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Health Personnel Practice in The Prevention and Management of Diarrhoeal Diseases in Children, Ndop Health District, North West Region, Cameroon

Shu Claudia Sirri[1*], Loveline Lum Niba[1], Mary Bi Suh Atanga[2]

[1]Department of Public Health, Faculty of Health Sciences, The University of Bamenda, Bamenda, Cameroon
[2]Department of Nursing and Midwifery, The University of Bamenda, Bamenda, Cameroon
Email: *shuclaudiasirri@yahoo.com, lumnyanga@gmail.com, maryatanga@gmail.com

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Abstract

Background: Diarrhoeal diseases remain a major cause of morbidity and mortality among children under five years of age in low- and middle-income countries, including Cameroon. Appropriate management relies on healthcare providers' adherence to evidence-based guidelines, particularly the use of oral rehydration solution (ORS), zinc supplementation, continued feeding, vaccination, and caregiver education. This study assessed healthcare providers' practices in the prevention and management of childhood diarrhoeal diseases in Ndop Health District, North West Region, Cameroon. **Methods:** A hospital-based cross-sectional study was conducted among 71 healthcare providers working in nine health areas of Ndop Health District. Data were collected using a structured, pre-tested questionnaire and an observational checklist to assess clinical practices and availability of essential commodities. Descriptive and inferential analyses were performed to determine practice levels and factors associated with good practice. **Results:** Overall, 74.6% of healthcare providers demonstrated good practice, while 25.4% had poor practice. Only 12.7% routinely assessed dehydration status, and consistent administration of ORS was reported by 33.8% of providers. Zinc supplementation was used in only 8.5% of cases, while antibiotics were frequently prescribed beyond guideline-based indications. Vaccination status was commonly assessed, with 85.9% and 97.2% reporting assessment of measles and rotavirus vaccination, respectively. Observational findings revealed intermittent stock-outs of ORS and zinc, limited availability of IMCI guidelines, and inconsistencies between self-reported practices and facility readiness. **Conclusion:** Although most healthcare providers demonstrated generally acceptable practice levels, substantial gaps persist

in dehydration assessment, zinc use, rational antibiotic prescribing, and availability of essential supplies. Strengthening IMCI-based training, supportive supervision, and supply chain systems is critical to improving the quality of childhood diarrhoeal disease management and reducing preventable morbidity and mortality in Ndop Health District.

Keywords

Diarrhoeal Diseases, Healthcare Providers, Practice, Children under Five, Ndop Health District

1. Introduction

Diarrhoeal diseases remain a major public health problem and one of the leading causes of morbidity and mortality among children under five years of age worldwide. An estimated 1.7 billion episodes of diarrhoea occur globally each year, resulting in approximately 525,000 deaths among children under five, with the highest burden occurring in low- and middle-income countries (LMICs) [1]. Sub-Saharan Africa bears a disproportionate share of this burden due to persistent challenges related to poverty, inadequate water, sanitation and hygiene (WASH), malnutrition, and weak health systems [2]. In Cameroon, diarrhoeal diseases consistently rank among the leading causes of childhood illness and mortality, contributing significantly to under-five hospital admissions and preventable deaths [3].

Despite the availability of simple, cost-effective, and evidence-based interventions such as oral rehydration solution (ORS), zinc supplementation, continued feeding, and appropriate vaccination, diarrhoeal disease-related mortality remains unacceptably high. The World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) recommend ORS and zinc as first-line treatment for all cases of acute childhood diarrhoea, with antibiotics reserved only for specific indications such as dysentery or suspected cholera [4]. Effective implementation of these guidelines largely depends on the knowledge, attitudes, and practices of healthcare providers who serve as the first point of contact for sick children within the health system. However, evidence from several LMICs indicates persistent gaps in adherence to standard treatment guidelines, including underuse of ORS and zinc, over-prescription of antibiotics, inadequate assessment of dehydration, and poor caregiver counselling [5] [6].

Healthcare providers play a critical role not only in the clinical management of diarrhoeal diseases but also in prevention through vaccination, health education, nutrition counselling, and disease surveillance. Proper assessment of dehydration, nutritional status, and danger signs, combined with timely follow-up, is essential to prevent complications and deaths. Nevertheless, studies across sub-Saharan Africa have reported suboptimal practices related to Integrated Management of Childhood Illness (IMCI), particularly in rural and resource-limited settings where shortages of trained staff, essential commodities, and supportive supervi-

sion are common [7] [8]. These systemic challenges compromise the quality of care delivered to children and undermine progress toward reducing under-five mortality.

In Cameroon, limited data exist on the practices of healthcare providers regarding the prevention and management of diarrhoeal diseases at the district level, particularly in conflict-affected and underserved regions such as the North West Region. Ndop Health District faces unique challenges including health workforce constraints, periodic stock-outs of essential supplies, laboratory service interruptions, and population displacement, all of which may negatively influence the quality of diarrhoeal disease management. Understanding how healthcare providers assess, treat, and counsel caregivers of children with diarrhoea is therefore crucial for identifying gaps, informing targeted interventions, and strengthening health system performance.

This study aims to assess the practices of healthcare providers in the prevention, management, and control of diarrhoeal diseases among children in Ndop Health District, North West Cameroon. By examining adherence to national and international guidelines, availability and use of essential commodities, and contextual challenges faced by providers, the findings are expected to generate evidence to guide capacity-building initiatives, improve service delivery, and ultimately reduce diarrhoeal disease morbidity and mortality among children under five.

2. Materials and Methods

2.1. Study Design and Setting

This Hospital based cross-sectional study was conducted among health personnel working in Ndop Health District, North West Region of Cameroon. The district comprises 15 health areas and provides primary and secondary healthcare services to the population.

2.2. Study Population

The study population consisted of health care providers, including medical doctors, nurses, and midwives, who were directly involved in the management of diarrhoeal diseases among children within Ndop Health District.

2.3. Sample Size Determination.

The minimum sample size was calculated using the single population proportion formula:

$$n = Z^2 P(1 - P)/e^2$$

where Z represents the standard normal deviate at 95% confidence level (Z = 1.96), P is the expected proportion of health personnel with appropriate practices in diarrhoeal management (assumed to be 0.20), and e is the margin of error (0.08). The calculated sample size was 71 participants. All eligible health personnel (n = 71) consented and were included in the study.

2.4. Sampling Technique

Nine health areas were randomly selected from the 15 health areas in the district. The sample size was proportionally allocated to each selected health area based on the number of health personnel. Within the selected facilities, eligible health care providers (medical doctors, nurses, and midwives) were recruited using a convenience sampling approach.

2.5. Eligibility Criteria

Inclusion criteria included all health personnel working in Ndop Health District who were directly involved in the management of children with diarrhoeal diseases and who provided informed consent. Health personnel who were not involved in the clinical management of paediatric diarrhoeal cases were excluded.

2.6. Data Collection Instruments and Procedures

Data were collected using a structured, pre-tested questionnaire adapted from previous studies on diarrhoeal disease management in children. The questionnaire comprised two sections. The first section captured sociodemographic characteristics, including age, sex, professional cadre, and years of work experience. The second section assessed health personnel practices related to diarrhoeal management and perceived challenges in service delivery. An observational checklist was also used to verify the availability of essential supplies such as oral rehydration salts (ORS), zinc, intravenous fluids, anthropometric tools for nutritional assessment (MUAC tapes and weighing scales), routine childhood vaccination records for measles and rotavirus, and the presence of national guidelines for the prevention and management of diarrhoeal diseases in children. Laboratory service availability and reasons for laboratory closure, particularly during weekends, were also documented. Observations were carried out during routine working hours in each selected health facility, immediately after completion of the questionnaire. The observation was announced to facility heads and participating healthcare providers to obtain permission; however, the specific checklist items were not disclosed in advance to minimize observer bias.

2.7. Ethical Considerations

Ethical approval was obtained from the Institutional Review Board of the Faculty of Health Sciences, University of Bamenda (Ref No: 2022/0709H/UBa/IRB). Administrative authorizations were obtained from the North West Regional Delegation of Public Health, the Senior Divisional Officer for Ngoketunjia Division, and the District Medical Officer of Ndop Health District. Community authorization was obtained from relevant quarter heads. Written informed consent was obtained from all participants prior to data collection. Participants were informed of the study objectives, the voluntary nature of participation, and their right to withdraw at any stage without any consequences. Confidentiality and anonymity of participants were strictly maintained throughout the study.

3. Results

3.1. Socio-Demographic Details of Healthcare Providers

The healthcare providers were distributed across 9 health areas, with the highest representation from Baba 1 (21.2% each) and the lowest from Mighang (2.8%). The sample consists of more females (56.3%) than males (43.7%), with ages primarily ranging from 19 to 53 years. The majority fall in the 26–32 years age group (33.8%), followed by 19 - 25 years (26.8%), with a mean age of 32.4 ± 8.9 years. Professionally, they include Medical Doctors (21.1%), Midwives (29.6%), State Registered Nurses (16.9%) and Nursing Assistants (32.4%). Most have 1 - 5 years of experience (57.7%), with very few exceeding 16 - 20 years (1.4%), and a mean of 7.3 ± 6.3 years. Geographically, providers are predominantly based in urban areas (36.6%), followed by rural (35.2%) and Semi Urban areas (28.2%). This young and relatively inexperienced workforce, largely comprising females, suggests a need for targeted training and capacity-building efforts to enhance their role in diarrhoeal disease prevention and management (Table 1).

Table 1. Socio-demographic details of healthcare providers in practice on the prevention, management and control of diarrhoeal diseases.

Variable	Frequency	Percentage	Mean ± SD
Health Area			
Baba 1	15	21.2	
Mbissa	9	12.7	
Bamunka urban	14	19.7	
Bamali	9	12.7	
Bamunkumbit	6	8.5	
Mighang	2	2.8	
Babungo	5	7.0	
Mbangsalle	5	7.0	
Bambalang	6	8.5	
Sex			
Male	31	43.7	
Female	40	56.3	
Age			32.4 ± 8.9
19 - 25	19	26.8	
26 - 32	24	33.8	
33 - 39	14	19.7	
40 - 46	8	11.3	
47 - 53	6	8.5	

Continued

Profession			
Medical doctor	15	21.1	
Midwife	21	29.6	
State Registered Nurses (SRN)	12	16.9	
Nursing Assistant	23	32.4	
Years of Experience			7.3 ± 6.3
1 - 5	41	57.7	
6 - 10	15	21.1	
11 - 15	14	19.7	
16 - 20	1	1.4	
Location of residence			
Rural	25	35.2	
Urban	26	36.6	
Semi-urban	20	28.2	

3.2. Practices of Healthcare Providers in Managing Diarrhoea in Children

More than half of the respondents (54.9%) reported that they manage children presenting with diarrhoea. Practices related to the assessment of diarrhoea severity varied, with respondents using different criteria, including MUAC (16.9%). Only a small proportion assessed dehydration status directly (12.7%). The majority of health personnel (85.9%) reported requesting laboratory investigations for children with diarrhoea, with stool analysis being the most commonly requested test (57.7%). Oral rehydration solution was administered consistently by 33.8% of respondents. Assessment of nutritional status was most commonly performed using MUAC (56.3%). Nutritional care and feeding practices were reported as being provided most of the time by 81.7% of respondents. Vaccination status was assessed by most respondents, with 85.9% reporting measles vaccination and 97.2% reporting rotavirus vaccination among children managed. Advice to caregivers on fluid replacement varied, with recommendations including increased water intake (26.8%), giving fluids at will (26.8%), use of homemade fluids (16.9%), and regular fluid administration after each stool loss (14.1%). Education on diarrhoea prevention focused on food safety (33.8%), hygiene and stool disposal (31.0%), handwashing (15.5%), and hygiene and sanitation sensitization (19.7%). Less than half of the respondents (48.2%) reported familiarity with national guidelines for diarrhoeal disease management, and 32.4% had received training on the management of childhood diseases. Provision of educational materials to caregivers was reported as often by 33.8%, sometimes by 31.0%, always by 18.3%, and rarely by 16.9% (Table 2).

Table 2. Practices of healthcare providers in managing diarrhoea in children.

Variable	Frequency	Percentage
Do you handle children with diarrhoea		
yes	39	54.9
no	32	35.1
Assessment the severity of diarrhoea in a child?		
Dehydration	9	12.7
It is assessed based on the frequency and its texture	17	23.9
Frequency of stool	13	18.3
Muac	19	26.8
Nature of the eyes and how weak the child is	13	18.3
laboratory investigation for all children with diarrhoea to know the causative agent		
yes	61	85.9
No	10	14.1
Tests often requested for		
Stool analysis	41	57.7
Stool examination, Mp/RDT, WIDAL	30	42.3
Differentiating between viral, bacterial, and parasitic causes of diarrhoea in children		
From the laboratory results	64	90.1
Color of the stool	7	9.9
Frequency of administration of oral rehydration solution (ORS) to children with diarrhoea?		
Always	24	33.8
Sometimes	21	29.6
Often	18	25.4
Rarely	8	11.3
Assessment of child's Diarrhoea		
Level of dehydration	15	21.1
Using the MUAC	40	56.3
Wt for age and MUAC	12	16.9
Using the Z-score	4	5.6
Availability of ORS		
Yes, always	24	33.8
Yes, most of the time	20	28.2
Sometimes	11	15.5
Rarely	16	22.5

Continued

Treatment given to the child with diarrhoea		
ORS	22	31.0
IV fluids	23	32.4
zinc	6	8.5
Antibiotics	5	7.0
all of the above	8	11.3
none of the above	7	9.9
Frequency of Monitoring and documenting the child's response to treatment		
Daily	12	16.9
Twice daily	28	39.4
Input and output chart	14	19.7
After serving the treatment	5	7.0
When ever the assessment is been done	11	15.5
Vaccination status		
Measles		
Yes	61	85.9
No	10	14.1
Rota virus		
yes	69	97.2
no	2	2.8
Number of days of antibiotics given to children with diarrhoea		
1 - 5 days	24	33.8
6 - 10 days	22	31.0
11 - 15 days	10	14.1
>15 days	15	21.1
Advise to parents or caregivers on fluid replacement for a child with diarrhoea?		
Child taking at least 1 liter of water a day	19	26.8
Give fluids at will	19	26.8
To desuolve 7cubes of Suger and a table spoon of salt in1.5 litters of boiled water	11	15.5
Give fluids regularly and in each los of stool untill diarrhoea is stopped and child become stable	10	14.1
By using home made fluid to prevent dehydration.	12	16.9
Education to parents on preventing the spread of diarrhoea to other family members?		
That food should be well cook	24	33.8
Proper hygiene especially how to dispose of stool	22	31.0

Continued

Wash hands after using the toilet	11	15.5
Do sensitisation on hygiene and sanitation	14	19.7
Follow-up visits for children with recent episodes of diarrhoea		
Yes, occasionally	46	64.8
not very often	18	25.4
never	7	12.7
Nutritional care and feeding practices		
yes most of the time	58	81.7
rarely	10	14.0
not very often	3	4.2
classifications of diarrhoea		
Diarrhoea with blood (Dysentery)	16	22.5
Acute watery diarrhoea	34	47.9
Persistent diarrhoea	21	29.6
National guidelines for the prevention, management, and control of diarrhoeal diseases in children under 5 years		
Familiar with guidelines	41	48.2
Not familiar with guidelines	30	35.3
Treatment options given by the guide for the management of diarrhoea		
Oral rehydration solution	15	21.1
Treatment with zinc sachets	23	32.4
ORS, IV fluids and antibiotics	21	29.6
Antibiotics, électrolyte, iv fluid,ORS	12	16.9
Service training on the management of childhood diseases including diarrhoea		
Taken	23	32.4
Not taken	48	67.6
Provision of information or educational materials on diarrhoeal disease prevention to caregivers		
Often	24	33.8
Sometimes	22	31.0
Always	13	18.3
Rarely	12	16.9

3.3. Level of Practice on the Prevention, Management and Control of Diarrhoeal Diseases

The majority of health personnel demonstrated a good level of practice in the prevention, management, and control of diarrhoeal diseases, with 74.6% scoring above the defined threshold for good practice. In contrast, 25.4% of respondents

exhibited poor practice levels, with scores below the set cut-off. Overall, the findings show that most health personnel had satisfactory practice scores, while a smaller proportion demonstrated suboptimal practice (Table 3).

Table 3. Level of Practice on the prevention, management and control of diarrhoeal diseases.

Practice levels	Frequency	Percentage	Range
Good practice	53	74.6	>50
Poor practice	18	25.4	<50

3.4. Assessment of Health Care Personnel's Attitude and Practice on the Prevention, Management and Control of Diarrhoeal Diseases

The results indicate that overall practice in the prevention, management, and control of childhood diarrhoeal diseases was generally good across most sociodemographic categories, with no statistically significant differences by age, profession, marital status, years of experience, or health facility location ($p > 0.05$). In contrast, key clinical practice variables showed strong and statistically significant associations with good practice: health personnel who consistently assessed a child's nutritional status, monitored and documented treatment response, and assessed and documented vaccination status demonstrated significantly higher levels of good practice ($p \leq 0.002$). Similarly, those who routinely requested laboratory investigations and consistently provided guidance to caregivers on the appropriate use of ORS were significantly more likely to exhibit good practice ($p = 0.014$). Overall, good practice was predominantly driven by adherence to core clinical assessment, documentation, caregiver counselling, and treatment monitoring activities rather than by personal or workplace characteristics (Table 4).

Table 4. Assessment of health care personnels' practice on the prevention, management and control of diarrhoeal diseases

Factors	Level of practice		χ^2	p-value
	Good n (%)	Poor n (%)		
Age			3.12	0.68
19 - 25	15 (78.9)	4 (21.1)		
26 - 32	19 (79.2)	5 (20.8)		
33 - 39	10 (71.4)	4 (28.6)		
40 - 46	5 (62.5)	3 (37.5)		
47 - 53	2 (50)	2 (50)		
>53	2 (100)	0 (0)		
Profession			0.69	0.88

Continued

Medical Doctor	10 (66.7)	5 (33.3)		
Midwife	16 (76.2)	5 (23.8)		
State Registered Nurses (SRN)	9 (75)	3 (25)		
Nurse Assistants (NA)	18 (78.3)	5 (21.7)		
Marital statues			0.56	0.46
Married	27 (71.1)	11 (28.9)		
Single	26 (78.8)	7 (21.2)		
Years of experience			0.68	0.95
1 - 5	29 (74.4)	10 (25.6)		
6 - 10	9 (69.2)	4 (30.8)		
11 - 15	9 (81.8)	2 (18.2)		
16 - 20	2 (66.7)	1 (33.3)		
>20	4 (80)	1 (20)		
Location			3.97	0.14
Rural	45 (78.9)	12 (21.1)		
Urban	7 (63.1)	4 (36.4)		
Semi-urban	1 (33.3)	2 (66.7)		
Assessment of Child's nutritional statue			15.06	0.001
Does not always assess	6 (37.5)	10 (62.5)		
Always assess	47 (85.5)	8 (14.5)		
Monitoring and documentation of child's Response to treatment				
Does not Monitor and document	2 (20)	8 (80)	18.37	0.001
Monitors and documents	51 (83.6)	10 (16.4)		
Assess and documents vaccination status			9.31	0.002
Does not assess and document	6 (42.9)	8 (57.14)		
Assess and document	47 (82.5)	10 (17.5)		
Guidance to care givers on the appropriate use of ORS				
Do not give guidance	0 (0)	2 (100)	10.59	0.014
sometimes	2 (40)	3 (60)		
Yes always	42 (77.8)	4.9 (71.42)		
Yes, most of the time	9 (90)	1 (10)		
Request for laboratory Investigation				
Does not Request	0 (0)	6 (100)	10.59	0.014
Always Request	53 (81.5)	12 (18.5)		

Continued

Provide guidance to care givers on ORS use				
Does not provide	0 (0)	2 (1000)	0.17a	0.89
Sometimes	2 (40)	3 (60)		
Yes Always	9 (90)	1 (20)		
Yes most of the time				

3.5. Challenges Faced by Health Care Providers in the Prevention, Management and Control of Diarrhoeal Diseases

Figure 1 below reveals several challenges in managing diarrhoea treatment, with 57% of respondents reporting shortages of ORS (Oral Rehydration Salts), indicating a significant availability issue. Additionally, 19% noted the challenge of relapse, where children experience recurring diarrhoea even after treatment. A further 9% mentioned that many children do not like the taste of ORS, which could hinder adherence to treatment. Lastly, 15% cited insufficient staffing and poor knowledge of diarrhoea as key issues, highlighting a lack of adequate human resources and training for proper management of the condition.

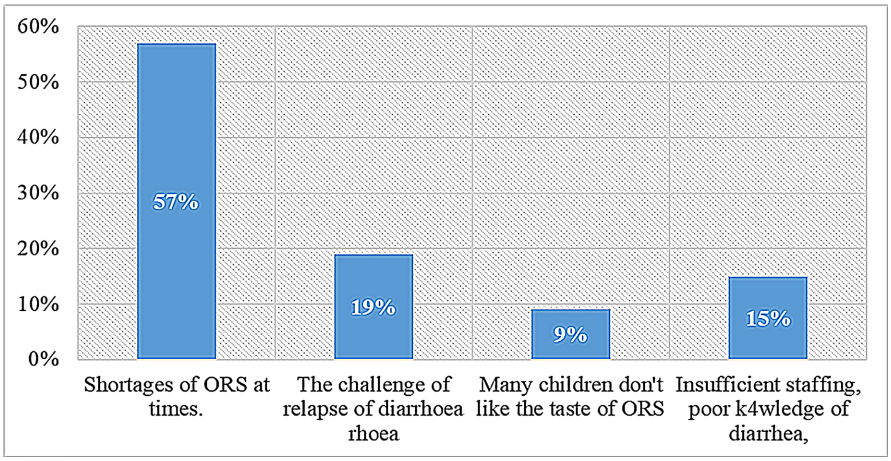

Figure 1. Challenges Faced by health care providers in on the prevention, management and control of diarrhoeal diseases.

3.6. Laboratory Closure as a Source of Challenge in the Prevention and Management of Diarrhoea Diseases in Children below Years

Nearly one-fifth of the issues affecting operations or processes are due to lockdowns and weekend-related constraints, which might hinder access to services or timely responses. A slightly smaller proportion of the challenge stems from a shortage of laboratory technicians, suggesting a workforce gap that impacts service delivery, especially in laboratory-related tasks (Figure 2).

3.7. Observational Checklist Findings

While a large proportion of providers self-reported routine prescription of ORS

and assessment of vaccination status, direct observation revealed that ORS was consistently available in only about one-third of facilities, with intermittent stock-outs in others, and zinc was available in fewer than half of facilities, reflecting the very low self-reported use of zinc (8.5%). Although most providers reported checking measles (85.9%) and rotavirus (97.2%) vaccination status, the checklist identified gaps in documentation and cold-chain monitoring. Overall, the observational findings highlighted clear discrepancies between self-reported practices and actual facility readiness, particularly in the availability of ORS, zinc, and guideline materials essential for effective childhood diarrhoeal disease management.

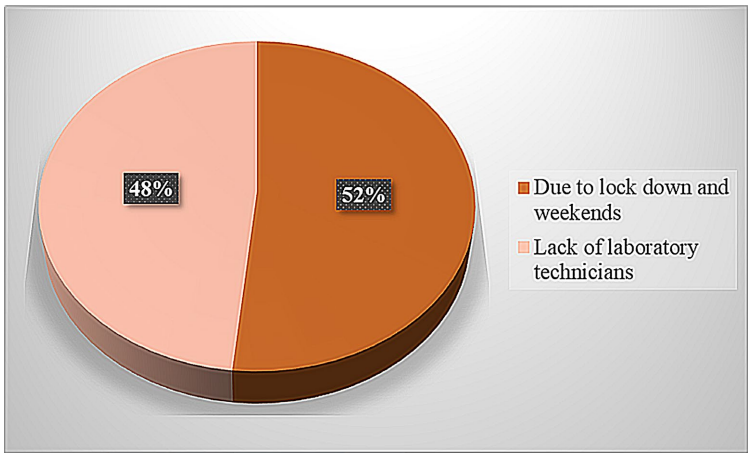

Figure 2. Reasons for laboratory closure.

4. Discussion

This study demonstrates that while a majority of health personnel exhibited overall good practice in the prevention and management of childhood diarrhoeal diseases, important gaps persist in core elements of guideline-based care. Approximately three-quarters of respondents achieved good practice scores, a finding comparable to reports from similar low- and middle-income country (LMIC) settings where IMCI implementation has improved general awareness but not consistently translated into full adherence to standards of care [9] [10]. The lack of significant association between practice level and sociodemographic characteristics such as age, cadre, years of experience, or facility location suggests that structural and system-level factors, rather than individual characteristics, play a dominant role in shaping diarrhoea case management practices [9].

Assessment-related practices emerged as a critical determinant of good performance. Health workers who consistently assessed nutritional status, monitored and documented treatment response, and verified vaccination status were significantly more likely to demonstrate good practice. According to WHO and UNICEF IMCI guidelines, appropriate care for acute watery diarrhoea requires systematic assessment of dehydration, nutritional status, and feeding practices, followed by regular monitoring until recovery [11] [12]. However, the low proportion of pro-

viders directly assessing dehydration status indicates incomplete application of IMCI assessment algorithms, a challenge also reported in recent studies from sub-Saharan Africa that document missed opportunities for early identification of dehydration and malnutrition [13] [14].

Management practices showed partial alignment with international recommendations. For uncomplicated acute watery diarrhoea, WHO and UNICEF recommend prompt administration of oral rehydration solution (ORS), zinc supplementation for 10 - 14 days, continued feeding, and avoidance of antibiotics [11] [12]. In this study, although many providers reported prescribing ORS, consistent administration was suboptimal, and zinc use was not universal. Similar gaps have been documented across LMICs, where zinc uptake remains lower than ORS despite strong evidence of its effectiveness in reducing diarrhoea duration and severity [10] [15].

For specific clinical presentations, several deviations from recommended practice were evident. Appropriate care for dysentery includes ORS, zinc, and targeted antibiotic therapy—most commonly ciprofloxacin—while suspected cholera requires rapid rehydration, zinc, and antibiotics only in severe cases or during confirmed outbreaks [11] [15] [16]. The frequent routine request for laboratory investigations and reported antibiotic use irrespective of clear clinical indications suggest potential overuse of diagnostics and antimicrobials. Such practices diverge from IMCI guidance, which emphasizes clinical classification and restricts antibiotic use to dysentery and selected cholera cases to limit antimicrobial resistance [13] [15] [16].

Preventive and caregiver-focused practices further highlight areas for improvement. Although most respondents reported providing nutrition counselling and preventive education, fewer consistently offered structured guidance on ORS preparation and home management, which is a cornerstone of IMCI and UNICEF diarrhoea control strategies [11] [12]. Limited familiarity with national guidelines and low coverage of formal training likely contribute to these gaps. Evidence from recent African studies shows that regular refresher training, supportive supervision, and use of job aids significantly improve adherence to diarrhoea case-management protocols and caregiver counselling practices [13] [14].

5. Limitations of the Study

The cross-sectional design limits causal inference between associated factors and healthcare providers' practices.

6. Public Health Implications

The observed gaps between self-reported practices and actual facility readiness highlight systemic weaknesses in the implementation of national and WHO/UNICEF-recommended diarrhoeal disease management strategies. Inadequate assessment of dehydration, low utilization and availability of zinc, inappropriate antibiotic use, and intermittent stock-outs of oral rehydration solution undermine

effective case management and contribute to preventable morbidity and mortality among children under five. Strengthening routine IMCI refresher training, supportive supervision, and supply chain systems is essential to improve the quality and consistency of care. Additionally, reinforcing standardized caregiver education and documentation practices can enhance home-based management, reduce recurrent episodes, and improve health-seeking behaviour. Addressing these gaps at the primary healthcare level will be critical for achieving national child survival targets and sustaining progress toward reducing under-five mortality attributable to diarrhoeal diseases in Cameroon.

7. Conclusion

This study demonstrates that although healthcare providers in Ndop Health District exhibit moderate to good overall practice in the prevention and management of childhood diarrhoeal diseases, critical gaps persist in the consistent application of evidence-based guidelines. Deficiencies were particularly evident in the assessment of dehydration, routine use of zinc supplementation, rational antibiotic prescribing, and continuity of caregiver education. The observational findings further revealed discrepancies between self-reported practices and facility readiness, notably in the availability of oral rehydration solution, zinc, and clinical guidelines. While vaccination status was frequently assessed, weaknesses in documentation and cold-chain monitoring were observed. These gaps appear to be driven more by health system and implementation challenges than by provider characteristics alone. Strengthening IMCI-based training, supportive supervision, and reliable supply of essential commodities is therefore essential to improve the quality of diarrhoeal disease case management and to reduce preventable morbidity and mortality among children under five in similar resource-constrained settings.

Acknowledgements

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Data Availability

The datasets generated and/or analyzed during the current study are available from the corresponding author on reasonable request. Data will be provided in anonymized form to protect participant confidentiality, and access will be granted only to qualified researchers for academic purposes, subject to approval by the Institutional Review Board of The University of Bamenda.

Authors' Contributions

All authors contributed substantially to the conception and design of the study, data acquisition, analysis, and interpretation. They participated in drafting the manuscript and critically revising it for important intellectual content. All authors approved the final version of the manuscript to be submitted, have agreed on the journal of submission, and accept responsibility for all aspects of the work, ensur-

ing that questions related to the accuracy or integrity of any part are appropriately investigated and resolved.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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