



Original Article

The Implementation of the Integrated Management of Childhood Illnesses Can Improve the Management of HIV by Peripheral Health Workers

L'implémentation de la prise en charge intégrée des maladies de l'enfant améliore la prise en charge du VIH par les personnels de santé des hôpitaux de district

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ABSTRACT

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Context. The Integrated Management of Childhood Illnesses (IMCI) aims to reduce death, illness, disability, and to promote improved growth and development of children < 5years. Our objective was to assess the effectiveness of IMCI as a tool to facilitate diagnosis of HIV. **Method.** This was a cross sectional observational study. We interviewed health workers (HWs) on IMCI and observed them during the assessment of at least five patients in 14 health facilities. An IMCI trainer then reassessed the children to confirm the conclusions made. Variables studied were: training, skill in IMCI, difficulty and suggestions to improve IMCI. HIV assessment was based on signs called “5 entry door” on which are based the classification and management of cases. **Results.** 30 workers were included; 43.8% of HWs had less than two years in the service, and 53.3% were not trained. Most of HWs (85.7%) not formerly trained were implementing the IMCI. They demonstrated various abilities to correctly manage. Among the untrained, 8 (66.6%) against 16 (100%) trained HWs adequately assessed, classified and managed children following the algorithm for HIV. Most of them (72.2%) declared that the IMCI facilitates early consultation. Majority (94.6%) had difficulty in implementing the algorithm due lack of material, training, supervision and motivation. **Conclusion.** The IMCI algorithm is a tool that can facilitate the identification of HIV infection. In a context where the check-treat strategy is not wide spread and where the PMTCT failed to detect all the infected/exposed children, routine implementation of the IMCI can improve the HIV management program.

RÉSUMÉ

Introduction. La Prise en Charge Intégrée des Maladies de l'Enfant (PCIME) vise à réduire la morbidité, les décès et l'infirmité des enfants < 5 ans. L'étude visait à évaluer l'efficacité de l'outil PCIME dans le dépistage du VIH. **Méthodologie.** L'étude était transversale descriptive. Nous avons interviewé sur la PCIME et observé des personnels prenant en charge chacun au moins cinq patients dans 14 formations sanitaires. Un expert réévaluait les enfants afin d'approuver leurs conclusions. Les variables étudiées étaient: la formation, maîtrise des directives PCIME, difficultés et les suggestions pour son amélioration. La recherche du VIH reposait sur les signes nommés « 5 portes d'entrée » desquelles découlent la classification et le traitement. **Résultats.** 30 personnels de santé ont été inclus. 43,8% de ces prestataires avaient moins de deux ans de service et 53,3% n'étaient pas formés. La majorité (85,7%) du personnel non formé pratiquait la PCIME. Ils étaient capables de prendre en charge correctement un enfant selon l'algorithme du VIH, de façon variable. Parmi eux, 8 (66,6%) contre 16 (100%) formés pouvaient correctement évaluer, classer et traiter les enfants. La plupart (72,2%) déclaraient que la PCIME facilite la consultation précoce. Presque tous (94,6%) éprouvaient des difficultés pour l'implémenter à cause du défaut d'outils de formation, de supervision et de motivation. **Conclusion.** L'algorithme PCIME représente un outil qui faciliterait l'identification de l'infection à VIH. Dans un contexte où son dépistage systématique n'est pas vulgarisé et où les performances de la PTME ne permettent pas de détecter tous les enfants exposés/infectés, son implémentation systématique améliorerait le programme du VIH.

INTRODUCTION

Cameroon is one of the developing countries with a high infant and under five mortality rates of 122 and 103 per 1000 live births, respectively (2,3). Despite the availability of effective interventions, there has been little decline on the incidence of the diseases as many children are not benefiting from them (4). The lack of knowledge on child care is among the obstacles in reducing infant mortality; therefore, staff training on IMCI is one solution proposed (5,6). Previous reports from the supervision of health workers (HWs) on the management of sick children in facilities reveal that many do not properly assess and treat them. The Cameroon government adopted the IMCI in 1999 with the aim to reduce the mortality and morbidity of children less than five years (CU5). However, the implementation of interventions within districts is far from adequate to demonstrate the impact of the IMCI on the reduction of mortality. The IMCI strategy promotes the accurate identification of childhood illnesses, ensures appropriate combined treatment of all major illnesses, and speeds up the referral of severe cases. In a setting where the performance of the prevention-of-mother-to-child-transmission (PMTCT) program is low, lack of appropriate diagnosis can lead to high mortality due to the late management of HIV cases (7–9). In Cameroon, the prevalence rate of HIV in the general population was 4.7% in 2015 (10). HIV/AIDS is among the six diseases that cause more than 70% of child deaths. The North West region was the fourth in rank in terms of prevalence of HIV infection (11). Before the ongoing strategy named “test and treat”, many children were diagnosed at the late stage of AIDS. Hence there was a need to improve the diagnosis of HIV infection at early stage. The IMCI strategy improves health workers’ performance and their quality of care (12). It is recognized as worth the investment, as it has a low cost per child correctly managed than current care (13). IMCI is implemented at the Bafut health district of the North West region of Cameroon since 2007. This work evaluates the use of IMCI in the diagnosis of HIV in children in the Bafut health district of the northwest region and the problems encountered; with the hypothesis that IMCI facilitates diagnosis and management of children with HIV infection.

METHODS

We carried out a cross sectional study in Bafut Health District (BHD) of the North West region of Cameroon. Thirty health workers out of 79 in charge of children were selected in 14 health facilities, using the convenient sampling method. We selected 13 integrated health centers and one District hospital. We observed 30 health workers among whom 18 (37.5%) were trained on IMCI and 12 who had not undergone formal training. Each was observed during the assessment of at least 5 CU5, making a total of 108 sick children selected consecutively. Written or verbal consent was obtained prior to observation of the

consultation. An IMCI trainer then reassessed each child to confirm the classification and management using the observation grid called “list of follow-up of HWs”. HIV assessment was based on signs and symptoms named “5 entry door”. They were: 1) one or more episodes of severe pneumonia, 2) two episodes of acute or one episode of persistent diarrhea, 3) malnutrition (low weigh for age or for height, signs of severe wasting or nutritional edema), 4) a chronic ear discharge, 5) chronic mumps, and 6) enlarged lymph nodes. These were to be recorded in the assessment forms of the children. A child was classified as having probable HIV infection when he has at least 3 entry doors for HIV assessment. If not, he was managed according to the others classifications. We attributed for each patient assessed 3 scores to describe the skill of the HW in assessing, classifying the case and 2 scores for the identification and treatment according to the IMCI HIV algorithm. We also interviewed HWs about their training on IMCI, duration in service, the difficulties they encounter in implementing IMCI, their appreciation and suggestions to improve the IMCI strategy. The data on cases assessed for HIV using IMCI during the period of study was recorded.

Statistical analysis:

Data was collected and analysed using Epi Info7 and Excel software program. Categorical data was presented as percentages, whereas quantitative data were expressed in proportion. We used Fisher Exact Test (χ^2) to compare the proportions, with statistical significance at $P < 0.05$.

Ethical Considerations

Ethical clearance was obtained from the Ethical Committee of the School of Health Sciences, Catholic University of Central Africa-Yaounde. The goal of the study was explained to the parents and their verbal or written consent obtained prior to the data collection. During clinical investigations, confidentiality was respected.

RESULTS

Out of 99 health workers (HWs) involved in the management of children, 37 (37.4%) had received IMCI training in the health facilities selected (Table 1). In all, 30 HWs were enrolled in the study; among them, 10 were males (33.3%) and 20 females (66.6%). Most (75.0%) of them were singles. Their duration of work varied from 4 months to 8 years with the median of 2 years (IQR: 1 -5 years). Almost 76.7% of the HWs had less than 5 years in service, 43.8% <2 years, and most of them (53.3%) were not trained in IMCI. The untrained HWs were mostly alone in the health facility.

Skills of health worker with regard to their duration in service and the training in IMCI

We found out that, HWs with professional experience whether trained or not on IMCI demonstrated various skills. HWs with working duration less than five years

were less likely to have been trained ($Khi^2 = 12.21$; $P = 0,002$) although they used the IMCI guidelines to assessed and managed children. They have being working with colleagues who were trained in IMCI before they left the health facility. Among these, 8 (66.6%) as opposed to 16 (100%) trained HW adequately assessed, classified, and managed children for HIV infection with score corresponding to the assessment of the 5 signs of HIV

infection (Table 2). From the data we got, out of 62 children consulted using IMCI and classified probable cases of HIV, 22 (35.5%) were confirmed HIV positive through diagnosis (Figure 1). The duration of work influenced the classification and the identification of the treatment but not the quality of assessment and the treatment process (Table 3).

Table 1. Global figure of the human resources trained and non-trained in IMCI and involving in the management of sick children at Bafut Health District

Health facility	Health workers in service			TR (%)
	Total	NTR	TR	
Akofunguba	1	1	0	0.0
Mundum	1	1	0	0.0
Nchum	2	0	2	100
Buwebukari	2	0	2	100
Tingoh 1	2	2	0	0.0
Tingoh 2	2	2	0	0.0
Mbakong	1	1	0	0.0
Akosia	1	0	1	100
Mankwi 1	3	1	2	66.7
Mankwi 2	2	1	1	50.0
Mankwi 3	3	1	2	66.7
Mankanikong	1	0	1	100
Manji 1	5	5	0	0.0
Manji 2	5	5	0	0.0
Manji 3	5	5	0	0.0
Manji 4	5	5	0	0.0
Manji 5	5	5	0	0.0
Nsoh 1	2	2	0	0.0
Nsoh 2	2	2	0	0.0
Manji 1	6	3	3	50.0
Manji 2	6	3	3	50.0
Manji 3	6	3	3	50.0
Mannji 4	6	3	3	50.0
Manji 5	6	3	3	50.0
Manji 6	6	3	3	50.0
Nsem 1	2	1	1	50.0
Nsem 2	2	1	1	50.0
Nforya 1	3	1	2	66.4
Nforya 2	3	1	2	66.4
Nforya 3	3	1	2	66.4
Total	99	62	37	37.4

NTR :non trained TR: trained

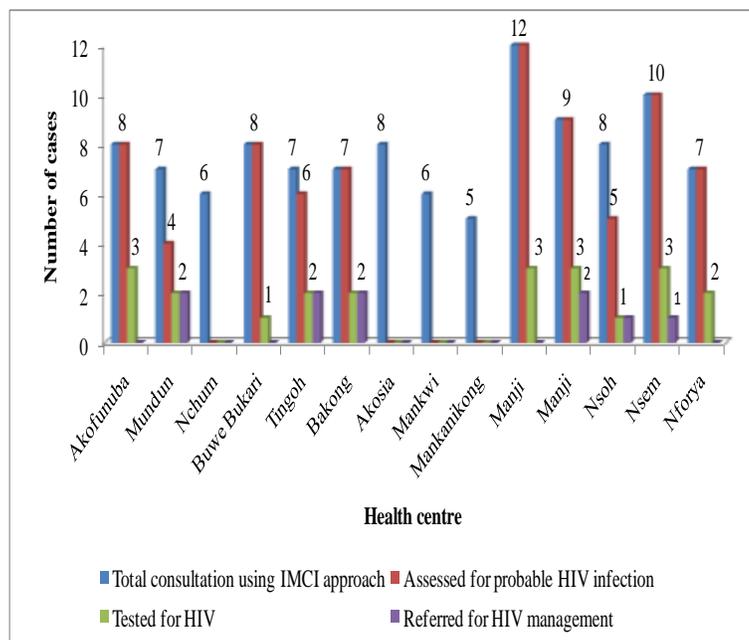


Figure 2: Number of children assessed using IMCI guidelines for HIV management and referred to the District Hospital.

Difficulties encountered by health workers during the implementation of IMCI

Majority (94.6%) of the HWs evoked difficulties in implementing the IMCI guidelines. The lack of personnels, especially trained personnel was among the main difficulties raised by 23 (76.7%) respondents. According to the health facility’s data, only 18 (56.6%) of 32 HWs trained, were still present at their health facilities and involved in child care; some moved to the zone where IMCI is not implemented. Lack of motivation was raised by 15 (50.0%) HWs, 16 (53.3%) complained of lack of the IMCI forms and other tools. Six (20.0%) sited the behavioral attachment of parents to traditional medicine and for 5 (16.7%) the late coming of children to the health facility (Table 4).

Appreciation of IMCI guidelines by the health workers

Majority (72.2%) of the HW declared that the IMCI facilitate early consultation and 88.9% taught it permits the assessment of vaccination status. For some (38.9%) it favors the availability of drugs and eases the treatment of children. For 1/3 (33.3%), IMCI helps to advise parents and to identify specific problem (Table 4).

Table 2: Skills of trained and not trained health workers in assessing and the managing children for HIV infection

Skills of the health worker	Variable	Frequency	Health workers trained N (%)		Khi ²	df	P
			Yes (n=16)	No (n=14)			
Assessment	All the 5 signs	24 (80.0)	16 (100)	8 (57.1)	12.1	2	0.002
	3-5 signs	6 (20.0)	0 (0.0)	6 (42.9)			
	< 3 signs	0 (0.0)	0 (0.0)	0 (0.0)			
Classification	All the 5 signs	17 (56.7)	16 (100)	8 (44.4)	26.2	3	0.000
	3-5 signs	5 (16.7)	0 (0.0)	5 (35.7)			
	< 3 signs	1 (3.4)	0 (0.0)	1 (7.1)			
Identification	Correctly	24 (80.0)	16 (100)	8 (57.1)	6.1	2	0.005
	Not correctly	6 (20.0)	0 (0.0)	6 (42.9)			
Management	Correctly	26 (86.7)	16 (100)	10 (71.4)	3.1	2	0.037
	Not correctly	4 (13.3)	0 (0.0)	4 (28.6)			

Table 3: Number of trained Health personnel and those not trained involved in IMCI

		Frequency (N = 30)	Duration of work			Khi ²	df	P
			< 2 (n=16)	2-5 (n=7)	5-10 (n=7)			
Formally trained	No	14 (46.7)	12 (75.0)	2 (28.6)	0 (0.0)	12.2	2	0.002
	Yes	16 (53.3)	4 (25.0)	5 (71.4)	7 (100)			
Assessment	All the 5 signs	24 (80.0)	11 (68.6)	6 (85.7)	7 (100)	7.0	4	0.138
	3-5 signs	6 (20.0)	5 (31.3)	1 (14.3)	0 (0.0)			
	< 3 signs	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)			
Classification	All the 5 signs	24 (80.0)	12 (31.3)	5 (71.4)	7 (100)	13.2	6	0.040
	3-5 signs	5 (16.7)	3 (18.8)	2 (28.6)	0 (0.0)			
	< 3 signs	1 (3.4)	1 (6.3)	0 (0.0)	0 (0.0)			
Identification of treatment	Correctly	24 (80.0)	10 (62.5)	7 (100)	7 (100)	6.6	2	0.038
	Not correctly	6 (20.0)	6 (37.5)	0 (0.0)	0 (0.0)			
Treatment	Correctly	26 (86.7)	12 (75.0)	7 (100)	7 (100)	4.0	2	0.138
	Not correctly	4 (13.3)	4 (25.0)	0 (0.0)	0 (0.0)			

DISCUSSION

Our study covered only a minority of HWs implementing the IMCI. Because of the long time lapse between training of HWs and the study, there may be some memory bias. In addition, it involved untrained HWs some with only 4 months in service and trained HWs transferred from elsewhere this would not be representative of all personnel involved in the management of CU5. Knowing that HIV algorithm is a simple useful tool when correctly used (14), authors thought that it was crucial to assess its use by HWs in child care.

Available knowledge on IMCI is essential to appreciate the care given to the children. The HIV status of most infants exposed to HIV was frequently unknown in Cameroon (15,16). In some cases it is delayed as shown in several studies in Cameroon (16–19). Not all HIV exposed infants are followed up (20). These situations could lead to a high mortality rate described in rapid progressors HIV infected infants (13). IMCI is a life-saving strategy of screening and catch up of children who escaped from PMTCT before they reach the stage of AIDS. In Kwazulu-Natal, the

implementation of IMCI guidelines permitted the detection of 7.1% of children infected with HIV (21).

Even with the new ongoing strategy “check-treat and track” that aims to reduce missed opportunities, it is important to scale up the IMCI in our context where pediatric HIV infection could be insufficiently controlled (20). The superiority of the performance of staff trained in IMCI in child care is well established (6); although there is a difference between those trained through the standard and those trained during a shortened course (22). There would be a large gap compared to those who received no training. We found that some HWs who were not trained, and were working with a trained worker, could assess children for HIV infection with fewer mistakes. The collaboration of trained and untrained staff in the same structure with the support of IMCI guidelines and tools could be an opportunity to cease in resource limited setting as ours, where financial means limits the scaling up of the IMCI training. In Zambia, the implementation of HIV

guidelines among IMCI trained HWs have not been found difficult to follow in IMCI algorithm (23).

Concerning the appreciation of IMCI guidelines, authors remarked that trained HWs found their training empowering and felt that retraining was important to reinforce the knowledge and skills (24). As in our study, the need to increase the number of the trained HWs was raised because of the workload (25). Meanwhile, this is not enough because of the turnover of the HWs and the fact that most of them are alone in their health facility. In our setting where IMCI is not implemented on a large scale, trained nurses move from the zone where IMCI is implemented to another where it is not. Out of the 48 HWs trained only 18 (37.5%) were still present at their health structures. The IMCI is known to be a cost-effective strategy (5,13); meanwhile, HWs are not always trained because of the high cost of the 11 day training implemented in Cameroon. A shorter duration of training lasting 5 days has improved the knowledge of the HWs (26); it is feasible in our milieu. Our study shows that some HWs, even though not trained (57.1%), know some aspects of assessment and the management of sick children using the IMCI guidelines. On the other hand, 8 (57.1%) out of the 14 HWs not trained, also correctly diagnosed and managed CU5 and only 4 (28.6%) could not. This is because in some health facilities the presence of IMCI tools facilitated the routine implementation of the IMCI guidelines. This boosted the skills of HWs particularly those not trained. Follow-up visits and regular supervision of the HWs could be essential in this context (25). Although very helpful, supervision is often not implemented after the training in our setting.

Factors that could impede the implementation of IMCI were inadequate strengthening of the health system, via the lack of supervision, the supply of drugs and vaccines (25). Most HWs complained of the availability of the IMCI materials. The lack of forms used for assessment of the child is a bottleneck in our milieu even though it cost only 50 francs CFA (0.1 US\$) per child assessed.

CONCLUSION

The HIV algorithm is a valid tool for identifying HIV infected and exposed children. In the present study, trained HWs showed good skills in assessing, classifying and managing sick CU5 for HIV infection using IMCI guidelines. IMCI tools were correctly used to manage CU5 when untrained HWs worked together with those trained. The present study identified barriers to the implementation of the HIV guidelines; we therefore advise frequent use of these and supervision to re-enforce its adherence.

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AUTHORS' CONTRIBUTIONS

NF initiated the draft of the document. DR participated to the writing and the statistical analysis; AO collected the data and analyzed them, FAV read and correct de final document. All the authors reviewed approved the final version of the draft of the manuscript

COMPETING INTERESTS:

The authors declare that they have no competing interest.

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