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Factors Associated with Vitamin A Supplementation and Mebendazole Deworming Coverage Among Children Under Five Years of Age in the Ngaba Health Zone, Kinshasa City-Province, Democratic Republic of Congo.

KANGAKOLO KOBOY Elysée[1], BALOW'A KALONJI KAMUNA Ignace[1]

1 Higher Institute of Medical Techniques of Kinshasa, P.O. Box 774, Kinshasa XI, DRC

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ABSTRACT

Vitamin A supplementation and mebendazole deworming are important interventions in the prevention of certain conditions and in improving the nutritional status of children under five

The overall objective of this study was to assess the coverage of vitamin A supplementation and mebendazole deworming, as well as to determine the factors associated with these preventive interventions among children under five years of age in the Ngaba health zone, in the city-province of Kinshasa, Democratic Republic of Congo.

This was a descriptive, non-probability study with an analytical focus, conducted among a convenience sample of 196 children aged 6 to 59 months selected from the Ngaba Health Zone.

The results reveal a statistically significant association between deworming with mebendazole and the three sociodemographic characteristics studied: sex ($\chi^2 = 6.157$; $p = 0.015$), occupation ($\chi^2 = 326.318$; $p < 0.001$), and the parents' marital status ($\chi^2 = 15.73$; $p < 0.001$).

Ultimately, coverage of vitamin A supplementation and mebendazole deworming remains insufficient among the children studied in the Ngaba Health Zone.

It is necessary to increase awareness among parents and caregivers, improve follow-up of children, and strengthen prevention activities in order to improve coverage of these interventions.

Keywords: Coverage, Supplementation, Vitamin A, Deworming, Mebendazole, Children under five.

1. INTRODUCTION

Child health is a fundamental pillar of public health and an essential component of the overall development of societies. Among children under five, nutritional problems and parasitic infections are major determinants of childhood morbidity and mortality in many settings where access to health services is limited (WHO & UNICEF, 2021). These conditions compromise children's physical and immune development and are often associated with micronutrient deficiencies or chronic infections.

Vitamin A deficiency is consistently identified as a major constraint on growth and resistance to infections in young children. Vitamin A plays an essential role in immune function, vision, and the integrity of epithelial tissues (WHO, 2020).

Integrated vitamin A supplementation and deworming programs are often implemented as part of combined health campaigns to optimize coverage of preventive services and improve children's overall health. However, the effectiveness of these strategies depends on various factors, including operational implementation, community acceptance, and socioeconomic determinants that influence access to care and health interventions. These factors can vary across geographic and cultural contexts, making systematic evaluation necessary to determine the actual impact of these programs in different settings.

In Central Africa, the situation is particularly concerning. Countries such as Cameroon and the Central African Republic have high rates of chronic malnutrition and micronutrient deficiencies. In Cameroon, approximately 31% of children under five suffer from stunting (Cameroon DHS, 2018), while in the Central African Republic, this rate exceeds 40% (UNICEF CAR, 2020). Vitamin A deficiency remains a severe public health problem there, associated with a high prevalence of intestinal parasitic infections fueled by environmental conditions conducive to transmission (WHO Africa, 2021).

In the Democratic Republic of Congo, the child health situation remains particularly concerning. According to the Demographic and Health Survey (DHS-DRC 2019–2020), 43% of children under five suffer from stunting, 6% from wasting, and 47% from anemia (DHS-DRC, 2020). Vitamin A supplementation coverage remains uneven across provinces, with rates below 70% in some rural areas (Ministry of Health of the DRC, 2021).

2. RESEARCH QUESTION

What factors are associated with coverage of vitamin A supplementation and mebendazole deworming among children under five in the Ngaba health zone, Kinshasa City-Province, in the Democratic Republic of the Congo?

3. RESEARCH HYPOTHESIS

Coverage of vitamin A supplementation and mebendazole deworming among children under five in the Ngaba health zone is likely associated with parents' sociodemographic characteristics (including their age, sex, and educational level), their socioeconomic characteristics (including their occupation and marital status), and their use of health services.

4. GENERAL OBJECTIVE

To determine the coverage of vitamin A supplementation and mebendazole deworming, as well as the factors associated with these interventions among children under five years of age in the Ngaba health zone, in the city-province of Kinshasa, Democratic Republic of Congo.

5. RESEARCH METHODOLOGY

This is a descriptive, non-probability study with an analytical focus, conducted among a convenience sample of 400 children aged 6 to 59 months selected from the Ngaba Health Zone.

6. RESEARCH RESULTS

Table 1: Distribution of Respondents by Sociodemographic Characteristics

Variables	Categories	n	%	Mean ± Standard Deviation
1 Parents' Gender				
	Male	145	36.3	
	Female	255	63.8	

2 Parents' age (years)				26.28 ± 6.23
	< 25	249	62.3	
	≥ 25	151	37.8	
3 Marital status				
	Married	103	25.8	
	Unmarried	297	74.3	
4 Occupation				
	Not working	226	56.5	
	Employed	174	43.5	
5 Relationship to the child				
	Mother	229	57.3	
	Father	100	25	
	Guardian	71	17.8	

Table 1 shows that 63.8% of respondents were female and that 37.8% were over 25 years old, with an estimated average age of 26.28 ± 6.23 years.

Regarding marital status, 25.8% of respondents were married, and among them, 56.5% were unemployed.

Regarding the family relationship with the child, the results indicate that 57.3% of respondents were the biological mothers.

Table 2: Distribution of Children Surveyed by Sociodemographic Characteristics

Variables	Categories	n	%	Mean ± Standard Deviation
1 Child's age (months)				**36.81 ± 13.06**
	< 24	97	24.3	
	≥ 24	303	75.8	
2 Gender				
	Male	172	43.0	
	Female	228	57.0	
Birth order				
	1st	15	3.8	
	2nd	130	32.4	
	3rd	119	29.8	
	4th	84	21.0	
	5th	21	5.3	
	6th	16	4.0	
	7th	15	3.8	

Table 2 shows that 75.8% of the children surveyed were 24 months of age or older, with an estimated mean age of 36.81 ± 13.06 months.

In terms of gender, 57% of the children were female, and in terms of birth order, 32.4% were the second-born child in the family.

Table 3: Distribution of children surveyed by vitamin A supplementation

Variables	Categories	n	%
1 Child receiving supplementation			
	No	163	40.8
	Yes	237	59.3
2 Annual frequency of supplementation			
	Once a year	226	95.4
	Twice a year	11	4.6
3 Source of confirmation of supplementation			
	Health record	136	57.4
	Verbal report from parents	63	26.6
	Registration record	38	16.0

Table 3 shows that 59.3% of the children surveyed received vitamin A supplementation and that only 4.6% of the mothers of the children surveyed knew that vitamin A supplementation was administered to children twice a year.

As for the source of confirmation of vitamin A supplementation, 57.4% cited the child's health record.

Table 4: Distribution of children surveyed by mebendazole deworming status

Variables	Modalities	n	%
1 Child treated for parasites			
	No	159	39.8
	Yes	241	60.3
2 Annual deworming frequency			
	Once a year	230	95.4
	Twice a year	11	4.6
3 Source of confirmation that the child has been treated for parasites			
	Health record	137	56.8
	Verbal report from parents	64	26.6
	Community Relay Registry	40	16.6

Table 4 shows that 60.3% of the children surveyed had been treated with mebendazole for deworming and that only 4.6% of the mothers of the children surveyed knew that mebendazole deworming treatment was administered to children twice a year.

Regarding the source of confirmation of deworming, 56.8% cited the child's health record.

The figure below shows that the tap (60.3%) and the well (57.3%) were the main sources of drinking water for households.

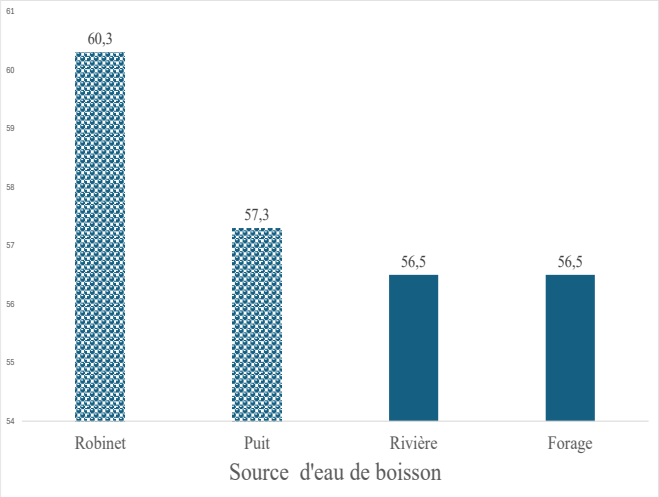


Figure 1: Main Sources of Household Drinking Water

Table 5: Average Distribution of Anthropometric Indices for Children Surveyed

Variables	Values	Mean ± Standard Deviation
1 W/H Index (underweight)		0.17 ± 2.58 Z-score
Minimum	-5.437	
Maximum	8.299	
2 T/A Index (growth retardation)		-6.47±3.94 Z-score
Minimum	-14.720	
Maximum	6.038	
3 P/T Index (acute malnutrition)		5.15 ± 4.85 Z-score
Minimum	-4.089	
Maximum	19.170	

Table 5 shows that the mean P/T ratio (5.15 ± 4.85 Z-score) and the P/A index (0.17 ± 2.58 Z-score) were within the range indicating good nutrition, while the T/A index (-6.47 ± 3.94 Z-score) was within the range indicating malnutrition.

Table 6: Relationship between vitamin A supplementation and parents' sociodemographic characteristics.

Variables	Categories	Child Receiving Supplements		Chi-Square Test Chi-Square	p-value
		No n(%) (n=174)	Yes n(%) (n=226)		
Parents' gender				3.497	0.039
	Male	84 (48.8)	88 (51.2)		
	Female	90 (39.5)	138(60.5)		
Occupation				340.02	<0.001
	Unemployed	11 (4.9)	215 (95.1)		
	Informal work	156(100)	0(0)		
	Civil servant	7(38.9)	11(61.1)		
Marital status				12.3	<0.001
	Married	60 (58.2)	43 (41.8)		
	Unmarried	133(38.3)	164 (61.7)		

The results in Table 6 highlight a statistically significant association between vitamin A supplementation in children and the sociodemographic characteristics of their parents, particularly gender ($\chi^2 = 3.497$; $p = 0.039$), occupation ($\chi^2 = 340.02$; $p < 0.001$), and marital status ($\chi^2 = 12.3$; $p < 0.001$).

Table 7: Relationship between mebendazole deworming and parents' sociodemographic characteristics.

Variables	Categories	Child treated for parasites		Chi-Square Test Chi-Square	p-value
		No n(%) (n=174)	Yes n(%) (n=226)		
Parents' gender				6.157	0.015
	Male	87 (50.6)	85 (49.4)		
	Female	87 (38.2)	141(61.8)		
Occupation				326,318	<0.001
	Unemployed	15 (6.6)	211 (93.4)		
	Informal employment	155 (994)	1 (0.6)		
	Civil servant	4 (22.2)	14 (77.8)		
Marital status				15.73	<0.001
	Married	62 (60.2)	41 (39.8)		
	Unmarried	112(37.7)	185(62.3)		

The results in Table 7 show a statistically significant association between mebendazole deworming of children under five years of age and the sociodemographic characteristics of their parents, particularly gender, occupation, and marital status ($p < 0.05$).

Regarding the parents' gender, children whose respondents were female were proportionally more likely to have received deworming treatment (61.8%) than those whose respondents were male (49.4%). This difference was statistically significant ($\chi^2 = 6.157$; $p = 0.015$). This means that the parent's gender was associated with the use of deworming for children.

With regard to occupation, a statistically significant association was observed between the parents' occupation and children's deworming ($\chi^2 = 326.318$; $p < 0.001$). In fact, the proportion of children who had undergone deworming was 93.4% among children of unemployed parents, compared with 77.8% among children of civil servants. In contrast, only 0.6% of children whose parents were engaged in informal work had undergone deworming. These results reveal significant differences based on the parents' socioeconomic status.

Regarding marital status, children of unmarried parents had a higher rate of deworming (62.3%) than those of married parents (39.8%). This difference was statistically significant ($\chi^2 = 15.73$; $p < 0.001$). This result indicates an association between the parents' marital status and the use of mebendazole for deworming

7. DISCUSSION OF RESULTS

The results of this study show that women accounted for 63.8% of respondents, with a mean age of 26.28 ± 6.23 years. Biological mothers constituted the largest group (57.3%). This predominance of women could be explained by the important role women play in the daily care of children, particularly in feeding, hygiene, and health monitoring. This observation is consistent with the work of Caldwell (1979), which highlights the influence of maternal characteristics on children's health and survival.

Regarding the children, 75.8% were 24 months of age or older, with a mean age of 36.81 ± 13.06 months. Girls accounted for 57% of the sample. This population warrants special attention, as the first years of life are a critical period for growth and development. According to Black et al. (2013), nutritional deficiencies and repeated infections during this period can compromise children's physical and cognitive development.

The present study reveals that 59.3% of the children had received vitamin A supplementation, while 40.8% had not. Furthermore, 95.4% of the supplemented children had received a single annual dose, and only 4.6% had received two. These results suggest insufficient coverage and irregularity in preventive interventions.

According to the World Health Organization (WHO, 2011), children aged 6 to 59 months living in populations at risk of vitamin A deficiency should receive periodic supplementation. For children aged 12 to 59 months, the recommendation is 200,000 international units every four to six months. Mayo-Wilson et al. (2011) also show that this intervention helps reduce certain risks of childhood morbidity and mortality in the affected populations. These data underscore the importance of strengthening community-based campaigns, raising parental awareness, and monitoring children.

Regarding mebendazole deworming, 60.3% of children had received this treatment, compared with 39.8% who had not. Among the children who were dewormed, 95.4% had received a single annual dose. According to the WHO (2017), preventive chemotherapy for soil-transmitted helminthiasis is recommended annually when community prevalence reaches at least 20%, and twice a year when it exceeds 50%. The frequency observed in our study must therefore be evaluated in light of the local prevalence of parasitic infections.

Taylor-Robinson et al. (2019) point out, however, that the effects of deworming programs on growth and nutritional indicators are not consistently demonstrated across all populations. Deworming must therefore be part of a comprehensive strategy that combines infection prevention, improved hygiene, and nutritional care.

Furthermore, the health record was the primary source of confirmation for vitamin A supplementation (57.4%) and deworming (56.8%). This finding underscores the importance of this document in monitoring preventive interventions and the need to strengthen its systematic use.

The results show that the tap (60.3%) and the well (57.3%) were the main sources of drinking water for households. This diversity of water sources can have health implications when the conditions for collection, treatment, and storage do not guarantee the quality of the water consumed.

According to the WHO and UNICEF (2023), access to safe drinking water, adequate sanitation facilities, and good hygiene practices is a key determinant in the prevention of infectious diseases. Black et al. (2013) also emphasize that repeated infections and poor environmental conditions contribute to the deterioration of children's nutritional status. It therefore appears necessary to combine nutritional interventions with measures to improve water, sanitation, and hygiene.

Regarding nutritional status, the observed mean values were 0.17 ± 2.58 Z-scores for weight-for-age, -6.47 ± 3.94 Z-scores for height-for-age, and +5.15 ± 4.85 Z-scores for weight-for-

height. According to WHO growth standards (2006), values below -2 standard deviations indicate malnutrition, while values above +2 for weight-for-height may indicate overweight.

The mean values for height-for-age and weight-for-height observed in this study are particularly unusual. They require verification of the anthropometric data and the calculation of Z-scores before any definitive conclusions can be drawn. It is also necessary to calculate the proportion of children with values below -2 and -3 standard deviations for each index.

Statistical analyses show a significant association between vitamin A supplementation and the parents' gender (χ^2 = 3.497; p = 0.039), their occupation (χ^2 = 340.02; p < 0.001), and their marital status (χ^2 = 12.3; p < 0.001).

Children whose respondents were female were more likely to receive supplementation (60.5%) than those whose respondents were male (51.2%). Similarly, supplementation was higher among unemployed parents (95.1%) than among civil servants (61.1%). With regard to marital status, children of unmarried parents had a higher rate of supplementation (61.7%) than those of married parents (41.8%).

Similar associations were observed for deworming with mebendazole. Children whose respondents were female were more likely to have been dewormed (61.8%) than those whose respondents were male (49.4%). The proportion reached 93.4% among unemployed parents, compared with 77.8% among civil servants and only 0.6% among informal workers. Furthermore, children of unmarried parents were more likely to have received deworming treatment (62.3%) than those of married parents (39.8%).

These results suggest that parents' sociodemographic characteristics are associated with the use of preventive interventions. This finding is consistent with the work of Caldwell (1979) and Black et al. (2013), which highlight the influence of family and socioeconomic characteristics on children's health.

However, these associations do not establish a causal relationship. They require cautious interpretation and could be further explored through a multivariate analysis to identify factors independently associated with supplementation and deworming.

Ultimately, this study highlights room for improvement in the coverage of vitamin A supplementation and mebendazole deworming among children under five years of age. It also shows that certain sociodemographic characteristics of parents are statistically associated with the use of these interventions. These results underscore the need to strengthen community-based campaigns, raise parental awareness, improve health monitoring of children, and enhance hygiene and sanitation conditions. An integrated approach appears essential for sustainably improving children's health and nutritional status.

CONCLUSION

The objective of this study was to analyze vitamin A supplementation, mebendazole deworming, and the nutritional status of children under five years of age, while examining the sociodemographic factors associated with the use of these preventive interventions.

The results of this study show that 59.3% of children had received vitamin A supplementation, while 60.3% had been treated with mebendazole for parasitic infections. These proportions indicate that a significant proportion of children had not yet received these interventions, which are essential for preventing nutritional deficiencies and parasitic infections. Furthermore, the majority of children who received supplementation or deworming had received only a single dose during the year, underscoring the importance of strengthening the continuity and monitoring of preventive interventions.

Regarding sociodemographic characteristics, the analyses revealed statistically significant associations between vitamin A supplementation and the parents' gender (p = 0.039), their occupation (p < 0.001), and their marital status (p < 0.001). Similar associations were observed between mebendazole deworming and these same sociodemographic characteristics (p < 0.05). These results suggest that the use of preventive interventions varies according to certain parental characteristics, though they do not establish a causal relationship.

With regard to environmental conditions, the tap (60.3%) and the well (57.3%) were the main sources of drinking water for households. This situation underscores the importance of strengthening measures related to access to safe drinking water, sanitation, and hygiene in order to reduce children's exposure to infectious diseases.

With regard to nutritional status, the mean values of the anthropometric indices revealed results that require further verification, particularly for height-for-age and weight-for-height. A definitive interpretation of these results will require validation of the anthropometric data and recalculation of the Z-scores according to WHO standards.

Ultimately, this study highlights the need to strengthen preventive and nutritional interventions for children under

five years of age. To this end, it is recommended to strengthen community-based vitamin A supplementation and deworming campaigns, intensify awareness-raising efforts among parents, improve the monitoring of children through health records, and promote access to safe drinking water as well as good hygiene practices.

REFERENCES

Black, R. E., Victora, C. G., Walker, S. P., Bhutta, Z. A., Christian, P., de Onis, M., Ezzati, M., Grantham-McGregor, S., Katz, J., Martorell, R., & Uauy, R. (2013). Maternal and child undernutrition and overweight in low-income and middle-income countries. The Lancet, 382(9890), 427–451. https://doi.org/10.1016/S0140-6736(13)60937-X

Caldwell, J. C. (1979). Education as a factor in mortality decline: An examination of Nigerian data. Population Studies, 33(3), 395–413. https://doi.org/10.2307/2173888

Mayo-Wilson, E., Imdad, A., Herzer, K., Yakoob, M. Y., & Bhutta, Z. A. (2011). Vitamin A supplements for preventing mortality, illness, and blindness in children aged under 5: Systematic review and meta-analysis. BMJ, 343, Article d5094. https://doi.org/10.1136/bmj.d5094

World Health Organization. (2006). WHO child growth standards: Length/height-for-age, weight-for-age, weight-for-length, weight-for-height, and body mass index-for-age: Methods and development. https://www.who.int/publications-detail-redirect/924154693X

World Health Organization. (2011). Guideline: Vitamin A supplementation in infants and children 6–59 months of age. https://www.who.int/publications/i/item/9789241501767

World Health Organization. (2017). Guideline: Preventive chemotherapy to control soil-transmitted helminth infections in at-risk population groups. World Health Organization.

Taylor-Robinson, D. C., Maayan, N., Soares-Weiser, K., Donegan, S., & Garner, P. (2019). Deworming drugs for soil-transmitted intestinal worms in children: Effects on nutritional indicators, hemoglobin, and school performance. Cochrane Database of Systematic Reviews, 2019(9), Article CD000371. https://doi.org/10.1002/14651858.CD000371.pub7

World Health Organization, & UNICEF. (2023). Progress on household drinking water, sanitation, and hygiene 2000–2022: Special focus on gender. World Health Organization.