British Journal of Multidisciplinary and Advanced Studies:
Health and Medical Sciences 5 (2),41-56, 2024
Print ISSN: 2517-276X
Online ISSN: 2517-2778
Website: https://bjmas.org/index.php/bjmas/index
Published by European Centre for Research Training and Development UK

Factors Influencing Neonatal Health Conditions in Zambia: A Systematic Literature Review

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doi: https://doi.org/10.37745/bjmas.2022.0456 Published March 30, 2023

Citation: Rukwaru E.K. (2024) Factors Influencing Neonatal Health Conditions in Zambia: A Systematic Literature Review, *British Journal of Multidisciplinary and Advanced Studies*: Health and Medical Sciences 5 (2),41-56

ABSTRACT: *Neonatal mortalities and health outcomes among infants are serious health conditions facing public health practice in Zambia and hindering the attainment of SDG 3 and target 3.2 by 2030. To address the problem of neonatal mortalities and health conditions in Zambia and inform relevant intervention, the present systematic literature review aimed to investigate the factors influencing neonatal mortalities and health conditions in Zambia. Methodology: A systematic literature review was done in order to assess factors influencing neonatal disorders in Zambia to document findings other researchers in Zambia had reported. The search strategies involved reviewing literature from Zambia using Google scholar and PubMed data bases. Selection of studies considered as eligible by this systematic literature review tool three steps namely topics only, abstracts and full articles. A CASP systematic review checklist 2018 tool was used to appraise included studies validity, results and relevance of results to the local situation. Findings of the articles selected for inclusion on the study were analyzed thematically based on themes generated from the study objective and presented in a narrative form. A data extraction table utilized and included among others a critical appraisal section for the included studies. Findings: On the prevalence of neonatal mortalities and health conditions among newborns in Zambia, the present systematic literature review found that in Zambia, neonatal mortalities and health disorders are a very serious public health problem among new borns in the nation and that majority of Zambian neonates die in a span of seven days after birth in with the rural regions which are underdeveloped bearing the brunt of these neonatal deaths and health conditions. The health conditions among Zambian neonates include respiratory syncytial virus, sepsis, premature births and respiratory dysfunctions among others. Regarding the factors influencing neonatal disorders among newborns in Zambia, the review found that in Zambia, neonatal mortalities and health conditions are caused by several factors namely neonatal sepsis, intrauterine infections, birth asphyxia, bacterial infections, premature deliveries and low-birth weight as the main factors while others include but are not limited to maternal level of education, being a male infant, severe intrapartum incidents respiratory syncytial virus, twin pregnancies and placental abruption. The study therefore concludes that neonatal mortalities and disorders are very prevalent among Zambian newborns with neonatal sepsis and low birth weight being some of the key causes of these health outcomes.*
KEYWORDS: neonatal, health conditions, Zambia, systematic, literature review

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INTRODUCTION

Neonatal health is a critical global concern, reflecting the national and global progress and challenges of health systems. Over the past decades, significant progress had made in improving neonatal survival, with the death decreased by 42.4% since1990, and caused 2.6 million deaths in 2015 (Collaborators GBDCM, 2016, p. 1725-1774; Wang, *et al.*, 2014, p. 957-979). Neonatal disorders ranked the second leading cause of YLLs (accounted for 1.78 million) in 2017, with a decrease of 24.1% since 2007 (Collaborators GBDCoD, 2018, p. 1736-1788).

Seventeen sustainable development goals (SDG) were agreed upon in 2015 by United Nations member states Zambia one of them. Among the SDGs, SDG three aims is to ensure healthy lives and promote well-being for all at all ages (SGD report, 2022). The third and remaining sixteen goals are to be achieved by end of the year 2030 and among the targets of SDG 3 is target number 3.2 which holds that preventable newborns and infants aged <5 mortalities should be ended by year 2030 with every country committing to reducing neonatal mortalities to no less than 12 in 1,000 live deliveries and <5 deaths to no less than 25/1,000 live deliveries (SGD report, 2022). The SDG report (2022) reveals that <5 deaths reduced by 14% in 2020 from 2015 internationally. In public health practice, SDG 3 covers reproductive, maternal, neonatal and child health which focuses in enhancing healthcare for women and infants so as to prevent adverse effects associated with pregnancies and childbirth.

Between the years 2018 and 2030, it has been estimated that 27.8 million neonates will lose their lives if there if progress in neonatal mortality does not occur (Hug, *et al.*, 2019, p.710-720). Oza, *et al.* (2014, p.19-28) conducted a research in 186 nations and established that early neonatal mortality risk was extremely heightened across a variety of contexts and nations. Among reported neonatal mortalities, almost 50% arise in a span of under one day of birth and almost 33.3% transpired under 6hr post-delivery (Baqui, *et al.,* 2016).

As a Jordanian Neonatal and Perinatal Death assessment show, neonatal death rates was found to be 14.9/1,000 live deliveries. In impoverished nations, most neonatal mortalities lack specific causes for instance pre-maturity (Goldenberg, *et al.*, 2019, p. 1915-1923; Mengesha, *et al.*, 2017). Lack of specific causes is a result of numerous potential variables that might be associated to the specific primary cause of neonatal deaths. Nevertheless, scholars have grouped the causes into either maternal or fetal related conditions (Lawn, *et al.*, 2005, p. 891-900). Neonatal mortalities normally take place often occur as a result of an ailment displaying as an emergency, either immediately post-delivery or later-on, as a result of infections for instance community-obtained infections or tetanus (Gülmezoglu, *et al.*, 2016). Information on neonatal mortality causes as well as their timing are normally scarce and less reliable compare to every-cause death information and such information influence indeterminate estimations that present great obstacles to evidence-informed interventions generation to prevent neonatal mortalities (Gülmezoglu, *et al.*, 2016).

Zejin, *et al.* (2022, p. 2-10) in the year 2019, 23,532.23 × 10^3 incident cases of neonatal disorders (ND) were reported which resulted in 1882.44 × 10^3 mortalities world over. Between the years 1990 and 2019, overall trends in age-standardized incidence rate of ND found to be fairly steady while that of age-standardized mortality rate reduced. In the meantime, declining age-standardized mortality rate reduced trends were reported in many nations and regions specifically Estonia and Cook Islands where the corresponding EAPCs were -9.04 (95%CI: -9.69 to -8.38) and -8.12 (95%CI: -8.46 to -7.77). Amongst identified 4 causes of ND and mortalities, just NPB had a declining trend internationally in the ASIR. Diminishing ASDR trends arising from ND underlying precise causes were detected in majority of the regions mainly in the HD in Armenia.

Among the major cause of global neonatal mortalities are neonatal disorders. A study by Hamideh, *et al.* (2014, p. 485) established that hyaline membrane ailment, first-minute Apgar <6, sepsis and existence of birth asphyxia heighted hospitalized neonates mortality rates in the ICU. Verguet and Jamison (2014, p. 151–63) and Feng, *et al.*, 2012) in their studies held that dramatical development in neonatal disorders was particularly as a result of socioeconomic. Neonatal ailments remain the main public problems in poor regions and some include, serious infections, neonatal pre-term delivery complications and neonatal encephalopathy (Deribew. *Et al.*, 2016; Collaborators GBDCoD. 2017, p. 1151-1210). Neonatal health conditions remain critical component of the United Nation's SDG and their epidemiological patterns remain vital to health decisions (GBD Sdg Collaborators, 2018, p. 2091-138).

In Jordan, Al-Sheyab, *et al.* (2020, p. 1) documented 10,328 births of which 10,226 were live delivers and 102 stillbirths registered during the time of study, with mortality rate of 14.1 mortalities in 1,000 live births of whom 76% were reported to be early neonatal deaths while late mortalities were 24%. Within the Ministry of Health healthcare centres, mortality odds were about 21 times heightened than that in private healthcare centres. Pre-term babies and LBW were highly likely to pass on in the period of neonatal compared to full-term infants. The probability of neonatal deaths were found to be considerably heightened amongst babies hose mothers were housewives than infants with employed. As the study outcomes further showed, the key neonatal mortality causes especially neonatal mortalities that took place prior to discharge included cardiovascular and respiratory conditions which accounted for 43% of the deaths and pre-mature and low birth weight that accounted for 33% of these mortalities. Cord and placenta complications, pregnancy complications and surgical and medical conditions were found to be the leading maternal related causes of these neonatal mortalities. Lastly, the study showed that neonatal mortalities post-discharge were found to be mainly caused by premature birth and low birth weight which caused a total of about 42% of the neonatal deaths.

Amsalu, *et al.* (2018, p. 1) in their systematic review established that neonatal mortality risk was reduced by antenatal care attendance [pooled effect size 0.66 (95% CI, 0.54, 0.80)]. In Kenya, Irimu, *et al.* (2021, p. 3-6) and showed at the time the researcher conducted the study within 354 healthcare centers, there were 90,222 admitted patients to 14 health care centers contributing

general pediatrics ward and new born units information. The study also showed that neonates aged 0–28 days formed 46 percent of the entire admissions, but these neonates accounted for 66 percent of the reported neonatal mortalities in the age group 0–13 years. 41 657 inborn neonates were admitted in the NBUs across the 16 hospitals during the study period. Results also showed that 4266/41 657 perished resulting in a crude mortality rate of 10.2 percent with 60 percent of the said mortalities taking place on the initial day of their admissions. Intrapartum-related complications was the single most common diagnosis among the neonates with birth weight of 2kg or more who died. A threefold variation in mortality across hospitals was observed for birth weight categories 1000–1499 g and 1500–1999 g.

In Zambia, premature births, being underweight, respiratory dysfunctions, birth related traumas, congenital malformations, neonatal infections and hemolytic disorders in newborn are specifically vary common among newborn babies. In Sub-Sahara Africa, Zambia is said to have the highest neonatal mortality rates. It has been shown that by 2022, neonatal deaths had yet to reduce in majority of the Zambian provinces including urban and rural settings with urban areas recording higher rates of neonatal mortality rates than rural areas (Ministry of Health, Zambia, 2022, p. ix). Generally, the Zambian mother and infants face numerous challenges that might result in high numbers of neonatal mortalities and health conditions. For instance, numerous rural regions remain underdeveloped with no antenatal care unit available in close proximity to the households, most Zambians especially women and youths lack formal employment and generally, the nation's citizens experience hard socioeconomic. All these has the potential of influencing neonatal health conditions and neonatal deaths. A representative study in the nation showing causes of neonatal is not available of inaccessible to the public which creates the need for the present study to investigate the factors influencing neonatal mortalities and health conditions amongst infants in Zambia.

Scope of the Study

The study focuses on a systematic literature review and not primary study. It addresses factors influencing neonatal mortalities and health conditions among infants. The study is grounded in Zambia and not all low income nations.

Research Question

Being an empirical study, FINER was used to guide the formulation of the research question in order to ensure that the study is feasible, interesting, novel, ethical and relevant after keen perusal of available empirical data on the study topic so as to identify potential gap(s) to be addressed in the current study. Using FINER, the research question was formulated as follows;

1. Which are the factors influencing the achievement of target 3.2: prevention of child and infant mortalities in SGD 3 (ensure healthy lives and promote well-being for all at all ages) in Zambia within the field of reproductive, maternal, neonatal and child health?

Research Objectives

2. To document the prevalence of neo neonatal mortalities and health conditions among infants in Zambia
3. To identify factors influencing neonatal mortalities and health conditions among infants in Zambia

Aim of the Study

The study aim was to conduct a systematic literature review on factors influencing neonatal mortalities and health conditions among infants in Zambia in order to provide additional data to public health and Zambian government that could help in enhancing the possibility of achieving SDG 3 by 2030 through changes in practice

METHODOLOGY

A systematic literature review was done in order to assess factors influencing neonatal disorders in Zambia to document findings other researchers in Zambia had reported. Being a desktop research, no ethical and logistical approval was needed. The process used to arrive at selected and included studies in this systematic literature review is as shown in figure 3.1 below which is a schematic representation of the methodology employed in the review;

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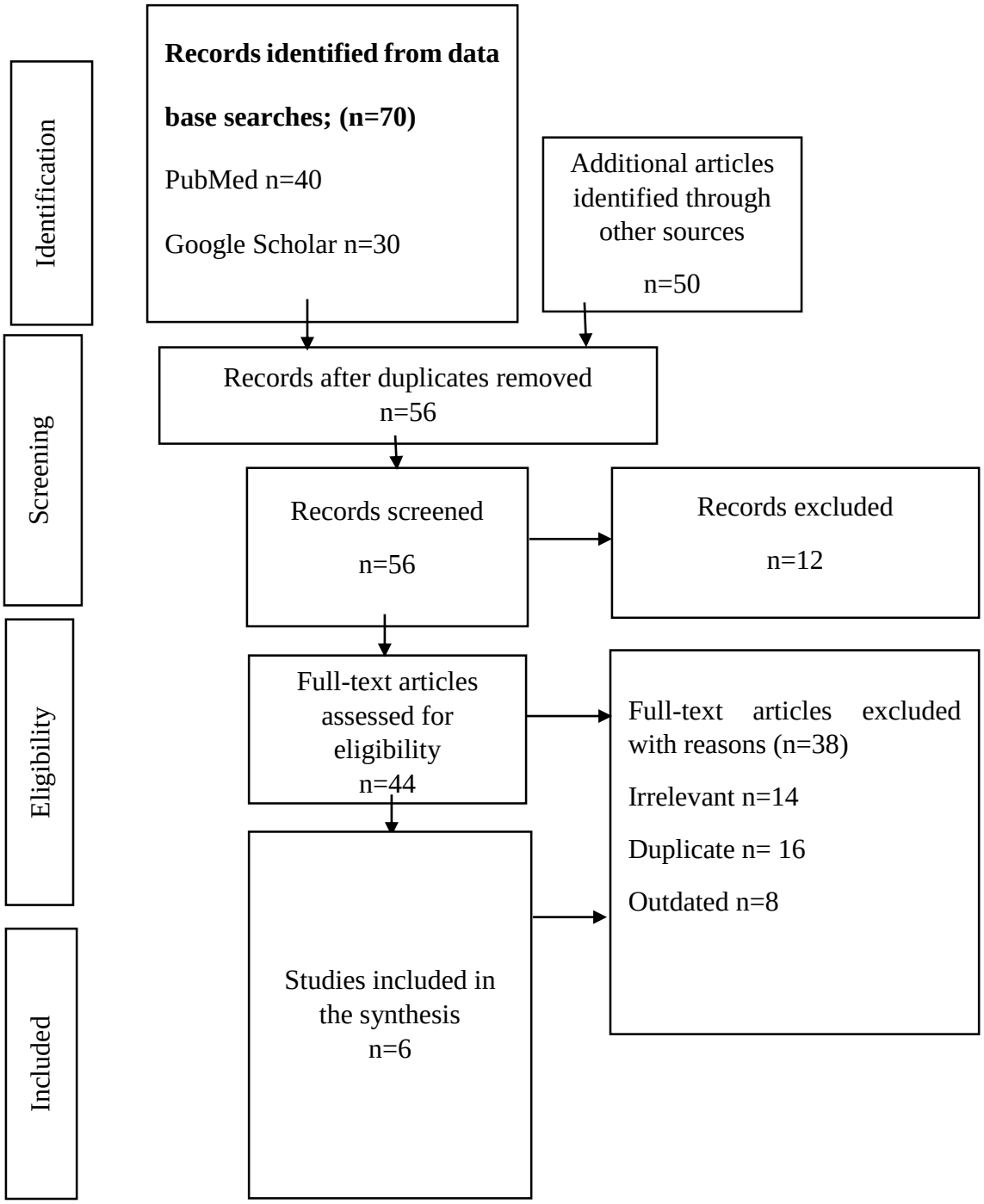
Figure 3.1: PISMA Flow Diagram



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Searching Strategies

The current systematic literature review was done to assess factors influencing neonatal disorders. Reviewed literature were mainly from Zambia as the study focused on Zambia and the literature mainly came from Google scholar and PubMed data bases. Key terms used to access the used studies were neonatal, newborn, determinants, antenatal care, disorders, health conditions, health policy, obstetrics and maternal. These terms were typed alone or in combination with the terms and or on. Inclusion criteria was informed by Population, Intervention, Comparison and Outcomes (PICO) framework with the population being neonates aged under 28 days, Intervention being ANC follow-up, health policies, and preventive obstetrics, comparison taken as neonates of mothers who neglected ANC follow-ups while outcomes being neonatal disorders.

Inclusion and Exclusion Criteria

Selection of studies considered as eligible by this systematic literature review tool three steps namely topics only, abstracts and full articles. Generally, any peer reviewed journal/article, written and published in English language and addressed determinants of neonatal disorders/mortalities were included in this review. Possible eligible studies were singled out by the researcher by independently reading their topics/titles as well as their abstracts that were widely searched and accessed. The journals' entire texts were retrieved and individually evaluated by the researcher for eligibility using the set criteria for exclusion and inclusion. All identified discrepancies were solved by the researcher consulting colleagues. Exclusion criteria involved studies that did not show neonatal disorder/mortalities and factors influencing them such as maternal ANC follow ups and inaccessible articles after efforts to contact the authors were excluded due to inability to examine article quality without access to the entire article.

Method of Critical Appraisal

For the studies selected and included in order to investigate he factors influencing neonatal mortalities and health outcomes in Zambia, a CASP systematic review checklist 2018 tool was made use of. Using this tool, studies validity, results and relevance of results to the local situation were assessed before inclusion.

Data analysis

Findings of the articles selected for inclusion on the study were analyzed thematically based on themes generated from the study objective and presented in a narrative form. The first step involved a thematic synthesis of neonatal disorder/mortalities based on findings from included studies. The second step entailed a thematic presentation of findings from included articles on factors influencing neonatal disorder/mortalities. A data extraction table that was pre-tested and structured tailored to this systematic literature review was formulated and utilized in the tabulation of extracted secondary findings from the articles, the year of study, authors' names, study design, methodology and study aim ending with a critical appraisal section.

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FINDINGS

Synthesis and Presentation of the Findings

Prevalence of Neonatal Disorders and Health Conditions among Newborns in Zambia

Miyoshi, *et al.* (2019, p. 1-6) in their study at a local healthcare center in Zambia revealed that over ninety percent of neonatal mortalities in Zambia took place within seven days of birth. The review also show that Eleanor, *et al.* (2011, p. 3-4) in their study done in rural regions of Zambia established that of the studied households, there were a total of 40% early childhood and 26% neonatal mortalities. The review records that Etambuyu and Charles (2015, p. 3) found that there were 3.4% recorded neonatal mortalities by their Zambian study. The results of the study also showed that in Zambia, more new borns died in rural settings than in urban settings.

The review through Yasuhiro, *et al.* (2019, p. 2-4) further finds that at a local hospital in Zambia, Zambia, a total of 1754 babies were born through 1704 health care center deliveries with 28 newborns transferred to this local health care center post-delivery. Established overall number of perinatal mortalities at the hospital was 4.2% with 25 mortalities in the intrapartum, seven mortalities occurring in the antepartum and 43 neonatal mortalities in the neonatal period. Kateule, *et al.* (2022, p. 3) showed that in Zambia, among the neonates, 21.2 percent lost their lives. In Lusaka, Zambia, Carla, *et al.* (2016, p. 4-5) who assessed low birth weight outcomes and their associated predictors among 200 557 neonates found that 10.5 percent of the neonates had low birth weight. The results also showed that 590 very early neonatal mortalities as well as 3626 stillbirths corresponding to a crude rate of stillbirth of 18/1000 live births and a crude rate of very early neonatal mortalities of 3/1000 live deliveries.

These results implied that neonatal mortalities are very prevalent in Zambia with the prevalence ranging from one are to the next. However, more neonatal deaths are recorded in Zambia within the first seven days of being born. The review also show that rural areas bear the brunt of neonatal mortalities and health conditions among newborns as opposed to urban areas.

Factors Influencing Neonatal Disorders among Newborns in Zambia

While reviewing the study by Eleanor, *et al.* (2011, p. 3-4) which was done in Zambia, it was established that 26% of recorded stillbirths were as a result of intrauterine infection while 18% of such mortalities resulted from birth asphyxia. From 84% neonatal mortalities, 37 percent were mainly caused by infections whereas 34% arose from premature deliveries. The study further showed that bacterial infections were responsible for most (82 percent) of recorded early childhood mortalities in Zambia. Another driver of neonatal and early childhood mortalities in Zambia was shown to be maternal positive HIV status. The study lastly show that low socio economic status,

home deliveries, lack of trained birth attendants and inadequate water or sanitation facilities were significantly related to neonatal and early childhood health conditions including mortalities.
Findings of the systematic review also reveal that a study by Etambuyu and Charles (2015, p. 3) in Zambia showed that overweight and low-birth weight were the main factors contributing to neonatal mortalities in Zambia with low birth weight infants significantly having higher risk of dying compared to their counterparts who had normal weight (aOR=2.58, 95%CI 1.02-6.49). The study also reported heightened mortality odds among over weight born infants in the country (aOR 3.21, 95%CI 1.36-7.59). Shockingly, the review through this study revealed that the higher the maternal level of education the greater the risk of death among infants born from such mothers than those born from Mothers lacking education (aOR 3.55, CI 95%, 1.26-9.94).

Kateule, *et al.* (2022, p. 3) revealed that in Zambia, 40% of reported neonatal deaths was a result of birth asphyxia while neonatal sepsis caused 38.1% percent of the recorded neonatal mortalities. Having under 2.5 kg of birth weight which is considered as a low birth weight, being born prematurely, ailing from neonatal jaundice, home delivery and being a male infant all were causal factors of neonatal mortality in Zambia. These results are in line with those of Miyoshi, Matsubara, Takata and Oka (2019, p. 1-6) who established that intrapartum events related complications including premature births, infections and low birth weight were responsible for infant mortalities in Zambia. The review through Yasuhiro, *et al.* (2019, p. 2-4) also finds that at a local hospital in Zambia, Zambia, majority of the antepartum mortalities (71.4 percent) were found to be fetal mortalities of undocumented causes whereas severe intrapartum incidents and or deformations, chromosomal abnormalities, malformations, deformations were leading causes of intrapartum deaths. Neonatal relate mortalities on the other hand were found to be mainly associated with intrapartum incidents elated complications (44.2%), infections (7%) or premature birth or low birth weight or prematurity (37.2%).

Christopher, *et al.* (2022, p. 272-275) established that among recorded neonatal mortalities, respiratory syncytial virus in Lusaka was detected amongst 7 percent of 2286 dead infants. The study also showed that respiratory syncytial virus was discovered among 9% of 1176 communal mortalities in comparison to 4 percent of 236 early health care facility mortalities (<2 days from admission) and 5 percent of 737 late healthcare facility mortalities (≥2 days from admission). Age was also found to cause neonatal mortalities as respiratory syncytial virus mortalities were found to be concentrated among neonates <90 days (72%) and were grouped in the initial half of every year and in the deprived and very heavily inhabited Lusaka townships. Lastly, the reviewed study showed that respiratory syncytial virus resulted in at least 2.8 percent of every recorded neonatal mortalities and 4.7 percent of community mortalities in Lusaka Township Zambia.

Among the factors influencing neonatal health outcomes, a review of Carla, *et al.* (2016, p. 4-5) in Lusaka established that for low birth weight, twin pregnancies, delivery before 37 weeks and placental abruption were the responsible factors. When compared to neonates that weighed over 2.5Kgs, low birth weight neonates had a higher risk of stillbirth (adjusted odds ratio [AOR] 8.6,

95% confidence interval [CI] 6.5–11.5), very early neonatal death (AOR 6.2, 95% CI 3.7–10.3), low Apgar score (AOR 5.7, 95% CI 4.6–7.2) and admission to the neonatal intensive care unit (AOR 5.4, 95% CI 3.5–8.3).

Generally, the review reveals that factors contributing to the recorder cases of neonatal mortalities and health conditions in Zambia are vast, but the major contributors to neonatal mortalities are low birth weight, birth asphyxia, neonatal sepsis, premature deliveries and bacterial infections. Others include but are not limited to intrauterine infection, maternal positive HIV status, home deliveries, born overweight and respiratory syncytial virus. Therefore, neonatal deaths and health conditions are influenced by numerous factors in Zambia.

DISCUSSIONS

Summary of Results

Prevalence of Neonatal Mortalities and Health Conditions among Newborns in Zambia
The review through Miyoshi, *et al.* (2019, p. 1-6), Eleanor, *et al.* (2011, p. 3-4), Etambuyu and Charles (2015, p. 3), Yasuhiro, *et al.* (2019, p. 2-4), Carla, *et al.* (2016, p. 4-5) and Kateule, *et al.* (2022, p. 3) showed that in Zambia, neonatal mortalities was a serious neonatal health conditions among new born. Most infants die seven days after birth in the nation whereas most such deaths are recorded in rural areas than in urban areas. The health conditions among the neonates were found to include respiratory syncytial virus, sepsis and low birth weight among the infants. Therefore, neonatal mortalities and health conditions are serious public health issues derailing the possible achievement of SDG 3 in Zambia by the 2030 deadline.

Factors Influencing Neonatal Disorders among Newborns in Zambia
Through the studies by Eleanor, *et al.* (2011, p. 3-4), Etambuyu and Charles (2015, p. 3), Kateule, *et al.* (2022, p. 3), Yasuhiro, *et al.* (2019, p. 2-4), Christopher, *et al.* (2022, p. 272-275) and Carla, *et al.* (2016, p. 4-5), this systematic review establishes that generally, in Zambia, neonatal mortalities and health conditions are caused by numerous factors which include but are not limited to intrauterine infection, birth asphyxia, bacterial infections, premature deliveries, maternal positive HIV status, home deliveries, lack of trained birth attendants and inadequate water or sanitation facilities, born overweight, low-birth weight, higher the maternal level of education, neonatal sepsis, being a male infant, severe intrapartum incidents and or deformations, chromosomal abnormalities, malformations, deformations, respiratory syncytial virus, twin pregnancies and placental abruption. Therefore, neonates in Zambia are at risk of death due to numerous factors within the country that work against them right from the start and therefore in order to achieve SDG 3, the government and all public health stakeholders including the community must work speedily to find effective and workable solutions to these factors that cause neonatal mortalities in Zambia.

Implications of Findings

The continued prevalence of neonatal mortalities in Zambia hinders or reduces the likelihood of the global efforts of ending neonatal mortalities globally as its existence and persistence is a clear indication that chosen interventions and measures are not achieving the desired effects of ending and or eliminating neonatal mortalities. This reality therefore shows that the achievement of the SDG 3 globally will not be realized both in Zambia and globally by 2030 by all world governments. Various central factors and or issues hamper the progress in ending neonatal mortalities in Zambia and these include socioeconomic factors, LBW, intrauterine infections, bacterial infections, premature birth, lack of trained birth attendants, neonatal sepsis, severe intrapartum incidents, respiratory syncytial virus, twin pregnancies as well as placental abruption

Public health practice have responded to the need to reduce neonatal moralities and achieve SDG 3 by 2030 in various ways through various interventions. For instance, community based interventions such as national prioritization and training of community health workers is one such intervention a public health practice that has been found to reduce neonatal mortalities (Medhanyie, *et al.*, 2012). Dean, *et al*. (2011) while addressing community based interventions and neonatal mortalities noted that in communal groups, preconception care results in lower neonatal death rates and a significant antenatal care rise. Therefore, community based interventions in public health aids in minimizing neonatal mortalities and increases the likelihood of SDG 3 achievement.

Recommendations

Based on the outcomes of the review, the study recommends that in order to address the factors increasing neonatal mortalities in Zambia, the government must strengthen community health workers initiatives through training and funding as this initiative reduces neonatal mortalities by catering for women giving birth at home and not in just in the hospitals

The government must work with speed to ensure successful implementation of universal health coverage in Zambia to help women afford maternal health services that are preventive measures of adverse health outcomes during pregnancies, delivery and after delivery for both mothers and new borns and therefore are crucial for preventing not only neonatal disorders but also neonatal mortalities.

The Zambian government and the public health ministry must work hand in hand and ensure more skilled professionals in the healthcare centres are trained in the field of maternal and new born health as this might help in the management of neonatal disorders and minimize the risk of neonatal mortalities

Zambian government must also focus on funding antenatal care services and facilities in order to ensure these services are accessible and affordable to all pregnant women in Zambia as through this lives on both mothers and child can be saved.

The fight against neonatal mortalities and health conditions must have concerted efforts from every public health stakeholder in the nation (community, individuals, the government, donors, NGOs, religious organizations, media and public health ministry) and global actors because the achievement of SDG 3 and its targets is a global goal and not only a goal of a single nation. This is the only way for countries in low and middle income bracket to be able to achieve the SDG 3 by the set date of end of the year 2030

More attention needs to be paid to causes of neonatal mortalities in the Zambian context as this area is bleak and or is not given enough attention as very limited public health scholarly works in the nation pay attention to this.

CONCLUSIONS

This study was a systematic literature review of the factors influencing neonatal mortalities and health conditions in Zambia. On the prevalence of neonatal mortalities and health conditions among newborns in Zambia, the present systematic literature review guided by the works of Miyoshi, *et al.* (2019, p. 1-6), Eleanor, *et al.* (2011, p. 3-4), Etambuyu and Charles (2015, p. 3), Yasuhiro, *et al.* (2019, p. 2-4), Carla, *et al.* (2016, p. 4-5) and Kateule, *et al.* (2022, p. 3) conclude that in Zambia, neonatal mortalities and health disorders are a very serious public health problem among new borns in the nation. The review also concludes that majority of Zambian neonates die in a span of seven days after birth with the rural regions which are underdeveloped bearing the brunt of these neonatal deaths and health conditions. The health conditions among Zambian neonates include respiratory syncytial virus, sepsis, premature births, respiratory dysfunctions, birth related traumas, congenital malformations, neonatal infections and haemolytic disorders. It is therefore the general conclusion of this study that neonatal mortalities and neonatal health conditions are very serious conditions affecting neonates all over Zambia and require urgent attention to address.

Regarding the factors influencing neonatal disorders among newborns in Zambia, using outcomes of this systematic literature review of included studies such as Eleanor, *et al.* (2011, p. 3-4), Etambuyu and Charles (2015, p. 3), Kateule, *et al.* (2022, p. 3), Yasuhiro, *et al.* (2019, p. 2-4), Christopher, *et al.* (2022, p. 272-275) and Carla, *et al.* (2016, p. 4-5), I conclude that in Zambia, neonatal mortalities and health conditions are caused by several factors that are within the nations environment which include among others intrauterine infections, birth asphyxia, bacterial infections, premature deliveries, maternal positive HIV status, home deliveries, lack of trained birth attendants and inadequate water or sanitation facilities, born overweight, low-birth weight, higher the maternal level of education, neonatal sepsis, being a male infant, severe intrapartum incidents and or deformations, chromosomal abnormalities, malformations, deformations, respiratory syncytial virus, twin pregnancies and placental abruption. The study therefore generally concludes that there are too many risk factors for neonatal mortalities and health conditions in Zambia and every one of them dangerous and require immediate action.

The study at the same time concludes that in Zambia, information on causes of neonatal mortalities is more compared to information on causes of neonatal health conditions and or disorders. Therefore, this is one area that might be affecting effective interventions geared towards ending neonatal mortalities by the year 2030 as without having adequate knowledge of causes of neonatal disorders which are amongst the leading causes of neonatal mortalities, approaches to end neonatal mortalities is bound to fail.

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