student Researcher,
MUHAS.

RE: ETHICAL CLEARENCE FOR CONDUCTING HEALTH RESEARCH IN ZANZIBAR

This is to certify that research protocol titled **"Effectiveness of simulation and video based training on neonatal resuscitation skills acquisition and retention among nurses at Mnazi Mmoja Hospital in Zanzibar"** was received and reviewed on the 30th May, 2023.

We would like to inform you that your proposal has been **"Approved"** for implementation.

Sites of Research: Mnazi mmoja Hospital.

The Principal Investigator has to:

i. Submit your progress report and final report upon completion of Research.
ii. Seek permission for Publication of results from ZAHREC.
iii. Submit Copies of the final Publications to ZAHREC.
iv. Seek approval for any changes made to the approved protocol prior to their implementation

Any researcher who deviates or fails to comply with these conditions shall be guilty of an offence and shall be liable **Six months: 30/05/2023 - 29/11/2023**

Thanks in advance,

ZANZIBAR HEALTH RESEARCH INSTITUTE
05 JUN 2023
P.O. Box 236, ZANZIBAR

Bernard P. Mtuta,
ACTING CHAIR- HRCC,
ZANZIBAR HEALTH RESEARCH INSTITUTE,
BINGUNI,
ZANZIBAR.

Amour S. Mohamed,
DIRECTOR GENERAL,
MINISTRY OF HEALTH,
ZANZIBAR.

Appendix Vi: Research Permit - Zanzibar Research Committee

REVOLUTIONARY GOVERNMENT OF ZANZIBAR

SECRETARY
ZANZIBAR RESEARCH COMMITEE
P. O. Box 2321 - Mazizini, Zanzibar
Tel: 024 2231869
Fax: 024 2231742



RESEARCH/FILMING PERMIT

(This Permit is only Applicable in Zanzibar for duration specified)

Ref: 200173962791691744039

SECTION	
Name	RASHID ZEDI MOHAMED
Gender	M
Date and Place of Birth	21-09–1984 CHUMBUNI, ZANZIBAR
Nationality	TANZANIAN
Data Collection Duration	03 Month(s)
Research Tittle	EFFECTIVENESS OF SIMULATION AND VIDEO BASED TRAINING ON NEONATAL SKILLS ACQUISITION & RETENTION AMONG NURSES.
Date of Issue	11-08-2023
Valid until	11-11-2023

FULL ADDRESS OF SPONSOR

Name of the Authorizing Officer ..... FATIMA M. ISSA

Signature and Seal .....

Institution Office of the Chief Government Statistician

Address P. O. Box 2321, Zanzibar

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Appendix VII: Plagiarism Check

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EFFECTIVENESS OF SIMULATION AND VIDEO BASED TRAINING ON NEONATAL RESUSCITATION SKILLS ACQUISITION AND RETENTION AMONG NURSES AT MNAZI MMOJA HOSPITAL IN ZANZIBAR.

Rahid Z Moh'd, MD

MMED (Anaesthesiology) Dissertation

Muhimbili University of Health and allied Sciences

May 2024

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IMPACT OF SIMULATION AND VIDEO BASED TRAINING ON NEONATAL RESUSCITATION SKILLS ACQUISITION AND RETENTION AMONG NURSES AT MNAZI MMOJA HOSPITAL IN ZANZIBAR.

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