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Visits to the CPS by breastfeeding women for growth monitoring of children under 5 years of age (Study conducted at the Mbandaka Regional General Hospital)

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Abstract

The overall objective of this study is to assess the uptake of the CPS by breastfeeding women for monitoring the growth of their children under the age of 5 in the Mbandaka health zone. To carry out this work, we conducted a non-probabilistic, cross-sectional, descriptive study with an analytical focus, using convenience sampling to select the study site and statistical units.

- The results show that three out of five mothers surveyed were over 30 years old, with an estimated mean age of 31.57 ± 6.64 years.
- Nine out of ten mothers surveyed had heard of CPS.
- Nine out of ten mothers surveyed were aware of the usefulness of CPS in disease prevention.
- More than three in five mothers surveyed were aware of the benefits of the CPS in nutrition education.
- The results show a statistically significant relationship between taking a child to the CPS and the mother's level of education and occupation.

Ultimately, this study shows that, despite a relatively high attendance rate at the CPS at the Mbandaka Regional General Hospital, shortcomings persist both in terms of knowledge of the actual objectives of the pre-school check-up and the regularity of its use. Strengthening health education activities, improving communication regarding growth charts, introducing appointment reminder systems, and bringing health services closer to communities are strategies likely to further improve attendance at the CPS and contribute to better monitoring of the growth of children under five. Finally, these findings highlight the need to pay particular attention to less educated mothers and those who are not in employment, as they represent the groups most at risk of low uptake of pre-school check-up services.

Keywords: Attendance, CPS, Breastfeeding mothers, Monitoring, Growth, Children.

1. Introduction

Monitoring children's weight gain is a key indicator for assessing paediatric health. It reflects not only the child's nutritional status, but also the quality of healthcare, the environment and diet. For children under five, balanced growth is a fundamental factor in ensuring optimal physical and cognitive development. According to the World Health

Organisation (WHO), approximately 45 million children under the age of five were wasted in 2023, whilst 148 million were stunted (WHO, 2023). These figures highlight the urgent need to implement rigorous monitoring and early intervention strategies.

Growth that is consistent with standards and follows a regular pattern usually reflects adequate nutrition, optimal health and a supportive environment. Conversely, a disruption or plateau in the growth curve may be the first indicator of an underlying condition: malnutrition, chronic infections, digestive disorders, endocrine disorders (such as hypothyroidism or growth hormone deficiency), as well as genetic conditions. From this perspective, a growth disturbance is frequently one of the first detectable clinical symptoms, preceding the onset of other manifestations.

However, analysing each of these measures individually has its limitations. This is why the combined analysis of this data, together with its graphical representation in the form of standardised growth charts – such as those published by the World Health Organisation (WHO) in 2006 – is essential. These charts facilitate comparison of a child's individual development with that of a reference population, taking into account age and sex. They enable early identification of deviations from the expected trajectory and guide the diagnostic process as well as therapeutic management.

Thus, harmonious growth – that is, development that follows the reference percentiles for weight, height and head circumference – is one of the best indicators of a child's good health and overall development.

The primary aim of monitoring is the early detection of any abnormalities in the growth trajectory, which may indicate a nutritional, metabolic, infectious, endocrine or genetic disorder. Failure to thrive may indeed be the initial clinical sign of an underlying condition, preceding the emergence of other symptomatic manifestations (Bocquet et al., 2021). This monitoring function is of particular importance given that certain conditions — such as chronic malnutrition or childhood obesity — develop insidiously and are likely to cause irreversible consequences for physical, cognitive and immune development in the absence of early intervention (Victora et al., 2008; Black et al., 2013).

Nutritional disorders encompass both manifestations of malnutrition, such as underweight, stunted growth and wasting, and nutritional excesses, notably overweight and obesity. These issues are now recognised as critical public health challenges, both in resource-limited countries and in high-income countries (Black et al., 2013). Inadequate growth may indicate a deficiency in protein or essential

micronutrients, whilst excessive weight gain may be an early indicator of metabolic syndrome.

2. Research question

In light of the above, we ask whether breastfeeding women in the Mbandaka health zone attend the pre-school clinic (CPS) for growth monitoring of their children?

3. Hypothesis

In response to the research question raised, we hypothesise that all breastfeeding women in the Mbandaka health zone attend and keep their appointments at the CPS for their children's growth monitoring.

4. General objective

The general objective of this study is to assess the attendance of breastfeeding women at the CPS for growth monitoring of their children under the age of 5 at the Mbandaka Regional General Hospital (HGR).

5. Methodological approach

To carry out this study, we used a non-probabilistic, convenience sample of breastfeeding women attending the CPS (Pre-school Clinic) at the Mbandaka Regional General Hospital in Equateur Province. The sample size was set at 300 participants.

6. Selection criteria

6.1. Inclusion criteria

To be included in the study, participants had to meet the following criteria:

- Be a breastfeeding woman;
- Be a resident of the site selected for the study;
- Have freely consented to take part in the study;
- Be of sound mind;
- Be able to communicate in French or Lingala.

6.2. Exclusion criteria

The following are excluded from our study:

- Any male participants;
- Any woman who is not breastfeeding.

7. Data collection

The questionnaire comprised the following sections:

- Respondents' personal details;
- Data relating to attendance at the CPS.

7.1. Study variables

7.1.1. Dependent variable

Having attended the CPS.

7.1.2. Independent variables

1) Socio-demographic characteristics

- **Age:** this is the number of years of age at the time of the survey. It is obtained simply from the respondent's self-report.

- **Marital status:** this refers to the respondent's marital status at the time of the survey, which may be single, married, divorced, widowed or cohabiting. This variable is categorised as 'Married' or 'Unmarried'.

- **Educational attainment:** determined by the last year of schooling attended or the highest qualification obtained by the respondent.

- **Occupation:** this refers to the activity carried out at the time of the survey.

- **Religion:** this is defined as the religious denomination to which the respondent belongs.

2) Data on CPS attendance

- Possession of the CPS form.
- To have attended the nutrition education session at the CPS.

8. Data processing and analysis

The data from our study were entered into a computer using MS Excel 2024 and analysed using SPSS version 25.0.

Statistical analysis of the data was carried out using frequencies, percentages and measures of central tendency (mean and standard deviation for quantitative variables); bivariate analysis was carried out using Pearson's chi-square test at a significance level of 5 per cent and/or Fisher's exact test when the conditions for applying Pearson's chi-square test were not met.

9. Presentation of results

9.1. Descriptive results

Table 1: Distribution of mothers according to socio-demographic characteristics

Variables (n=300)	Frequency (%)	Mean $\pm$ Standard deviation
1. Age (years)		31.57 $\pm$ 6.64 years
<30	120(40)	
>30	180 (60)	
2. Level of education		
Low	95(31.7)	
High	205 (68.3)	
3. Occupation		
Not in employment	130(43.3)	
In employment	170 (56.7)	
4. Marital status		
Married	130 (43.3)	
Unmarried	170 (56.7)	

Table 1 shows that 60 per cent of the mothers surveyed were over 30 years old, with an estimated average age of 31.57 $\pm$ 6.64 years, and that 68.3 per cent of the mothers had a high level of education (secondary and higher or university). The same table indicates that 56.7 per cent of the mothers were in employment and that 43.3 per cent of the participants were married.

Table 2: Distribution of children according to socio-demographic and anthropometric characteristics

Variables (n=300)	Number (%)	Mean $\pm$ Standard deviation
1 Age (in months)		27.38 $\pm$ 16.28 months
< 24	135(45)	
> 24	165(55)	
2 Sex		
Male	29(48.3)	
Female	31(51.7)	
3 Weight (kg)		11.34 $\pm$ 3.91 kg
< 10	115 (38.3)	
> 10	185 (61.7)	
4 Height (cm)		87.10 $\pm$ 14.90 cm
< 85	125(41.7)	
> 85	175(58.3)	
5 Birth order		
Eldest	100 (33.3)	
Second	15(5)	
Third	75 (25)	
Fourth	35(11.7)	
Fifth	20 (6.7)	
Junior	55 (18.3)	

Table 2 shows that 55 per cent of the children surveyed were over 24 months old, with an estimated average age of 27.38 ± 16.28 months, and that 51.7 per cent of the children were

female. The same table shows that 61.7% of the children weighed more than 10 kg, with an average weight of 11.34 ± 3.91 kg, and that 58.3% were taller than 85 cm, with an average height of 87.10 ± 14.90 cm. It is also noted that 33.3 per cent of the children surveyed were the eldest in their family.

Table 3: Breakdown of mothers by awareness of the CPS and its usefulness

Variables	Number (%)
1 Having heard of CPS (n=300)	
Yes	270 (90)
No	30 (10)
2 Usefulness of CPS (n=270)	
2.1. Vaccination	
Yes	109 (40.7)
No	161 (59.3)
2.2. Nutrition education	
Yes	175 (64.8)
No	95 (35.2)
2.3. Disease prevention	
Yes	243 (90)
No	27 (10)
2.4. Monitoring a child's growth	
Yes	109 (40.7)
No	161 (59.3)

Table 3 shows that 90 per cent of mothers had heard of CPS. With regard to its usefulness in children's lives, it is noted that disease prevention (90 per cent) and nutritional education

(64.8 per cent) were among the perceived benefits of CPS identified by respondents.

Table 4: Breakdown of mothers according to their knowledge of the monthly frequency of CPS and the involvement of healthcare professionals

Variables (n=270)	Number (%)
1 Knowledge of the monthly frequency of CPS	145 (53.7)
Once a month	125 (46.3)
Twice a month	
2. The healthcare professional books the next appointment	148 (55)
Yes	122 (45)
No	
3. The healthcare professional interprets the growth chart	
Yes	256 (95)
No	145 (53.7)

Table 4 shows that 53.7% of mothers were aware that visits to the CPS took place once a month, and that in 55% of cases the healthcare professional's role was to arrange the date of the mother's next appointment.

Table 5: Breakdown of mothers according to their knowledge of CPS practices

Variables	Number (%)
1. Having taken the child to the CPS (n=300)	
Yes	260 (86.7)
No	40 (13.3)
2. Have a CPS record	
Yes	260 (100)

3. Awareness of CPS services (n=260)	
3.1. Weighing the child	
Yes	260 (100)
3.2. Measuring height	
Yes	85 (32.7)
No	175 (67.3)
3.3. Vaccination	
Yes	260 (100)
3.4. Vitamin A supplementation	
Yes	210 (80.8)
No	50 (19.2)
3.5. Nutrition education	
Yes	179 (69.2)
No	81 (30.8)

Table 5 shows that 86.7 per cent of mothers had taken their children to the CPS and that all the mothers surveyed had a CPS record. The same table indicates that CPS services focused on weighing and vaccination (100 per cent), vitamin A supplementation (80.8 per cent) and nutrition education (69.2 per cent).

Table 6: Distribution of mothers according to their knowledge of factors explaining non-attendance at the CPS

Variables (n=300)	Proportion (%)
1. Factors explaining non-attendance at the CPS	
1.1. Distance from the health centre	
Yes	289 (96.6)
No	11 (3.4)
1.2. Lack of time	
Yes	145 (48.3)
No	155 (51.7)
1.3. Lack of money	
Yes	35 (11.7)
No	265 (88.3)
1.4. Lack of information	
Yes	120 (40)
No	180 (60)
1.5. Forgot an appointment	
Yes	175 (58.3)
No	125 (41.7)

Table 6 shows that the distance from the health centre (96.6 per cent) and missed appointments (58.3 per cent) were factors explaining non-attendance at the health centre.

Table 7: Breakdown of mothers by factors motivating their attendance at the CPS

Variables (n=300)	Number (%)
1. Factors motivating attendance at the CPS	
1.1. Community awareness	
Yes	285 (95)
No	15(5)
1.2. Free service	
Yes	270 (90)
No	30 (10)
1.3. Accommodation near CS	
Yes	260 (86.7)
No	40 (13.3)
1.4. Lack of information	
Yes	120(40)
No	180(60)
1.5. A warm welcome from the healthcare professional	
Yes	249 (83.3)
No	51 (16.7)

Table 7 shows that community awareness (95 per cent), free services (90 per cent), living close to the health centre (86.7 per cent) and a warm welcome from healthcare professionals (83.3 per cent) were factors motivating visits to the health centre.

9.2. Analytical results

Table 8: Relationship between taking the child to the CPS and socio-demographic characteristics

Variables	Having taken the child to the CPS		Test Chi-square	Significance p-value
	Yes (%)	No (%)		
1 Level of education			4.055	0.044 S
Low	70 (73.7)	25 (26.3)		
High	190 (92.7)	15 (7.3)		
2 Marital status			1.263	0.261NS
Married	120 (92.3)	10 (7.7)		
Unmarried	140 (82.4)	30 (13.3)		
3 Occupation			7.333	0.016S
Not in employment	95 (73.1)	35 (26.9)		
In employment	165 (97.1)	5 (2.9)		
4 Having heard of CPS			2.308	0.178NS
Yes	240 (88.9)	30 (11.1)		
No	20 (66.7)	10 (33.3)		

(*) Fisher's exact test

Table 8 shows that 92.7 per cent of respondents with a high level of education reported having taken their child to the CPS, compared with 73.7 per cent of those with a low level of education, and that respondents in employment were proportionally more likely (97.1 per cent) to use the CPS than those not in employment (73.1 per cent). Application of Pearson's chi-square test at a 5% significance level indicates

that respondents' level of education ($\chi^2 = 4.055$; $p = 0.044$) and employment status ($\chi^2 = 7.333$; $p = 0.016$) were factors significantly associated with the use of pre-school counselling.

10. Discussion of the results

The data from this study indicate that sixty per cent of the mothers surveyed were over thirty years of age, with a mean age of 31.57 ± 6.64 years. This over-representation of women aged over thirty could be attributed to the fact that they usually have more extensive experience of motherhood and childcare. This experience enhances their understanding of the value of preventive health services, particularly the Pre-school Consultation (CPS). Numerous studies conducted in low- and middle-income countries have established that maternal age is a key determinant of the use of child health services, with older mothers being more likely to comply with recommendations regarding their children's growth monitoring and immunisation (World Health Organisation [WHO], 2023; United Nations Children's Fund [UNICEF], 2023). Furthermore, Fagbamigbe and Idemudia (2015) found that maternal age has a positive influence on the use of maternal and child health services in sub-Saharan Africa.

With regard to educational attainment, this study indicates that 68.3 per cent of mothers had completed secondary education or higher. This result reflects a relatively satisfactory level of educational attainment among the participants. Education is one of the major social determinants of health, as it enhances understanding of health messages, facilitates communication with healthcare professionals and encourages behaviours that benefit children's health. According to the World Health Organisation, a mother's level of education is significantly correlated with her children's survival, nutritional status and access to preventive services (WHO, 2023). This finding is also confirmed by Black et al. (2013), who report that mothers with a high level of education are more likely to adopt appropriate practices regarding their children's nutrition, immunisation and growth monitoring. Data from the Democratic Republic of the Congo Demographic and Health Survey also indicate that the use of health services increases in line with women's level of education (Ministry of Planning & ICF, 2019).

Furthermore, a majority of the participants (56.7 %) were in employment. This may facilitate access to healthcare, insofar as employment generally increases women's financial independence and their ability to cover the direct or indirect costs associated with medical consultations. However, some studies indicate that work commitments may also limit mothers' availability to attend preventive check-ups regularly, particularly when the opening hours of healthcare facilities are

not well aligned with economic activities (Ahmed et al., 2010). Consequently, the impact of employment on the use of health services is largely determined by the socio-economic context as well as by the organisation of health facilities.

With regard to marital status, unmarried women accounted for 56.7 per cent of the sample, whilst married women accounted for 43.3 per cent. This distribution indicates that the use of child health services does not depend solely on marital status, but also on other variables such as educational attainment, financial resources, the geographical proximity of health facilities and family support. According to UNICEF (2023), the involvement of the family circle and the empowerment of women are key factors in the use of paediatric health services.

With regard to the children's characteristics, the data indicate that fifty-five per cent of them were over twenty-four months old, with an average age of 27.38 ± 16.28 months. This distribution reveals that the majority of children participating in this study were in a phase of rapid growth requiring regular nutritional monitoring. The World Health Organisation recommends systematic growth monitoring during the first five years of life, a period during which the risks of malnutrition, stunting and infectious diseases are particularly high (WHO, 2006).

The distribution by sex shows a slight predominance of girls (51.7 %) compared with boys (48.3 %). This near-equality between the sexes is similar to that observed in the general population and suggests that the child's sex did not influence their participation in the study. Furthermore, numerous studies show that the growth differences observed between boys and girls during the first years of life remain limited when nutritional and health conditions are adequate (de Onis et al., 2006).

Anthropometric data indicate that 61.7 % of children weighed more than ten kilograms, with an average weight of 11.34 ± 3.91 kg, whilst 58.3 % were taller than 85 cm, with an average height of 87.10 ± 14.90 cm. These results may reflect an overall adequate nutritional status for the majority of the children examined. However, average weight and height figures alone are insufficient to definitively establish nutritional status without using standardised anthropometric indices (weight-for-age, height-for-age or weight-for-height). In accordance with the international growth standards published by the World Health Organisation (WHO), the analysis of anthropometric parameters must systematically be based on growth curves and Z-scores in order to detect cases of stunting, wasting or overweight at an early stage (WHO, 2006). Black et al. (2013) also emphasise that regular growth monitoring is one of the most effective measures for preventing the effects of malnutrition in children.

Finally, one third of the children (33.3 %) were the eldest in their sibling group. This situation is likely to influence care practices, as mothers gradually gain more experience with each successive birth. However, numerous studies also indicate that first-born children frequently receive more intensive parental attention, whilst large families may face a reduction in the resources allocated to each child (Victora et al., 2021). Consequently, birth order is a factor that may indirectly influence attendance at preventive health services as well as growth monitoring.

The data presented in Table 3 show that 55 per cent of children were over 24 months old, with a mean age of 27.38 ± 16.28 months. This distribution reflects a predominance of children who had passed the two-year mark, a period during which growth monitoring remains crucial for preventing nutritional disorders and ensuring balanced development. According to the World Health Organisation (WHO, 2006), the first five years of life constitute a crucial phase characterised by rapid growth, during which children are particularly vulnerable to malnutrition, infectious diseases and developmental delays. Consequently, regular attendance at the Pre-school Check-up (CPS) during this period is an effective way of quickly identifying any abnormalities in a child's growth trajectory.

The breakdown by gender shows a slight numerical advantage for girls (51.7 per cent) over boys (48.3 per cent). This disparity remains limited and reflects a relatively even distribution of the population analysed. Global growth standards defined by the World Health (WHO) show that, despite the existence of distinct growth curves for boys and girls, the differences observed during the first years of life remain limited when nutritional and health conditions are adequate (de Onis et al., 2006). This near-equality between the sexes suggests that gender was unlikely to have influenced attendance at the CPS in the context of this study.

Anthropometric data indicate that 61.7 % of children weighed more than 10 kg, with an average weight of 11.34 ± 3.91 kg, whilst 58.3 % were taller than 85 cm, with an average height of 87.10 ± 14.90 cm. These results may reflect a generally adequate nutritional status among the majority of children. Nevertheless, the analysis of absolute measures of weight and height remains inadequate for accurately assessing a child's true nutritional status. World Health Organisation guidelines recommend the use of standardised anthropometric indices (weight-for-age, height-for-age, weight-for-height and age-adjusted body mass index) expressed as Z-scores, in order to accurately assess growth and detect cases of stunting, wasting or overweight (WHO, 2006). In this context, Black et al. (2013) highlight that systematic anthropometric monitoring is one of the most effective measures for preventing child

malnutrition and reducing mortality among children under five.

Furthermore, one third of the children (33.3 %) were the eldest in their sibling group. This finding could influence parents' parenting practices regarding child health. First-time motherhood is frequently associated with increased demand for health services due to a greater need for information and support. Conversely, some research suggests that multiparous mothers gradually acquire greater expertise in childcare, which may influence their behaviour during preventive check-ups (Victora et al., 2021).

With regard to awareness of the Pre-school Health Check-up (CPS), the results in Table 4 show that 90 per cent of mothers had already heard of the CPS. This high proportion reflects the good visibility of this service in the study area. It could be explained by community awareness-raising activities, vaccination campaigns and regular contact between health professionals and families. According to UNICEF (2023), community-based health promotion strategies significantly improve parents' knowledge of preventive services for children.

Nevertheless, despite a thorough awareness of the CPS's existence, understanding of its objectives remains limited. Indeed, disease prevention (90 %) and nutritional education (64.8 %) were the main functions identified by mothers, whilst only 40.7 % associated the CPS with monitoring children's growth and vaccination. This situation reveals a lack of information regarding the CPS's overall remit. According to the World Health Organisation (2023), pre-school check-ups comprise a coherent set of interventions encompassing growth monitoring, vaccination, micronutrient supplementation, early detection of diseases and nutritional advice for parents. A limited understanding of these various components could reduce mothers' commitment to regularly monitoring their children's health.

The data presented in Table 5 also indicate that only 53.7 % of mothers were aware of the recommended monthly frequency of pre-school check-ups. This relatively low proportion suggests that approximately one in two mothers lacks adequate knowledge of the standard schedule for preventive check-ups. In accordance with the guidelines of the World Health Organisation (WHO, 2006), systematic monitoring of growth is a key pillar in the prevention of nutritional disorders and requires regular visits to healthcare facilities during the first five years of life.

Furthermore, fifty-five per cent of mothers reported that healthcare professionals systematically schedule the next appointment. This approach helps to ensure continuity of care and to maximise attendance at preventive check-ups. Various

research studies have shown that appointment reminder systems are an effective method of increasing uptake of paediatric health services, particularly in resource-constrained countries (WHO, 2023; UNICEF, 2023).

Finally, almost all participants (95 %) reported that healthcare professionals interpreted their child's growth chart. This result is a positive indicator of the quality of services provided by the Social Welfare Fund (CPS). The analysis of growth charts enables parents to understand changes in their child's nutritional status, to identify growth abnormalities at an early stage, and to strengthen their commitment to nutritional recommendations. According to Black and colleagues (2013), the systematic analysis of growth charts, combined with effective communication between healthcare professionals and parents, plays a decisive role in preventing malnutrition and improving child health.

The data presented in Table 6 indicate that 86.7 % of mothers had previously taken their child to the Pre-school Health Check (CPS). This relatively high proportion reflects effective use of preventive health services within the population analysed. This result can be attributed to the awareness-raising activities carried out in health facilities, as well as to the priority given to preventive interventions during the first five years of life. According to the World Health Organisation (WHO, 2023), the pre-school health check-up is a fundamental intervention aimed at ensuring growth monitoring, the prevention of diseases and the promotion of child health. Research conducted by Black and colleagues (2013) also demonstrates that the systematic use of preventive health services helps to reduce infant mortality through the early detection of nutritional disorders and preventable diseases.

Furthermore, all mothers who attended the CPS had a growth chart, i.e. 100 per cent. This result attests to the effective organisation of the paediatric monitoring system at the Mbandaka General Referral Hospital. The growth chart is an essential tool for healthcare professionals to assess a child's weight and height development and to promptly detect any abnormalities. In line with the recommendations of the World Health Organisation (WHO, 2006), the systematic use of the growth chart optimises the quality of nutritional monitoring and simplifies clinical decision-making.

Analysis of the services reported by mothers shows that weighing and vaccination were identified by all participants (100 per cent). These results reflect the high visibility of these two activities, probably due to their systematic implementation during consultations. By contrast, only 32.7 per cent of mothers mentioned height measurement among the services offered by the CPS. This low proportion could be

explained by a lack of communication from healthcare professionals or by the beneficiaries attaching less importance to this measurement. However, height is a key indicator for the screening of chronic stunting. According to Onis et al. (2006), the simultaneous assessment of weight and height enables the child's nutritional status to be correctly assessed and forms of malnutrition to be identified at an early stage.

80.8 per cent of mothers were aware of vitamin A supplementation, whilst 69.2 per cent identified nutrition education as a service provided by the CPS. These results are encouraging, as vitamin A supplementation is a recognised intervention for reducing child morbidity and mortality, particularly in low- and middle-income countries (WHO, 2023). Similarly, nutrition education helps to improve parents' feeding practices and promotes healthy growth in children (Bhutta et al., 2013).

The data presented in Table 7 indicate that the distance between the home and the health centre was the main factor limiting access to CHC (96.6 %). This finding confirms that geographical accessibility remains one of the main factors influencing the use of health services in developing countries. Numerous studies conducted in sub-Saharan Africa have established that the distance between communities and health facilities significantly reduces attendance at preventive consultations, particularly in rural areas (Noor et al., 2006; WHO, 2023). Transport constraints, the deterioration of road infrastructure and the indirect costs associated with travel are usually cited as reasons for this situation.

Missed appointments (58.3 %) were also a major factor in non-attendance. This finding indicates a lack of, or insufficient, effective appointment reminder mechanisms. According to the World Health Organisation (2023), the introduction of reminder systems, particularly by telephone or via community workers, significantly increases attendance at preventive consultations. Lack of time (48.3 %) and a lack of information (40 %) were also major barriers. These findings corroborate those of UNICEF (2023), which highlights that work-related constraints, domestic responsibilities and a lack of awareness continue to hinder access to child health services in many African countries.

By contrast, a lack of money was cited by only 11.7 % of mothers. This low proportion could be explained by the fact that certain child health services are provided free of charge or subsidised in the study area. This finding differs from several African studies which identify financial difficulties as a major barrier to accessing care (Ahmed et al., 2010). It suggests that the free-of-charge policies implemented could help to improve attendance at preventive services.

The data presented in Table 8 indicate that community awareness, at 95 per cent, was the predominant factor encouraging attendance at the CPS. This finding confirms the effectiveness of the health promotion initiatives implemented within the community. According to UNICEF (2023), community-based interventions significantly enhance parents' knowledge and promote access to paediatric health services.

Free services (90 per cent), the proximity of the health centre (86.7 per cent) and the quality of care provided by healthcare professionals (83.3 per cent) were also major motivating factors. These findings confirm those of Gilson (2003), who identified the quality of the relationship between service providers and users as a key factor in trust in health services. Furthermore, Kruk et al. (2018) consider that the quality of care and a positive patient experience have emerged as fundamental elements of universal health coverage.

The analytical data presented in Table 9 reveal a significant association between mothers' educational attainment and attendance at the CPS ($\chi^2 = 4.055$; $p = 0.044$). Indeed, 92.7 % of mothers with a high level of education had taken their child to the CPS, compared with 73.7 % of those with a low level of education. This finding confirms that the mother's level of education is a key determining factor in access to preventive services. Educated women understand health-related messages more effectively, adhere more strictly to expert recommendations and recognise the benefits of growth monitoring more readily. This finding is consistent with the research by Black et al. (2013), Victora et al. (2021), and the guidelines of the World Health Organisation (WHO, 2023), which identify maternal education as a key factor influencing child health and survival.

Mothers' employment status was also significantly associated with the use of the CPS ($\chi^2 = 7.333$; $p = 0.016$). Women in employment attended the CPS more frequently (97.1 per cent) compared with those who were unemployed (73.1 per cent). This disparity could be attributed to greater financial independence, a generally higher level of education, and improved access to health services. Ahmed et al. (2010) indicate that women's economic empowerment promotes the use of maternal and child health services by strengthening their decision-making capacity within the household.

Conversely, no statistically significant correlation was found between attendance at the CPS and marital status ($p = 0.261$), nor between attendance at the CPS and prior knowledge of the CPS ($p = 0.178$). These results indicate that mere awareness of the service's existence does not guarantee its frequent use. They highlight the predominance of other determinants, notably socio-economic factors, geographical accessibility,

the quality of services, and community-based awareness-raising initiatives. This finding corroborates the conclusions of Kruk et al. (2018), who demonstrate that increasing health coverage requires not only greater access to services, but also improvements in their quality and acceptability among the population.

Conclusion

The aim of this study was to assess attendance at the Pre-school Clinic (CPS) by breastfeeding women for the monitoring of the growth of children under five years of age at the Mbandaka General Referral Hospital (HGR). The results show that a significant proportion of mothers (86.7 per cent) had already taken their child to the CPS, indicating generally satisfactory uptake of this preventive health service. However, this proportion remains lower than the hypothesis that all breastfeeding women would attend the CPS regularly, leading to the rejection of the research hypothesis.

The study also highlights that the majority of mothers were aware of the existence of the CPS (90 per cent) and recognised its role in disease prevention and nutritional education. Conversely, understanding of its core role in monitoring growth remains insufficient, as fewer than half of the participants (40.7 per cent) identified growth monitoring as one of the main objectives of the CPS. Furthermore, the best-known services were weighing and vaccination, whilst height measurement and the interpretation of growth charts were little recognised, reflecting gaps in communication between healthcare professionals and mothers.

Furthermore, several factors influence attendance at the CPS. The main barriers identified are the distance to health facilities, forgetting appointments, lack of time and insufficient information. Conversely, community awareness, free services, proximity to the health centre and the quality of care provided by healthcare professionals are the main factors encouraging use of the CPS.

The bivariate analysis reveals that mothers' level of education and occupation are significantly associated with attendance at the CPS. Mothers with a high level of education and those in employment make greater use of pre-school consultations than their less educated or unemployed counterparts. By contrast, marital status and simply having heard of the CPS do not show a statistically significant association with its use.

Ultimately, this study shows that, despite a relatively high level of attendance at the CPS at the Mbandaka Regional General Hospital, shortcomings persist both in terms of awareness of the actual objectives of the pre-school clinic and the regularity of its use. Strengthening health education activities, improving communication regarding growth charts,

implementing appointment reminder systems, and bringing health services closer to communities are strategies likely to further improve attendance at the CPS and contribute to better monitoring of the growth of children under five. Finally, these results highlight the need to pay particular attention to less educated mothers and those not in, who represent the groups most at risk of low uptake of pre-school check-up services.

The findings of this study are encouraging and confirm our hypothesis that all breastfeeding women in the Mbandaka health zone attend and keep their appointments at the CPS for growth monitoring of their children.

Looking ahead, we hope that this study will be complemented by a large-scale study conducted on a large sample size and across several health zones in Equateur Province.

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