

State of Play of the Use of Children's Health Booklets in Cameroon according to Child Health Professionals

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How to cite this paper: Tchakoute, C., Nguéack, F., Mpangop, A.R., Chelo, D., Djike Puepi Fokam, Y. and Nguéack-Tsague, G. (2022) State of Play of the Use of Children's Health Booklets in Cameroon according to Child Health Professionals. *Open Journal of Pediatrics*, 12, 688-710.

<https://doi.org/10.4236/ojped.2022.124071>

Received: August 11, 2022

Accepted: September 23, 2022

Published: September 26, 2022

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Abstract

Introduction: The Child health booklet has been shown to be an essential tool for monitoring the implementation of interventions with a high impact on reducing infant and child mortality. **Objective:** To describe the opinion of child health providers about child health records. **Methodology:** Cross-sectional survey of health professionals on content, ease of use and recommendations for a health record of the ideal child. **Results:** About 3/4 (75%) of participants considered medical follow-up useful and 91.5% wanted it to be conducted at all levels of health care. According to 93% of them, all health care providers should be involved. However, almost two-thirds (65.5%) had never been trained to use the child's health record. About half (54.2%) of them had already seen the national manual and only 43.7% had ever filled it out, 82.2% of whom found it very difficult. With regards to the assessment of the content, 44.4% to 57.7% of respondents were dissatisfied with 12 of the 16 subheadings of the handbook. As for an ideal child health record, the majority recommended that it should contain indicators related to: childbirth, growth, monitoring of preventive activities and advice to parents. **Conclusion:** Child health booklets available in health facilities in Cameroon are not optimally used to reduce infant and child morbidity and mortality. It is important to review the content of the child's health booklets in order to adapt it to the Cameroonian context.

Keywords

Booklets, Health, Child, Use, Opinion, Providers

1. Introduction

Nearly 6.3 million children under the age of 15 died in 2017, most of them from preventable causes, according to new estimates of child mortality released by UNICEF, the World Health Organization (WHO), the United Nations Population Division and the World Bank Group. This figure represents 1 death every 5 seconds [1]. The vast majority (5.4 million) occurred during the first 5 years of life with almost half of it occurring in newborns with the majority (50%) occurring in sub-Saharan Africa [1].

According to 2018 statistics in Cameroon, infant mortality is 79 per 1000 live births, neonatal mortality is 28/1000; infant and child mortality of 109 per 1000 live births [2] [3] [4]. Most of the causes of death of children under 5 years of age are preventable, such as malaria, neonatal diseases, measles, diarrheal diseases and pneumonia [1] [5].

In order to fight against infant and child mortality, Cameroon has developed and documented in the Health Sector Strategy Paper 2016-2027, essential high-impact interventions for the survival of mothers and children [3] [4] [6]. These routine cost-effective interventions include vaccination, vitamin A supplementation, deworming, and intermittent preventive treatment of malaria. Thus, five priority packages of interventions essential for child survival exist 1) Essential care of the newborn, 2) Infant, child and maternal nutrition including micronutrient supplementation and deworming, 3) Vaccination and malaria control, 4) Management of common childhood diseases, 5) Prevention of mother-to-child transmission of HIV/AIDS and care for children affected by HIV/AIDS [7].

In addition to these interventions, regular monitoring of the growth and development of the child according to the WHO standards makes it possible to identify the related problems in order to provide adequate solutions [8]. It is therefore important to measure the child regularly, report the figures on a growth chart and interpret the results. This essential procedure makes it possible to act early on the possible causes of a growth anomaly [9].

The monitoring of the indicators of the various health programs is carried out during the medical follow-up of the child; they are recorded in the child health booklet (CHB) [10]. This booklet appears to be an essential tool for health promotion and is used to record the history of the health services he has received and also as a communication tool [11] [12] [13] [14] [15].

After the second war, faced with the rise in infant mortality, WHO and UNICEF focused on accelerating the use of the CHB [8]. At first, it was just a growth card or a vaccination card; some were intended for the follow-up of pregnancy and the newborn [8]. The adaptations of the health record, up to the more elaborate forms proposed by the WHO in 2006, have accompanied health transition all over the world [8]. One of the objectives was to detect acute or chronic medical conditions early. This could include visual, auditory, psychomotor development, under nutrition or a risk of being overweight [14] [15] [16].

Better use of this document would contribute to the reduction of infant and child mortality [8]. It was important to know the opinions of professionals and users of these tools in order to propose an ideal health record for the follow-up of children in Cameroon.

Background and Rationale

In Cameroon, there exist a multitude of child health booklets made by the various health facilities, ranging from 3 to 5 US\$ depending on the level of the health facility. Consequently, the models and contents vary from one sale point to another, *i.e.* in pharmacies and health facilities. The section which is commonly used is that for vaccination, the rest of the pages are used for the medical history and prescription. The vision of this health record is not sufficiently perceived by users although it has been demonstrated in Africa that if it is judiciously used, can contribute to reducing infant and child mortality [12].

It is with this in mind that in 2015, the Cameroonian government with the support of the Japan International Cooperation Agency (JICA) developed and made available to health facilities a mother-child health booklet entitled “Maternal and Child Health Handbook” (MCHH) at a price of US\$ 1 [12] [16]. However, its implementation encountered bottlenecks particularly, the absence of buy-in from the heads of health facilities they lost the revenue they were generating. This is reflected in the lack of renewal of stocks; however, the real problem was the irrational and insufficient exploitation of the items in the handbook. For example, some staff use it as a prescription form, the growth curves were almost not filled in, and the different sections are filled in without respecting the assigned age groups. This child health booklet developed by the Ministry of Public Health, which is used mainly in the public sector, contains very limited information. It is not uncommon to find other notebooks produced and preferentially sold in parallel in these public health structures. We are convinced that with all these excesses, the use of health handbooks has deviated from the intended objective; hence the present investigation.

2. Research Hypotheses

Child health care providers in Cameroon believe that child health booklets used in the country do not meet the health needs of children.

3. General Objective

Collect the opinions of child health care providers about child health booklets in Cameroon.

4. Methodology

4.1. Type of Survey

Cross-sectional survey was conducted among child health professionals in Cameroon during the Cameroonian Pediatrics Association (CPA) congress from 20 to 23 November 2019 in Kribi.

4.2. Survey Population

Members of the Cameroonian Pediatrics Association (CPA) including those who are regularly registered; medical doctors, pediatricians and other associated professionals who work for the health of mothers and children.

4.3. Types of Questions and How the Questionnaire Is Administered

It was a self-administered questionnaire with: single-choice and multiple-choice closed-ended questions as well as semi-open-ended and open-ended questions.

The questionnaire consisted of three sections:

In the first section, we recorded the perception of health providers on the medical follow-up of the child, on the organisation of the health system and on the child health booklet in general. In particular, they should give their opinion on the usefulness of this tool and note the difficulties encountered in using it.

In the second section of the analysis survey form, health professionals are asked to analyse specifically the Ministry of Health's maternal and child health manual.

Finally, the third section collects recommendations from health professionals on the content of the ideal child health record for Cameroon.

4.4. Study Framework

The CPA congress took place in the city of Kribi from 20 to 23 November 2019 with the theme "Reduction of infant and child mortality. What are the challenges for Cameroon?"

Preliminary study: A preliminary survey was carried out in October 2019, in four health facilities in Yaoundé (Centre Médical la Cathédrale, Centre Mère et Enfant, Hôpital de District de la Citéverte and Hôpital de District de Biyem Assi). The aim was to determine the proportion of children with a health record and the importance that mothers attach to the medical child's follow-up of the. The findings revealed that 387/1388 (28%) of mothers owned it and about a quarter knew the importance of the child's medical follow-up.

Pre-test: We pre-tested the questionnaires with the staff of the Centre Médical la Cathédrale, a private facility located in Yaoundé. The results allowed us to identify the difficulties, which is how we were able to adjust the questionnaires.

Sampling: Exhaustive including CPA members who participated in the Kribi congress held from 20 to 23 November 2019.

Sample size: All delegates who consented to participate in the survey.

Conduct of the study: The CPA set up a technical committee to advocate with the consultants to develop the protocol and do the pre-test; it included a principal investigator and six co-investigators.

4.5. Financing

This survey was financed by the CPA fund.

4.6. Procedure

The Technical Committee met several times to develop the strategies and modalities of the investigation.

At the beginning of the congress, the question of the management of the health record was presented with the aim of explaining the purpose of the study and obtaining the buy in the delegates. The protocol and the survey sheet were discussed in plenary. Subsequently, the survey sheet and the photocopy of the children's section of Maternal and Child Health Handbook (MCHH) were given to them for exploitation; they were collected at the end of the congress for analysis. We had previously extracted sections of the various health records used in Cameroon and submitted to the respondents for assessment; some had elements of the essential child survival intervention packages [7].

4.7. Variables Studied

We analyzed respondents' perceptions of the child health booklet (CHB) in relation to the organisation of the health system, the role of the child's medical follow-up in reducing infant and child mortality, the actors involved, as well as the optimal level of care for the child's follow-up. We also studied the concordance of the sections of the content of child health booklets with the health problems of the child in Cameroon, the training on the child health booklet and the difficulties experienced during the use as well as the explanations for the difficulties. As concerns MCHH of Ministry of Public Health, the analyses focused on the assessment of the content of the children's section. Finally, we analyzed CPA's recommendations on the ideal content of a child health booklet.

4.8. Statistical Analysis

The data was then entered and analyzed using epiinfo software. Qualitative variables are presented as a percentage.

To look for associations between qualitative variables, chi-two tests were used when the expected numbers were greater than 5 and the Fisher test otherwise. P-values below 5% were considered statistically significant.

5. Results

In this part of the research, we present the socio-professional characteristics of the participants (**Table 1**); then the subsections, the first of which deals with the generalities on the CHB. In the latter we discuss the perception of health professionals on the CHB in relation to the health system, on the usefulness of the CHB, in relation to training on the use of the CHB. We also study the difficulties experienced by respondents when using the CHB. The second subsection concerns the evaluation of the children's section of the MCHH in which we address the generalities, the reasons put forward by professionals to explain the difficulties in the use of the child part. Next, we describe the satisfaction of professionals with the content of the children's section of the manual. We conclude with the

suggestions of CPA members on the ideal content of a CHB, taking into account in particular the opinions on the data of the delivery section, activities of the neonatal period, growth indicators, and on the monitoring of preventive activities.

Characteristics of the survey population

Our results show that out of 250 expected health professionals, 227 were present at the congress. Only 142 delegates (62.5%) participated in the survey.

As regards socio-professional categories, paediatricians were more represented (55.6%). In terms of places of practice, the majority of respondents, 69.0%, worked in the public sector. As for the number of years in practice, two-thirds of the respondents (66.2%) have been working for less than 10 years (**Table 1**).

General information on the CSE available in Cameroon

This section summarizes health professionals' perceptions of the CHB in terms of: organization versus the health system (**Table 2**), training on its use (**Table 3**). It also discusses the difficulties encountered in the use of the CHB (**Table 4**), as well as the explanatory reports (**Table 5**).

Analysis of responses according to the organization of the health system and the usefulness of the CHB

About three-quarters or 75.4% of respondents think that medical follow-up of

Table 1. Socio-professional characteristics of respondents.

	Actual	Percentage (%)
QUALIFICATION		
Pediatricians	79	55.6
General practitioners	34	23.9
Nurses	16	11.3
Pediatric residents	9	6.3
Other	4	2.8
SEX		
Masculin	102	71.8
Feminine	40	28.2
PLACE OF PRACTICE		
Private secular	35	24.6
Private denominational	9	6.3
Public	98	69.0
NUMBER OF YEARS OF PRACTICE		
1 - 10	94	66.2
11 - 20	25	17.6
≥21	23	15.5
Total	142	100.

Paediatricians were more represented (55.5%) and the majority of respondents (69.0%) worked in the public sector. 66.2% of respondents have been working for less than 10 years.

the child is a useful activity; according to 91.5% of them, it should be carried out at all levels of the health pyramid and by all health care providers according to 93.0 % of respondents (**Table 2**).

As for its usefulness, 91.5% of respondents believe that this tool could contribute to the reduction of infant and child mortality. About two-thirds (66.9%) admit to request it at each visit and 85.2% suggest that it be used for preventive, promotional and curative activities (**Table 3**).

Training and difficulties during the operation of the CHB

About two-thirds of respondents were not trained in the use of the CHB; however, they did not consider it necessary to have a user's guide for CHB (**Table 4**).

The majority of respondents (71.1%) said they encountered difficulties in using the CHB; especially when recording data and 81.0% during the retrieval of information contained in the CHB (**Table 5**).

The difficulties of recording data in the CHB are: lack of training (88.1%); narrowness of the writing space reserved (90.1%); small font size and headings not adapted for the Cameroonian health system (70.1%). With regards to the causes of the difficulties encountered in locating information in the CHB, respondents mentioned the non-systematic filling of the CHB (92.2%); information

Table 2. Respondents' perception of the child health booklet (CHB) in relation to the organization of the health system.

Variable studied	Answers	Staff N = 142	Percentage (%)
Role of the medical follow-up of the child.	Useless	33	23.2
	Neutral	2	1.4
	Useful	107	75.4
The actors of the medical follow-up of the child.	Pediatricians alone	1	0.7
	Paediatricians and general practitioners	9	6.3
	All health professionals	132	93.0
Levels of care concerned by the medical follow-up of the child	Central hospitals	3	2.1
	Regional hospitals	1	0.7
	District Hospitals	6	4.2
	Health Centres	2	1.4
	All levels	130	91.5
Concordance of the items of the content of the CHB with the health problems of the child in Cameroon	Not at all	19	13.4 %
	Partly	112	78.9
	That's right	11	7.7

About three-quarters of respondents (75%) believe that medical follow-up of the child is a useful activity.

Table 3. Health professionals' perception of the usefulness of the CHB.

Opinions studied	Answers	Staff N = 142	%
Undeniable contribution of the best use of CHB to the reduction of infant and child mortality	Disagree	6	4.2
	Neutral	6	4.2
	All right	130	91.5
Child's health record required at each visit	Yes	95	66.9
	Not	47	33.1
Types of priority consultation for the use of the CHB	Preventive consultation	18	12.7
	Consultation curative	3	2.1
	The 2 types of consultation	121	85.2

In total, 91.0% of respondents believe that this tool could contribute to the reduction of infant and child mortality.

Table 4. Respondents' views on training on the use of the CHB.

Issues studied	Answers	Workforce (N = 142)	Percentage (%)
Have you been trained in the use of the child's health record?	Yes	49	34.5
	Not	93	65.5
Do you think that a user guide document would be useful to facilitate the use of the child's health record?	Yes	51	35.9
	Not	91	64.1

About two-thirds of respondents were not trained in the use of the CHB.

Table 5. Challenges in respondents using CHB.

Hardship	Answer	Actual	Percentage (%)
Relating to the recording of information in the CHB.	Yes	101	71.1
	Not	41	28.9
Relating to the retrieval of information in the CHB.	Yes	115	81.0
	Not	27	19.0

71.1% of respondents said they had difficulties in operating CHB.

not carried over within the planned framework (81.7%) and use of the CHB for curative activities (53.9%) (**Table 6**).

Evaluation of the children's section of the "Maternal and Child Health Handbook" (MCHH) of the Ministry of Public Health

In this second part of the children's section of the MCHH, we analyze in addition to the generalities, the difficulties in use as well as the reasons. Participants also had to appreciate the content of the children's section of the MCHH.

General information on the children's section of the MCHH

More than half of respondents or 54.2% said they had seen the MCHH before.

Only 43.7% said they had used it before and of these, 82.2% said they did not use it easily (**Table 7**).

The reasons for the difficulties using the children's section of the MCHH are: the redundancy of texts mentioned by 62.7% of respondents and for some, there is little space reserved for filling in information (23.5%) (**Table 8**).

Analysis of the different sections of the children's section of the maternal and child health manual

Respondents were asked to express their level of satisfaction with the content

Table 6. Explanatory reasons for the difficulties encountered in the use of CHB.

Reasons for difficulties	Difficulties in recording data (N = 101)		Difficulties when searching for information (N = 115)	
	n	%	n	Percentage (%)
Lack of training	89	88.1		
Reduced space	91	90.1		
Font too small	71	70.1		
Some inappropriate headings	71	70.1		
Non-systematic filling of CHB			106	92.2
Information not reported in the spaces provided.			94	81.7
Use of CHB for curative activities			62	53.9

Table 7. General information on the children's section of the "Maternal and Child Health Handbook" (MCHH).

Issue studied	Answers	Workforce (N = 142)	Percentage
Have you ever seen the MCHH?	Yes	77	54.2
	Not	65	45.8
Have you ever used the MCHH?	Yes	62	43.7
	Not	80	56.3
Do you easily use this manual?	Yes	11	17.7
	Not	51	82.2

54.2% said they had already seen the MCHH. Only 43.7% said they had used it before and among them, 82.2% said they did not use it easily.

Table 8. Causes of difficulties in using the child section of the MCHH.

Reasons for difficulties in use	Workforce (N = 51)	Percentage (%)
Redundant texts	32	62.7
Little space for filling	12	23.5

The explanatory reasons for the difficulties in the exploitation of the document: the redundancy of the texts (62.7% of the respondents) and little space for the filling of the information (23.5%).

of the manual by checking either “dissatisfied”, “neutral” or “satisfied”. The majority of respondents (44.4 per cent to 57.7 per cent) were dissatisfied with 12 out of 16 headings in the children’s section of the MCHH. On the other hand, the majority of neutral responses were observed for two headings: “identification of the newborn” (41.5%) and “medical history and treatment scores” (36.6%). They reported being mostly satisfied with the 2 headings: “The childhood vaccination schedule” (42.3%) and “The different vaccines at each stage of life” (53.2%). Participants were 63.4% satisfied with the bilingual nature of the document (**Table 9**).

In summary, out of the 16 headings of the children’s section of the manual presented, 75% of the headings were not satisfactory to the respondents; that the latter were neutral for 12.5% of the headings and satisfied for 12.5% of the headings (**Table 9**).

Respondents’ recommendations in relation to the ideal content of the child health booklet in the Cameroonian context

In the general section, only the heading “data on radiological examinations”

Table 9. Opinion of professionals on the different headings of the children’s section of the maternal and child health manual.

Information to be filled in the topics	Unsatisfied (%)	Neutral (%)	Satisfied (%)
<i>Stratification of paediatric age groups</i>			
Identification of the newborn	39.4	41.5	19.0
Newborn (less than one month)	54.2	28.9	16.9
From infant to childhood (1 month to 5 years)	54.9	27.5	17.4
<i>Identification of signs of illness and management at home</i>			
How to treat common diseases of the child at home	50.0	33.1	16.9
What signs does a sick child show?	47.9	28.9	23.2
When should the child be brought to a health facility?	50.0	31.0	19.0
What emergency medications need to be available in your home	46.5	34.5	19.0
How can a mother protect her child from accidents?	50.7	22.5	26.8
<i>Health promotion and disease prevention</i>			
General rules for the nutrition of infants and children under five years of age	45.1	26.8	28.2
Health programme for children under 5 years of age	57.7	26.1	16.2
Recording of diseases, growth problems and development	52.1	32.4	15.5
WHO growth curves	57	18.3	24.6
Childhood Immunization Schedule (EPI)	23.2	34.5	42.3
Medical observation and treatment notes	32.4	36.6	31.0
Vaccination certificate	44.4	30.3	25.4
The different vaccines for each stage of life	19.7	26.8	53.2
Bilingual nature of the document	14.8	21.8	63.4

N= 142.

was considered “useless” by 36.6% of respondents. Those relating to the identity of the parents, blood type of the parents, electrophoresis of hemoglobin, blood transfusion, identity of siblings, family history of hereditary diseases”, allergies and summaries of consultations for various conditions were highly appreciated (**Table 10**).

In the section on childbirth, participants rated about 90% of all items proposed as “useful”; these include: antenatal consultations, information about labour, state of newborn at birth, neonatal resuscitation, essential newborn care, specialized care of the newborn (low birth weight, HIV positive mother and hepatitis B positive mother) as well as a complete physical examination (**Table 11**).

Table 10. Headings in the general section of an ideal CHB.

Heading	Useless (%)	Neutral (%)	Useful (%)
Identity of parents	6.3	5.6	88.0
Parents' blood type	4.9	8.5	86.6
Hemoglobin electrophoresis of parents	4.9	6.3	88.7
Identity of siblings	9.9	28.2	62.0
Family history (hereditary diseases)	6.3	11.3	82.4
Allergies	11.3	18.3	70.4
Blood transfusion data	28.2	30.3	41.5
Radiological examination data	36.6	27.5	35.9
Summaries of consultations for various conditions	4.9	5.6	89.4

N = 142. In general, only the heading “data on radiological examinations” was considered “useless” by 36.6% of respondents.

Table 11. Information from the childbirth section.

Heading	Useless (%)	Neutral (%)	Useful (%)
Prenatal consultations	7.0	12.0	81
Labour data	4.9	3.5	91.5
Condition of the newborn at birth	1.4	4.2	94.4
Neonatal resuscitation	2.1	3.5	94.4
Essential newborn care in the birth room	2.1	3.5	94.4
Special care for low birth weight newborns	0.7	2.1	97.2
Special care for newborns of HIV-positive mothers	0.7	4.2	95.1
Special care for newborns of hepatitis B-positive mothers	1.4	4.3	94.3
Complete physical examination	0.7	7.0	92.3

N = 142. Participants rated “useful” All proposed items related to childbirth.

With regards to neonatal investigations, respondents considered some systematic screenings, particularly for phenylketonuria (42.3%), congenital adrenal hyperplasia (43.7%), hypothyroidism (45.8%), and cystic fibrosis (47.9%) to be unnecessary. On the other hand, the majority recommend that screening for sickle cell disease be included in the health record (**Table 12**).

As for the growth indicators, the parameters (weight, mid upper arm circumference, head circumference and height) were approved at proportions ranging from 58.5% to 92.3%. Similarly, the weight/age, weight/height, head circumference/age and height/age curves were approved at proportions from 88% to 93.7%. Psychomotor development was considered useful at 93.7% (**Table 13**).

Table 12. Relevant explorations of the neonatal period.

Heading	Useless (%)	Neutral (%)	Useful (%)
Ophthalmological examination	19.7	38.0	42.3
Screening for hearing loss	31.7	36.6	31.7
Screening for phenylketonuria	42.3	40.4	17.6
Screening for congenital adrenal hyperplasia	43.7	28.9	27.5
Hypothyroidism screening	45.8	26.1	28.2
Screening for sickle cell disease	4.2	12.0	83.8
Screening for cystic fibrosis	47.9	28.2	23.9
Screening for malformations	1.4	7.7	90.8
First month weight curve	2.1	5.6	92.3

Respondents considered some systematic screenings to be unnecessary, including phenylketonuria (42.3%), congenital adrenal hyperplasia (43.7%), hypothyroidism (45.8%), and cystic fibrosis (47.9%).

Table 13. Growth indicators.

Heading	Useless (%)	Neutral (%)	Useful (%)
Weight	2.8	4.9	92.3
Brachial perimeter	16.2	25.4	58.5
Cranial perimeter	4.2	6.3	89.4
Waist	2.1	5.6	92.3
Psychomotor development	2.1	4.2	93.7
Weight/Age Curve	0.7	5.6	93.7
Weight/Size Curve	1.4	5.6	93.0
Cranial Perimeter/Age Curve	0.7	10.6	88.7
Size/Age curve	1.4	10.6	88.0
BMI/Age Curve	4.2	7.0	88.7

All growth parameters with their curves were approved at a proportion greater than 80%.

Table 14. Monitoring of preventive activities.

Heading	Useless (%)	Neutral (%)	Useful (%)
Infection prevention	1.4	7.0	91.5
Vaccination	0	1.4	98.6
Malaria prevention	1.4	4.2	94.4
Feeding	0.7	7.0	92.3

More than 90% of the monitoring headings for preventive activities have been approved.

Items in the follow up section of preventive activities (infection prevention, vaccination, malaria prevention and diet) were found to be useful with proportions greater than 90% (Table 14).

6. Discussions

Out of 250 health professionals expected, 227 were present at the congress. Only 142 delegates (62.5%) participated in the survey. This result is higher than that obtained in France during the survey on the evaluation of the 2006 model health record; only 49.4% of health professionals contacted by telephone agreed to participate in the study [17].

The optimal growth and development of the child, especially during the first years of life, guarantees adequate health. Early detection of developmental problems appears to be an ongoing process of monitoring a child's growth [18].

This monitoring is one of the essential elements of public health policy; it includes: the establishment of the health record, regular medical follow-up, compliance with the vaccination schedule, preventive advice and referral to specialized care if necessary [19]. WHO has not developed a specific schedule of visits for the assessment of child growth; visiting schedules depend on each country [20]. Given the context of high mortality, and the insufficient use of MCHH in Cameroon, the authors analyzed the level of understandings of this health record by health care providers. The goal is to find out what they think about the content and to collect proposals for improvement of its content and obtain CHB adapted to local realities.

The present survey was certainly riddled with selection and information biases because the congress had so many activities that kept participants very busy. They did not have enough time to fully understand and fill in the questionnaires with only 62.5% of participants returning questionnaires. Nevertheless, the results of the survey make it possible to understand the challenges with the use of child health booklets in Cameroon.

Nearly 3/4 of the participants (75%) agreed that the medical monitoring of the child's development is an essential activity in the promotion of the health of the child especially in the first years of his life. This is a critical period of brain development; and it is also at this time that the child can best respond to treatment [10] [18] [19].

In the present study, 93% of respondents expressed the opinion that all health care providers should be involved in the medical follow-up of the child regardless of their qualification. In addition, 91.5% believed that this activity should be carried out at all levels of the health pyramid. Indeed, the right to health is inalienable for all children, it is quite normal that their follow-up takes place everywhere in order to break the apparent inequity of the offer of care in our environment. Thus perceived, this activity would engage all actors in child health. It is such a vision of the follow-up of the child from 0 to 5 years that is part of the strategy of the “Integrated Management of Childhood Illness” (IMCI). It was developed for health professionals at the lower level of care rather than for specialists [10] [18].

The health record is a document that puts together most of the medical information and events that concern the health of the child from birth [8] [11] [13]. There are a multitude of them sold in Cameroon either in pharmacies, health facilities or in public and private health centers. These notebooks are usually copied from those of developed countries; this is probably why 78.9% of respondents think that their content is only partially in line with the health problems of the child in Cameroon. Headings concerning the fight against diseases such as malaria, malnutrition, acute respiratory infections and common childhood conditions of African countries south of the Sahara do not appear in most local CHB. It would be important to contextualize it so that it can achieve the ultimate objectives. It is certainly for this reason that 91.5% of the participants felt that if this document is well developed and used optimally, it would inevitably contribute to the reduction of infant and child mortality. In Morocco, Loubna *et al.* reported in a similar survey that 89% of health care providers had a positive perception about the CHB [21].

Health care providers seem to adhere to the CHB's vision because about 2/3 (66.9%) seemed to request for it at all visits to health facility by children. This explains why 85.2% think that this document needs to be used as much for routine follow-up as during curative consultations. These are the statements of the surveys that do not fully reflect the reality because; a pilot study found out that although CHB are available, they are not always used especially in health facilities that archive medical records. In a study conducted in France among family doctors on the use of CHB in the context of HIV infection, 80% to 90% said they systematically asked parents [22].

With regard to the perception of child health care providers, particularly in terms of training in the use of the CHB, most (65.5%) were not; conversely, a similar proportion (64.1%) felt that the development of a guide would be unnecessary. The new French models of the 2018 child health booklet and certificates are accompanied by a user's guide for health care providers [14]. The lack of training of respondents on health booklets explains the difficulties that 71.1% experienced in recording of data, and 81% in the identification of information in the CHB. Work overload, unsuitable content of most of the CHB to the health

context of the country, small font size and as well as using it essentially for curative purpose are among the explanatory reasons for the difficulties encountered with the CHB. Our data are comparable to those found by Loubna *et al.* in a similar survey in Morocco according to which, the constraints to the proper use of the CHB relate to the lack of training, the overload of work and the insufficient communication around the said manual [21]. These difficulties would explain the information gap observed in many of these CHB. Koffi *et al.* noted information gaps in antenatal consultation books in a study in Côte d'Ivoire [23]. However, this information is crucial for planning individualized and comprehensive actions for the well-being of children and the general population.

With regard to the assessment of the children's section of the Ministry of Health's maternal and child health manual, the authors recall that through the "Maternal, Newborn and Child Health (MNCH) Project" of the Japan International Cooperation Agency (JICA), Cameroon has benefited from the allocation of health booklets entitled "Maternal and Child Health Handbook" (MCHH) [12] [24]. This is the official document of the Ministry of Public Health intended for the follow-up of the child. In the present study, the children's section of this manual has been analysed particularly as concerns ease of its usage.

It emerged that almost half of the respondents (54.2%) had already seen it and that only (43.7%) used it, of which 82.25% had great difficulty using it. The latter mentioned the redundancy of texts and images, and little space reserved for filling in information. Such difficulties were noted when analysing staff opinions on other CHB.

As for the respondents' opinions on the 16 headings of the children's section of the MCHH, the majority were dissatisfied for 12 headings. They had to formulate essential recommendations for the development of the child's health record with ideal content.

The majority of participants also approved the sections to be filled in the general section of the MCHH; information contained in the chapters "General" and "Long-term pathologies, allergies, family history" of the latest version of the French CHB [14].

In the section with information on delivery, more than 90% of respondents approved all the headings submitted to them. Child health care providers rightly believe that data on pregnancy is essential for better care of the newborn. Similarly, essential newborn care in the delivery room as well as WHO recommendations on interventions to improve the outcome of preterm birth has been validated [25]. In a survey conducted in 2003 in France, Chalumeau *et al.* listed the wishes of paediatricians in the perinatal section of the child's health record. It emerged that paediatricians wanted information about pregnancy and child-birth included with a focus on risk factors of bacterial maternal-fetal infection [26].

In the neonatal activities section, participants approved screening for certain conditions such as sickle cell disease, malformations and ocular pathologies. On

the other hand, they did not approve screening tests for phenylketonuria, hypothyroidism, cystic fibrosis or congenital adrenal hyperplasia. The reason for the rejection of these tests is that they are ineffective in our context and that related pathologies are not identified as public health problems in sub-Saharan Africa. The development of a health record, although inspired by those of other countries, adapts to local realities.

As concerns, the section on growth indicators, all parameters including the growth curves received more than 80%. The evaluation of anthropometric parameters is a key element in monitoring a child's growth; hence the new growth reference standards established by the WHO that make it possible to detect developmental delays [8] [9] [27].

As for the section on monitoring preventive activities, all the proposed headings were approved by more than 90% of respondents. These include vaccination, infection prevention, malaria control and nutrition. This section follows the strategic approach of the IMCI (Integrated Management of Childhood Illness) implemented in many developing countries. Indeed, this strategy takes into account the conditions of the newborn, and the infant as well as the common pathologies of early childhood in developing countries [28] [29].

7. Limitation of the Study

This survey was certainly subject to bias given the very busy congress schedule. First of all, there is the possibility of selection bias, since only two-thirds (62.5%) of the delegates handed in their survey forms. Information bias can also be considered, as the time allocated to the presentation of the study to congress participants at the general assembly was very short (15 minutes); as a result, some questions were not well understood and therefore not answered properly.

8. Conclusion

Health care providers were unanimous on the importance of medical monitoring of the child by all and at all levels of the health pyramid. The present survey has revealed that the contents of the various existing CHB in Cameroon are only partially in line with the health problems of the child. The development of an ideal manual inspired by the recommendations of health professionals is desired, however, it would be crucial to train them, to adapt the content of the ideal manuals in order to facilitate its optimal use not only for curative consultations.

Acknowledgement

Our thanks go to the CPA officials as well as to the delegates who kindly participated in the survey.

Conflicts of Interest

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

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Appendix

SURVEY SHEET

State of Play of the Use of Children's Health Booklets in Cameroon according to Child Health Professionals

Dear colleagues :

The health booklet is an important tool in health promotion. It is a health document used to record the history of health services received by an individual. It is the main tool for collecting data during medical follow-up.

The survey we are conducting concerns the place of the child's health booklets in Cameroon's health facilities. We want to analyse the existing CSE in order to identify incongruities and propose improvements.

This survey was initiated by the Cameroonian Pediatrics Association (CPA) for health professionals in order to gather their opinions on this child health monitoring tool.

Recommendations for answers are given in italics next to each question except for questions with binary answers.

Please answer the following few questions and we thank you for your participation.

Qualification: 1. Paediatrician ___ 2. General practitioner ___ 3. Nurse ___
4. Other _____ (to be specified)

Sex: 1. Female ___ 2. Male ___

Place of practice: 1. Private secular ___ 2. Private religious ___ 3. Public ___

Number of years of practice _____

NB: CHB = Child Health Booklet

GENERAL INFORMATION ON CHILD HEALTH BOOKLETS

1. What do you think of the role of child health monitoring (prevention and promotion of child health) in Cameroon? (*Circle your answer, only one answer possible*)

1. *Useless*; 2. *Neutral*; 3. *Useful*

2. In your opinion, who is responsible for the child's medical care?

1. *Paediatricians alone* ___ 2. *Paediatricians and general practitioners alone* ___
3. *All health professionals (including nurses)* ___

3. In which structure(s) of the health pyramid should the medical follow-up of the child be carried out in Cameroon? (tick your answer(s), several answers possible)

1. *Central hospitals* ___ 2. *Regional hospitals* ___ 3. *District Hospitals* ___
4. *Health centres* ___ 5. *All levels* ___

4. In your opinion, do the contents of the CHBs in circulation in Cameroon correspond to the problems of child health in Cameroon? (*Circle your answer, only one answer possible*)

1. *Not at all* ___ 2. *Partially* ___ 3. *Completely* ___

5. If the child health booklets were well developed and properly used, they could contribute to the reduction of infant and child mortality in Cameroon. What do you think? (*Circle your answer, only one answer possible*)

1. *Disagree* ___ 2. *Neither disagree nor agree* ___ 3. *Agree* ___

6. Do you ask for the CHB at each visit? Yes ___ No ___

7. During which consultation should the CHB be used as a priority? (*Circle your answer, only one answer possible*)

1. *During the routine consultation (growth and development monitoring)* ___

2. During the consultation for illness ____ 3. During both types of consultation ____

8. Have you been trained to use the CHB? Yes ____ No ____.

9. Do you think that a user guide would be useful to facilitate the use of the child's health booklet?

Yes ____ No ____

Challenges of using the child health record for data recording

10. Do you experience difficulties when recording data in the CHB? Yes ____ No ____

If yes, what kind of difficulties? (Tick your answer(s), multiple answers possible)

1. Limited space ____ 2. Font size too small ____ 3. Some of the headings are inappropriate for our health system ____
4. Lack of training for data recording ____ 5. Other

Challenges of using the child's health record to retrieve medical information

11. Do you have difficulties in finding medical information in the CHB:? Yes ____ No ____

If yes, what kind of difficulties? (tick your answer(s), several answers possible)

1. Unsystematic filling in of the child's health records ____ 2. Information not recorded in the spaces provided ____
3. Use of child health records as a sick notebook ____ 4. Others: ____

EVALUATION OF THE MATERNAL AND CHILD HEALTH MANUAL OF THE MINISTRY OF PUBLIC HEALTH OF CAMEROON

You have a photocopy of the children's section of the manual; please refer to it to answer the following questions.

12. Have you ever seen this manual? Yes ____ No ____

13. Have you ever used it? Yes ____ No ____

14. Are you comfortable using this booklet? Yes ____ No ____

If not, describe the difficulties (tick your answer(s), several answers possible)

1. Too cluttered __ 2. Too little space for filling __ 3. Others

Assess the contents of the MINSANTE MATERNAL AND INFANT HEALTH MANUAL under the following headings. (Circle your answer, only one answer possible)

NB: To make it easier to answer the questionnaires, we have indicated in brackets the pages of the Ministry of Health's maternal and child health manual that correspond to the required information.

15-A Identification of the newborn (Pages 43 to 44):

1 *Unsatisfied*, 2 *Neutral*, 3 *Satisfied*

16-B Newborn (less than one month old) (Pages 45 to 50)

1 *Unsatisfied*, 2 *Neutral*, 3 *Satisfied*

17-C Infant to childhood (1 month to 5 years) (Pages 51 to 66)

1 *Unsatisfied*, 2 *Neutral*, 3 *Satisfied*

18-D How to treat common childhood diseases at home (Pages 67 to 70)

1 *Unsatisfied*, 2 *Neutral*, 3 *Satisfied*

19-E What are the signs of a sick child (Page 70)

1 *Unsatisfied*, 2 *Neutral*, 3 *Satisfied*

20-F When should the child be taken to a health facility? (Page 71)

1 *Unsatisfied*, 2 *Neutral*, 3 *Satisfied*

21-G What emergency medicines should be available in your home? (Page 72)

1 *Unsatisfied*, 2 *Neutral*, 3 *Satisfied*

22-H How can a mother protect her child from accidents? (Page 73)

1 *Unsatisfied*, 2 *Neutral*, 3 *Satisfied*

23-I General rules for feeding infants and children under five years of age (Pages 74 to 81)

1 *Unsatisfied*, 2 *Neutral*, 3 *Satisfied*

24-J Health programme for children under 5 (Page 82)

1 *Unsatisfied*, 2 *Neutral*, 3 *Satisfied*

25-K Recording diseases, growth problems and the physical and intellectual development of the child (Pages 83 to 85)

1 *Unsatisfied*, 2 *Neutral*, 3 *Satisfied*

26-L WHO growth charts (Pages 86 to 93)

1 *Unsatisfied*, 2 *Neutral*, 3 *Satisfied*

27-M Childhood immunization schedule (EPI) (Pages 94 to 95)

1 *Unsatisfied*, 2 *Neutral*, 3 *Satisfied*

28-N Medical observation and treatment notes (Pages 96 to 100)

1 *Unsatisfied*, 2 *Neutral*, 3 *Satisfied*

29. Immunisation certificate

1 *Unsatisfied*, 2 *Neutral*, 3 *Satisfied*

30. Different vaccines for every step of life

1 *Unsatisfied*, 2 *Neutral*, 3 *Satisfied*

31. Bilingual nature of the document

1 *Unsatisfied*, 2 *Neutral*, 3 *Satisfied*

32. IDEAL CONTENT OF A CHILD HEALTH RECORD

32-1 Identity of parents:

1-*Useless*, 2-*Neutral*, 3-*Useful*

32-2 Parents' blood type:

1-*Useless*, 2-*Neutral*, 3-*Useful*

32-3 Hemoglobin electrophoresis of parents:

1-*Useless*, 2-*Neutral*, 3-*Useful*

32-4 Identity of siblings:

1-*Useless*, 2-*Neutral*, 3-*Useful*

32-5 Family history (hereditary diseases)

1-*Useless*, 2-*Neutral*, 3-*Useful*

32-6 Allergies:

1-*Useless*, 2-*Neutral*, 3-*Useful*

32-7 Blood transfusion data:

1-*Useless*, 2-*Neutral*, 3-*Useful*

32-8 Radiological examination data:

1-*Useless*, 2-*Neutral*, 3-*Useful*

32-9 Summaries of consultations for various conditions:

1-*Useless*, 2-*Neutral*, 3-*Useful*

32-10 Prenatal consultations:

1-*Useless*, 2-*Neutral*, 3-*Useful*

BIRTH

32-11 Labour data:

1-*Useless*, 2-*Neutral*, 3-*Useful*

32-12 Condition of the newborn at birth:

1-*Useless*, 2-*Neutral*, 3-*Useful*

32-13 Neonatal resuscitation:

1-*Useless*, 2-*Neutral*, 3-*Useful*

32-14 Essential care of the newborn in the delivery room:

1-*Useless*, 2-*Neutral*, 3-*Useful*

32-15 Special care for newborns

32-15.1 Low birth weight:

1-*Useless*, 2-*Neutral*, 3-*Useful*

32-15.2 Hiv-positive mothers:

1-*Useless*, 2-*Neutral*, 3-*Useful*

32-15.3 Hepatitis B positive mother:

1-*Useless*, 2-*Neutral*, 3-*Useful*

32-16 Complete physical examination:

1-*Useless*, 2-*Neutral*, 3-*Useful*

NEONATAL PERIOD

32-17 Ophthalmological examination:

1-*Useless*, 2-*Neutral*, 3-*Useful*

32-18 Screening for hearing loss:

1-*Useless*, 2-*Neutral*, 3-*Useful*

32-19 Screening for phenylketonuria:

1-*Useless*, 2-*Neutral*, 3-*Useful*

32-20 Screening for congenital adrenal hyperplasia

1-*Useless*, 2-*Neutral*, 3-*Useful*

32-21 Screening for hypothyroidism:

1-*Useless*, 2-*Neutral*, 3-*Useful*

32-22 Screening for sickle cell disease:

1-*Useless*, 2-*Neutral*, 3-*Useful*

32-23 Screening for cystic fibrosis:

1-*Useless*, 2-*Neutral*, 3-*Useful*

32-24 Screening for malformations:

1-*Useless*, 2-*Neutral*, 3-*Useful*

32-25 First month weight curve:

1-*Useless*, 2-*Neutral*, 3-*Useful*

FOLLOW-UP OF THE CHILD UNTIL THE AGE OF 5:

GROWTH PARAMETERS:

- 32-26 Weight: 1 - *Useless*, 2 - *Neutral*, 3 - *Useful*
- 32-27 Arm circumference: 1 - *Useless*, 2 - *Neutral*, 3 - *Utile*
- 32-28 Head circumference: 1 - *Useless*, 2 - *Neutral*, 3 - *Utile*
- 32-29 Height: 1 - *Useless*, 2 - *Neutral*, 3 - *Utile*
- 32-30 Psychomotor development: 1 - *Unnecessary*, 2 - *Neutral*, 3 - *Useful*

GROWTH CURVES:

- 32-31 Weight/Age: 1 - *Useless*, 2 - *Neutral*, 3 - *Useful*
- 32-32 Weight/Height: 1 - *Useless*, 2 - *Neutral*, 3 - *Useful*
- 32-33 Head circumference/Age: 1 - *Useless*, 2 - *Neutral*, 3 - *Useful*
- 32-34 Height/Age: 1 - *Useless*, 2 - *Neutral*, 3 - *Useful*
- 32-35 BMI/Age: 1 - *Useless*, 2 - *Neutral*, 3 - *Useful*

HEADINGS FOR ACTIVE MONITORING OF PREVENTIVE ACTIONS

- 32-36 Infection control: 1 - *Useless*, 2 - *Neutral*, 3 - *Useful*
- 32-37 Immunization: 1 - *Useless*, 2 - *Neutral*, 3 - *Useful*
- 32-38 Malaria prevention: 1 - *Useless*, 2 - *Neutral*, 3 - *Useful*
- 32-39 Nutrition: 1 - *Useless*, 2 - *Neutral*, 3 - *Useful*