Int. j. adv. multidisc. res. stud. 2025; 5(2):1317-1324

Received: 11-02-2025
Accepted: 21-03-2025

International Journal of Advanced Multidisciplinary Research and Studies

ISSN: 2583-049X

Examining Strategies in Ministry of Health (MOH) and their Effectiveness in Reducing Neonatal Mortality: A case Study of Levy Mwanawasa Teaching Hospital in Lusaka

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DOI: https://doi.org/10.62225/2583049X.2025.5.2.3982

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Abstract

Neonatal Mortality is a global problem which has claimed about 2.4 million deaths of babies between the ages of one (1) day to twenty eight (28) days and constitutes 42% of global under-five mortality. Neonatal Mortality is a global problem which has claimed about 2.4 million deaths of babies between the ages of one (1) day to twenty eight (28) days and constitutes 42% of global under-five mortality. The target population was sixty (60) healthcare workers in NICU ward. Results indicated that the level of training for most nurses were 80.02% diploma, and only 3.77% nurses acquired degree certificates and 13.21% doctors had master's degree. Presentation of results on established adherence control in neonatal programs by the hospital revealed that 52.83% were familiar with all set protocols while 47.17% were very conversant with these controls and applied accordingly. The results on identified challenges in neonatal adherence control did indicate that there were 22.64% had few challenges while 77.36% had no challenges. In conclusion, the research has established the gap that the hospital does not have adequately trained human resource to handle neonates in intensive care unit. There were few protocols that were not in place due to financial constraint by the hospital, for example, the ward had no digital rectal thermometers which are the most accurate at measuring core temperature. Finally, on the challenges in neonatal adherence controls, this research found that at times challenges comes as a result of economic status of the parents.

Keywords: Ministry of Health (MOH), NICU, Zambia

1. Introduction

1.1 Background

Reducing neonatal mortality is a critical public health goal in many countries, including Zambia. Neonatal Mortality rate is defined as number of deaths during the first 28 days completed of life per 1000 live births in a given year or other period (SDG 3.2.2). Globally neonatal mortality accounts for about 2.6 million deaths and constitute 42% of global under-five mortality. Out of 2.6 million deaths globally, 99% of neonatal mortalities had taken place in low and middle income countries. Statistics have indicated that globally 2.4 million children died in their first month of the life in the year 2019. In the period 1990-1996, Zambia's neonatal mortality ratio (MMR) was 649 deaths per 100,000 Live births according to the report from Central Statistical Office (CSO) *et al*, (1997). The National Millennium Development Goal (MDG)target for 2015 was 162 maternal deaths per 100,000 Live births as per report from the Ministry of Community Development Mother and Child Health (MoH) (2013). To reach this target, Zambia's neonatal mortality rate would have had to have decreased at an average annual rate of about 5.5 %. According to the Ministry of Community Development, Mother and Child Health (MOCDMCH) (2014) report that "the infant mortality rate was 34/1000 live births and of those, neonatal mortality constitute 30%. The Ministry of Health in Zambia has been actively examining and implementing various strategies to address this issue. As a result, there has been a reduction in neonatal mortality rate. For example, the neonatal mortality ratio (NMR) declined from 729 per 100,000 live births in Zambia demography health survey (ZDHS) 2002, to 591 deaths per 100,000 live births in (ZDHS) 2007, and a further decline to 278 deaths per 100,000 live births in (ZDHS) 2018.

1.2 Statement of the problem

Neonatal mortality in the Ministry of Health in Zambia is pressing public health concern characterised by the death of new-borns within their first 28 days of life. Regardless of efforts to improve neonatal mortality, Zambia has continued to face a high neonatal mortality rate; this has hindered progress towards achieving sustainable Development Goal 3.2 reducing neonatal mortality to below 12 per 1000 live births by 2030. There are several factors contributing to this such as inadequate access to quality maternal and neonatal healthcare, limited awareness of essential new born care practices and high rate of preterm births. There is need to put adequate prevention of neonatal mortality programs and policies are in place for all women and girls (CSO, 2009). Urban areas had a higher rate at 28 deaths/1000 live births, compared to 23 deaths/1000 live births in rural areas of Zambia (MOH, 2022). Essential Newborn Care Guidelines of July, 2014 reports that "the neonatal mortality rate was 30/1000 live births. The number of new born deaths among the live births increased from 24/1000 to 27/1000 live births between 2013 and 2018 (ZDHS, 2018). In Zambia, deaths from severe birth asphyxia tops and by the year 2020, it stood at 30.2 %, followed by premature at 27.2% and then sepsis or infections at 18.2%. It is estimated that 75% of babies born too soon die within the first week of life (WHO, 2012)." Therefore, this study will endeavour to bring out what could be the best solution to the above challenge.

1.3 Objectives

The general objectives of this project are to examine strategies in the ministry of health (MOH) and their effectiveness in reducing neonatal mortality. Specific objectives of the research project include the following: To identify levels of training provided to people providing neonatal services, to establish neonatal adherence control in neonatal programs by the hospital, and to establish challenges in neonatal adherence controls**.**

1.4 Research questions

What levels of training is provided to people providing neonatal services? How is the neonatal adherence control in neonatal programs by the hospital? What are challenges in neonatal programs?

1.5 Theoretical Framework

Theoretical framework is defined as 'blue print' or guide for a research (Grant & Osannloo, 2014). It is a framework based on existing theory in a field of enquiry that is related and/or reflects the hypothesis of the study. Sinclair (2007), Fulton and Krainovich-Miller,(2010). The role of the theoretical framework is compared to that of a road map that guides a person to unknown destination or a travel plan. The importance of theoretical framework is to 'provide structure in showing how the researcher defines his/her study philosophically, epistemologically, methodology and analytically' (Grant & Asanloo, 2014). For this to happen there must be quality of care provided to the newly-born and their mothers. The World Health Organization (WHO) defines quality of care as 'the extent to which healthcare services provided to individuals and patients to achieve desired health outcomes' Hence, in order to achieve this, healthcare must be safe, effective, timely efficient, equitable, quality care and people-centred. This includes accessibility, affordability and utilization of the services. In the research, the following theoretical framework can be used: Training and education needs Access to multidisciplinary education and training allows a neonatal team to develop effectively (RCN 2012b). This would allow individual nurses need to ensure that their personal development meets the requirements of the NMC revalidation process (NMC 2105b) and AHPs ensure they meet the standards of conduct, performance and ethics of the Health and Care Professions Council (2016). Staff on every unit should have access to a practice development nurse and an educator (DH 2009). Of the registered nursing staff, 70% should have the neonatal QS (DH 2009, NICE 2010, BAPM 2010). Neonatal unit management teams should work alongside the ODNs and health education to ensure that available courses deliver nurses able to fulfil their roles effectively (Turrill 2015). As set out in the 2012 RCN guidance, all non-registered staff should be appropriately trained and have the competency, knowledge and skills they need to work in the neonatal setting**.** Adherences to neonatal control programs have its own challenges such that new-born infection is one of the major causes of death during the first month of life, especially in high mortality settings. However, empirical treatment of infants presenting with clinical signs of sepsis is a life-saving intervention, regardless of that, the antimicrobial resistance (AMR) that follow, especially as a result of broad-spectrum antibiotic use, is threatening future progress.

Addressing challenges of neonatal programs may not be easily met but require consented effort. For example, the report from Global Health Action (2017) on effectiveness of antenatal care services in reducing neonatal mortality in Kenya: Analysis of national survey data, indicated that " although global neonatal mortality declined by about 40% from 1990 to 2013, it still accounted for about 2.6million deaths globally and constituted 42% of global under-five deaths". This study has been necessitated by the increase of neonatal mortality rate despite measures that are put in place hence the need to identify other factors and measures that will enhance improvement of neonatal health care services in Zambia.

2. Literature Review

Identifying levels of training provided to people providing neonatal services in health institutions is necessary to finding solution for the neonatal mortality rate which is not only Zambia's concern but also the world at large**.**

The research that was done in Iran, brazil, Finland, Korea, India, Nigeria, South Africa, Uganda, and Zambia to check on levels of training to people providing healthcare services to neonates found varying results in different countries. For example, in Iran the aim was to explain the challenges of education in Neonatal Intensive Care Unit (NICU). After data analysis was done, there were two main categories that were extracted and these were theoretical education challenges and clinical education challenges. The first main category was comprised of the following subcategories: Removing of nursing department and the Hospital. There was inconsistency between the content of theoretical courses and limited in terms of working together between basic science and medical departments**,** low number of lecturers but also unrealistic expectations by the lecturers as well as the importance of the scoring system.Another issue was an extended work shifts, a large number of students however, this was characterised with lack of opportunity to do clinical

practices by the students including lack of training classes with limited equipment in the hospital were recognized as subcategories of the second category. (Educational challenges of postgraduate neonatal intensive care nursing students: J Edu Health Promot 2020).

In Brazil, the research focused on effectiveness of action-oriented educational intervention in ensuring long term improvement of knowledge, attitudes and practices of community health workers in maternal and infant health. The results in that research indicated that a sustainable improvement of the community health workers, besides that a lot of them represented a transferable model that could ensure retention of acquired competencies and provide more solid foundations for improved CHWs performance (Melo e Lima etal. BMC. Education (2018) [15].

In Finland, the focus was on staff to collaborate with parents to train them in identifying the barriers and facilitate the family centered care and thereby improve neonates' outcome. The training of healthcare workers took one and half years with results of facilitation the implementation of training program which were multidisciplinary commitment and staff's motivation to change their professional role to work as the parents' facilitator. It was learnt that it was a key factors in facilitating the change. Toivonen et al. (2019) [6].

Zambia's training program for midwifery is done in 3 ½ years, it is also done to doctors. However, due to lack of standardization of duration of the study, content and structure of midwifery education and different pathways to midwifery across the world, midwives may lack confidence to deliver quality healthcare services. They also need quality training both theoretical and practical in order to gain confidence in new-born care upon completion of their training. (Health. 2020). To assist these conventional training, there has been an experience that training traditional birth attendants in remote areas are vital for saving neonates (BMJ Clinical Research, 2011).

Adherence controls in neonatal programs which are interventions that can be put in place in order to reduce neonatal mortality from various causes. One of the most important things to do is to follow the adherence to World Health Organization guidelines on first line antibiotic which is crucial to mitigate the risks of increased antimicrobial resistance.

The Ugandan government implemented the WHO guidelines of 2016 for pregnancy, child birth postpartum and new-born care, however, it was discovered that the knowledge of healthcare workers were low and therefore, there was need to put measures in place to ensure that there is diverging practices to health workers, give indications for closer working relationship within the health and mother-neonate contact after birth complications is recommended. (Pregnancy and Child Birth,2021). In Lesotho which has the highest maternal mortality in the world, provide free primary healthcare including maternity care while in the hospital co-payments were required from patients. The provision of free maternal care at the clinics and district hospitals that have assisted pregnant women deliver within the hospital and increased the number of babies born in a safe environment by 49%. As part of its efforts to achieve the sustainable development goals, it is recommendable that government should consider the national wide introduction of free delivery at all levels of the healthcare system (Tropical Medicine and International Health, 2019.

In Zambia, adherence controls to neonatal mortality did a research on effectiveness of 4% chlorhexidine umbilical cord washes that could reduce neonatal mortality; however, the reduction in neonatal mortality in Zambia was not significant compared to that of Asia (Lucia. H, Lancet Glob Health, 2016 Vol 7, issue 6,E720, June 2019). In case of areas infested with mosquito that cause malaria, the disease can cause a lot of deaths not only to parents but also to neonates. The needed thing to be done was to have urgent need to have access to quick and effective treatment as a cornerstone strategy of malaria control. WHO recommends home management of malaria using artemisinin based combination therapy (ACT) and Rapid Diagnostic tests (RDTs) as one strategy for improving access to quick and effective malaria case management. For the above strategy to be achieved, a research study was conducted on the subject "Community case management of malaria using ACT and RDT in two districts of Zambia: Achieving high adherence to test results using community workers". The results indicated that community case management of malaria by CHWs using RDTs and ACT was feasible, accessible by the communities and are efficient. A lesson from the above scenario is that RDT test results were the best practice. Scaling up malaria case management with ACT and RDTs coupled with intensified training and supervision has potential to improve malaria case management in remote areas of Zambia (Chanda *et al.* Malaria Journal**,** 2011). The other area of study undertaken was on the neonatal hypothermia which was recognized as a risk factor to the new-born survival. Some of the protocols of the WHO recommendations are to maintain warm chain and skin to skin care for thermos protection of new-born. Another key was the aspect of training family members to support mothers in the provision of thermos protection to their new-born (Musso A, *et al*, 2014)**.**

The challenges faced with neonatal adherence controls. in Iran, the research study on "education challenges f post graduate neonatal intensive care nursing students" found that regardless of healthcare and the application of new technology in the care of patients, the need to train the highly skilled and specialized nurses is needed. Other challenges in training of students were large number of students lacked opportunities to do clinical practices, lack of training classes and limited amenities in the hospital. Asa result of this scenario, they cannot perform to expect adherence controls when they are employed after school. The lesson in that study was that providing students with problem based clinical education, familiarizing physically by students with clinical environment before entering new clinical settings would be effective. Also in-house training and workshops could create a supportive climate in the clinical settings to overcome such challenges (Edu Health Promot, 2020).

In Japan one of the great focuses is to maintain maternity care system because of the decreasing number of obstetricians in rural areas. The challenges were that in these rural settings, there was low awareness of health primary care, lack of training opportunities, unclear goal of the training, lack of certification system, lack of consultation system and lack of obstetricians to offer support. Therefore, increasing the awareness of primary care and developing maternity care training programs to certify primary care physicians may enable more primary care physicians to

engage in and provide women's health and maternity care in remote areas (Shibata *et al*. BMC Practice, 2018).

3. Research Methodology

3.1 Research Design

MacMillan and Suchumacher (2001), define it as "a plan for selecting subject, research sites and data collection procedures to answer the research question" and further, they indicated that the goal of a sound research design is to provide results that are judged to be credible. In a similar manner, Durrheim (2004), defined research design as "a strategic framework for action that serves as a bridge between research question and the execution, or implementation of the research strategy". Therefore, according to the definitions above, the research design in case study that was used to meet a plan for selecting subject, research site and data collection procedure to answer the research question was a case study research. It was used to narrow down a very broad field. The findings of neonatal variables will help in providing systematic information about this phenomenon.

Research methodology is the primary principle that will guide your research (Dawson, 2019). Therefore, this could be qualitative, quantitative or mixed method methodologies. Methodology ensures that the method used should be systematic, procedural, giving roadmap up to the conclusion of the study case. This must have logical, empirical, replicable, transmittable deductive and objectify. In this case, the research design that was used to meet a plan for selecting subject, research site and data collection procedure to answer research question. The research had to describe in-depth study of neonatal mortality in its context rather than just looking at statically survey. It was used to narrow down a very broad field**.**

The target population in which the research focused was individuals that the interventions intend to conduct the research on and draw a conclusion. These were medical personnel such as doctors and pediatric nurses whose duty is to provide healthcare to neonates admitted in neonatal intensive care unit (NICU).Sampling method refers to rules and procedures by which some elements of the population are included in the sample (Dr. Fulwinder Pal Sigh, 2019). Examples of sampling methods are: Simple random sampling, stratified sampling, and cluster sampling. In this research, purposive sampling was used. The sampling technic was chosen because it was the best when focusing on an in-depth while relatively small samples. The main purpose of that sampling was to identify cases and individuals best suited to help answer the research question raised. In the research it was chosen that the sample size of sixty (60) health workers whose duties is to give healthcare to neonates admitted in the hospital. However, due to the limited number of health workers, and their busy schedule, only fifty three (53) healthcare workers were interviewed and answer questionnaires. Indicators were used as a measurement index of the results that can be used as an evidence to evaluate the project and check if moving in the wright direction as is guided by the objectives. The indicators in this research were: To identifying levels of training to people providing neonatal services. What levels of training are acquired in order to effectively provide neonatal services? The second indicator on establishing neonatal adherence controls in neonatal programs. In reference to WHO guidelines on neonatal programs, how has the hospital adhered to the guidance? The third indicator was to establish challenges in neonatal programs. What kind of challenges faced with by the hospital in implementation of neonatal programs?

According to Cohen Manion and Morrison (2000) define triangulation as "the use of two or more methods of data collection to study a particular phenomenon". Hence, triangulation is viewed as a verification procedure that researchers can use to search for convergence among multiple and different sources of information including data. For example, data source can be sourced from literature review, questionnaires and interviews. Literature is used to provide secondary information that can help a researcher to formulate questions for questionnaires and the findings of the questionnaires help a researcher to formulate other questions for physical interviews. Data was collected from healthcare workers in the hospital through written questionnaires provided to them. After data collection was done through questionnaires, some of them were interviewed for further clarification. Data was then processed to find results of the research study.

4. Results/Findings

4.1 Presentation of research Findings

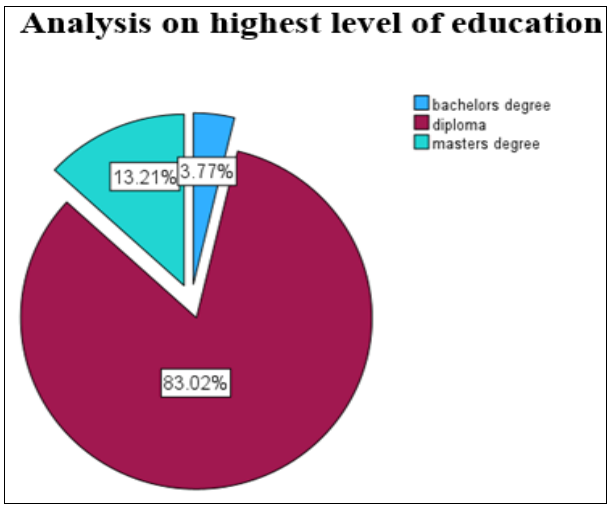

Fig 1:

Respondents were requested to indicate their highest qualification obtained in formal school, 80.02% were diploma holders while 13.21% master's degree and 3.77% were for bachelor degree.

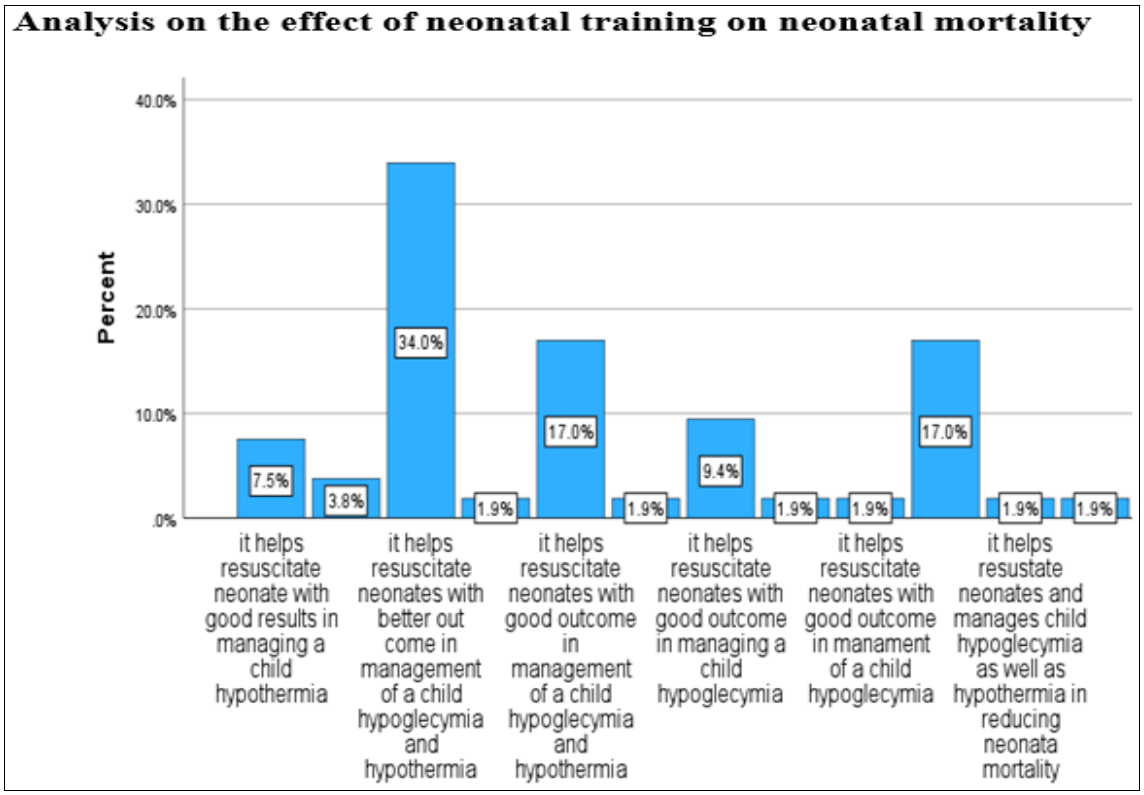

Fig 2:

The effect it has on neonatal mortality. 34.0% it helps resuscitate neonates with better outcome in management of a child hypoglycemia and hypothermia, 17.0% it helps resuscitate neonates with good outcome in management of hypoglycemia and hypothermia, 9.4% it helps resuscitate neonates with good outcome in managing a child with hypothermia, 7.5% it helps resuscitate neonate with good results in managing a child hypothermia and 1.9% it helps resuscitate neonate and manages child hypoglycemia as well as hypothermia in reducing neonate mortality.

Presentation of results on established adherence control in neonatal programs by the hospital.

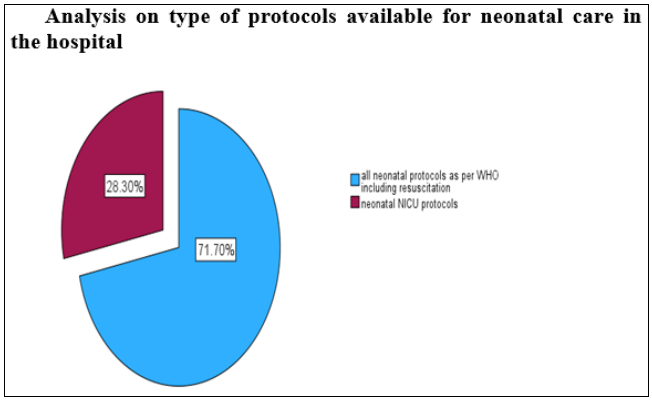

Fig 3:

Respondents were requested to indicate the protocols they have for neonatal care, 71.70% indicated that all neonatal protocols as per World Health Organization (WHO), including resuscitation and 28.30% Neonatal Intensive Care Unit (NICU) protocols.

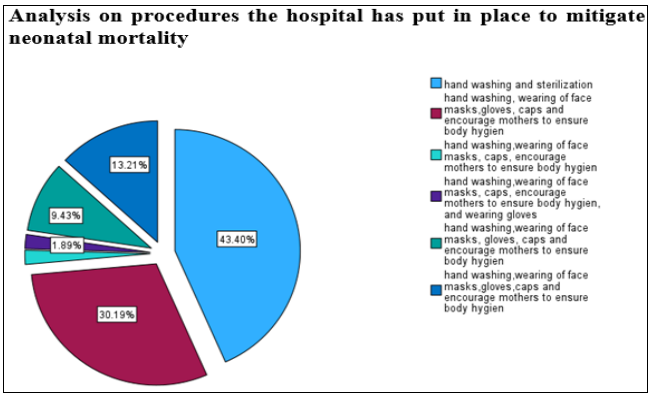

Fig 4:

Respondents were asked to indicate procedures put in place to mitigate neonatal mortality, 43.40% mentioned hand washing, face masks and wearing of caps, 30.19% said by wearing gloves, caps and masks, while 13.21% indicated wearing of masks, gloves, caps and encourage mothers to ensure body hygiene, 9.43% said wearing of masks, gloves and 1.89% mentioned masks, caps, mother body hygiene, hand washing, and wearing of gloves respectively.

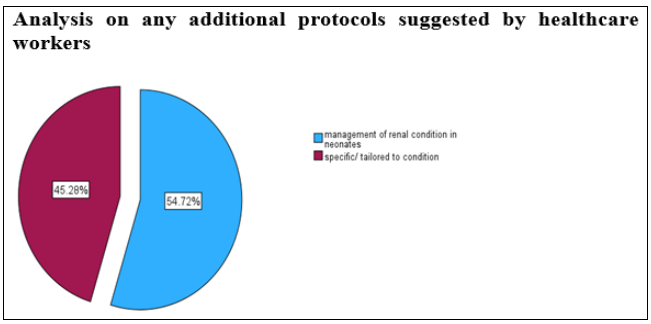

Fig 5:

Respondents were requested to indicate if there more that can be added to existing protocols.54.72% mentioned management of renal condition in neonates while 45.28% specific tailored condition.

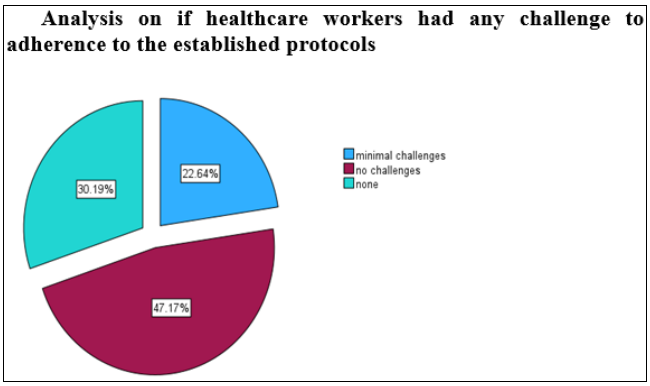

Fig 6:

Respondents were asked if they faced any challenges in adhering to the established protocols, 47.17 had no challenges, while 30.19% had none and 22.64% had minimal challenges.

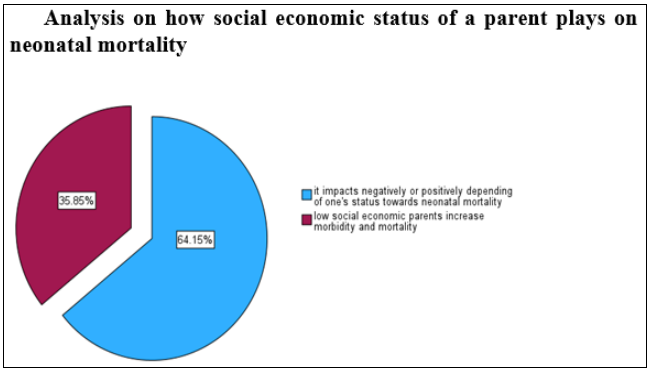

Fig 7:

Respondents were asked to describe the role of social economic status of parents play in neonatal mortality, 64.15% said it impacts negatively or positively depending on one's status toward neonatal mortality and 35.85% described low social economic parents increase morbidity and mortality.

4.2 Discussion

The discussion of the results on the levels of training provided to people providing neonatal services in the hospital. Results indicated that the level of training of the healthcare workers started at diploma level which stood at 80.02% among female and male nurses. For bachelor degree, there were only 3.77 nurses and these were only females. These are the ones that were trained in pediatric who are qualified to work in Neonatal Intensive Care Unit (NICU) ward. However, due to non-availability of qualified staff to work in this ward, the hospital management had no choice but to deploy nurses who had done general nursing program. The other needed skills in NICU are gained through in-house training provided by the hospital, they also learn through organized workshops within and outside the hospital. The other needed skills in NICU are gained through in-house training provided by the hospital, they also learn through organized workshops within and outside the hospital. The only few that obtained bachelor degree were being used as the in-charge of the shift or work as super visors to these others who had not attained pediatric level of training. Doctors were the ones that had attained master's degree and ensured that each shift had not less than three doctors in the ward. The formal levels of training received by healthcare workers were as follows; 83.0% resuscitation, in-house workshop, 13.2% neonatal resuscitation, 10% pediatric nurse and 10% resuscitation, in-house training. These results indicated that only 10% of nurses were trained in pediatric that were qualified to work in NICU ward. This means there were 90% of nurses that were not formally trained to work in neonatal ward and that was the gap found. That was against the need of training for high-risk premature neonates' treatment and procedures, maintaining various tubes were highly demanded by nurses and should be prioritized. (Healthcare. 2022).The qualified nurses in NICU can ensure the reduction of neonatal mortality in the ward. That was an indication by 69.8% of heath care worker's response on the effect it has on neonatal mortality. It is important to acquired competencies and provides more solid foundations for improved CHWs performance. (Melo e Lima *et al*. BMC Medical Education (2018) [15].

Presentation of results on established adherence control in neonatal programs by the hospital according to World Health Organization (WHO) protocols. Respondents were asked to indicate protocols which they had for their daily use for neonatal care. The response were as follows; 71.70% indicated that almost all neonatal protocols as per WHO including resuscitation while 28.30% indicated that there are few protocols that are not in place due to financial constraint by the hospital, cited one example, the ward had no digital rectal thermometers which are the most accurate at measuring core temperature. On the other hand, some of the procedures the hospital had put in place to mitigate neonatal mortality, the respondents gave the following responses; 43.40% mentioned hand washing, face masks and wearing of caps, 30.19% said by wearing gloves, caps and masks, while 13.21% indicated wearing of masks, gloves, caps and encourage mothers to wash their hand before breastfeeding and ensure general body hygiene in order to prevent cross infection to their babies. 9.43% said wearing of masks and gloves and 1.89 mentioned of wearing masks, caps, mother body hygiene, hand washing, and wearing of gloves respectively. Regarding other protocols that might not have been covered by the hospital which was needed by the healthcare workers, in response, respondents indicated that 54.72% mentioned management of renal condition in neonates while 45.28% specific/ tailored condition. Hence, management of renal condition and tailored condition were found to be the gap that requires management of the hospital to work on. In addition, family care is becoming more relevant today, as parents are encouraged to participate in NICU care skills. (Int.J.Environ. Res. Public Health. 2020, 17(19),7197). This is important as one family member (mother), cannot manage to care for a baby alone.

The presentation of results on identified challenges in neonatal adherence control had different views. Respondents were asked if they faced any challenges in adhering to the established protocols, 47.17% responded that they had no challenges while 30.19% had none and 22.64% had minimal challenges. These results clearly indicate that only 22.64% had few challenges while 77.36% had no challenges. These results corroborates with the level of training of healthcare

workers in neonatal intensive care unit (NICU) in which 80.02% were not trained for pediatric program and out of these, 10% were trained through the in-house training on neonatal programs while 13.2% they trained through in-house workshops.

Challenges at times comes a result of economic status of the parents, hence respondents were requested to describe the role of social economic of parents how it affect neonatal mortality rate. The response were as follows; 64.15% said it impacts negatively or positively depending on one's status toward neonatal mortality and 35.85% described that low social economic status of a parent increases morbidity and mortality rate. The responses above give an idea of another challenges healthcare workers face.

Respondents were requested to share any other issues that contribute to neonatal mortality, 62.26% said rotation of staff from NICU have negative effect on neonatal care, it compromises healthcare and 37.74% concerned about inadequate communication.

4.3 Conclusion

In conclusion, the research has established that the level of training provided to the people providing neonatal services were not sufficient as shown above were 80.02% healthcare workers were not trained in paediatric nursing but only trained in general nursing which only contained resuscitation course. Only 3.77% were fully trained as paediatric nurses who were qualified to work in NICU ward and 13.21% of doctors who attained the qualification of master's degree as the highest qualified cadres in the ward, such findings meant that for medical doctors it was 100% of them were qualified for their work. Therefore, 52.83% of the nurses suggested that it was important that all healthcare workers in NICU should attain paediatric level of training. These finding therefore, have established the gap that the hospital do not have adequate trained human resource to handle neonates in intensive care unit. The minimum qualification for neonatal intensive care nurse is a registered nurse(RN) with either an Associate's Degree in Nursing (ADN) or a Bachelor's of Science in Nursing (DH 2009, NICE 2010, BAPM 2010)**.**

While the response on established adherence controls of 71.70% had indicated that almost all neonatal protocols were being adhered to as per WHO including resuscitation, while 28.30% indicated that there were few protocols that were not in place due to financial constraint by the hospital and cited one example, the ward had no digital rectal thermometers which are the most accurate at measuring core temperature. That was a clear indication that not all established controls were in place as the NICU ward had none of these. Apart from what the hospital was lacking as per WHO protocols, there was another need suggested by healthcare workers that the hospital management should put in place and that were management of renal condition in neonates and specific/ tailored condition. The above response revealed that there was and still is a gap in neonatal adherence controls that needs to be included for the effectiveness of mitigating neonatal mortality.

And finally, the results on identified challenges in neonatal adherence control did indicate that there were few healthcare workers who had few challenges. These results clearly indicate that only 22.64% had few challenges while 77.36% had no challenges. These results corroborates with the level of training of healthcare workers in neonatal intensive care unit (NICU) in which 80.02% were not trained for pediatric program and out of these, 10% were trained through the in-house training on neonatal programs while 13.2% they trained through in-house workshops. That meant that the rest were not trained but they learned through physical observation during the course of work with their senior healthcare workers**.** As a result, these had minimum challenges on certain protocols on which they are yet to observe how it is done. Therefore, the research findings did indicate that out of 80.02% who were not officially trained in school but 23.2% attained knowledge through workshops and in-house training leaving out 56.82% without any NICU training. In conclusion, it is un deniable that 22.64% of healthcare workers had few challenges in adherence to control measures recommended by the WHO and the hospital which is the gap that need to be worked on by the hospital management.

5. Acknowledgments

I am indebted to the Information and Communications University and Zambia Research and Development Centre for providing guidance and enabling environment for this journal project to succeed. I am grateful to the Information and Communications University for its tireless provision of needed guidance during the process of the project.

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