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# Frontline Feedback: Healthcare Workers' Perspectives of 'Paediatric Acute Intervention Resuscitation Skills' (PAIRS) Training in a Low Resource Setting in Wakiso District, Uganda

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#### **Executive Summary**

The study on the "Paediatric Acute Intervention Resuscitation Skills" (PAIRS) program in Wakiso District, Uganda, aimed to evaluate its effectiveness in enhancing neonatal and paediatric resuscitation practices among healthcare professionals in a low-resource setting. Frontline paediatric staff are trained in resource-limited settings, with a focus on practical resuscitation skills and early illness recognition to enhance patient safety. The training was designed to empower healthcare workers by educating them about crucial resuscitation skills and enhancing paediatric emergency care outcomes in low-resource settings.

The research identified significant personal and professional growth among participants, who reported increased confidence and improved skills in managing paediatric emergencies. This will be reflected in enhanced teamwork and communication, which are critical factors in emergency care where prompt and coordinated actions can save lives. The study underscored the training's practical relevance and immediate applicability in clinical settings, highlighting its role in improving the quality of paediatric care.

Despite these positive outcomes, the study identified substantial systemic and structural barriers, such as insufficient medical equipment and inadequate infrastructure. Many healthcare facilities lacked essential medical equipment and adequate infrastructure, severely limiting the application of newly acquired skills and knowledge amongst healthcare professionals who undertook the training. This gap between training effectiveness and real-world application was a recurring theme, suggesting a disconnect that could undermine potential improvements in healthcare delivery and patient outcomes.

Theoretical frameworks such as Social Cognitive Theory, Adult Learning Theory, and the Capability Approach were instrumental in analysing the impact of the PAIRS training. These theories emphasised the importance of context and resource availability, which are pivotal in shaping the outcomes of educational interventions.

The study's findings advocate for a holistic approach to healthcare training, stressing the necessity to extend beyond knowledge transfer to substantial enhancements in healthcare infrastructure and resource availability.

# Recommendations

Recommendation	Justification
Regular Refresher Training	The study revealed that regular refresher PAIRS training
	enhances skill retention and confidence among healthcare
	workers. Regular PAIRS refresher courses will ensure that
	the skills and knowledge gained through participation in
	the PAIRS training remain current and are reinforced,
	which is crucial for maintaining high standards of
	paediatric care in dynamic clinical environments.
Increase Resource	Healthcare professionals noted a gap between training
Allocation	and the availability of essential medical tools for
	emergency care. Ensuring healthcare clinic facilities are
	well-equipped will enable the practical application of
	learned skills and improve patient outcomes.
Implement Localised	To enhance accessibility and relevance, PAIRS training
Training Sessions	should be localised within various regions. This approach
	addresses logistical barriers to attending training sessions
	and ensures that the training content is adapted to meet
	local needs and conditions, which can vary significantly
	across different settings.
Strengthen Support	The effectiveness of PAIRS training program is
Structures	significantly influenced by organisational support.
	Establishing robust support structures, including
	mentorship and supervision, would help integrate training
	into practice more effectively and foster a supportive
	learning environment within healthcare facilities.
Develop and Implement	The establishment of frameworks that support regular
Supportive Policies and	updates, monitoring, and evaluation of training programs
Regulatory Frameworks.	will ensure that PAIRS training remains relevant, effective,
	and aligned with national health priorities.

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# List of Abbreviations

MDP	Masters in Development Practice
PAIRS	Paediatric Acute Intervention Resuscitation Skills
CME	Continuous Medical Education
LMIC	Low- Middle Income Country
SDG	Sustainable Development Goal
AMBU	Artificial Manual Breathing Unit
ETAT	Emergency Triage Assessment and Treatment
HBB	Helping Babies Breathe
CPR	Cardiopulmonary Resuscitation
BLS	Basic Life Support
ACLS	Advanced Cardiac Life Saving

## **Chapter 1: Introduction**

#### **1.1 Introduction**

Globally, neonatal mortality remains a formidable challenge, significantly pronounced in low- and middle-income countries (LMICs) such as Uganda (Rosa-Mangeret et al., 2022). Each year, millions of children die, with a substantial proportion of these deaths occurring in regions struggling with systemic healthcare deficiencies (Souza et al., 2022). These deficiencies include, but are not limited to, inadequate healthcare infrastructure, a scarcity of trained healthcare professionals, limited access to essential medicines, and insufficient implementation of proven clinical practices (Kumar et al., 2020; Alasmar et al., 2022). These factors contribute to high rates of preventable deaths, underscoring a critical area of concern that requires urgent and sustained intervention (Agho et al., 2020).





(UNICEF, 2024)

In Uganda, the healthcare system faces numerous challenges that hinder effective paediatric care. The country's under-five mortality rate (**Fig 1**) is a stark indicator of these systemic issues (UNICEF, 2024). Although there has been a considerable decline in these numbers, the number remain high compared to most developed nations such as Ireland which has an under-five mortality rate of 3.1 (Kananura et al., 2020; UNICEF, 2024). Furthermore, there is often a gap between the healthcare

practices recommended by global health authorities and those actually implemented on the ground, largely due to constraints in training and resources (Geniets et al., 2021).

This research aims to investigating the effectiveness of the PAIRS training program, a targeted initiative designed to address these gaps. The program has been specifically tailored for healthcare professional in the Wakiso District of Uganda (**Fig 2**), an area particularly affected by high rates of neonatal and child mortality (Ssemanda et al., 2023).





(Infrastructure Transparency, 2020)

The PAIRS program aims to equip healthcare workers with the skills and knowledge necessary to improve neonatal and paediatric care outcomes through enhanced

illness recognition and stabilization techniques in a contextually appropriate way (Nurture Africa, 2023).

# 1.2 Significance of the Study

This introductory section sets the stage for the research by clearly articulating the central question and detailing the specific objectives of the study. It also offers an extensive overview of the existing challenges in paediatric healthcare within LMICs, using Uganda as a pivotal example. The narrative highlights the significant discrepancies between international health standards and the on-the-ground realities of healthcare in these regions, emphasising the urgent need for targeted interventions.

The PAIRS program, which this research seeks to evaluate, is presented as a strategic initiative aimed at bridging these gaps (Nurture Africa, 2023). By focusing on the effectiveness of PAIRS, the study not only endeavours to provide solid evidence for the program's impact but also to explore how such interventions can be fine-tuned and scaled. The ultimate goal of this research is to gather and present data that can inform and improve paediatric health strategies, thereby contributing to a tangible reduction in the distressingly high rates of mortality among children under five years old in Uganda and comparable settings across the globe. This work promises to be a valuable asset in the ongoing efforts to align local healthcare practices with global health standards, ensuring better health outcomes for the most vulnerable populations.

## 1.3 Background

To further the achievements of Sustainable Development Goal (SDG) 3, particularly target 3.2 which aims to end preventable deaths of new-borns and children under five years of age, it is crucial to implement scalable and sustainable health solutions (United Nations, 2024). The global challenge is not just to decrease mortality rates, but to do so through persistent and widespread application of effective health interventions and policies.

# Fig 2: Sustainable Development Goal 3, Target 3.2



# **END ALL PREVENTABLE DEATHS UNDER 5 YEARS OF AGE**

By 2030, end preventable deaths of newborns and children under 5 years of age, with all countries aiming to reduce neonatal mortality to at least as low as 12 per 1,000 live births and under-5 mortality to at least as low as 25 per 1,000 live births.

(United Nations, 2020)

Based on current projections, over 35 million children under the age of five are expected to die before 2030, with new-borns accounting for half of these fatalities; a significant majority of these deaths, approx. 60%, are anticipated to occur in sub-Saharan Africa (UNICEF, 2024). In Uganda, the neonatal mortality rate stands distressingly high at 40.5 deaths per 1,000 live births (UNICEF, 2024). A significant contributor to these deaths is pre-term birth complications, lower respiratory infections, and diarrhoea (Perin et al., 2021). The lack of adequately trained healthcare personnel, standardised protocols, and appropriate equipment continues to impede progress in reducing these rates (Musoke et al., 2021).

Training initiatives such as 'Helping Babies Breathe' and 'ETAT' have shown potential in various settings by focusing on simple, effective interventions (Morris et al., 2020; Pinkham et al., 2022). However, their effectiveness often wanes due to issues such as high staff turnover, long duration of course, sporadic training follow-up, and the program's insufficient adaptation to local healthcare contexts (Alhassan, 2020; Sigalet et al., 2021). The PAIRS program was introduced as a more comprehensive, contextually adapted training solution designed to address these limitations and offer extensive training encompassing a wider scope of paediatric emergency care, thus aiming to have a broader impact on overall child health outcomes (Nurture Africa, 2023).

# 1.4 Research Question

How effective is the PAIRS training program in enhancing neonatal and paediatric resuscitation practices among healthcare professionals in the Wakiso District of Uganda?

# 1.5 Aims

To critically evaluate the PAIRS training program's effectiveness in improving neonatal and paediatric resuscitation practices within the Wakiso District.

# 1.6 Objectives

- 1. To explore healthcare professionals perceptions of the relevance, applicability, and sustainability of the PAIRS training in their daily practice.
- 2. To assess changes in resuscitation practices in health facilities following the implementation of PAIRS training.
- 3. To identify barriers to the effective implementation and sustainability of the PAIRS program in the Ugandan healthcare context.
- 4. To identify facilitators to the effective implementation and sustainability of the PAIRS program in the Ugandan healthcare context.

# 1.7 Current Challenges and Research Justification

The current healthcare environment in Uganda, characterised by an acute shortage of medical resources and a dearth of specialised training, presents formidable challenges in managing neonatal and paediatric emergencies (Awor et al., 2020). The introduction of the PAIRS program, with its emphasis on practical, situational training adapted to the local context, offers a potentially transformative approach to paediatric emergency care. Embedding advanced resuscitation skills within a curriculum that respects and utilises local realities and resources, PAIRS seeks to empower healthcare workers not just with skills but with confidence in their application (Nurture Africa, 2023).

# **1.8 Conclusion**

The implementation of the PAIRS program in Uganda represents a critical intervention aimed at reducing high neonatal and child mortality rates. Through this study, valuable

insights are expected into the efficacy of specialised training programs in enhancing healthcare outcomes in challenging settings. The findings will contribute to global discussions on child health interventions, offering evidence-based recommendations for scaling effective resuscitation training in similar contexts. This research will provide a basis for policymakers and healthcare administrators to develop targeted strategies that enhance the capacity and efficacy of health services in LMICs, aiming ultimately to improve health outcomes for of the world's most some vulnerable populations.

#### **Chapter 2: Literature Review**

#### 2.1 Introduction

In the realm of paediatric healthcare, the critical role of resuscitation training cannot be overstated, particularly when it pertains to improving survival outcomes for children under the age of five. This review explores the impact of resuscitation training on paediatric outcomes across diverse geographical contexts, assessing its effectiveness in equipping healthcare workers with the necessary skills to manage paediatric emergencies effectively. With an emphasis on empirical studies from various global regions, this chapter aims to synthesise findings on how such training has influenced the knowledge, competence, and confidence of healthcare professionals, thereby contributing to the reduction of child mortality rates in challenging environments.

## 2.2 Search Strategy

To identify studies relevant to cardiopulmonary resuscitation (CPR) training in paediatric populations within low-resource settings, a comprehensive search was conducted across two major databases: CINAHL and MEDLINE. A search string was conducted using Boolean operation 'OR' and 'AND' and the key terms 'CPR', 'Training' 'Paediatric' and 'Low Resource Setting' (**Appendix 1**). The search was limited to peer-reviewed articles published in English from 2010 onwards, yielding a total of 628 articles from CINAHL (n=180) and from MEDLINE (n=448) (**Appendix 2**). This strategy ensured a comprehensive review of the current literature on the specified topic within the defined parameters. Four themes emerged from the review of this literature.

#### 2.3 Themes

## 2.3.1 Effectiveness of Resuscitation Training

The impact of resuscitation training on paediatric outcomes is a subject of considerable interest and has been the focus of numerous studies across different geographical contexts (Agudelo-Perez et al., 2022). These training programs are pivotal in enhancing the abilities of healthcare workers to perform paediatric resuscitation, a critical skill in improving under-five survival rates. Research from various global regions supports the effectiveness of training in significantly enhancing the knowledge and practical skills of healthcare workers, studies conducted in sub-

Saharan Africa have documented notable improvements in staff competency posttraining (Hole et al., 2011; Msemo et al., 2013; Chang et al., 2015; Wright et al., 2015; Rule et al., 2016; Bang et al., 2016; Wilson et al., 2016; Leaf et al., 2017; Eblovi et al., 2017; Kayembe and Weir, 2018; Chen et al., 2019; Nyiringango et al., 2020; Brathwaite et al., 2020; Tadesse et al., 2021; Ding et al., 2021; Baumgartner et al., 2021; Umuhoza et al., 2021; Tuyishime et al., 2023).

Studies conducted in Ghana and Malawi, Hole et al. (2011) and Eblovi et al. (2017) observed that healthcare workers not only learned new resuscitation techniques but were also able to apply these skills effectively in clinical settings, leading to better immediate care for patients. Similarly, in Tanzania and Ethiopia, it is reported that the consistent use of hands-on practice sessions substantially boosted both the confidence and competence of medical staff in managing paediatric emergencies (Msemo et al. 2013; Tadesse et al., 2021; Becker et al., 2022).

These training sessions which varied in duration and frequency, typically include repeated practice and role-playing scenarios that mimic real-life situations, which are crucial for building both competence and confidence in paediatric resuscitation techniques (Cordova et al., 2017; Chen et al., 2019; Tadesse et al., 2021). The effectiveness of these methods is further enhanced through the provision of refresher courses, which help maintain and improve the skill levels over time, ensuring that healthcare professionals remain equipped to handle paediatric emergencies effectively (Rule et al., 2017; Eblovi et al., 2017).

The ultimate goal of this type of training is to reduce mortality rates in paediatric care. Nyiringango et al. (2021) highlights that training can lead to significant reductions in paediatric mortality rates when these programs are integrated into a supportive healthcare system. Key factors that enhance the success of these programs include the availability of necessary medical equipment and the motivation of staff, which collectively improve the overall quality of paediatric care (Tadesse et al., 2021). Variability in the effectiveness of these training programs, which can be attributed to several factors. The frequency and quality of ongoing training and support play a crucial role; sporadic or infrequent training sessions without continuous support and monitoring may not yield the desired long-term outcomes (Hole et al., 2012; Haynes et al., 2021; Nyiringango et al., 2021). Similarly, the absence of a system-wide approach that includes consistent updates in equipment and protocol revisions can diminish the potential impacts of the training (Brathwaite et al., 2020).

For these programs to be maximally effective, they must be conducted within a contextually appropriate framework that ensures regular updates, support, and access to necessary resources (Wright et al., 2015; Spies et al., 2021; Tuyishime et al., 2023). Continuous learning and system-wide support are essential for sustaining the gains made through these training initiatives and for ultimately achieving significant reductions in child mortality rates globally.

#### 2.3.2 Impact on Paediatric Outcomes

Through enhancing the competencies of healthcare professionals in paediatric resuscitation, these programs significantly mitigate the associated risks. Training equips healthcare workers with the skills necessary to respond swiftly and effectively to emergencies, thereby increasing the chances of survival for children who might otherwise succumb to life-threatening conditions (Little et al., 2011; van-Schaik et al., 2011; Niermeyer, 2015; Rule et al., 2017; Drake et al., 2019). Training has been shown to decrease morbidity associated with paediatric complications (Agudelo-Perez et al., 2022). Rule et al. (2017) observed a 53% reduction in suspected hypoxic-ischemic encephalopathy (HIE) cases in Kenya after the implementation of in-house resuscitation training. Similarly, a study in an Ethiopian hospital also found that morbidity rates declined dramatically post the introduction of a nurse-led paediatric advanced life support team although these rates cannot be completely attributed to the training (Tadesse et al., 2021). By addressing emergencies promptly and competently, trained healthcare workers not only save lives but also improve the quality of life for survivors.

Well-implemented training programs foster environments where continuous learning and adherence to best practices in paediatric care are prioritised which could lead to systemic changes within healthcare institutions, promoting a culture of safety and proactive management of emergencies (Bang et al., 2016; Rule et al., 2017; Cordova et al., 2017; Leaf et al., 2017 Kayembe and Wier, 2018). The success of such programs in reducing mortality and morbidity enhances community trust in healthcare systems, potentially increasing the utilisation of maternal and paediatric health services (Rule et al., 2017).

From a global health perspective, the successes documented in regions like Ethiopia and Kenya provide compelling evidence of the scalability and adaptability of resuscitation training in diverse settings (Rule et al., 2017; Tadesse et al., 2021). These outcomes offer valuable insights for policymakers and healthcare leaders in other low-resource settings, demonstrating that strategic investments in training programs can result in substantial improvements in paediatric health metrics. This type of improvement underscores the importance of sustained support for resuscitation programs, continuous training, and integration into national health strategies to ensure that every child has the best possible chance in life.

#### 2.3.3 Staff Perspectives and Challenges

The implementation of training programs such as HBB, provides critical skills to healthcare workers, enhancing their ability to manage paediatric emergencies effectively. However, while the introduction of these programs often results in improved clinical outcomes, the experiences and challenges faced by the staff are multifaceted, impacting the long-term sustainability and effectiveness of the training (Hole et al., 2012; Wilson et al., 2017; Leaf et al., 2017; Kayembe and Wier, 2018; Groothuis and van-Genderen, 2019; Becker et al., 2022).

One of the clear benefits of training is the increased confidence managing emergency situations among healthcare professionals (van-Schaik et al., 2011; Wright et al., 2015; Leaf et al., 2017; Eblovi et al., 2017; Chen et al., 2019; Nyiringango et al., 2021; Tadesse et al., 2021; Ding et al., 2021; Baumgartner et al., 2021; Tuyishime et al., 2023). This increase in self-assurance is often associated with greater job satisfaction because professionals feel more competent and prepared to manage the critical tasks of paediatric care and can lead to enhanced motivation and morale, which are crucial for maintaining high standards of care in stressful clinical environments (Kayembe and Wier, 2018; Chen et al., 2019).

Despite the positive impacts, significant challenges such as high staff turnover can undermine the effectiveness of training (Hole et al., 2011; Brathwaite et al., 2020). Frequent changes in personnel can lead to a rapid decay in the institutional memory of skills and knowledge imparted through training programs (Hole et al., 2012; Bang et al., 2016; Brathwaite et al., 2020; Baumgartner et al., 2021). Without mechanisms for ongoing training and evaluation, the benefits of initial training efforts may be shortlived, and the quality of care may fluctuate depending on the skill mix of the staff.

Another significant challenge highlighted in the studies was the lack of necessary resuscitation equipment and adequate organizational support. Training healthcare professionals in advanced paediatric resuscitation techniques raises expectations that the necessary tools and supportive environment will be available to implement these skills effectively (Hole et al., 2011; Nyiringango et al., 2021; Brathwaite et al., 2020; Niermeyer, 2015; Ralston et al., 2013; Groothuis and van-Genderen, 2019; Baumgertner et al., 2021; Wright et al., 2015; Umuhoza et al., 2021; Gulmezoglu and Lawrie, 2015; Little et al., 2011; Msemo et al., 2013; Tuyishime et al., 2023; Becker et al., 2022; Spies et al., 2021). However, in resource-limited settings, the absence of essential equipment, such as functioning resuscitation devices or adequate medical supplies, can severely hinder the application of learned skills. Training programs are instrumental in improving paediatric outcomes through enhanced staff competencies, the long-term success of these initiatives relies on overcoming significant challenges related to staff turnover, resource constraints, and organizational support. Addressing these issues is crucial for maintaining the integrity and sustainability of the training's benefits in improving paediatric care.

## 2.3.4 Training Adaptation and Cultural Considerations

The successful implementation of resuscitation training programs significantly hinges on their ability to adapt to the unique cultural, societal, and infrastructural nuances of their operational environment (Little et al., 2011; Umuhoza et al., 2021; Baumgartner et al., 2021; Wilson et al., 2017; Bang et al., 2016; Ralston et al., 2013; Niermeyer, 2025; Nyiringango et al., 2021). Customising these programs to align with local realities not only enhances their receptivity and applicability but also optimises their efficacy in improving paediatric care outcomes. Cultural considerations play a pivotal role in the design and delivery of effective training programs. Factors such as language, local medical practices, and the hierarchical nature of staff relationships can all significantly influence how training is received and implemented. Studies carried out by Chen et al. (2019) and Wright et al. (2015) excluded all participant who were not proficient in English which established a barrier for professional development for staff that did not meet the 'criteria'. Training delivered in the local language or dialect can improve comprehension and participation among trainees, while respecting and incorporating traditional medical practices can help bridge the gap between modern medical techniques and indigenous healthcare practices (Ding et al., 2021; Bang et al., 2016; Wilson et al., 2016; Little et al., 2011; Spies et al., 2021).

In many healthcare settings, particularly in regions with strict hierarchical or gender norms, the dynamics among healthcare staff can impact the effectiveness of training programs (Tuyishime et al., 2023). Recognising and addressing these dynamics is essential for fostering an inclusive and supportive learning environment. Training programs that promote collaboration across different levels of staff and encourage contributions from all participants, including those who might traditionally have less authority or voice due to their position or gender, can lead to more successful outcomes (Ding et al., 2021; Wilson et al., 2016; Van-Schaik., 2011; Little et al., 2011). The long-term success of training programs depends on their adaptability to the evolving needs of the healthcare setting. Continuous feedback mechanisms and involving local healthcare leaders in the training process can ensure that the training is not only culturally sensitive but also aligned with institutional priorities and challenges, thereby enhancing the sustainability of the training impacts (Nyiringango et al., 2021; Kayembe and Wier, 2018; Ding et al., 2021; Niermeyer, 2015; Eblovi et al., 2017; Ralston et al., 2013; Bang et al., 2016; Leaf et al., 2017; Baumgartner et al., 2021; Drake et al., 2019; Rule et al., 2017; Agudelo-Perez et al., 2022; Haynes et al., 2021).

# 2.4 Conclusion

This review of the effectiveness of resuscitation training programs highlights their pivotal role in enhancing paediatric care and reducing mortality rates among children. The findings indicate that when these programs are integrated into a supportive healthcare framework with adequate resources, they lead to substantial improvements in paediatric outcomes. The success of these initiatives hinges on addressing several key challenges, including:

- high staff turnover
- the availability of essential medical equipment
- the need for ongoing training and support

By adapting training programs to meet cultural and infrastructural nuances, and ensuring continuous improvement and support, healthcare systems can better sustain the gains achieved through these training programs. These efforts are crucial in enhancing the capacity of healthcare workers to deliver life-saving care, thereby ensuring that children worldwide receive the best possible start in life.

## Chapter 3: Methods & Materials

## **3.1 Introduction**

This section outlines the methodologies employed to assess the staff's perspectives of the PAIRS training program, within the Wakiso District in Kampala, Uganda. To deeply understand staff's perspectives of this program, a case study approach was adopted. This approach is particularly well-suited for exploring complex phenomena within their real-life context, thereby providing a rich and detailed understanding of the perspectives and experiences of healthcare professionals who have undergone the PAIRS training (Alam, 2021; Priya, 2021).

# 3.2 Theoretical Basis



The theoretical foundation of this study is anchored in several established theories that elucidate the learning and adoption processes in educational programs:

- Social Learning Theory
- Adult Learning Theory
- Capability Approach

**Social Cognitive Theory** underscores the importance of learning within a social context, reflecting the communal and interactive aspects of the PAIRS training (Bandura, 1986). In PAIRS training, this theory is evident through observational learning, where healthcare workers observe and emulate advanced paediatric assessment and intervention techniques demonstrated by experienced trainers and peers. Such engagement facilitates learning beyond traditional methods and is supported by vicarious reinforcement, as trainees witness the successful application of these techniques. The theory also stresses the significance of the learning environment, which in PAIRS training, is designed to promote interaction and discussion, fostering a community of practice that enhances professional development.

Adult Learning Theory supports the training's structure, emphasising the necessity of practical, experience-based learning that is critical for engaging adult learners

(Knowles, 1980). This theory supports the structure of the PAIRS training, which is fundamentally designed to engage healthcare professionals by focusing on real-world applications of resuscitation techniques and emergency responses. By integrating scenario-based training sessions, the program aligns with the adult learner's preference for learning that is directly applicable to their daily challenges in healthcare settings. Such an approach not only facilitates the immediate application of knowledge in practical settings but also significantly enhances the retention of skills and information. This method acknowledges the experiences that adult learners bring to the table, utilizing their prior knowledge as a foundation upon which new skills are built, thereby fostering a deeper understanding and mastery of critical paediatric care techniques.

Lastly, the **Capability Approach** highlights the enhancement of healthcare workers' abilities to achieve valued outcomes, significantly impacting paediatric care standards in resource-constrained environments (Sen, 1985). This theoretical perspective offers a valuable lens through which to view the impact of educational interventions like the PAIRS program. According to this approach, the true measure of benefit from such training programs extends beyond the acquisition of skills and knowledge. It involves the expansion of healthcare workers' capabilities, enabling them to effectively utilise their enhanced skills to influence paediatric care outcomes positively. This approach suggests that the effectiveness of the PAIRS training should be evaluated not just on the knowledge it imparts, but on the increased freedom it provides healthcare workers to apply that knowledge towards meaningful improvements in their professional settings. In environments such as healthcare centres in Wakiso District, where resources are limited and systemic barriers often undermine healthcare delivery, empowering healthcare workers goes beyond traditional training. It requires an infrastructure that supports the application of new skills, continuous learning opportunities, and systems that adapt to the evolving needs of the community. The Capability Approach thus supports a broader, more holistic understanding of educational interventions, advocating for a framework that not only educates but also equips and empowers healthcare professionals to effect real and sustainable change in paediatric health outcomes.

These theoretical perspectives collectively provide a comprehensive understanding of how the PAIRS training potentially influences healthcare practices and outcomes in the targeted settings.

## 3.3 Case Study Design

The case study methodology was chosen for its strength in dealing with a wide array of qualitative data while allowing for an in-depth exploration of specific instances within a bounded system, such as healthcare facilities in the Wakiso District (Paleyes and Lawrence, 2022; Tomaszewski et al., 2020). Focusing on specific cases, this approach facilitated an examination of the intricate ways in which the training influenced individual and group behaviours, decision-making processes, and professional practices among healthcare staff. The use of a case study is particularly effective in healthcare research as it allows for detailed observations and evaluations of practices and outcomes in a way that other methods do not (Sibbald et al., 2021). The main unit of analysis was the healthcare professionals who participated in the training.

**Main Unit of Analysis 1:** Interviews with healthcare professionals who underwent the PAIRS training. These interviews were conducted to understand the impact of the training on their professional practices and perceptions of paediatric emergency care. The interviews explored how the training affected the healthcare professionals' confidence, competence, and their ability to apply learned skills in real-life situations.

## 3.4 Study Population and Sample Size

The study population consisted of healthcare professionals working in neonatal and paediatric care at five health centres within the Wakiso District. These included doctors, clinical officers, nurses, and midwives who were directly involved in the delivery of neonatal and paediatric care. The sample size comprised 22 healthcare professionals, including 5 nurses, 6 clinical officers, 8 midwives, and 3 doctors.

## 3.5 Sampling Method

Participants were purposively recruited from five designated healthcare facilities within the Wakiso District, as identified by Nurture Africa for this study. The inclusion criteria for this study:

- ✓ any staff member within healthcare facility who is directly involved in neonatal and/ or paediatric care
- ✓ had participated in PAIRS Training

This purposive recruitment strategy was aimed at ensuring that the data collected would be rich and directly relevant to the populations of interest. The recruitment efforts were supported by a comprehensive communication strategy. Posters were circulated to participants of previous PAIRS training by Nurture Africa staff. These posters were also circulated to the managers of healthcare facilities to distribute to staff.





Managers at each site played a crucial role in the recruitment process. They provided initial information and guidance to potential participants, directing them to contact the research team for more detailed discussions about the study. Those interested were encouraged to reach out to the research team directly to schedule an appointment at their convenience, thereby facilitating their participation in the study. This approach not only simplified the recruitment process but also ensured that participants were well-informed and genuinely interested in contributing to the research objectives.

## 3.5 Data Collection Methods

Data collection with the participating healthcare professionals was conducted through semi-structured face-to-face interviews at their respective Health Centre II, III, and IV facilities in the Wakiso District. This method allowed for a nuanced exploration of individual perspectives and experiences while providing the flexibility to probe deeper into specific topics as they arose during the discussions.

To minimise disruptions to clinical operations, the researcher strategically scheduled site visits. This approach enabled healthcare staff to participate in the short interviews at times that were most convenient for them, thereby ensuring their primary clinical responsibilities were not compromised.

# 3.6 Data Analysis

Upon completion of the data collection phase, all audio-recorded interviews and were transcribed verbatim by Nurture Africa staff. This meticulous transcription process ensured that every detail, including emotional nuances and the context of responses, was accurately captured. Transcribing the data verbatim was crucial for preserving the integrity and richness of the participants' verbal expressions, which are essential for a deep understanding of their perspectives (McKim, 2023).

The transcribed data was then imported into NVivo, a specialized software for qualitative data analysis (Allsop et al., 2022). NVivo facilitated the organization and systematic analysis of large volumes of textual data, allowing for efficient coding and retrieval of information. This software supports qualitative research by providing tools to classify, sort, and arrange information; examine relationships in the data; and combine analysis with linking, shaping, and modelling.

# 3.7 Thematic Analysis

The thematic analysis began with a thorough reading of the transcribed texts to gain an overall understanding and to immerse in the data. Initial codes were generated by noting patterns and meaningful units of text related to the research questions. These codes were applied across the dataset to identify recurring themes and variations in the data. The coding process was iterative, involving the refinement and combination of initial codes into broader themes that accurately represented the dataset. This involved an inductive approach, where themes were developed based on the data without trying to fit it into a pre-existing coding frame (Kiger and Varpio, 2020). This approach ensures that the analysis remains grounded in the actual data, reflecting true experiences and insights of the participants. The final stage of thematic analysis involved weaving together the themes into a coherent narrative that effectively addressed the research questions. By using NVivo and engaging in rigorous thematic analysis, the researcher was able to uncover deep insights into the effectiveness and impact of the PAIRS training, revealing both the strengths of the program and areas needing improvement. This comprehensive approach not only enriched the understanding of the training program's outcomes but also provided concrete evidence for policy and practice recommendations aimed at enhancing healthcare training efficacy.

## 3.8 Data Management

All data is owned by Nurture Africa. Personalised data contained in the consent forms will be kept stored securely in a secure Nurture Africa office in line with their GDPR policy. All data will be pseudonymised prior to analysis and that data will be held securely in a password protected folder within a Nurture Africa network and only accessed by the Principal Investigator. A Risk Assessment of the data protection implications of the health research and a Data Protection Risk Assessment was carried out and an indication of the level of risk identified by either or both was low. Presentation or publication in relation to the study will not identify the participant. Training in data protection law and practice has been provided to those individuals involved in carrying out the research.

## **3.9 Ethical Considerations**

Ethical approval was obtained TCD School of Natural Science Ethics Committee, Makerere University Research Ethics Committee and Uganda National Council for Science and Technology. Informed consent was secured from all participants, who were assured of confidentiality and the voluntary nature of their participation. All data was anonymized and securely stored to protect participant privacy.

## **Chapter 4: Findings**

This chapter presents the findings from twenty-two semi structured interviews with healthcare professionals. The sample size comprised 22 healthcare professionals, including 5 nurses, 6 clinical officers, 8 midwives, and 3 doctors.

	Themes Identified
Theme 1	Personal and Professional Development
Theme 2	Team and Clinical Enhancements
Theme 3	Systematic and Structural Enhancements

## 4.1. Personal & Professional Development

This theme will discuss staffs' responses regarding how PAIRS training program significantly enhanced healthcare professionals' confidence and competence in paediatric and neonatal resuscitation by bridging the gap between theory and practice. PAIRS training also improved teamwork and clinical practices, with structured approaches like the ABCDE assessment method enhancing response times and outcomes. The training elevated emergency care standards, positively impacting patient health and recovery.

Participants overwhelmingly reported personal and professional growth as a direct outcome of the PAIRS training. The training not only enhanced their confidence in

Interviewer: Has the PAIRS you feel more training made confident and prepared for emeraencies? Participant 5: Yeah. Because there are some things I learned when I was still at school but had not yet practiced. So, when we got into their training, it brought in more confidence in me. You appreciate the hands-on training.

handling emergency situations, particularly in paediatric and neonatal resuscitation, but also significantly boosted their overall self-efficacy in daily clinical tasks. Healthcare professionals emphasised how the hands-on approach adopted by the training was crucial in bridging the gap between theoretical knowledge and practical application. This aspect was

instrumental in improving their competence and preparedness for real-world medical challenges.

The hands-on training allowed participants to practice and refine essential resuscitation skills in a controlled environment, making them more adept at quick decision-making and effective action during actual emergencies. This practical

experience was invaluable, as it helped participants internalise the procedures and protocols, ensuring they could perform under pressure when faced with critical situations. Healthcare professionals highlighted that the simulated scenarios during the training mirrored real-life emergencies, which not only enhanced their technical skills but also improved their psychological readiness to manage high-stress situations. The training fostered a greater sense of teamwork and communication among participants. By practicing together, healthcare workers developed a deeper understanding of their roles within a team and learned to coordinate more effectively during emergencies. This improved collaboration was seen as a key factor in enhancing the overall quality of care provided to patients.

Participants also noted that the PAIRS training contributed to their ongoing professional development by keeping them updated with the latest medical practices

and techniques in emergency care. The knowledge gained from the training sessions enabled them to stay current with advancements in the field, which is crucial for maintaining high standards of care. This commitment to continuous learning and improvement noted as essential for adapting to new challenges and innovations in medical practice. Respondents frequently commented on the immediate applicability of the skills the training acquired during sessions.

Interviewer: How do you perceive overall importance the and relevance of PAIRS training in the context of your work environment? Participant 2: I think it everybody should do it. It should be mandatory cause it improves our skills and when you do training, training, training, the skills keep at hand. If you don't do it, you will not be able to perform perfectly like someone who has been trained. If we do it once a year, we will learn new skills cause every year in medical new things come up.

highlighting how these skills were crucial in real-life emergency scenarios. Participants described various situations where they successfully employed techniques such as effective airway management and CPR, directly contributing to saving lives in critical conditions. Several healthcare professionals recounted instances where their quick and skilled response, guided by the PAIRS training, made a significant difference in patient outcomes, preventing fatalities and stabilising patients for further treatment.

The PAIRS training was cited as a crucial catalyst for continuous professional development. Staff expressed deep appreciation for the opportunity it provided to stay updated with the latest medical practices and techniques in emergency care. They

valued the training's focus on current best practices and advancements in medical science, which kept them informed about the latest innovations and improvements in the field. This ongoing education was seen as essential for the evolution of medical practice, enabling healthcare professionals to adapt to new challenges and innovations in medical care.

The PAIRS training fostered a culture of lifelong learning among participants. They reported a heightened sense of duty to continually seek out new knowledge and skills to enhance their clinical practice. This commitment to ongoing professional development was viewed as vital for maintaining high standards of care and ensuring that healthcare professionals are equipped to manage the dynamic and ever-changing nature of medical emergencies.

## 4.2 Team and Clinical Enhancements

Healthcare professionals reported significant improvements in emergency response capabilities and clinical outcomes following PAIRS training, which emphasised structured approaches like the ABCDE assessment method. This theme will discuss how the PAIRS training also enhanced teamwork, coordination, and communication, creating a culture of peer-to-peer education and ongoing preparedness. Despite concerns in centres with minimal training participation, the overall improvements in procedural skills and systematic emergency management have elevated the standard of care, positively impacting patient health and recovery.

Healthcare professionals across various facilities noted a marked improvement in their ability to respond to emergencies more effectively following the PAIRS training. The training's emphasis on structured approaches, such as the ABCDE assessment method, was highlighted as a critical factor that significantly enhanced their response times and the quality of initial care provided. The use of these structured protocols has not only improved the speed with which care is delivered but has also enhanced the overall clinical outcomes for patients. Respondents often described scenarios where these skills were pivotal, where immediate and correct actions have the potential to significantly alter patient outcomes.

In particular, the ABCDE assessment method allowed healthcare professionals to systematically evaluate and address the most critical aspects of a patient's condition,

Interviewer: How do you think has the PAIRS training affected the outcomes or experiences of your patients? Participant 11: It has made the outcomes better because it's easy to identify an emergency. Based on the ABCDE approach, it's easy for me to identify where the problem is. Start with my airway and assess in a structured way. It breaks the assessment down. You see the problem and ask yourself what do I do? It has made my work easy and outcomes better. It has made me check things like glucose, disability and the exposure which did not always happen before PAIRS.

ensuring that no vital steps were overlooked during emergencies. This methodical approach helped streamline the decisionmaking process, reducing hesitation and increasing confidence among medical staff when faced with high-pressure situations. The emphasis on early recognition of illness and resuscitation skills basic meant that healthcare workers were better prepared to identify and intervene in life-threatening conditions promptly.

Respondents shared numerous anecdotes

highlighting how the PAIRS training directly contributed to saving lives. In one instance, a nurse recounted a situation in which a child suffering from severe respiratory distress was rapidly assessed and treated using the techniques learned in the training, leading to a swift recovery. Another healthcare professional described a case where the structured approach enabled the team to stabilise a critically ill neonate prior to transfer to a higher-level care facility, significantly improving the chances of survival.

The PAIRS training program significantly fostered an environment of improved teamwork within healthcare settings, leading to better coordination and communication among medical staff during emergencies. Enhanced teamwork was frequently cited as a major benefit, with improvements visible not only in critical situations but also in routine interactions, contributing to a more cohesive and efficient unit overall. One key aspect of this improvement was the training's ability to promote a culture of peer-to-peer education. The initial trainings were extended through inhouse Continuing Medical Education (CME) sessions, ensuring that the knowledge and skills gained were shared widely among staff. This ongoing educational exchange maintained a high level of preparedness across the entire team, benefiting even those who did not directly participate in the PAIRS sessions. Through this internal training

effort, healthcare professionals could reinforce and update their skills regularly, ensuring consistent and effective emergency response capabilities.

However, in centres where only a minimal number of staff were trained, there were some concerns about the overall teamwork. In these settings, not all team members were able to work in a structured way or operate the equipment correctly, highlighting the importance of broader training coverage to achieve uniform competency and teamwork across the board. This disparity underscored the need for more comprehensive training programs to ensure all staff members are equipped with the necessary skills and knowledge to work together effectively in emergency situations.

Respondents across the board indicated a discernible improvement in their clinical practices following their participation in the PAIRS training. These enhancements were not limited to procedural skills such as the execution of CPR and other resuscitation

techniques but extended to their overall approach to managing emergency situations. Healthcare professionals shared recollections of scenarios where the immediate and correct application of resuscitation techniques, as taught in the PAIRS training, had turned potentially fatal situations around, allowing patients to reach specialised care in a much more stable condition. This improvement not only increased the chances of survival but also contributed to quicker recovery periods and

Interviewer: How did you find the PAIRS training program? Participant 3: The best thing. We have really changed my way of doing things in the clinic. The way I have managed emergency conditions, especially in paediatrics, and pairs training has really equipped me with skills I never acquired in training school. I am much more vigilant since training as each case is unique. So indeed, I've learned a lot in the pairs training, particularly in paediatric management.

reduced complications in the facilities where they worked. The structured approach taught in PAIRS training was instrumental in helping healthcare professionals prioritize interventions according to the severity and immediacy of the patient's condition. This systematic prioritization is crucial in chaotic emergency environments, where time and resources are often limited. By ensuring that the most critical issues are addressed first, healthcare workers could provide more effective and efficient care, leading to better patient outcomes.

The emphasis on structured protocols and systematic approaches has ingrained practices that are essential for maintaining high standards of emergency care. These practices have been instrumental in elevating the overall quality of care provided, making a tangible difference in patient health and recovery trajectories. The ability to act swiftly and correctly in emergency situations, as fostered by the PAIRS training, has empowered healthcare professionals to deliver better care and improve the overall health outcomes of their patients.

## 4.3 Systematic & Structural Enhancements

The study identified significant barriers to the effective implementation of the PAIRS training program, such as inadequate medical equipment and infrastructure, which hindered the practical application of learned skills. This theme will discuss how participants advocated for localised training sessions to ensure broader coverage and uniformity, as well as streamlined organisational processes and inclusive policies. This study emphasised the need for systemic and infrastructural improvements, along with supportive policies and regulatory frameworks, to fully realise the program's potential and enhance paediatric emergency care.

A significant barrier identified by participants was the inadequate availability of

Interviewer: What difficulties, if any, have you faced in using what you learned from the PAIRS training at work? Participant 13: Since we have limited resources like no oxygen, we can't apply some of the knowledge. When a baby needs resuscitation, it's crucial to be equipped. We assess the situation here and communicate with an ambulance if we need oxygen. Unfortunately, it can take a long time for them to arrive, which compromises the ability to respond effectively.

essential medical equipment and proper infrastructure. Participants expressed concerns over the lack of functional equipment, which often hindered the application of skills learned during training. This deficiency not only limited their ability to effectively respond to emergency situations but also stunted the practical application of newly acquired techniques and procedures. Healthcare professionals detailed scenarios where the absence of critical resuscitation equipment, such as AMBU bags, oxygen supplies, and functional suction devices, directly impacted patient care. In

many cases, the available equipment was either outdated or poorly maintained, leading to potential risks during critical care situations. The physical layout and

condition of healthcare facilities was also mentioned as barriers to safe care. Inadequate space for emergency response, lack of designated resuscitation areas, and the inefficient organisation of medical supplies were common issues that delayed immediate care and reduced the overall effectiveness of emergency interventions.

Participants highlighted the urgent need for improvements in both the quality and accessibility of medical equipment, as well as enhancements in facility design to create environments that support optimal emergency care practices. The feedback underscored a critical gap between training effectiveness and real-world application, suggesting that even with advanced training like PAIRS, the lack of proper tools and environment significantly limits healthcare

Interviewer: Do you have any ideas on how to make PAIRS training more effective or easier to access for staff? Participant 22: It can be regionalised. I think Nurture Africa is still taking it on, which is good, but I think if they can really have more trainers pushed to regionals, like maybe this is a region of around fifteen healthcare facilities, maybe a training can be brought down here. We can really work on the ground to the real situations. Instead of a classroom we can see the resources that we are familiar with and we're using it.

professionals' ability to implement their skills effectively, compromising patient outcomes and staff morale.

Participants advocated for more localised training sessions that are easily accessible to healthcare professionals in different regions. This approach would ensure broader coverage and uniformity in training standards across health facilities. Participants emphasised the importance of reducing logistical barriers that prevent staff from attending training sessions, particularly those located in rural or underserved areas. By localising training, healthcare professionals believe that it would not only foster greater inclusivity but also ensure that all staff, regardless of location, have the same competencies in emergency response and resuscitation techniques. Issues related to organisational structure and inclusivity were highlighted such as bureaucratic processes that sometimes impeded the swift implementation of training insights into practice. Participants pointed out that the delay in applying learned skills was often due to lengthy approval processes for resources and a lack of coordination among different departments within healthcare facilities. These structural barriers not only slowed the response to emergencies but also hindered the dissemination and regular updating of critical training materials and protocols. To address these challenges, participants suggested that more efficient organisational practices could be adopted

to streamline processes. This could include simplifying approval procedures, enhancing inter-departmental collaboration, and establishing clear, agile response protocols that allow for quicker decision-making in critical situations. Participants advocated for more inclusive policies that ensure all staff, regardless of their role or seniority, have access to necessary training and are encouraged to participate actively.

The need for supportive policies and regulatory frameworks was emphasised as

**Interviewer:** How could the PAIRS training be improved to better serve the staff?

Participant 16: I would think about three things. We have the Irish Volunteers and the Ugandan teams that have been trained. The two teams need to have a common objective. However, I don't seem to understand very well the big picture or the objectives of the PAIRS training, other than me being a trainer at healthcare Facility and as a Ugandan faculty trainer. Transparency is needed. We need to understand the common goal because they say we're doing it on a voluntary basis. We're also doing it on a voluntary basis. But then, what is inspiring them to do it may not be the same thing that is inspiring me, so I need to get more clarity about it. Then, I think there has to be regulations and policies guidelines for the PAIRS training, that is for both the Irish and the Ugandan teams. Since we are more people who have now been into this training, I think we need to have a regulation so that when we are doing anything, we are representing PAIRS or we are representing Nature Africa because we are different people from different institutions.

essential for the training's long-term sustainability. Participants expressed a strong desire for government accreditation of the PAIRS training, which would not only validate the program but also ensure it meets certain quality standards that are consistent across the board. Establishing a regulatory framework would also facilitate continuous support and recognition from government and other healthcare authorities. Such frameworks could include mandates for regular updates and refresher courses, ensuring that healthcare professionals remain adept with the latest practices and technologies.

Additionally, participants suggested the development of a monitoring mechanism to evaluate the ongoing effectiveness of the training programs, which could inform necessary adjustments and improvements,

ensuring that the training remains relevant and impactful. While the training improves individual capabilities, systemic issues such as understaffing, high turnover rates, and

inadequate infrastructure in many health facilities pose substantial barriers. These challenges dilute the potential impact of the training, as consistent practice and team coherence are difficult to maintain. Addressing these issues requires a holistic approach that includes not only training but also substantial investments in healthcare infrastructure and workforce planning. By tackling these systemic and infrastructural challenges, and supporting the training with robust policies and frameworks, the full potential of PAIRS training can be realised, leading to sustained improvements in healthcare delivery and patient outcomes across the board.

Interviewer: How could the PAIRS training be improved to better serve the staff? Participant 6: I think it could be more consistent, and they could do it more often both new training and refresher. Oftentimes a lack of training is a general problem. You find that we, health workers, all over Uganda have some gaps. It is because of the lack of resources but if PAIRS can reach the facilities and maybe make this a government initiative, so they can provide more resources for us to use and be regulated.

#### **Chapter 5: Discussion**

#### **5.1 Introduction**

The focus of this investigation centres on evaluating the PAIRS training program, specifically its role in bolstering neonatal and paediatric resuscitation practices among healthcare professionals in Uganda's Wakiso District. The thrust of the inquiry delves into the real-world efficacy of this targeted training initiative, conceived as a strategic response to the urgent needs of an area where paediatric care facilities and services lag markedly behind those available in more resource-adequate environments. The question driving the research seeks to unearth the tangible outcomes of PAIRS training: 'How effective is the PAIRS training program in enhancing neonatal and paediatric resuscitation practices among healthcare professionals in the Wakiso District of Uganda?' This question is pivotal, considering the critical healthcare gaps that the training aims to address, aiming for a comprehensive understanding of the program's impact within the challenging constraints of a low-resource setting.

## 5.2 Discussion

The PAIRS training program significantly influenced healthcare professionals' abilities in multiple dimensions, reflecting its comprehensive design and focus on practical skills development. The training fostered substantial personal and professional growth among participants. The hands-on and practical components of the PAIRS training enhanced participants confidence and competence, equipping them with the skills needed to handle paediatric emergencies more effectively. This aspect of the training was particularly valued by healthcare workers who often face critical situations requiring immediate and decisive action.

The PAIRS training program's findings show significant similarities with other studies, such as HBB and ETAT, in improving immediate response and clinical outcomes in paediatric emergencies. Studies consistently emphasise the critical need for ongoing educational support and adequate resources to sustain improvements. HBB and ETAT also highlight the importance of practical, hands-on training that enhances healthcare workers' confidence and competence. PAIRS training uniquely underscores the substantial personal and professional growth among participants due to its comprehensive design and focus on practical skills development. This particular
emphasis on personal growth is less prominent in other studies, which often focus more on clinical outcomes and less on individual empowerment and confidence building.

The PAIRS program led to notable improvements in team dynamics and clinical outcomes. By integrating structured approaches, the training helped streamline emergency response protocols, making these responses more efficient and effective. Structured methods provided a clear framework for assessing and managing paediatric emergencies, thereby improving the overall quality of care, and potentially reducing the time to intervention. Despite these positive developments, the study also uncovered significant systemic and structural challenges. The lack of necessary medical equipment and adequate infrastructure in many healthcare settings remained a substantial barrier to effective resuscitation practices. This deficiency limited the full application of the skills learned through the PAIRS training. Without access to essential medical tools and a supportive infrastructural environment, the practical skills and protocols taught during the training could not be implemented effectively, undermining the potential improvements in paediatric care outcomes. This gap highlights a critical area for future intervention, suggesting that training programs must be complemented by efforts to enhance the physical and resource capabilities of healthcare facilities to truly transform paediatric health care practices.

The findings from the PAIRS training evaluation reveal a complex interplay between the enhanced capabilities of individual healthcare professionals and the teams they are part of, and the broader systemic and infrastructural challenges they face. The training undoubtedly bolsters the skills and confidence of healthcare workers, equipping them with the necessary tools to address paediatric emergencies more effectively. Participants reported significant improvements in their ability to manage critical situations, underscoring the training's effectiveness in bridging critical knowledge and practice gaps. The impact of these enhancements is tempered by persistent systemic issues, particularly the lack of adequate resources and infrastructure. These deficiencies manifest as shortages of essential medical equipment and inadequate healthcare facilities, which critically hinder the application of newly acquired skills and techniques. The effectiveness of a well-conducted resuscitation can be severely compromised if the necessary resuscitative devices are not available or are in disrepair.

While the PAIRS training program is a powerful catalyst for improving paediatric emergency care, its success is not solely contingent on the dissemination of knowledge and skills. There is a pressing need for a concurrent focus on improving the structural and resource aspects of healthcare settings. Enhanced resource allocation and infrastructure development are crucial for these training efforts to translate into tangible improvements in paediatric healthcare outcomes and for the potential reductions in paediatric mortality envisioned by the program to be realised. This approach is essential not only for sustaining the gains made through such training programs but also for ensuring that these improvements are effectively integrated into daily medical practice. The WHO (2017) and UNICEF (2024) have recognised the need for such training programs and provide guidelines to support them. For instance, WHO's Essential Newborn Care Course and UNICEF's initiatives on improving maternal and child health highlight the importance of skill-based training in emergency care. These guidelines advocate for practical, hands-on training similar to the PAIRS program, emphasizing the need for continuous education and resource availability.

The findings of this study resonate with broader academic investigations into the efficacy of specialised training programs, demonstrating substantial improvements in the immediate responses and clinical outcomes of paediatric emergencies. Research exploring similar interventions, such as the HBB and ETAT, consistently points to the critical nature of sustained support and the availability of adequate resources as fundamental to maintaining the gains achieved through such training. These studies underline that while the initial training can elevate the skills of healthcare workers, the continuity and extension of these improvements depend heavily on regular refresher courses, consistent application in clinical settings, and access to necessary medical tools and equipment.

Distinctively, this research contributes to the existing body of knowledge by stressing not only the need for ongoing educational support but also the essential role of structural enhancements within healthcare facilities. It becomes clear through this study that the optimisation of health outcomes goes beyond the individual or team capabilities, reaching into the realm of systemic changes. Upgrades to infrastructure, better resource allocation, and strategic improvements in healthcare settings are shown to be just as crucial as the training itself. Ensuring that healthcare professionals are not only well-trained but are also well-equipped and supported by a robust system that allows them to apply their skills effectively. The emphasis on structural enhancements in this study provides a more comprehensive view of what is required to truly advance paediatric emergency care in resource-limited settings.

The theoretical foundation of this study rests on a fusion of Social Cognitive Theory, Adult Learning Theory, and the Capability Approach, each contributing a rich layer of insight into the dynamics of effective training programs. Social Cognitive Theory posits that learning is a product of the interplay between individual behaviours, environmental factors, and personal cognition. This interaction suggests that the efficacy of the PAIRS program hinges not only on the content delivered but also on the social context and the observational learning that occurs within the group settings of the training sessions. Adult Learning Theory emphasises the importance of experiential learning and the relevance of the content to the learners' professional lives. Adults learn best when they see a direct application of their knowledge to their daily tasks, which in this case, involves handling paediatric emergencies effectively. This theory underscores the design of the PAIRS training, which prioritizes practical skills and real-life scenarios that healthcare workers face, thus enhancing their engagement and the retention of knowledge. The Capability Approach further expands on these ideas by framing the outcomes of education as enhancements in the learners' freedoms and capabilities. It asserts that education should aim to expand the capabilities of healthcare professionals to achieve the kind of lives they value, which in this context means saving lives and improving paediatric care. This approach aligns with the finding that training should not only transfer knowledge but also empower healthcare workers with the confidence and skills to apply this knowledge, thereby effectively transforming their capabilities and impacting their professional environments.

These theories advocate for a holistic approach to training that incorporates active, social learning environments, practical applications, and a focus on empowering healthcare workers beyond the simple acquisition of knowledge. They highlight the importance of considering the broader social and resource contexts in which these

healthcare professionals operate, suggesting that for training programs like PAIRS to be fully effective, they must be supported by adequate resources and structured to meet the specific needs and conditions of the settings in which they are implemented. This integrated theoretical framework thus not only guides the educational strategy but also calls for systemic changes that support the actual application of new competencies in complex real-world settings.

# 5.3 Conclusion

The insights garnered from this study highlight the complexity of enhancing paediatric healthcare outcomes in regions with limited resources. It becomes clear that advancing healthcare professionals training is merely one facet of a multifaceted challenge. Equally crucial is the need to tackle systemic barriers that frequently hinder the practical application of new skills gained through such training programs. This research brings to the forefront the interconnectedness of training programs like PAIRS with the broader health system in which they are implemented. The success of these initiatives does not exist in isolation; rather, it is deeply entwined with factors such as the adequacy of infrastructure, the availability of necessary medical equipment, and the strength of organizational support.

Such an integrated perspective prompts a re-evaluation of strategies aimed at improving healthcare outcomes. It suggests that for interventions like the PAIRS training program to yield lasting benefits, they must be accompanied by concerted efforts to enhance the foundational aspects of healthcare systems. This approach not only ensures that healthcare professionals are well-trained but also that they are supported by a system capable of sustaining and extending the benefits of their training. As we look to the future, the integration of training programs with broader system enhancements stands out as a pivotal strategy for amplifying the impact of health interventions. This holistic approach is essential for making substantial progress toward sustainable healthcare improvements in low-resource settings across the globe.

# **Chapter 6: Conclusion**

# 6.1 Conclusion

The study on the PAIRS training in Wakiso District, Uganda, sought to understand and evaluate the effectiveness of this program in enhancing neonatal and paediatric resuscitation practices among healthcare professionals. This concluding chapter synthesises the findings and considers their implications for practice, policy, and future research.

The primary objective of this research was to assess how effectively the PAIRS training improved resuscitation practices and outcomes in paediatric care within a low-resource setting. The study highlighted significant personal and professional development among healthcare professionals who participated in the training. Participants reported increased confidence and skills, particularly in managing paediatric emergencies, underscoring the training's practical relevance and immediate applicability to their day-to-day clinical duties.

The training promoted better teamwork and communication, which are crucial in emergency scenarios where the timely and efficient coordination of efforts can mean the difference between life and death. However, despite these positive outcomes, the findings also pointed to substantial systemic and structural barriers. The lack of essential medical equipment and adequate infrastructure in many healthcare facilities severely limited the application of newly acquired skills and knowledge, highlighting a disconnect between training effectiveness and real-world application.

From a theoretical standpoint, this research reaffirmed the relevance of Social Cognitive Theory, Adult Learning Theory, and the Capability Approach in understanding the impact of targeted educational interventions like the PAIRS training. These frameworks emphasise the importance of context, resource availability, and the empowerment of learners, aspects that were crucial in shaping the outcomes of the training program. Practically, the study's findings underscore the necessity for a holistic approach to healthcare training, one that extends beyond the transfer of knowledge to include substantial improvements in healthcare infrastructure and resource availability. Training must be accompanied by parallel efforts to enhance the

physical and operational capacities of healthcare settings to ensure that improvements in healthcare professionals competencies translate into better patient outcomes.

# 6.2 Recommendations

The following are a list of recommendations:

- Regular Refresher Training: The study revealed that regular refresher PAIRS training enhances skill retention and confidence among healthcare workers. Regular PAIRS refresher courses will ensure that the skills and knowledge gained through participation in the PAIRS training remain current and are reinforced, which is crucial for maintaining high standards of paediatric care in dynamic clinical environments.
- Increase Resource Allocation: Healthcare professionals noted a gap between training and the availability of essential medical tools for emergency care. Ensuring facilities are well-equipped will enable the practical application of learned skills and improve patient outcomes.
- 3. Implement Localised Training Sessions: To enhance accessibility and relevance, training should be localised within various regions. This approach addresses logistical barriers to attending training sessions and ensures that the training content is adapted to meet local needs and conditions, which can vary significantly across different settings.
- 4. Strengthen Support Structures: The effectiveness of training programs is significantly influenced by organisational support. Establishing robust support structures, including mentorship and supervision, would help integrate training into practice more effectively and foster a supportive learning environment within healthcare facilities.
- 5. Develop and implement supportive policies and regulatory frameworks: The establishment of frameworks that support regular updates, monitoring, and evaluation of training programs will ensure that PAIRS training remains relevant, effective, and aligned with national health priorities.

The PAIRS training program in Uganda's Wakiso District has demonstrated significant potential in enhancing paediatric emergency care by equipping healthcare professionals with crucial resuscitation skills. However, the full realisation of this potential is contingent upon addressing the broader systemic challenges that currently hinder the effective application of these skills. Only through a concerted effort to align educational initiatives with broader infrastructural and systemic enhancements can we hope to see a substantial reduction in paediatric mortality rates in low-resource settings. This study contributes to the ongoing discourse on improving paediatric healthcare in challenging environments and underscores the need for comprehensive strategies that integrate education, policy, and resource allocation to improve health outcomes globally.

# 6.3 Limitations

The study acknowledges several constraints, including the potential for selection bias due to non-random participation in the training and the possibility of reporting bias in self-assessed knowledge and skills. Additionally, the impact of external factors such as organisational support and resource availability on the implementation of learned skills was difficult to control.

# 6.4 Future research

Several avenues for future research have been identified to further enhance the effectiveness and sustainability of such training programs in low-resource settings. Future studies could explore the long-term impact of PAIRS training on patient outcomes and healthcare professionals retention rates. Investigating the scalability and adaptability of the PAIRS program across different regions within Uganda and similar settings globally could provide insights into the variables that influence the success of such initiatives. Additionally, comparative studies involving alternative training models could offer valuable data on the most cost-effective and impactful approaches to emergency paediatric care training.

There is also a need for research focused on the integration of technology in training and practice, examining how digital tools and virtual simulations can supplement hands-on training, particularly in areas with scarce resources. Studies that delve into the psychological impact of such intensive training on healthcare professionals could contribute to the development of support systems that enhance overall professionals well-being and job satisfaction. Lastly, rigorous policy analysis research could evaluate the effects of current health policies on the implementation of PAIRS training and propose amendments to optimise health outcomes. Such comprehensive research efforts are essential for crafting strategies that not only teach skills but also create environments where those skills are most effectively applied, ultimately reducing paediatric mortality rates in regions similar to Wakiso District.

Future research should emphasise the importance of training sustainability by focusing on the development of local expertise. Building capacity by training local trainers not only promotes self-sufficiency but also ensures that the programs are culturally tailored and more responsive to the specific needs of the community. By leveraging local knowledge and skills, programs can achieve greater longevity and relevance, thus fostering a sustainable model of healthcare education and practice that is more likely to have a lasting impact on the community.

# 6.5 Concluding Remarks

This study has effectively demonstrated that while the PAIRS training substantially improves the competencies and confidence of healthcare professionals in managing paediatric emergencies, the full potential of these advancements is often undercut by the lack of necessary medical equipment and infrastructure. These limitations underscore the critical gap between training outcomes and their practical application in real-world settings.

Furthermore, the study reaffirms the applicability of theoretical frameworks such as Social Cognitive Theory, Adult Learning Theory, and the Capability Approach, which stress the significance of context and resource availability in shaping the effectiveness of educational programs. The practical implications of these findings highlight an urgent need for a holistic approach to healthcare training—one that not only imparts critical skills but also ensures that healthcare settings are sufficiently equipped to implement these skills effectively.

In order to scale up this programme, it is clear that any effort to sustain and enhance the gains from the PAIRS training must involve a coordinated approach that includes regular refresher courses, increased resource allocation, localised training adaptations, and robust support structures. The development and enforcement of supportive policies and regulatory frameworks are essential to align these educational initiatives with national health priorities. Only through such comprehensive strategies can we hope to achieve a meaningful reduction in paediatric mortality rates in Uganda and similar contexts globally, thereby making a significant stride toward improving paediatric healthcare in challenging environments.

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# Appendices

# Appendix 1: Search Terms

CPR	cpr or cardiopulmonary resuscitation or resuscitation or cardiorespiratory resuscitation or chest compressions or cardiac arrest or basic life support or BLS or advanced life support or ACLS or emergency resuscitation
Training	training or staff training or education or development or learning or equipment or in- service training or training in hospitals or healthcare professional training or competency-based training or skill development
Paediatric	paediatric or pediatric or children or child or infant or young person or child health or school-aged children
Low Resource Settings	Low resource settings or healthcare access or resource allocation or lmic or low-income countries or middle-income countries or developing countries or limited resources

# **Appendix 2: Flow Chart**



# **Appendix 3: TCD School of Natural Science Ethics Approval**

# School of Natural Sciences (SNS) Research Ethics Policy School of Natural Sciences, Trinity College Dublin UG/PGT Modified Form

In line with Trinity College Dublin's Policy on Good Research Practice, all research in the School of Natural Sciences (SNS) should be conducted according to the overarching ethical principles of "respect for the individual subject or population, beneficence and the absence of maleficence (research should have the maximum benefit with minimal harm) and justice."

All individuals involved in research should facilitate and ensure research is conducted ethically. Ethical conduct in research is a shared responsibility. Primary responsibility rests with the Principal Investigator(s). Ethical responsibilities and legal obligations may overlap. All staff and students conducting research are required to ensure that their research is carried out in compliance with this policy. Ethical review is required before any studies involving human subjects, other living organisms and/or the natural environment, encompassing biosphere, geosphere, hydrosphere and atmosphere, commence. This requirement applies to staff, postgraduate and undergraduate students and volunteers/interns. Field- and laboratory work cannot commence until ethical review has been completed and approval has been gained. Staff or students planning to undertake research should complete the Research Ethics Application (Appendix 2).

Projects involving researchers from other Schools or institutions which have ethical approval from those bodies do not need further ethical approval, but evidence of the approval must be submitted to the Module Coordinator.

The process for applying for ethical approval is outlined in the following steps:

1. Read the Trinity College Dublin Policy on Good Research Practice

 Complete the <u>SNS Research Ethics Application</u>. Applications should be sent to the <u>Module</u> <u>Coordinator</u>. Deadlines for ethical approval submission are set by the Module Coordinator.

For any applications that cannot be approved by the Module Coordinator and that require escalation to the Research Ethics Committee (REC, Chaired by Prof Steve Waldren), applications must be submitted by the **15<sup>th</sup> of each month**, and the School of Natural Sciences Research Ethics Committee will aim to respond by the **1<sup>st</sup> of the following month**.

All researchers must complete the **Section 1** 'Applicant Details' and **Section 2** 'Initial Research Ethics Checklist'. If the study is desk-based or does not include interaction with live organisms, including humans as research models, nor does it involve working in natural or human-made outdoor habitats, then it is deemed not to require ethical approval, and the study can proceed without the approval of an ethics committee, but the completed and signed (Section 5) form should be submitted to the Module Coordinator. If the study is deemed to require ethical approval, then the applicant should complete **Section 3** 'Checklist for School REC suitability' to determine if the application is suitable for consideration by the School REC. Checklists for student projects must be endorsed by their supervisor. If the study is suitable for consideration by a Level 1 committee (ie none of section 3 questions were answered "Yes" without the possibility of mitigation to reduce ethical risk), the researcher should complete **Section 4** 'Ethical Approval Application'. Students should ensure that this is approved by the project supervisor before being sent to the Module Coordinator (as indicated on the form). *All researchers must complete* **Section 5** 'Declaration'.

If any of the answers to the checklist in Section 3 are yes, and suitable mitigation cannot be applied, the study requires the approval of a Level 1 and possible Level 2 committee. The applicant should then download the application and procedures for the appropriate Level 1 SNS REC and/or Level 2 REC (<u>the Faculty of Engineering, Mathematics and Science REC</u>, or the <u>Animal REC for vertebrate research</u>).

All animal (vertebrate) research must be ultimately approved by the Animal REC; research involving vertebrates in their natural habitats will be assessed by the Module Coordinator initially; if necessary this will be sent to the SNS REC; and then the decisions will be overseen by the AREC, but any research involving vertebrates in a laboratory setting needs to be submitted directly to the AREC. Please see HPRA guidelines.

# 3. Submit participant information and informed consent forms where applicable (Appendix 2).

**4.** The ethics application will be reviewed by the Module Coordinator in the first instance.

**5. Respond** if necessary to any requests for further information, or clarification, that the Module Coordinator might make in relation to the approval request. Discuss these with your supervisor where necessary. The student will be advised when the Module Coordinator has made a decision.

6. For projects of more than one year duration, if there are changes to the project details which may have a bearing on ethical considerations, then applicants must submit an <u>annual report</u> (Appendix 3). All applicants must submit an <u>end of project report</u> upon completion of the study (Appendix 4).

# Research Ethics Application School of Natural Sciences, Trinity College Dublin

# Section 1: Applicant Details

Name (Student/lead researcher)	Orla Walsh
Staff/Student Number	18329914
Applicant E-mail Address	walsho2@tcd.ie
Name(s) of Additional Researcher(s)	Nurture Africa
Name of Supervisor (for students)	Dr. Eleanor Hollywood – School of Nursing & Midwifery
Supervisor E-mail Address	hollywoe@tcd.ie
What School/Discipline are you affiliated to?	School of Natural Sciences
Title of Project	Exploring Staff Perspectives: A Study on the Effectiveness and Impact of PAIRS Training
Brief description of the project (max 200 words)	This case study aims to explore the experiences of healthcare staff who underwent PAIRS training by Nurture Africa.
	Objectives include assessing staff's experiences of practice post PAIRS training and evaluating the availability and adequacy of resuscitation equipment.
	The study target population is healthcare professionals in Uganda. Staff interviewed include Nurses and Doctors who have participated in (PAIRS) training by Nurture Africa.
	Semi-structured face-to-face interviews will take place in the healthcare facilities. Draft question (Appendix 7).
	The estimated sample size is 24. 10 health centres will be attended by Nurture Africa Staff. The methodology involves case study research with sub-unit analysis of anonymized data. NVivo software will be used for data management and analysis, following Braun and Clarke's six-step approach for thematic analysis.
Highlight the category that best describes the research	Taught MSc project

Has this application been submitted to another TCD Ethics Committee for approval? <sup>1</sup>	Νο
Has ethical approval for this project been sought from outside TCD? What was the outcome?	Uganda National Council for Science and Technology Pending Outcome

<sup>&</sup>lt;sup>1</sup> All research involving animals (vertebrates) must ultimately be approved by the Animal Research Ethics Committee (AREC); research involving vertebrates in their natural habitats will be assessed by the SNS REC initially and then the decisions will be overseen by the AREC, but any research involving vertebrates in a laboratory setting needs to be submitted directly to the AREC.

# **Section 2: Initial Research Ethics Checklist**

	YES	NO
1. Quality assurance study (e.g. assessment of teaching practice) <sup>2</sup>		Х
2. Audits of standard practice (not involving identifiable records)		х
3. Research on existing publically available information, documents or data (i.e. already gathered and in the public domain)		X

#### DOES YOUR RESEARCH PROJECT FALL CLEARLY UNDER ANY OF THE FOLLOWING CATEGORIES?

If you have answered YES to one or more of the above questions, your research project can proceed without the need for ethical approval from the School Research Ethics Committee (REC). Please be aware that all researchers have a responsibility to follow TCD's Policy on Good Research Practice, (available <u>here</u>) as well as any academic or professional code of practice or guidelines relevant to the specific research project. Even if you answer YES to one of the above question, **please return a signed (Section 5) copy of this form to the MODULE COORDINATOR** as a record must be kept of all projects.

<u>If you have answered NO to all of the above questions</u>, proceed to Section 3 to determine whether your application is suitable for consideration for the Module Coordinator or if the application needs to be evaluated by a Level 1 and/or Level 2 committee.

<sup>&</sup>lt;sup>2</sup> Quality assurance and audit studies do not routinely require ethical approval. However, if following the study there is scope to publish the findings of a study, an REC may grant a letter of approval if required.

# Section 3: Checklist for School REC suitability

This checklist needs to be completed in order to determine whether your application is considered "low risk" and is therefore suitable for consideration by the Module Coordinator or the School REC<sup>3</sup>. Please indicate if your application falls into any of the categories below (categories from TCD "Criteria for Research Ethics Committees" <u>document</u>, Jan 2014). Answer "NO" if your work does not involve the scenario. Answer "YES" if it does and ethical risks cannot be mitigated. Answer "YES but see…" if ethical risks can be mitigated by appropriate actions such as designing the study to minimize the chances of potentially endangering people, populations of study organisms and/or the environment (and list these in Section 4).

	NO	YES	YES but
			see
			mitigation
			strategy in
			Section 4
<b>1.</b> Surveys asking questions of a sensitive or private nature	х		
2. Questionnaires or observational studies involving children or vulnerable	Х		
adults.			
<b>3.</b> Research where there is a risk of a participant feeling undue pressure to	Х		
participate by virtue of his/her relationship with the researcher (e.g.			
student/supervisor; patient/clinician).			
<b>4.</b> Projects involving a justifiable degree of deception.	Х		
5. Analysis of archival irrevocably anonymised human tissue samples for	Х		
which consent for research was not originally given, and was not acquired in			
the course of clinical treatment. (Archived samples taken for a previous			
research study must always get new ethical approval).			
6. Research involving invasive procedures on humans (other than those	Х		
listed above).			
7. Research other questionnaires or observational studies involving	Х		
vulnerable persons <sup>4</sup> .			

<sup>&</sup>lt;sup>3</sup> In situations where research ethics approval has been granted by an appropriate body outside TCD, approval must also be sought from an appropriate TCD REC, although, at the discretion of the REC chair, the submission may qualify for fast-tracked approval.

<sup>&</sup>lt;sup>4</sup> Vulnerable persons: Certain individuals who face excessive risk of being enrolled in research include those with limitations in their ability to provide informed consent to research because of factors such as immaturity or cognitive impairment. Vulnerability can also stem from individuals' relationships with others, and it is imperative that coercive situations are avoided. Such cases may occur when an employee/student/dependent is asked to participate in research being conducted by a supervisor/mentor. Additional social factors, such as poverty and lack of access to health care, can also make individuals vulnerable to coercion, exploitation or other risks and need to be considered and appropriately mitigated for.

8. Research where identifiable information obtained may have legal,	Х	
economic or social consequences for research subjects.		
<b>9.</b> Research that may identify illegal activity on the part of the participant.	Х	
<b>10.</b> Projects where each subject is paid (over and above token gestures).	Х	
<b>11.</b> Research that may potentially cause irrevocable damage to <sup>5</sup> the	Х	
population of subjects, and/or researchers, and/or 3rd parties, and/or the		
environment. See note below.		
<b>12.</b> Research involving the collection of human tissue.	Х	
<b>13.</b> Research that may have a direct military application.	Х	
<b>14.</b> Potentially harmful research involving humans conducted outside	Х	
Ireland <sup>6</sup> .		
<b>15.</b> Research involving psychological intervention.	Х	

*Official Approval/licensed research:* Research involving elements that may cause harm to the environment, to invertebrate animals or plants; or deal with endangered fauna and/or flora and/or protected areas; or involve the use of elements that may cause harm to humans, including research staff; may need formal approval/licensing by outside body, and such approval for the research (e.g. from the relevant Government Department) must be attached to this application. If formal approval for the work has been granted please give details in the box below:

Approval for work granted by:	Give Government Department or relevant authority who has granted approval
Licences held relating to research activities	<i>Give Government Department or relevant authority who has granted licence</i>
Details of approval:	Describe how work may potentially endanger environment and how this will be minimised, and what the formal approval covers

**If you have answered YES to any of the above questions and cannot mitigate ethical risks**, then the application is deemed to be of moderate or high risk (*i.e. risk or discomfort is greater than that usually encountered during normal daily life*) and should be submitted to SNS REC for Level 1 review; and then the appropriate Level 2 Ethics Committee. The applicant should download the application

<sup>&</sup>lt;sup>5</sup> Relevant Health and Safety Risk Assessment forms must be completed before work can be undertaken.

<sup>&</sup>lt;sup>6</sup> Does not apply to material publically available in another jurisdiction. Note that the same ethical standards will apply to research carried out by SNS researchers within and outside of Ireland. Work must comply with legal requirements of the State in which it is carried out.

and procedures for the appropriate Level 2 REC (<u>the Faculty of Engineering, Mathematics and</u> <u>Science REC</u>, or the <u>Animal REC for vertebrate research</u>).

**If you have** <u>not</u> **answered YES** to any question in Section 3, your application can be submitted for consideration by the Module Coordinator after completion of Section 4.

# Section 4: Ethical Approval Application Form for School of Natural Sciences Level O RE via Module Coordinator

All student applications should be reviewed and approved by the project supervisor prior to submission.

# **Project Description**

Title of research project	Exploring Staff Perspectives: A Study on the Effectiveness and Impact of PAIRS training
Start date of research project	06.05.2024
End date of research project	24.06.2024
Detential othical issues	

Potential ethical issues

As per TCD guidelines- this research is Level 2- LOW RISK RESEARCH.

The research team will strictly adhere to ethical guidelines during the study. **Informed consent** will be obtained from all participants, ensuring their right to withdraw from the study at any time without repercussions (Appendix 6). Confidentiality of participant information will be maintained throughout the data collection, analysis, and reporting processes. **The student will have no access to confidential data and only access anonymised data**.

Ethical clearance will be sought from the appropriate institutional review board before the commencement of the study – Uganda Research Ethics Board. This research also requires ethical approval from Trinity College Dublin Ethics committee and will comply with all GDPR laws.

The procedure of obtaining informed permission will be continuous and initiated through participant information sheets and consent forms. By taking these precautions, the researcher will successfully maintain safety and privacy across the whole research process. Nurture Africa staff will conduct interviews and transcribe all data from interviews.

# Ethical considerations, reducing potential risks and mitigating impacts

A gatekeeper has been identified who will support participants should they become distressed (PIL to ensure informed consent: See Appendix 5). The participants are aware that the gatekeeper and Nurture Africa will provide any support deemed necessary.

Nurture Africa will also provide support/counselling if needed.

As per the risk assessment and TCD ethics literature - the chances of causing distress are deemed LOW.

Data storage

• Personalised data contained in the consent forms will be kept stored securely electronically in a password protected computer on secure Nurture Africa network in line with their GDPR policy.

• All data will be pseudonymised prior to analysis and that data will be held securely in a password protected folder within a Nurture Africa network and only accessed by the PI.

• A Risk Assessment of the data protection implications of the health research and a Data Protection Risk Assessment was carried out and an indication of the level of risk identified by either or both. Presentation or publication in relation to the study will not identify the participant. All persons carrying out the have a contractual code of secrecy that would mean disciplinary action for employees who disclosed or facilitated unauthorised access to the personal data.

• Training in data protection law and practice has been provided to those individuals involved in carrying out the research.

• Student will only have access to anonymised data for the writing of a report

Published ethical guidelines to be followed

TCD Policy on Good Research Practice V3.0

# **Section 5: Declaration**

Signature of applicant	Signature: Orla Walsh
I declare that the information given herein is accurate. I have read the TCD Ethics Policy and will follow the guidelines therein. I have read and understood the <u>TCD Data Protection Policy</u> .	<b>Date:</b> 05/04/2024
Signature of Supervisor (in case of students)	Signature: Eleanen Undervord
I declare that the information given herein is	
accurate. I have read the Ethics Policy and will	
follow the guidelines therein.	Date: 8/4/24

To be completed following Module Coordinator review:

Approval by the School's Ethics Committee	Sign/Stamp:
Based on the information available on this form, the Module Coordinator believes the ethical risks in this project are negligible and will be appropriately mitigated during the course of the research <sup>7</sup> .	Date: 12/04/2024

<sup>&</sup>lt;sup>7</sup> Primary responsibility for ensuring ethical conduct in research rests with the Principal Investigator(s).



**Trinity College Dublin** Coláiste na Tríonóide, Baile Átha Cliath The University of Dublin



# **Staff Participant Information Leaflet (PIL)**

PIL

# Name of Study:

Exploring Staff Perspectives: A Study on the Effectiveness and Impact of PAIRS Training

You are invited to take part in a research study. If you wish to take part, it is important for you to understand why the research is being done and what it will involve. Please read this information sheet fully and please ask if you do not understand or would like more information.

The research is being carried out on behalf of Nurture Africa. You can ask the Principal Investigator any questions about the study or your participation. You should understand the risks and benefits of taking part in the study so that you can make a decision that is right for you.

Site	Health Centres in Nansana Municipality
Principal Investigator	Stuart Kwikiriza
Study Sponsor	Nurture Africa
Data Controllers	Nurture Africa
Data Protection Officer	Data Protection Officer, Nurture Africa, 6 Miles Hoima Road, Uganda.

Part 1 - The Study

#### Why is this study being done?

To explore the experiences of healthcare staff who have participated in PAIRS training.

#### Why have I been invited to take part?

You have been invited to take part in the study because you work at a Government Health Facility that works in close partnership with Nurture Africa.

#### Do I have to take part? Can I withdraw?

Your participation in the study is **entirely voluntary**. You do not have to take part if you do not want to. If you decide not to consent to participate in the study, there will be absolutely no consequences. If you consent to take part, you can withdraw from the study up to and until data analysis. If you wish to withdraw from the study, you can do so by contacting the researcher Stuart at email address: stuartk@nurtureafrica.org. You do not have to give a reason for withdrawing from the study and you will not suffer any adverse consequences because of withdrawing.

## What happens if I change my mind?

Participation in this study is entirely voluntary. If you agree to take part and you change your mind, that's okay. If you want to withdraw you can do so by contacting the researcher Orla Walsh at stuartk@nurtureafrica.org.

#### What happens to me if I decide to take part?

If you decide to take part, you will be asked to do a short one-to-one interview with the researcher lasting approximately 15 minutes. The interview will take place over the phone/online/face to face scheduled for a date and time that suits you.

#### What will happen to my Samples and Data?

All the data collected in the research will be fully pseudonymized and/or coded to remove all personally identifying information to protect your confidentiality and to ensure that no individual person who participated can be identified from the data they have provided. Once all identifiable information has been removed the data will be securely stored electronically on a password protected computer. All data used during analysis will not contain any personally identifiable information about any of the participants and will be used solely for research and publication purposes. It will also be necessary to retain the consent form you provided for 7 years. The consent forms are stored separately from the research data in a secure research password protected computer in the Nurture Africa office.

#### Are there any benefits to taking part in this research?

Taking part in this study will not directly benefit you. However, research performed with your coded information may help improve the quality of PAIRS training in health centres and identify the need for implementation of such programmes across all health care settings.

#### Are there any risks to me or others if I take part?

While the researcher does not foresee any adverse outcome or risk involved in participating in the study, the research team is aware that participants might find some questions uncomfortable. During the interview, if participants are feeling upset or distressed, we will terminate the interview, provide a debriefing sheet and inform the gatekeeper, in case of any adverse outcomes.

#### Will I be told the outcome of the study?

The results of the study will be made available in a published report to Nurture Africa.

#### Part 2 – Data Protection

#### What information about me (personal data) will be used as part of this study?

The personal data required for this study is your name and contact details. This is required for the consent form as evidence you have agreed to take part. An audio recording of the interview will be used to collect the qualitative data. No personal information is collected during the study.

#### What will happen to my personal data?

The consent forms containing your personal data will be stored securely electronically in a password protected computer in Nurture Africa office. Personal information will not be transcribed or used during data analysis. The audio recordings will be deleted following transcription of the data by the researcher. The consent forms will be stored for a period of 7 years. The data processors for this study are named in the introductory page above.

#### Who will access and use my personal data as part of this study?

Nurture Africa will have access to the participant's personal data as part of this study. Personalised data will not leave Nurture Africa networks.

#### Will my personal data be kept confidential? How will my data be kept safe?

Your privacy is important to us. We take many steps to make sure that we protect your confidentiality and keep your data safe. Here are some examples of how we do this:

- Personalised data contained in the consent forms will be kept stored securely electronically in a password protected computer on secure Nurture Africa network in line with their GDPR policy.
- All data will be pseudonymised prior to analysis and that data will be held securely in a password protected folder within a Nurture Africa network.
- A Risk Assessment of the data protection implications of the health research and a Data Protection Risk Assessment was carried out and an indication of the level of risk identified by either or both. Presentation or publication in relation to the study will not identify the participant. All persons carrying out the have a contractual code of secrecy that would mean disciplinary action for employees who disclosed or facilitated unauthorised access to the personal data.
- Training in data protection law and practice has been provided to those individuals involved in carrying out the research.
- However, if something did go wrong, we are contractually obliged to report any breach of confidentiality to the Data Controller in Nurture Africa; and to inform you the data subject within the timeframes mandated.

## What is the lawful basis to use my personal data?

By law [1], we can use your personal information for scientific research [2] (in the public interest [3]). We will also ask for your explicit consent to use your data as a requirement of GDPR laws in both Ireland & Uganda.

[1] The European General Data Protection Regulation (GDPR)

[2] Article 9(2) (j))

[3] (Article 6(1)(e)

# What are my rights?

You are entitled to:

- The right to access to your data and receive a copy of it
- The right to restrict or object to processing of your data
- The right to object to any further processing of the information we hold about you (except where it is de-identified)
- The right to have inaccurate information about you corrected or deleted
- The right to receive your data in a portable format and to have it transferred to another data controller
- The right to request deletion of your data

By law you can exercise the following rights in relation to your personal data unless the request would make it impossible or very difficult to conduct the research. You can exercise these rights by contacting. Email: Nurture Africa Data Protection Officer: Email: <u>kevin@nurtureafrica.ie</u>

# Part 3 - Costs, Funding and Approval

#### Has this study been approved by a research ethics committee?

Yes, this study has been approved by the Trinity College of Dublin Faculty of Geography Research Ethics Committee. Approval was granted on the [TBC] and the study has also been approved by Nurture Africa on [TBC].

# Who is organising and funding this study? Will the results be used for commercial purposes?

This study is fully funded by Nurture Africa.

# Is there any payment for taking part? Will it cost me anything if I agree to take part?

No, we are not paying participants to take part in the study.

Part 4 - Future Research

Will my personal data and/or biological material be used in future studies?

Your personal data will not be used in future research studies. Data collected and anonymized for this study may however be used for future research by Nurture Africa and Trinity College Dublin. Your participation is entirely voluntary, and you can withdraw your consent at any time. This research will only take place if it has research ethics approval.

Part 5 - Further Information

# Who should I contact for information or complaints?

If you have any concerns or questions, you can contact:

 Nurture Africa Data Protection Officer: Email: <u>kevin@nurtureafrica.ie</u> Phone: +353(0)1-4434843

Under GDPR, if you are not satisfied with how your data is being processed, you have the right to lodge a complaint with:

 National Information Technology Authority – Uganda (NITA-U), Palm Court, Plot 7A, Rotary Avenue, PO Box 33151, Kampala, Uganda. Website: <u>https://www.nita.go.ug/</u>

# Will I be contacted again?

If you would like to take part in this study, you will be asked to sign the Consent Form on the next page. You will be given a copy of this information leaflet and the signed Consent Form to keep. You will not be contacted again after the completion of the study.

# **Participant Debriefing Sheet**

Thank you for taking the time to participate in this study. If any issues emerged as a result of taking part, please contact:

- Nurture Africa HR Department, Nurture Africa, PO Box 33180, Kampala, Uganda or by email: jobs@nurtureafrica.ug
- Principal Investigator: Stuart Kwikiriza stuartk@nurtureafrica.ug

**Consent Form** 



Trinity College Dublin

Coláiste na Tríonóide, Baile Átha Cliath

The University of Dublin



# CONSENT

# Name of Study:

Exploring Staff Perspectives: A Study on the Effectiveness and Impact of PAIRS Training

General	Please Tick
I confirm I have read and understood the Information Leaflet for the above	
study. The information has been fully explained to me and I have been able to ask	
questions, all of which have been answered to my satisfaction.	
I understand that this study is entirely voluntary, and if I decide that I do not want to	
take part, I can stop taking part in this study at any time without giving a reason. I	
understand that deciding not to take part will not affect my future medical care.	
I understand that I will not be paid for taking part in this study.	
I agree to take part in this research study having been fully informed of the risks,	
benefits and alternatives which are set out in full in the information leaflet which I	
have been provided with.	
I understand that I can stop taking part in this study at any time without giving a	
reason.	
I understand that personal information about me will be protected in accordance with	
the General Data Protection Regulation.	

Staff Name (Block Capitals)

Staff Signature

Date

Witness Name (Block Capitals)

Witness Signature

Date

#### **Draft Questions**

#### Introduction:

• Can you describe your role within the healthcare system and your experience with paediatric care before participating in PAIRS training?

#### **Training Experience:**

- What motivated you to participate in the PAIRS training program?
- Could you walk me through your experience during the PAIRS training sessions?
- How did the format and structure of the training sessions impact your learning experience?
- Were there any specific aspects of the training curriculum that you found particularly valuable or challenging?

#### **Application in Practice:**

- How have you applied the knowledge and skills gained from PAIRS training in your day-to-day work?
- Can you share any specific instances where PAIRS training influenced your approach to caring for patients?
- Have you encountered any barriers or challenges in implementing PAIRS principles in your practice? If so, what were they?

#### **Impact on Patient Care:**

- In what ways do you believe PAIRS training has impacted the quality of care provided to paediatric patients in your healthcare setting?
- Can you provide examples of how PAIRS training has contributed to improved patient experiences?
- Have you noticed any changes in the overall culture or attitudes towards paediatric emergency care among your colleagues since participating in PAIRS training

#### **Personal Development:**

- How has your confidence in managing paediatric care evolved since completing PAIRS training?
- Have there been any changes in your communication skills or teamwork dynamics due to the training?
- In what ways do you feel PAIRS training has contributed to your professional growth and development?

#### **Suggestions for Improvement:**
- Are there any aspects of the PAIRS training program that you believe could be enhanced or modified to better meet the needs of healthcare staff?
- What additional resources or support would you find beneficial in furthering your skills in paediatric emergency care?
- Do you have any recommendations for how PAIRS training could be integrated more effectively into the broader healthcare system?

# **Appendix 4: Research Ethics Committee Approval**

MAKERERE

P.O. Box 7072 Kampala UGANDA Email: hdrecadmin@musph.ac.ug



# UNIVERSITY

Tel: +256 -414-543 872/ 031-2-263158 Fax: +256-414-531807 Website: www.sph.mak.ac.ug

### COLLEGE OF HEALTH SCIENCES SCHOOL OF PUBLIC HEALTH

**Research and Ethics Committee** 

13/05/2024

Type: Initial Review

Re: SPH-2024-576: Staff Experiences of PAIRS Training

I am pleased to inform you that the MAK School of Public Health REC (SPHREC), through expedited review held on 13/05/2024 approved the above referenced study. Approval of the research is for the period of 13/05/2024 to 13/05/2025.

As Principal Investigator of the research, you are responsible for fulfilling the following requirements of approval:

- 1. All co-investigators must be kept informed of the status of the research.
- 2. Changes, amendments, and addenda to the protocol or the consent form must be submitted to the REC for rereview and approval **prior** to the activation of the changes.
- 3. Reports of unanticipated problems involving risks to participants or any new information which could change the risk benefit: ratio must be submitted to the REC.
- 4. Only approved consent forms are to be used in the enrolment of participants. All consent forms signed by participants and/or witnesses should be retained on file. The REC may conduct audits of all study records, and consent documentation may be part of such audits.
- 5. Continuing review application must be submitted to the REC **eight weeks** prior to the expiration date of **13/05/2025** in order to continue the study beyond the approved period. Failure to submit a continuing review application in a timely fashion may result in suspension or termination of the study.
- 6. The REC application number assigned to the research should be cited in any correspondence with the REC of record.
- 7. You are required to register the research protocol with the Uganda National Council for Science and Technology (UNCST) for final clearance to undertake the study in Uganda.

The following is the list of all documents approved in this application by MAK School of Public Health REC (SPHREC):

No.	Document Title	Language	Version Number	Version Date
1	OW Ethics Cert	English	1	2024-05-02
2	SK Ethics Certificate	English	1	2024-05-02
3	Informed Consent forms	English	1	2024-04-30
4	Data collection tools	English	2	2024-04-30
5	Informed Consent forms	English	2	2024-04-30
6	CVs of the investigators	English	1	2024-04-30
7	Protocol	English	2	2024-04-30

Yours Sincerely

Thagann'

Joseph Kagaayi For: MAK School of Public Health REC (SPHREC)

# Appendix 5: Uganda National Council Science and Technology Clearence



Uganda Pational Council for Science and Technology (Established by Act of Parliament of the Republic of Uganda)

Our Ref: HS4309ES Nurture AfricaNGO Wakiso 12 June 2024

#### Re: Research Approval: <u>Staff Experiences of PAIRS Training</u>

I am pleased to inform you that on 12/06/2024, the Uganda National Council for Science and Technology (UNCST) approved the above referenced research project. The Approval of the research project is for the period of 12/06/2024 to 12/06/2025.

Your research registration number with the UNCST is **HS4309ES**. Please, cite this number in all your future correspondences with UNCST in respect of the above research project. As the Principal Investigator of the research project, you are responsible for fulfilling the following requirements of approval:

- 1. Keeping all co-investigators informed of the status of the research.
- 2. Submitting all changes, amendments, and addenda to the research protocol or the consent form (where applicable) to the designated Research Ethics Committee (REC) or Lead Agency for re-review and approval **prior** to the activation of the changes. UNCST must be notified of the approved changes within five working days.
- 3. For clinical trials, all serious adverse events must be reported promptly to the designated local REC for review with copies to the National Drug Authority and a notification to the UNCST.
- 4. Unanticipated problems involving risks to research participants or other must be reported promptly to the UNCST. New information that becomes available which could change the risk/benefit ratio must be submitted promptly for UNCST notification after review by the REC.
- 5. Only approved study procedures are to be implemented. The UNCST may conduct impromptu audits of all study records.
- 6. An annual progress report and approval letter of continuation from the REC must be submitted electronically to UNCST. Failure to do so may result in termination of the research project.

Please note that this approval includes all study related tools submitted as part of the application as shown below:

No.	Document Title	Language	Version Number	Version Date
1	Informed Consent forms	English	1	30 April 2024
2	Data collection tools	English	2	30 April 2024
3	Informed consent form for the recruitment	English	1	21 March
	of research participants			2024
4	Project Proposal	English	2	
5	Approval Letter	English		
6	Administrative Clearance	English		

Yours sincerely,

Hellen Opolot For: Executive Secretary UGANDA NATIONAL COUNCIL FOR SCIENCE AND TECHNOLOGY

LOCATION/CORRESPONDENCE

Plot 6 Kimera Road, Ntinda P.O. Box 6884 KAMPALA, UGANDA **COMMUNICATION** 

TEL: (256) 414 705500 FAX: (256) 414-234579 EMAIL: <u>info@uncst.go.ug</u> WEBSITE: http://www.uncst.go.ug











