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Nutritional Status and Associated Factors among Children under Five years in Ruhango Health Center Catchment Area, Rwanda

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Abstract

Undernutrition among children under five years is one of the major public health issues worldwide in developing countries and occurs prominently. In Rwanda, according to Demographic Health Survey in 2019-2020, the prevalence of stunting was 33.0% while 8.0% were underweight. The aim of the study was conducted to determine nutritional status and associated factors in order to plan and alleviate child malnutrition among children under five years at Ruhango Health Center and its catchment area. A cross-sectional descriptive study was conducted. All children (200) were included with their caregivers who visited to the health center from August to September 2022. A structured questionnaire was used to collect data. Descriptive statistics using counts and proportions were computed to describe the basic characteristics of respondents. Chi-square test was used to establish factors associated with children undernutrition. Multivariable logistic regression model was performed to control the confounding variables. The level of significance was set at 5%. Ethical clearance to collect data was obtained from Mounty Kenya University. The study showed that most of the children were aged between 6 to 24 months (94.5%) and males were 52.0% compared to 48.0% of their female counterparts. The study concludes that the prevalence of under nutrition was relatively high but lower than the national average with respondent factors that are associated malnutrition. Therefore, public health sector and local government should increase access to clean water and also to increase the awareness of caregivers on balanced diet.

Keywords: *Nutritional Status, Associated Factors, Children, Five years, Rwanda*

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1.0 Introduction

Globally, nutritional status of children is an indicator of the level of development and potential of the community. The nutritional status of infants and children under five years of age is of particular concern since the early years of life are crucial for optimal growth and development (WHO 2019). In 2015, according to WHO, 156, 50 and 42 million of the world under-five children were estimated to be stunted, wasted and overweight or obese respectively (Solomon, Aderaw, & Tegegne, 2017). In Ethiopia, according to the 2016 Ethiopian Demographic and Health Survey, 38.4% of children are stunted, 9.9% are wasted, and 23.6% are underweight indicating the persistence of both acute and chronic under nutrition (Solomon et al., 2017). According to RDHS 2019-2020, Childhood stunting has decreased in Rwanda, from 48% in 2000 to 33% in 2019-20. During the same period, the proportion of children underweight has declined from 20% to 8%. Childhood wasting has decreased from 8% to 1% over the same period (Survey, 2019). Malnutrition affects physical growth, morbidity, mortality, cognitive development, reproduction, and physical work capacity, and it consequently affects human performance, health and survival (Nsereko et al., 2018).

Poverty, food insecurity, and illiteracy are the top three leading causes of malnutrition. Other factors contributing to malnutrition are financial constraints, inadequate food intake, ill-health and improper care of children. Furthermore, a heavy workload for mothers, local cultural beliefs that severe malnutrition is due to witchcraft and the violation of sexual taboos are other factors contributing to malnutrition. Studies have shown that illiterate mothers are more likely to have inadequate knowledge about the nutritional requirement of their children, which results in unhealthy feeding practices (Raji et al., 2020).The same report showed that stunting rate among children is higher in Africa and Asia than elsewhere. It is the most recognizable and perhaps most no toward consequence of poverty in children (Goel, 2017).

Early detection and appropriate management of nutritional problems among children at first-level health facilities are important in ensuring that the needs of ill children are met to decrease child mortality. However, studies show that the quality of health care for children in developing countries has often been found to be poor (Bussing et al., 2018). The quality of case detection, management and appropriate and timely referral of malnourished children provided in these health care settings is likely therefore to have a major impact on the health and lives of millions of children each year. The World Health Organization (WHO) estimates that some 3 billion people suffer from malnutrition of one kind or other. In Ethiopia (52%) under the age of five are stunted (growth retardation), 11% are wasted (thin for their height) and 47% are underweight (low weight-forage). Stunting and wasting rates are even higher in rural children, where most of the population is dwelling. Other community based studies in Ethiopia also showed prevalence of wasting from 9-12% (Mihretie, 2018)

Poor infant and young child feeding practice, poor socio-economic background and nutritionally inadequate diet contribute more for severe acute malnutrition in Ethiopia (Alemu, 2013). The recognition of severe malnutrition at the first-level health facility: (a facility such as a health center, health post, or outpatient department of a hospital) which is considered the first facility within the health system where people seek care is important because standard management protocols can greatly reduce mortality (Neumann, 2019). The Rwanda Demographic Health Survey 2010 showed 11% of children underweight, 44% stunted, 3% wasted and Ruhango was the one of highest prevalence of malnutrition with 23.5% .even if they have shown that there is improvement

of 8.5% of underweight compared to 2010 situation the knowledge of community health workers may contribute in that improvement (Niyibituronsa et al., 2015).

1.1 Problem Statement

Child nutrition is one of the measures of health status that WHO recommends for equity in health, especially for children under five years. However, under nutrition still explains around 45% of deaths among children under five, mainly in low and middle-income countries. Several strategies exist, aiming at eradicating all forms of malnutrition. Despite this, childhood malnutrition remains a public health burden mostly in sub-Saharan Africa including Rwanda (Olney & Arsenault, 2020). Parents do not have always problem of food and nutrition but they may have low knowledge about balanced diet, therefore the government provides some programs for supporting daily life in order to increase knowledge to the parents and how to be aware about balanced diet and prevention of malnutrition in children under five years (Ndiema, Makworo, & Mutai, 2018). Malnutrition in sub-Saharan Africa including Rwanda is located contributes to high rates of childhood morbidity and mortality. However, there is limited information on the nutritional status of children in children under five years. Few publications were made in present study area but no study assessed the factors associated with under nutrition. Based on the above information mentioned it shows us that assessing nutritional status and associated factors at Ruhango health center catchment area is crucial. The 2019-20 Rwanda DHS measures children's nutritional status by comparing height and weight measurements against an international reference standard. These changes are not sufficient despite; Rwanda has introduced policies and programs implemented in prevention of malnutrition in children under five years. This study was therefore, to assess nutritional status and associated factors among children under five years under five years at Ruhango Health Center Catchment area.

2.0 Literature Review

Theoretical Review

Malnutrition and its forms

Malnutrition is a condition that results from eating a diet in which one or more nutrients are either not enough or are too much in such way that the diet causes health problems. It may involve calories, protein, carbohydrates, vitamins or minerals (Meijers et al., 2010). Malnutrition refers to deficiencies, excesses, or imbalances in a person's intake of energy and/or nutrients. Malnutrition is the cellular imbalance between the supply of nutrients, energy and the body's demand for them to ensure growth, maintenance and specific functions (Mawa & Lawoko, 2018) The causes of malnutrition are multi-factorial (Olodu, Adeyemi, Olowookere, & Esimai, 2019) Dietary and environmental factors contribute to the risks of malnutrition in children. The spectrum of the more severe forms of protein energy malnutrition of early childhood considered to form clinical and biochemical change include nutritional marasmus (Marasmic-Kwashiorkor & kwashiorkor (District, 2018).

The term malnutrition addresses three broad groups of conditions: Under nutrition, which includes wasting (low weight-for-height), stunting (low height-for-age) and underweight (low weight-for-age).The three indices (height-for-age, weight-for height, and weight-for-age) are expressed as standard deviation units from the median Children under five years, those who fall below minus two standard deviations (-2 SD) from the median of the reference population were regarded as moderately malnourished, while those who fall below minus three standard deviations (-3 SD)

from the reference population median were considered severely malnourished. Each of these indices provides information about growth and body composition that is useful in assessing nutritional status. Stunting, or low height for-age, were signs of chronic undernutrition that reflects failure to receive adequate nutrition over a long period. The most direct causes are usually (Solomon et al., 2017).

There are four broad sub-forms of under nutrition: wasting, stunting, underweight, and deficiencies in vitamins and minerals. Under nutrition makes children much more vulnerable to disease and death. Low weight-for-height is known as wasting. It usually indicates recent and severe weight loss because a child has not had enough food to eat and/or they have had an infectious disease, such as diarrhea, which has caused them to lose weight. A young child who is moderately or severely wasted has an increased risk of death, but treatment is possible. Low height-for-age is known as stunting. It is the result of chronic or recurrent under nutrition, usually associated with poor socioeconomic conditions, poor maternal health and nutrition, frequent illness, and/or inappropriate infant and young child feeding and care in early life (Kamanzi, 2018), Stunting holds children back from reaching their physical and cognitive potential. Children with low weight-for-age are known as underweight. A child who is underweight may be stunted, wasted, or both (Jeannine, 2011).

Overweight and obesity is when a person is too heavy for his or her height. Abnormal or excessive fat accumulation can impair health. Body mass index (BMI) is an index of weight-for-height commonly used to classify overweight and obesity. It is defined as a person's weight in kilograms divided by the square of his/her height in meters (kg/m^2). In adults, overweight is defined as a BMI of 25 or more, whereas obesity is a BMI of 30 or more. Overweight and obesity result from an imbalance between energy consumed (too much) and energy expended (too little). Globally, people are consuming foods and drinks that are more energy-dense (high in sugars and fats), and engaging in less physical activity (Kamanzi, 2018).

Causes of children malnutrition

Malnutrition is a serious medical condition mainly caused by: poor qualify of diet, poor maternal health, socioeconomic status, war, and conflict. Malnutrition among children under five years is a result of a complex interaction of accessibility, availability, and utilization of local food and health care services. The factors of nutrition include: inadequate food intake, poor care providing also parenting, non-proper food practices and some infectious co morbidities. Nutrition-sensitive factors include food insecurity, inadequate economic resources at the individual, household, and community levels. Limited or poor access to education, healthcare services, infrastructure and poor hygienic environment are other nutritional sensitive factors that adversely affect the children under the age of five years nutritional status demonstrates the theoretical framework for the causes of malnutrition under the age of five years. All causes have relation between: food, health, care, culture practice, socio environment, political issues, Biology and disease, water and sanitation, economy and Security (Ersado, 2022).

Malnutrition prevention among children less than five years

Among the most important policies and programs to prevent malnutrition of under five children the following can be mentioned: growth monitoring, oral rehydration, breastfeeding, immunization, female education, child spacing, food supplementation, nutrition for children under five years of age, and control of nutritional deficiencies, Antenatal care, Girinka munyarwanda which is the program of distributing cows in poor families, One thousand days program, (Olodu et al., 2019). All these preventive measures and programs are decentralized to people and aim to prevent and reduce malnutrition in Rwandan people (Survey, International, & Bank, 2020).

In Rwanda, many programs have been initiated to combat with malnutrition. The programs include distributing fortified flour to vulnerable parents with children under five, working with community health workers to engage with parents with malnourished children so the latter can be taken to health centers for treatment, as well as running different campaigns that encourage mothers to breastfeed their children in their early age (Kassie & Workie, 2020). Fortification is the practice of deliberately increasing the content of one or more micronutrients like vitamins and minerals in a food or condiment to improve the nutritional quality of the food supply and provide a public health benefit with minimal risk to health (Miller & Welch, 2013). Kwashiorkor which indicate severe malnutrition with nutritional edema, change of skin and hair. Nutritional marasmus which severe undernourishment causing an infant's or child's weight to be significantly low for their age. Marasmic kwashiorkor Intermediate form severe protein-calorie malnutrition severe protein-calorie malnutrition signs of both kwashiorkor and marasmus. Unspecified severe protein-calorie malnutrition Starvation edema. (Syndrome, 2015).

Empirical Review

Nutritional status of children under five years

According to the World Bank (2017), in a report entitled "World Development Indicators," the prevalence of underweight, stunting, wasting, and undernutrition was found to be 10.75%, 13.5%, 9.6%, and 23.85%, respectively. According to UNICEF (2016), in the Maldives, 26% of children under the age of five are underweight, 32% are stunted, and 13% are wasted. A study conducted in West Azerbaijan province by Farrokh-Eslamlou in 2015 revealed that the prevalence of underweight, stunting, and wasting was estimated to be 4.3%, 8.7%, and 7.5%, respectively. (Bank et al., b.r.) For weight and height, the trend showed an increasing prevalence of stunting with age, though the difference was only significant between the 0–12 months and 25–36 months' age groups (District, 2018). In developing countries, 30% of children younger than five are stunted because their physical growth is not proportional to their height. UNICEF reported that every year there is a 30–40% prevalence of stunting in sub-Saharan Africa, and it varies from country to country and region to region. According to the 2016 Global Nutrition Report, the prevalence of stunting in Mozambique in children under 5 years is still high at 43.3%, underweight at 19%, and wasting at 5.9%, respectively. (Cruz et al., 2017)

The Africa estimates for stunting and wasting are 33.0% and 6.2%, respectively, with Eastern and Middle Africa UN sub-regions demonstrating stunting rates of 50% and wasting rates of 42% (Ellen et al., 2014). In Ethiopia, (52%) under the age of five are stunted (growth retardation), 11% are wasted (thin for their height), and 47% are underweight (low weight-for-age). Other

community-based studies in Ethiopia also showed a prevalence of wasting from 9–12% (Mihretie, 2018). According to UNICEF et al (2021), in Eritrea (52.5%) and Burundi (50.9%), Gabon (17.0&) and Ghana (17.5%). Kenya reported 26.2%, Tanzania 31.8%, and Uganda 25.4% (UNICEF et al., 2021).

In Rwanda, the stunting rate stands at 33.1% and wasting at 1.1% with the Northern and Western regions having the highest stunting rates at 41% and 40% respectively (NISR, 2021). Rwanda, 1% of children under five are wasted, 8% of children under five are underweight, and 6% of children under five are overweight. In the Southern region, where Ruhango Health center is situated, the stunting rate is at 33% (Children, 2021).

3.0 Methodology

A cross-sectional descriptive study was conducted. All 200 children were included with their caregivers who visited the health center from August to September 2022. A structured questionnaire was used to collect the data. The data was collected using Statistical Package for Social Sciences (SPSS) version 21. Descriptive statistics using counts and proportions were computed to describe the basic characteristics of respondents. The chi-square test was used to establish factors associated with children's undernutrition. A multivariable logistic regression model was performed to control the confounding variables. The level of significance was set at 5%. Ethical clearance to collect data was obtained from Mount Kenya University.

4.0 Results and Discussion

Demographic Information

The distribution of the demographic factors is presented in Table 1 using frequencies and percentages. The variables include age, sex, social category, and gestational age, initiation of complementary food, access to tap water and availability of modern pit latrine.

Table 1: Demographic Information

Variables	Frequency (n=200)	Percent (%)
Age in months		
6 to 24	189	94.5
25 to 59	11	5.5
Sex		
Male	104	52.0
Female	96	48.0
Social category		
Category 1	24	12.0
Category 2	92	46.0
Category 3	84	42.0
Gestational age		
< 37 Weeks	2	1.0
37 weeks and above	198	99.0
Initiation of complementary feeding		
Below 6 months	46	23.0

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6 months and above	154	77.0
Access of tap water		
Yes	78	39.0
No	122	61.0
Availability of modern pit latrine		
Yes	153	76.5
No	47	23.5

The findings in Table 1 revealed that the majority of the children (94.5%) were aged between 6 and 24 months, while the remaining (5.5%) were between 25 and 59 months. Male children were 52.0%, compared to 48.0% of their female counterparts. The highest percentage (46.0%) belongs to the second social category, followed by those in the third social category (42.0%). Almost all children (99.0%) were born full term. About three-quarters of the children (77.0%) started complementary food after 6 months. Access to the water and toilet were assessed, and the majority (61.0%) did not have access to clean water, while 23.5% had modern pit latrines.

Awareness on composition of balanced diet in Ruhango HC, 2022

The study also looked at the awareness on composition of balanced diet in Ruhango District. Mothers and caregivers were asked whether they were aware about six items of balanced diet indicated in Table 2.

Table 2 Awareness on composition of balanced diet in Ruhango HC, 2022

Composition of balanced diet	Category	Frequency (n=200)	Percent (%)
Beans	Yes	187	93.5
	No	13	6.5
Vegetables	Yes	164	82.0
	No	36	18.0
Meat	Yes	156	78.0
	No	44	22.0
Proteins	Yes	151	75.5
	No	49	24.5
Lipids	Yes	156	78.0
	No	44	22.0
Vitamins	Yes	167	83.5
	No	33	16.5
Overall awareness	Inadequate (Scored 4 and below)	42	21.0
	Adequate (Scored 5 and 6)	158	79.0

As indicated in Table 2, the findings revealed that Majority balanced diet is composed of beans (93.5%), vegetables (82.0%), meat (78.0%), proteins (75.5%), lipids (78.0%) and vitamins

(83.5%). The overall awareness towards balanced diet was assessed. Six food items mentioned above which the balanced diet is composed were used to determine the level of awareness on balanced diet. Those who mentioned above 4 were grouped as having adequate awareness while those able to mention only 4 and below were classified as having inadequate awareness. Accordingly, majority (79.0%) had adequate awareness on balanced diet whereas 21.0% had inadequate awareness on the same**.**

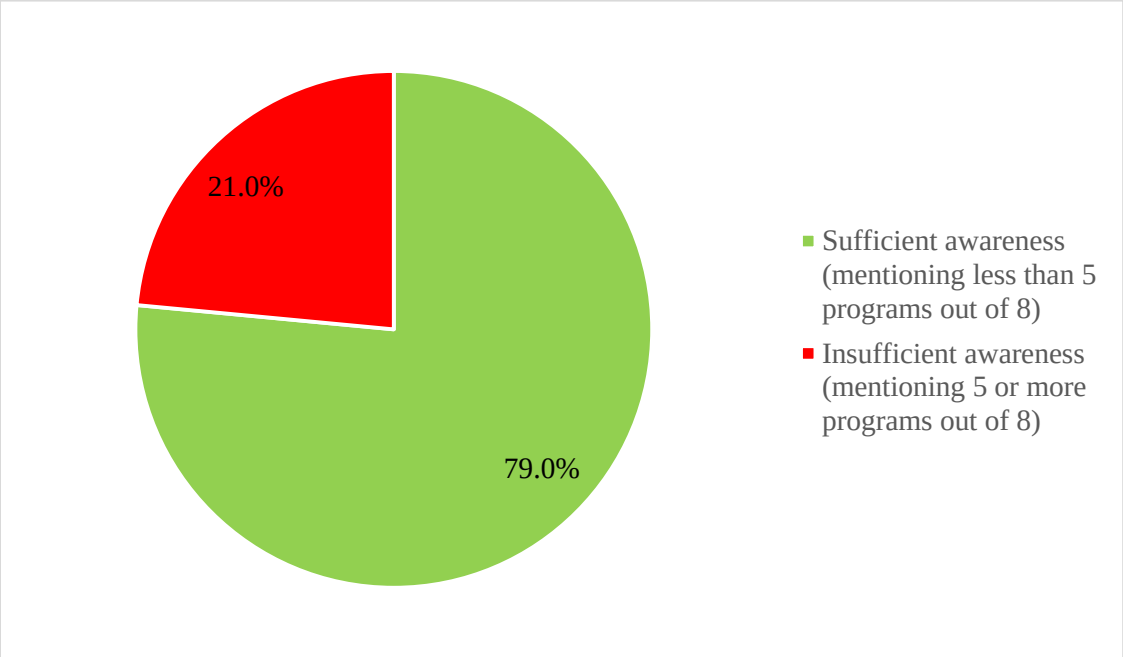

Figure 1: Awareness on nutrition programs

The mothers /caregivers were asked whether they were aware of nutrition programs from the available 8 nutrition programs in the district. Respondents who selected less than 5 programs were categorized as having insufficient awareness on nutrition programs while those selected 5 or more were grouped as having sufficient awareness. Majority (76.5%) had sufficient awareness towards the nutrition programs.

Nutritional status among children of 6 to 59 months in Ruhango HC, 2022

The study sought to determine the nutritional status (stunting, wasting and underweight) among children of 6 to 59 months in Ruhango, Rwanda and the result is presented in Figure 2.

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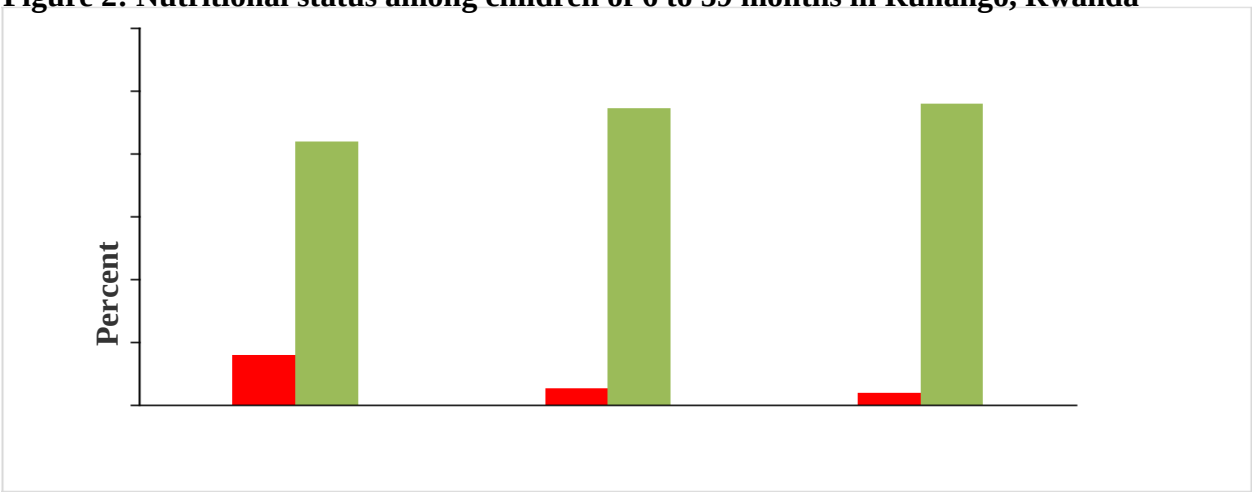
Journal of Medicine, Nursing & Public Health
Volume 6||Issue 1||Page 65-77||May||2023|
Email: info@stratfordjournals.org ISSN: 2706-6606

Figure 2: Nutritional status among children of 6 to 59 months in Ruhango, Rwanda



The findings indicated that the prevalence of stunting among children was 16.0% as indicated in Figure 2. The figure further shows that the prevalence of wasting and underweight were 5.5% and 4.0% respectively.

Relationship between socio-demographic characteristics and under nutrition among children of 6 to 59 months

The study sought to establish the demographic characteristics that are associated with under nutrition among children. This bivariate analysis is presented in Table 3.

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Journal of Medicine, Nursing & Public Health
Volume 6||Issue 1||Page 65-77||May||2023|
Email: info@stratfordjournals.org ISSN: 2706-6606

Table 3: Relationship between socio-demographic characteristics and undernutrition

Variable	Stunting		p value	Wasting		p value	Underweight		p value
	Yes, n(%)	No, n(%)		Yes, n(%)	No, n(%)		Yes, n(%)	No, n(%)	
Age [months]									
6 to 24	32(16.9)	157(83.1)	0.136	11(5.8)	178(94.2)	0.410	8(4.2)	181(95.8)	0.486
25 to 59	0(0.0)	11(100.0)		0(0.0)	11(100.0)		0(0.0)	11(100.0)	
Sex									
Male	18(17.3)	86(82.7)	0.600	6(5.8)	98(94.2)	0.862	5(4.8)	99(95.2)	0.544
Female	14(14.6)	82(85.4)		5(5.2)	91(94.8)		3(3.1)	93(96.9)	
Social category									
Category 1	3(12.5)	21(87.5)	0.204	1(4.2)	23(95.8)	0.322	0(0.0)	24(100.0)	0.561
Category 2	11(12.0)	81(88.0)		3(3.3)	89(96.7)		4(4.3)	88(95.7)	
Category 3	18(21.4)	66(78.6)		7(8.3)	77(91.7)		4(4.8)	80(95.2)	
Gestational age									
< 37 Weeks	2(100.0)	0(0.0)	**0.025**	2(100.0)	0(0.0)	**0.003**	2(100.0)	0(0.0)	**0.001**
37 weeks and above	30(15.2)	168(84.8)		9(4.5)	189(95.5)		6(3.0)	192(97.0)	
Initiation of complementary feeding in months									
< 6	25(54.3)	21(45.7)	**<0.001**	11(23.9)	35(76.1)	**<0.001**	7(15.2)	39(84.8)	**<0.001**
6 and above	7(4.5)	147(95.5)		0(0.0)	154(100.0)		1(0.6)	153(99.4)	
Access of tap water									
Yes	4(5.1)	74(94.9)	**0.001**	2(2.6)	76(97.4)	0.207	1(1.3)	77(98.7)	0.153
No	28(23.0)	94(77.0)		9(7.4)	113(92.6)		7(5.7)	115(94.3)	
Availability modern pit latrine									
Yes	13(8.5)	140(91.5)	**<0.001**	5(3.3)	148(96.7)	**0.012**	4(2.6)	149(97.4)	0.090
No	19(40.4)	28(59.6)		6(12.8)	41(87.2)		4(8.5)	43(91.5)	

In Table 3, the findings revealed that gestational age, initiation of complementary feeding, and access to clean water and toilets were significantly associated with stunting. Children born preterm were significantly more likely to develop stunting compared to full-term children (p = 0.025). The proportion of children with stunting was significantly higher among those who started complementary feeding before 6 months from birth (p = 0.025). Households without tap water access and modern pit latrines had significantly more children with stunting (p <0.001) and (p 0.001), respectively. Though the proportion of stunting was higher among social class 3, it has not reached the significance level (p = 0.204).

Similarly, children born preterm were significantly more likely to have wasting than full-term children (p = 0.003). The proportion of children with wasting was significantly higher among those who started complementary feeding before 6 months from birth (p <0.001). Households without modern pit latrines had significantly more children with stunting (p = 0.012).

Regarding underweight, only gestational age and the initiation of complementary feeding were significantly associated with underweight. Children with preterm birth were significantly more likely to develop underweight compared to full-term children (p = 0.001). The proportion of

underweight was significantly higher among those who started complementary feeding before 6 months from birth (p <0.001).

Association of awareness on composition balanced diet and nutrition programs with undernutrition among children

The study sought to assess association between under nutrition and awareness on balanced diet /nutrition programs as the findings are shown in Table 4.

Table 4: Association of awareness on composition balanced diet and nutrition programs with undernutrition among children

Variable	Stunting		p value	Wasting		p value	Underweight		p value
	Yes, n(%)	No, n(%)		Yes, n(%)	No, n(%)		Yes, n(%)	No, n(%)	
Awareness on balanced diet									
Inadequate	26(61.9)	16(38.1)	**<0.001**	7(16.7)	35(83.3)	**0.002**	5(11.9)	37(88.1)	**0.011**
Adequate	6(3.8)	152(96.2)		4(2.5)	154(97.5)		3(1.9)	155(98.1)	
Nutrition program awareness									
Insufficient	18(38.3)	29(61.7)	**<0.001**	3(6.4)	44(93.6)	0.722	3(6.4)	44(93.6)	0.394
Sufficient	14(9.2)	139(90.8)		8(5.2)	145(94.8)		5(3.3)	148(96.7)	

Mothers or caregivers with inadequate awareness on composition of balanced diet had significantly more stunted children compared to those with adequate awareness (p <0.001). Likewise, stunting in children was significantly higher among mothers or caregivers who had insufficient awareness on nutrition programs than with sufficient awareness (p = 0.002). Mothers or caregivers with inadequate awareness on composition of balanced diet had also significantly more children with wasting (p = 0.002) and underweight (p = 0.011).

Discussion

The result from this study indicates that the prevalence of stunting, wasting and underweight was 16.0%, 5.5% and 4.0% respectively among children in Ruhango. These figures are slightly above the 2021global estimates by FAO et al (2021, which state that stunting and wasting stands at 22.0% and 6.7%. This could be could indicate that the Rwanda MOH nutrition strategy is bearing some fruits albeit slowly.

The Africa estimates for stunting and wasting are 33.0% and 6.2% respectively with Eastern and Middle Africa UN sub-regions demonstrating stunting rates of 50% and wasting rates of 42% (Ellen et al., 2014). However, there are considerable variations across countries. For example, In Ethiopia (52%) under the age of five are stunted (growth retardation), 11% are wasted (thin for their height) and 47% are underweight (low weight-for-age). Other community-based studies in Ethiopia also showed prevalence of wasting from 9-12% (Mihretie, 2018). According to UNICEF et al (2021), the highest rates of stunting are reported in Eritrea (52.5%) and Burundi (50.9%)

while the lowest rates are in Gabon (17.0&) and Ghana (17.5%). These variations could be explained by varying strategies by different countries to prevent malnutrition influenced by the prevailing circumstances such as conflict, war, political instability and poverty. In the neighboring countries, which boosts somewhat similar conditions to Rwanda, the stunting rate is somewhat comparable, with Kenya reporting 26.2%, Tanzania 31.8% and Uganda 25.4% (UNICEF et al, 2021).

In Rwanda the stunting rate stands at 33.1% and wasting at 1.1% with the Northern and Western regions having the highest stunting rates at 41% and 40% respectively (NISR, 2021). In the Southern region, where Ruhango Health center is situated, the stunting rate is at 33%. The lower rates reported in this study could be a testament that the strategies put in place at Ruhango Health center are working.

5.0 Conclusion

The aim of this study was to assess nutrition status and influencing factors among children under five years at Ruhango Health Center. The study concludes that the prevalence rate of malnutrition was relatively high although it is somewhat lower than the national average and the Southern province rates.

The study also concludes that there are some respondent factors that are associated with the children's' nutritional status, and that many of these factors, such as gestational age, initiation of complementary feeding, access to clean water/sanitation, social category, and mothers' knowledge care givers, and awareness, of some programs, need to reinforced and improved for reducing malnutrition in Ruhango Health Center.

6.0 Recommendations

1. The MCH sector can adopt measures to delay introduction of complementary feeding, such as educating mothers and caregivers on the benefits as well as other measure such as implementing and enforcing adequate maternity leave as well as putting in place measure to allow working mothers to be able to breastfeed their children. These can include specific breaks during the day for the mothers or facilitating establishment of baby care centers at the workplace.
2. The health centers in coordination with CHWs should put in place strategies to ensure pregnant mothers attend antenatal clinic effectively for checking up on the progress of the pregnancy. This will enable the health care workers address any deviations and thus ensure that the number of babies born before term is reduced.
3. The public health sector and local government together with bodies responsible for provision of amenities should speed up and increase the number of people getting access to clean water including access to clean toilets and sanitation.
4. The government should amplify poverty eradication measures to pull up people from the low economic status, which has been shown to be linked to unfavorable nutritional outcomes among children.

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