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Prevalence and Factors Associated with Anaemia among Zambian Women Aged 15-49 Years Old: Data Analysis of the 2018 Zambia Demographic and Health Surveys

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Abstract

Anaemia is one of the major public health concerns among women of child bearing age globally with associated adverse outcomes for mother and child. However, there is limited information on the factors associated with anaemia among women in Zambia. Therefore, the aim of this study was to determine the prevalence of anaemia and its associated factors among women aged 15-49 in Zambia using data from the 2018 Demographic and Health Survey (ZDHS). We analyzed secondary data from 13,683 women who participated in the ZDHS survey. Descriptive statistics were used to generate frequencies and percentages, while binary logistic regression identified significant factors associated with anaemia. The prevalence of anaemia among women aged 15 – 49 years was 30%, with 16% being mildly, 13% being moderately, and 1% being severely anaemic. Anaemia prevalence was higher in women of ages 30 to 49 (31.3%) compared to that of women below 30 years old (29.7%). Similarly, anaemia prevalence was slightly higher among urban respondents (30.6%) compared to their rural counterparts (30.2%). Additionally, pregnancy status, marital status, employment status, wealth index, age, and total number of children ever born were significantly associated with anaemia prevalence among Zambian women based on ZDHS. Conclusion: Anemia in women is a pervasive global health issue, as evidenced by its high prevalence in Zambia (30%), reflecting broader patterns seen worldwide. Addressing this challenge requires targeted interventions, including education on the importance of consuming iron-rich foods and the use of iron supplements, especially during pregnancy.

Keywords: Anaemia Demographic and Health Survey; Effect; Prevalence; Women; Zambia

Introduction

Anaemia is a condition characterized by a lower-than-normal count of red blood cells and haemoglobin (Hgb) levels.1 It is categorized into three levels: mild (haemoglobin 10.0 g/dL), moderate (hemoglobin 8.0 to 10.0 g/dL), and severe (haemoglobin 6.5 to 7.9 g/dL). Anaemia is the most prevalent nutritional deficiency worldwide, affecting millions of women, with significant geographical disparities [1]. Global estimates reveal that in 2021, 31.2% of women were anaemic as compared to 17.5% of men. The gender difference was more noticeable during the reproductive years, ages 15–49 were the prevalence of anemia in women was 33.7% compared with 11.3% in men. In 2019, an estimated 30.1% of women of reproductive age globally were affected by anaemia, with low- and middle-income countries (LMICs) experiencing the highest burden [2].

Anaemia affects individuals of all ages, but it is more common among women of childbearing age.3 Anaemia significantly affects the health and well-being of women of reproductive age, increasing the risk of maternal and neonatal mortality. It can lead to complications such as preterm birth, stillbirth, low birth weight, fatigue, breathlessness, dizziness, headaches, and decreased productivity [3]. Women of childbearing age are generally more prone to iron deficiency compared to men, due to factors such occupation, marital status, history of pregnancy or pregnancy abortions. Overall, anaemia contributes to various negative health outcomes for childbearing women, ultimately impacting their reproductive health [3].

There are different symptoms of anemia appears such as cold hands and feet, faint skin, lack of sensation or itching in hands, feet and legs, sore of tongue and mouth and problem in appetite, just to name a few. There are two main factors of anemia: primary and secondary factors. Primary Factors essentially have two types as exogenous and endogenous factors. Exogenous causes are social dimensions of illness and are possibly preventable. Prominent issues of exogenous factor include education of mothers, health services, household income and communicable diseases. The exogenous causes are ex-ternal factors to the human body and degenerate diseases defined within socio-cultural and demographic context. Endogenous factors are internal agents operating within the body, leading to biological defects in the mother and new born, as well as degenerative diseases of later life. Main concerns of secondary factors are excessive damage of RBCs, inadequate production of red blood cells (RBCs) and loss of blood. The number of pregnancies, smoking, malnutrition, age of mother, abortion and nutritional knowledge are internal factors of the mothers causing severe health complications [4, 5].

The 2018 Zambia Demographic and Health Survey (DHS) data shows that 31% of women of child bearing age. aged 15-49 were anaemic, with 16% being mildly anaemic, 14% being moderately anaemic, and 1% being severely [6, 7]. The highest prevalence was among pregnant women with 41%, women who were neither pregnant nor breastfeeding (31%), and lower among breastfeeding women (28%) [7].

Anaemia remains a critical public health issue among women of childbearing age in Zambia, contributing significantly to maternal and child health complications. The prevalence of anaemia in this population may be linked to factors such as poor dietary intake, high rates of infectious diseases, and limited access to healthcare services. Despite its impact, research efforts in Zambia have predominantly focused on children's nutritional status rather than anaemia among women of reproductive age, highlighting a gap in addressing maternal health [8, 9]. The widespread prevalence of anaemia in women has profound public health consequences, including increased maternal mortality due to heightened risks of haemorrhage, infection, and adverse birth outcomes during pregnancy; poorer child health and development as anaemic mothers are more likely to have low-birthweight or preterm babies prone to stunted growth and developmental delays; and reduced economic productivity as anaemia diminishes women’s physical and cognitive capacity, limiting workforce participation and perpetuating poverty cycles [6].

Anaemia among women of reproductive age as an official indicator to track progress towards Sustainable Development Goal (SDG) 2-aimed at ending all forms of malnutrition by 2030-was formalised in October 2019. Addressing anaemia is essential for

improving maternal and child health outcomes in Zambia. To combat anemia effectively, Zambia requires a multi-sectoral approach that integrates health, nutrition, education, and social protection strategies.

Findings from studies focused on anaemia among women can inform the development of targeted policies and strategies to accelerate progress in reducing anemia prevalence and achieving the SDG targets [10, 11].

Information on the factors contributing to anemia among women in Zambia is limited. This study aimed to assess the prevalence of anaemia and its associated factors among women aged 15-49 years in Zambia, using data from the 2018 Demographic and Health Survey. The findings will assist policymakers in prioritising interventions targeting women of childbearing age to address morbidity and mortality related to iron deficiency anaemia

Study Design and Setting

Retrospective study design was employed to collect the data for addressing the stated research question. The study used secondary data from the Zambia DHS conducted from 2018 [7]. While these surveys have included both objective and self-reported data on several indicators including nutrition, fertility, malaria, HIV/AIDS, maternal mortality, maternal and child health, and reproductive health, among others, this analysis focused on epidemiological data that was used for monitoring the trends in prevalence and effect of anaemia among women in Zambia for the period under investigation. Consistent with most surveys conducted in Zambia that used DHS data, this study employed a stratified multi-stage sampling technique in which the country was divided into provinces, districts, constituencies, and wards from which women aged 15-49 from randomly selected households were considered for analysis.

Study Variables

Anaemia status was considered as a dependent variable for this analysis. Consistent with similar studies conducted in other settings that used DHS data, [12, 13] anaemia was operationalized as a categorical variable grouped into non-anaemic, mild, moderate, and severe. For purposes of establishing the factors influencing anaemia among pregnant women for the period under investigation, these four categories were collapsed into two namely non-anaemic (coded as 0) and anaemic (coded as 1), which facilitated a binary logistic regression model fit. Based on the DHS dataset that was used for this analysis, the following explanatory variables were included in the model as potential factors that might have influenced anaemia among the study participants: maternal age, economic status, residence, region (province), education level, size of the household, sex of household head, employment status, marital status, religious beliefs, literacy level, distance to health facility, media exposure, maternal parity, contraceptives use, postnatal care, body mass index (BMI) status, and iron supplementation, among others.

Statistical Analysis

After variable identification, data extraction from the DHS datasets, including data analysis (both descriptive and inferential) was undertaken using the STATA version 17. Descriptive statistical analysis such as cross-tabulation was used to generate the frequencies/percentages associated with various categories of the study variables. Binary logistic regression analysis was carried out to determine the most significant factors associated with anaemia among pregnant women in Zambia for the period under investigation. This means that each independent variable was assessed separately for its association with anaemia by focusing on the adjusted odds ratios (ORs) alongside the 95% confidence intervals (CIs) and probability values (p-values).

Results

Sociodemographic Characteristics of Participants

Zambia Demographic and Health Survey (ZDHS) data from 2000 to 2018 which included 13,683 women were analysed. Results show that more than half (58.2%) of the participants were less or equal to 29 years old while 41.8% were between 29 and 49 years old (M = 28.3, SD = 9.56). Lusaka province had the highest number of participants and accounted for 13.0% of the total while North Western province was the least (7.9%). This could be attributed to the fact that the number of participants selected from each region was proportional to its population size. Results further show that more rural women (59.7%) than urban women (40.3%) participated in the study. Regarding participants' religious beliefs, results show that 98.6% were Christians while 1.4% were non-Christians. The total number of children ever born ranged from 0 to 14 with a median of 2 children per woman. Only 765 (5.6%) women had acquired tertiary education while 1145 (8.4%) did not have any formal education. This means that about 86% of the participants had attained either primary (45.4%) or secondary (40.6%) levels of education.

Among the 13,683 women, 1109(8.1%) were pregnant while 12,574 (91.9%) were not pregnant at the time of data collection. A cross-tabulation further revealed that 24.9% of the women who were not pregnant were breastfeeding while 75.1% were not breastfeeding. It has further been revealed that 20 (1.8%) among the pregnant women were also breastfeeding. Regarding marital status, results show that slightly above half (55.1%) of the participants were married while 31.6% had never been married. Of the remaining 13.3%, results show that 0.4% were living with a partner while 2.9% were widowed, 7.2% divorced and 2.8% were on separation. In addition, majority of the participants (71.9%) indicated that their households were male-headed while the rest came from female-headed households. Slightly more than half (55%) of the respondents were working while 45% were not working at the time of data collection. Results further highlight that majority of the respondents had visited a health facility in last 12 months while the rest did not do so.

Anaemia Prevalence and Associated Factors

Among the, 13,683 women that took part in the survey, 13226 of them had their haemoglobin levels measured in grams/decilitre. After accounting for cigarette smoking and altitude in enumeration regions above 1000 meters, Zambia Statistical Agency [ZSA] (2019) determined that a pregnant woman was anaemic if her haemoglobin level was below 11.0g/dL and that of a non-pregnant woman was below 12.0g/dL. Figure 1 shows the proportion for each of the four anaemia levels based on the ZSA classification and the examined DHS dataset.

Prevalence of Anaemia among Zambian Women Based on the 2018 DHS Data

The results of Figure 1 show that 30% of women between the ages of 15 and 49 were anaemic, with 16% being mildly, 13% being moderately, and 1% being severely anaemic. After performing a cross-tabulation between anaemia status (0 = non anaemic, 1 = anaemic) and each of the explanatory variables displayed in Table 1, the following observations were made.

Firstly, anaemia prevalence was higher in women of ages 30 to 49 (31.3%) compared to that of women below 30 years old (29.7%). Similarly, anaemia prevalence was slightly higher among urban respondents (30.6%) compared to their rural counterparts (30.2%). Secondly, at the time of data collection, the prevalence of anaemia was lower among women who were not pregnant (29.7%) than it was among those who were (38.0%). This was the case even though 73% of pregnant women took iron supplements for 90 days or more, 77% of them used deworming medication, and only 3% of them did not. Also, the findings show that those who had visited a health facility during the previous 12 months had a lower prevalence of anaemia (29.7%) than people who had not. Additionally, Third, women with no formal education had a greater frequency of anaemia (31.2%) than those with some level of education (30.3%). Similarly, women who were not working were linked to a greater frequency of anaemia (31.0%) than those who were working (29.7%). Finally, married women (28.1%) had a lower frequency of anaemia than unmarried women (33.2%).

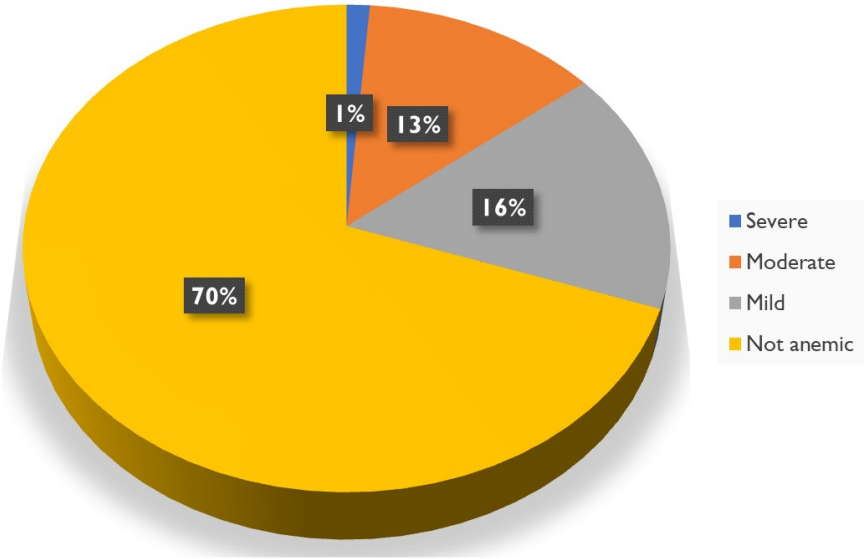

Figure 1: Prevalence levels of anaemia among Zambian women who took part in the 2018 ZDHS (n = 13,226)

Table 1: Cross-tabulation of anaemia status against sociodemographic factors

Variable Name			Anaemia Status		Total
			Non-anaemic	*Anaemic*	
Age	**15-29**	**Count**	5419	2294	7713
		%	70.3	29.7	100
	30-49	Count	3787	1726	5513
		%	68.7	31.3	100
Type of place of residence	Urban	Count	3672	1621	5293
		%	69.4	30.6	100
	Rural	Count	5534	2399	7933
		%	69.8	30.2	100
Education status	No education	Count	751	340	1091
		%	68.8	31.2	100
	With some education	Count	8455	3680	12135
		%	69.7	30.3	100
Sex of household head	Male	Count	6748	2774	9522
		%	70.9	29.1	100
	Female	Count	2458	1246	3704
		%	66.4	33.6	100
Wealth index	Poor	Count	3699	1651	5350
		%	69.1	30.9	100
	Middle	Count	1840	777	2617
		%	70.3	29.7	100

	Rich	Count	3667	1592	5259
		%	69.7	30.3	100
Currently pregnant	No or unsure	Count	8541	3612	12153
		%	70.3	29.7	100
	Yes	Count	665	408	1073
		%	62.0	38.0	100
Visited health facility last 12 months	No	Count	3335	1516	4851
		%	68.7	31.3	100
	Yes	Count	5871	2504	8375
		%	70.1	29.9	100
Respondent currently working	No	Count	5045	2265	7310
		%	69.0	31.0	100
	Yes	Count	4161	1755	5916
		%	70.3	29.7	100
Current marital status	Not married	Count	3950	1967	5917
		%	66.8	33.2	100
	Married	Count	5256	2053	7309
		%	71.9	28.1	100

Note. Percentages of anaemia status are calculated across categories for each sociodemographic factor

Sociodemographic Factors that had a Statistically Significant Influence on Anaemia Prevalence among Zambian Women Based on the 2018 ZDHS Data

Regarding the predictive role of respondents' sociodemographic characteristics on anaemia prevalence based on the 2018 ZDHS, binary logistic regression was used. To ensure that the data was compatible with the requirements of binary logistic regression analysis, the four initial categories of anaemia levels were collapsed into two categories (0 = non-anaemic, 1 = anaemic). It is also worth noting that some explanatory variables that were initially coded with many categories were also collapsed into a lesser number of categories. For instance, the five levels of "wealth index" were reduced to three levels (0 = poor, 1 = middle, and 2 = rich). Similarly, the 7 categories of the variable "marital status" were collapsed into two categories (0 = not married, 1 = married) for easy comparison. Table 2 illustrates categorical variable codings for easy interpretation of the logistic regression analysis output displayed in Table 3. Apart from the categorical variables displayed in Table 2, it is worth noting that two continuous variables (woman's age in years and number of children ever born) were also included in the logistic regression model.

Table 2: Categorical Variables Codlings for Binary Regression Analysis Output

Variable Name		Frequency	Parameter coding	
			(1)	*(2)*
Wealth index	**Poor**	5350	1.000	0.000
	Middle	2617	0.000	1.000
	Rich	5259	0.000	0.000
Education	No	1091	1.000	
	Yes	12135	0.000	
Religion	Non-Christian	187	1.000	
	Christian	13039	0.000	
Sex of household head	Male	9522	1.000	
	Female	3704	0.000	
Currently pregnant	No or unsure	12153	1.000	
	Yes	1073	0.000	
Visited health facility last 12 months	No	4851	1.000	
	Yes	8375	0.000	
Currently breastfeeding	No	10148	1.000	
	Yes	3078	0.000	
Currently working	No	7310	1.000	
	Yes	5916	0.000	
Marital status	Not married	5865	1.000	
	Married	7361	0.000	
Snuffs by nose	No	13089	1.000	
	Yes	137	0.000	
Smokes cigarettes	No	13107	1.000	
	Yes	119	0.000	
Type of place of residence	Urban	5293	1.000	
	Rural	7933	0.000	

Table 3 illustrates the regression coefficient (B), p-value (sig.), and odds ratio (exp (B)) for each sociodemographic variable included in the model. The 95% confidence intervals for odds ratios have also been generated to determine their significance. In terms of model fit, results from the "Omnibus Tests of Model Coefficients" indicate a good fit since the Chi-square test is statistically significant, $X_2(15) = 158.972$, $p < .001$. This is also a clear demonstration that the model fits the data significantly better than the intercept-only model. While the model was highly sensitive (99.9%), model specificity was very low (0.3%). Nonetheless, the overall accuracy was quite good (69.6%). These measures of model fit, and accuracy give a good impression of the validity and reliability of the results obtained from the binary logistic regression analysis whose output is shown in Table 3.

Based on the results displayed in Table 3, pregnancy status ($p < .0001$), marital status ($p < 0.0001$), employment status ($p = .045$),

wealth index (p = .023), respondents' age (p < .0001), and total number of children ever born (p < .0001) were statistically significant predictors of anaemia prevalence among Zambian women based on ZDHS. In terms of the effect size, results indicate that the odds of anaemia prevalence were 0.617 less likely in non-pregnant pregnant women compared to those who were pregnant at that time.

Table 3: Factors Associated with Anaemia Among Women in Zambia as per the 2018 SLDHS

Variable Name	B	S.E.	Wald	df	Sig.	Exp(B)	95% CI	
							Lower	*Upper*
Type of place of residence (1)	**0.021**	**0.055**	**0.142**	**1**	**0.706**	1.021	0.917	1.137
Education (1)	0.036	0.072	0.248	1	0.619	1.036	0.900	1.193
Religion (1)	0.294	0.154	3.637	1	0.057	1.341	0.992	1.813
Sex of household head (1)	-0.040	0.049	0.657	1	0.418	0.961	0.872	1.058
Currently pregnant (1)	-0.482	0.070	47.185	1	<0.001	0.617	0.538	0.708
Visited health facility last 12 months (1)	0.032	0.041	0.638	1	0.424	1.033	0.954	1.119
Currently breastfeeding (1)	-0.100	0.051	3.823	1	0.051	0.905	0.819	1.000
Smokes cigarettes (1)	0.183	0.211	0.751	1	0.386	1.200	0.794	1.814
Snuffs by nose (1)	0.184	0.199	0.858	1	0.354	1.202	0.814	1.775
Marital status (1)	0.281	0.052	29.012	1	<0.001	1.324	1.196	1.467
Currently working (1)	0.083	0.041	4.029	1	0.045	1.086	1.002	1.178
Wealth index			5.282	2	0.071			
Wealth index (1)	0.141	0.062	5.182	1	0.023	1.152	1.020	1.300
Wealth index (2)	0.066	0.060	1.219	1	0.270	1.069	0.950	1.203
Women's age in years	0.028	0.004	60.754	1	<0.001	1.028	1.021	1.036
Total children ever born	-0.082	0.013	39.204	1	<0.001	0.922	0.898	0.945
Constant	-1.483	0.306	23.487	1	0.001	0.227		

Results further reflect that an unmarried woman was 1.324 times highly likely to experience anaemia compared to a married woman. It has also been established that the odds of anaemia prevalence among women who were not working was 1.086 times higher than those who were working. Regarding woman's age in years, results show that old-aged women were highly likely (by 1.028 times) to experience anaemia compared to the younger ones. Finally, results displayed in Table 2 show that the odds of anaemia prevalence were less likely (by 0.922) in women with more children compared to those with fewer children ever born.

Discussion

This study sought to assess the prevalence and factors associated with anaemia among women aged 15-49 using data from the 2018 Zambia Demographic and Health Survey (ZDHS). The participants were drawn from both rural and urban areas. The substantial representation of rural participants could provide valuable insights into rural-urban disparities in anaemia. However, there was no significant difference in anaemia prevalence between rural women and urban women. Nevertheless, results indicate that anaemia continues to be a major public health concern among Zambian women, particularly those of reproductive age. This finding is consistent with global patterns, where anemia among women aged 15-49 remains a significant health issue [1, 3]. This natural control of the population might help to identify some exceptional factors explaining women's anaemia. Th-

ese findings might help in developing strategies and achieving SDG 2 and 3. Zero hunger (SDG 2), and Good health and well-being (SDG 3).

Based on the sample used in this analysis, the study findings revealed that 30% of women were anaemic, with 16% being mildly, 13% being moderately, and 1% being severely anaemic. These results suggest a notable prevalence of anaemia among women in Zambia, indicating a significant public health concern. The findings underscore significant public health implications, emphasising the need for targeted interventions to address and mitigate the issue of anaemia among women in Zambia. The prevalence of anaemia in women aged 15-49 years reported in this study was found to be almost similar to the global prevalence which stands at 29.9%.14 Nevertheless, anaemia prevalence in this study was slightly higher than in a study in East Africa (34.9%) [12, 15].

Factors Associated with Anaemia

Our binary logistic regression analysis identified several significant predictors of anaemia among pregnant women in Zambia. These include pregnancy status, marital status, employment status, wealth index, age, and the number of children ever born.

Results from this study indicated that age of a woman is significantly associated with the prevalence of anaemia. It was noted that that older women in the age range 30-49 years were highly likely (by 1.028 times) to experience anaemia compared to younger women aged below 30 years. These findings are similar to what was reported in a systematic review by Ramakrishnan et al. Ramakrishnan et al reported that increased age and higher parity are associated with cumulative nutritional deficits and repeated physiological demands of pregnancy and childbirth, exacerbating the risk of anaemia [15]. On the contrary, the findings are not in line with a study conducted in East Africa among women of reproductive age which found that being older in age was associated with a lower prevalence of anemia [16].

Another significant factor associated with the prevalence of anaemia in women is the pregnancy status of a woman. The findings revealed that the odds of anaemia prevalence were 0.617 less likely in non-pregnant pregnant women compared to those who were pregnant at that time. This could be attributed to the physiological changes that occur during pregnancy. Pregnancy often leads to an increased demand for iron and other essential nutrients to support the developing fetus and maternal health [14-16]. As a result, pregnant women may be more susceptible to developing anaemia due to a higher likelihood of insufficient iron intake or absorption. Additionally, factors such as hormonal changes and increased blood volume during pregnancy may contribute to the higher prevalence of anaemia in pregnant women [14 -16]. Non-pregnant women, not undergoing these specific physiological changes, may experience a lower risk of anaemia. These findings are in line with previous studies [14-16].

Evidence show that marital status is a significant determinant of prevalence of anaemia in women [14-18]. This study established that the frequency of anaemia was lower in married women than unmarried women. It was observed that an unmarried woman was 1.324 times highly likely to experience anaemia compared to a married woman. This is possibly because of the social and economic support that married women may receive from the spouse. Married women might have better social and emotional support, which can positively impact their overall health. Emotional well-being and support can indirectly influence dietary choices and health behaviours. Additionally, married women may have better access to resources, including financial resources, which can impact their ability to afford a diverse and nutritious diet. Adequate nutrition is crucial for preventing anaemia.

Parity was found to strongly associate with prevalence of anaemia among women. The findings showed that the odds of anaemia prevalence were less likely (by 0.922) in women with more children compared to those with fewer children ever born. The reasoning here could be due to the experience of multiple pregnancies and childbirths that may contribute to increased awareness of maternal health, influencing women to proactively manage their well-being and nutritional intake. Additionally,

the hormonal changes associated with repeated pregnancies may impact iron metabolism in a way that mitigates the risk of anaemia. This is consistent with previous research done in other settings [12, 15]. Surprisingly, it was observed in this study that anaemia prevalence was slightly higher among urban women compared to their rural counterparts. The possible explanation here could be due to the urban lifestyles which often come with specific dietary patterns that may lack essential nutrients, contributing to a higher risk of anaemia. Additionally, urban areas may have a higher prevalence of sedentary lifestyles and processed food consumption, which can impact overall nutritional health. Limited access to green spaces for physical activity and potential stressors associated with urban living might also play a role.

Another significant contributing factor to prevalence of anaemia in women of the reproductive age is the employment status of a woman. This study established women who were not working were linked to a greater frequency of anaemia (1.086 times higher) than those who were working. These findings are consistent with earlier studies [12, 15 -17]. One study conducted in Cameroon found that the odds of anemia prevalence were lower among women who were currently working (AOR = 0:77, 95% CI; 0.61-0.96), compared to women who were not currently working. The possible explanation here is that women who have no work might not have a chance to buy adequate foods (both in quantity and quality) or get balanced diet [18]. Furthermore, this study found that the wealth index was significantly associated with the prevalence of anaemia among women. Women in the lowest wealth quantile had a greater frequency of anaemia than those in the middle or high wealth quantile. These findings are in line with the findings of a study done in East Africa which reported that being from second to highest household wealth quantiles were associated with lower prevalence of anemia as compared with women from households with lowest quantile [13]. This could be due to the fact that improved socioeconomic status has been linked to healthy nutrition, lower infection/-morbidity, and increased access and utilisation of medical health services.19-22 Additionally, it might be because of women from high socio-economic status could be able to purchase variety (both in quantity and quality) of foods.

The findings reported in this study have implications for both policy formulation and public health improvement. The high anaemic prevalence among unemployed women and those in the lowest wealth quantile suggest that creating employment opportunities and improving household income through deliberate economic programmes can have long term impact on health of women. Additionally, the introduction of nutrition education talks at maternal and child care clinics especially in urban areas and also targeting pregnant women is vital for providing necessary and appropriate information to women to improve and diversify their diet. Furthermore, these findings will help the country and the world at large to achieve SDG 2 and 3 by tackling the underlying causes of poor health, such as malnutrition and food insecurity, which are major contributors to anaemia. Thus emphasising on the importance of integrated strategies that merge agricultural development, access to healthcare, and social support systems to foster sustainable and equitable development.

Conclusions

Anemia in women is a pervasive global health issue, as evidenced by its high prevalence in Zambia (30%), reflecting broader patterns seen worldwide among women of child bearing age. Addressing this challenge requires targeted interventions, including education on the importance of consuming iron-rich foods and the use of iron supplements, especially during pregnancy. Particular focus should be given to vulnerable groups, such as the uneducated, unemployed, those with multiple births, and low-income communities. By raising awareness and providing resources, we can work towards reducing the burden of anemia on women globally, improving their health and well-being.

Based on the findings of this study, several recommendations have been proposed to address the high prevalence of anaemia among women of reproductive age in Zambia;

Given that, the prevalence of anaemia is highest among women in the age range 30-49 years, it is important that government

comes up with targeted interventions focusing on older women (30-49 years) who demonstrated a higher likelihood of experiencing anaemia. Healthcare programs should prioritize this age group, providing tailored nutritional guidance and health education to mitigate the risk of anaemia.

This study also recommend that efforts should be directed towards pregnant women, considering the higher odds of anaemia during pregnancy. Maternal healthcare services should emphasize the importance of adequate iron intake and overall nutritional support for pregnant women.

Additionally, the observed association between marital status and anaemia suggests the need for social and economic support for unmarried women. Implementing community-based support systems and promoting access to resources can positively impact the nutritional well-being of unmarried women.

Furthermore, interventions should consider the impact of employment status on anaemia prevalence, advocating for economic empowerment programs and job opportunities to improve women's overall health.

Lastly, there is need for government to come up with public health initiatives to address the socio-economic disparities by promoting education on nutrition and health for women in the lowest wealth quantile. Implementing nutrition education talks in maternal and child care clinics, especially in urban areas, can be instrumental in providing essential information to improve dietary diversity and overall health outcomes for women.Thus, contributing to the achievement of SDG 2 and 3.

Author Contributions

Conceptualization, G.G, and A.M.; methodology, G.G.; software, A.M.; validation, G.C., and A.M.. A.B.T; formal analysis, A.M.; investigation, G.C, A.M.; resources, G.C., and data curation, A.M.; writing-original draft preparation, G.C.; writing-review and editing, G.C., and A.M, O.N, A.B.T project administration, G.C. All authors have read and agreed to the published version of the manuscript.

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Data Availability Statement

Data is available for all (2007 -2018) Zambia DHS documents used in article at https://www.nfnc.org.zm/.

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Conflicts of Interest

The authors declare no conflict of interest.

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