DOI: 10.1590/1413-81232017226.07752016

Factors associated with the use of the Child Health Handbook in a large city of the Brazilian Northeast, 2009

Graciete Oliveira Vieira [1]
Maiara Coutinho Bastos [1]
Mariana Ribeiro dos Reis [1]
Isane Souza Santos Moreira [1]
Camilla da Cruz Martins [1]
Daiene Rosa Gomes [2]
Géssica Silva Santana [2]
Tatiana de Oliveira Vieira [2]

Abstract *This study aimed to investigate the factors associated with mothers reading the Child Health Handbook (CHH) and health professionals completing this instrument, in Feira de Santana, Bahia, 2009. This is a cross-sectional study with the application of 727 forms to mothers of children under one year of age. The outcomes studied were mother reading the CHH and health professionals completing weight and height measures. We performed a logistic regression analysis with $p \leq 0.05$. The prevalence of reading, weight and height were, respectively, 81.1%, 68.9% and 47.3%. Mothers with a higher level of education had a greater chance of reading the CHH. Recording weight and height was more prevalent in mothers who were under 35 years of age. Performing childcare in areas of the Family Health Program or the Community Health Workers was positively associated with the height's record, despite the low prevalence of records. Child age greater than six months was positively associated with all outcomes. It demonstrated the underutilization of CHH by mothers and health professionals, which indicates the need for training of health professionals and guidance to mothers on the importance and management of this issue.*

Key words *Child development, Child health, Health promotion*

[1] Programa de Mestrado em Saúde Coletiva, Universidade Estadual de Feira de Santana (UEFS). gracieteovieira@gmail.com
[2] Departamento de Saúde, UEFS. Feira de Santana BA Brasil.

Introduction

One of the targets of the sustainable development goals is to reduce child mortality worldwide[1]. In Brazil, one of the strategies for this purpose is the monitoring of growth and development (GD)[2,3], a resource that is easy to interpret and understand, allowing parents and health professionals to identify early childhood health problems.

GD charts were implanted in Brazil in 1984, in the Children's Card (CC). Over time, the CC has undergone several modifications with the incorporation of relevant information on child's health and was renamed the Child Health Handbook (CHH)[4]. In 2007, an important milestone was the replacement of old curves with new curves developed by the World Health Organization (WHO), a chart that technically provides a better description of children's physical development[5,6]. This version also included information relevant to the family and health professionals concerning the care of children from zero to 10 years of age, such as oral, visual and hearing health, promotion of healthy eating and prevention of accidents[6].

In 2010, a new reformulation of the handbook created a section for the parents and another for health professionals[7]. The CHH is currently in its eighth edition and maintains a structure similar to the version edited in 2010[8].

In 2001, a survey carried out by Vieira et al.[9] in the city of Feira de Santana showed that, of the 2,319 CHHs evaluated, 39.6% of development curves were not adequately completed. A survey conducted in two municipalities of the Brazilian semi-arid region, in 2008, also found a low percentage of CHH completion[10].

Other countries, like Canada, use CHH-like instruments to monitor GD of children under five and implement WHO curves[11]. Health registration manuals used in Japan and the United Kingdom are also similar to the Brazilian one[12,13]. The Japanese model includes data on follow-up of pregnancy and birth[13].

It is necessary to know whether the incorporation of contents, changes of layout and increased CHH cost that occurred over the years in Brazil were accompanied by its increased use. This study aimed to ascertain factors associated with mothers reading the CHH and health professionals completing it, in the municipality of Feira de Santana, Bahia, in 2009.

Material and methods

Research consisted of a population-based, cross-sectional epidemiological study conducted in 2009, on the national day of the second vaccination phase. The target population from which the sample was obtained consisted of children under one year of age up to the day of the survey, from the municipality of Feira de Santana, who attended the vaccination units accompanied by their respective mothers and/or responsible.

In the sample calculation, the conglomerate sampling process was used assuming simple random sampling, with value adjusted by the effect of conglomeration (1.7) for the urban area of the municipality. Consideration was also given to the estimation of the portability prevalence of CC (95%), according to a study by Vieira et al.[9], assuming an error of around 5% and a 95% confidence level. The ideal sample size to meet study objectives was calculated at 124 subjects. Due to the possible non-portability of the document, a percentage of 50% was added to the estimated sample size, making a total of 186 subjects.

The data collection instrument reference was that established for the Second Survey of Breastfeeding Prevalence in the Brazilian capitals and in the Federal District elaborated by the Ministry of Health[14], which contained information on the birth of the child, childbirth, medical care, mothers' characteristics, as well as data on CHH completion and use.

Data collection occurred at the 71 vaccination facilities in the city. Form application required a team of 161 university students in area of health, properly trained by research supervisors and coordinators. Researchers questioned the mothers/guardians whether the child had or carried the CHH; in the case of portability, questions regarding its use were asked.

The mother was asked if she had read the document and the interviewer checked whether at least two weight and/or height records (yes/no) had been filled by a health professional.

The other variables studied were mothers' characteristics: age (categorized in < 35 years, ≥ 35 years), primiparity (yes, no), schooling (≥ Secondary school, ≤ Elementary school), working outside the household (yes, no); and children's: age (≥ 6 months, < 6 months), gender (male, female), birth weight (< 2,500 g, ≥ 2,500 g), born at the "Baby-friendly hospital" (yes, no), location of

Ciência & Saúde Coletiva, 22(6):1943-1954, 2017

childcare consultation (private service, covenant or public network) and, when they performed childcare in public services, whether it was at Basics Health Units (BHC) or in the working area of the Community Health Workers Program (CHWP) and the Family Health Program (FHP).

Data analysis followed three stages: description of the characteristics of the population carrying the CHH; bivariate analysis using the chi-square test, with calculations of prevalence ratio (PR), 95% confidence interval (CI) and p-value ≤ 0.05; and multivariate analysis through logistic regression.

At first, in the logistic regression, variables of interest were individually tested with outcome variables (CHH reading, child weight and height record in the CHH), and those that obtained a level of significance of 25% ($p < 0.25$) were selected for the subsequent stage. The second stage consisted in constructing a model with the variables pre-selected in the previous stage, with backward entry, where the significance level was $p < 0.17$; the variables selected in this stage were included in the final model in backward mode, stipulating as significant p-values < 0.05, determining, then, regression coefficients, odds ratios (OR) and their confidence intervals. The model fit was verified with the Hosmer-Lameshow test; residual analysis was performed through a linear model with a logarithmic binomial distribution function (GLM log-binomial)[15,16].

The statistical package used was the Statistical Package for Social Sciences (SPSS), version Windows 9.0 (Chicago, II, USA). The adjusted OR values were calculated using statistical package R, version 2.8.0[16]. The research protocol observed the regulation of research involving human beings – Resolution CNS 196/96[17] – and is in accordance with the Declaration of Helsinki. The Ethics and Research Committee, State University of Feira de Santana approved the study. The respondents signed an informed consent form.

Results

Of the 1,471 mothers of children approached in the 71 vaccination facilities of the urban area of the city on National Vaccination day, 49.4% (727) carried the CHH; 20.8% (306) owned it but did not carry it with them and 29.8% (438) did not have it. The analysis then considered data of 727 mothers and children who carried the document with them on the day of data collection.

CHH use was lower than expected regarding mothers reading the document (81.1%) and health professionals recording at least two weight (68.9%) and height (47.3%) measures. Table 1 shows data regarding the use of CHH and the characteristics of mothers and children.

In the bivariate analysis, the characteristics of mothers and children associated with reading the CHH were mothers' schooling equal to or higher than secondary school level ($p = 0.000$), the child being older than six months ($p = 0.001$) and childcare in private service ($p = 0.023$) (Table 2). In addition, the analysis of weight and height record is shown in Table 3 and Table 4, respectively.

There was a higher prevalence of weight compared to height records, regardless of childcare's service location. While not significant, there were differences in the prevalence of weight records, when childcare consultations were performed in public services (72.3%) or in the private network/covenant (66.4%). In the public service, prevalence of weight records was 72.9% and 73.2%, respectively, in CHWP/FHP and BHC (Table 3).

As far as height records were concerned, there was a higher prevalence of these measures in childcare services performed in the private network/covenant compared to the public network ($p = 0.011$). When childcare consultations were carried out in the public network, attendance in the area covered by the CHWP/FHP was associated with a greater number of height records (49.2%), compared to children attended in the BHC (37.3%), although this prevalence did not achieve the rate of 50% (Table 4).

In the multivariate analysis, the higher mother schooling and children's age equal to or greater than six months were associated with reading the CHH. With regard to filling the weight and height curves, the age group of the child greater than or equal to six months and mother's age less than 35 years were positively associated with this procedure. Recording child height measures was also influenced by the public service location where childcare consultation was carried out (Table 5), and the monitoring in the CHWP and FHP areas of action is a predictive characteristic of larger records of these measures.

Discussion

Much of the child's health problems can be addressed through PHC-oriented actions, such as GD monitoring, immunization, oral hydration

Table 1. Description of variables related to the characteristics of mothers, children and use of the Child Health Handbook in Feira de Santana, Bahia, in 2009.

Variables	N	%
Characteristics of mothers		
Mothers' age group (N = 583)		
< 35years	510	87.5
≥ 35years	73	12.5
Primiparity (N = 577)		
Yes	338	58.6
No	239	41.4
Mother schooling (N = 572)		
≥ Secondary school	392	68.5
≤ Primary school	180	31.5
Working outside the household (N = 588)		
Yes	144	24.5
No	444	75.5
Characteristics of children		
Age (N = 727)		
≥ 6 months	458	63.0
< 6 months	269	37.0
Gender (N = 727)		
Male	362	49.8
Female	365	50.2
Birth weight (N = 679)		
< 2,500 grams	63	9.3
≥ 2,500 grams	616	90.7
Born at the "Baby-friendly hospital" (N = 695)		
Yes	281	40.4
No	414	59.6
Location of childcare consultation (N = 691)		
Private service / covenant	244	35.3
Public network (BHC, CHWP, FHP)	447	64.7
Public service to perform the childcare consultation (N = 411)		
CHWP/ FHP	258	62.8
BHC	153	37.2
Use of CHH		
Mother reading the CHH (N = 583)		
Read (All or partially)	473	81.1
Did not read	110	18.9
Weight record in the CHH (N = 727)		
Yes	501	68.9
No	226	31.1
Height record in the CHH (N = 727)		
Yes	344	47.3
No	383	52.7

CHH = Children Health Handbook; BHC = Basic Health Units; CHWP = Community Health Workers Program; FHP = Family Health Program.

and breastfeeding, which generate epidemiological changes and affect health indicators and infant mortality. The CHH is an important document in the integration of such content.

The outcome of this study, which investigated mothers reading information of the CHH and health professionals recording weight and height measures revealed low quality of use of this instrument in the municipality of Feira de Santana. A very similar situation was found in the survey carried out in 2001, in the same municipality: of the evaluated cards, 29.3% of weight and height records were incomplete and 39.6% had no records at all[9].

Other authors also verified the incomplete filling of these curves. Figueiras et al.[18] observed that 23.7% of charts were blank and only 15.6% of them were filled out completely in Belém. A study conducted in two municipalities of Piauí also showed a low percentage (22.2%) of adequately completed handbooks[10].

Unsatisfactory results were shown in Southeastern Brazil. Alves et al found the completed handbook in only 59.4% of the cases of children attended in Belo Horizonte[19]. Likewise, Costa et al.[20], in a study conducted in Teixeiras, Minas Gerais, found that 77.2% of the children included had CC, however, all were incomplete in terms of filling the GD curve. In addition, the mothers did not understand the value and meaning of the curve. For these children, CC was used only as a vaccination card[20].

Other researchers have shown better results. Ceia e Cesar[21] observed the recording of two or more points in the weight curve in 78% of the evaluated cards. Santos et al.[22] found annotations in 70.4% of the charts, although only one weight record was evaluated, which may have contributed to optimize the results.

The follow-up of serial measures over time, with the establishment of a growth curve, is more useful than comparing a single measure with the reference; it provides more information about the child's health status and, above all, allows the performance of early preventive or corrective actions in the case of development problems, avoiding the establishment of morbid states such as malnutrition[23] or obesity.

It was noted that, regardless of the Brazilian region in which the study was developed, a poor quality of CHH filling by health professionals[9,10,18-20] was observed, which may have occurred for several reasons, ranging from non-recognition of its importance[243], time-consuming demand or even to the non-portability of the

Ciência & Saúde Coletiva, 22(6):1943-1954, 2017

Table 2. Prevalence of mother reading the Child Health Handbook according to the characteristics of the children and mothers, in 2009.

Variables	Mother reading		PR (CI95%)	p-value
	Yes N (%)	No N (%)		
Characteristics of mothers				
Mothers' age group (N = 575)				
< 35years	414 (82.0)	91 (18.0)	1.083 (0.94-1.24)	0.274
≥ 35years	53 (75.7)	17 (24.3)		
Primiparity (N = 569)				
Yes	280 (83.3)	56 (16.7)	1.07 (0.99-1.17)	0.114
No	181 (77.7)	52 (22.3)		
Mother schooling (N = 566)				
≥ Secondary school	341 (87.4)	49 (12.6)	1.22 (1.10-1.35)	0.000
≤ Primary school	126 (71.6)	50 (28.4)		
Working outside the household (N = 580)				
Yes	124 (86.1)	20 (13.9)	1.08 (1.00-1.17)	0.106
No	347 (79.6)	89 (20.4)		
Characteristics of children				
Age (N = 583)				
≥ 6 months	300 (85.7)	50 (14.3)	1.15 (1.06-1.26)	0.001
< 6 months	173 (74.2)	60 (25.8)		
Gender (N = 583)				
Male	228 (79.7)	58 (20.3)	0.96 (0.89-1.04)	0.454
Female	245 (82.5)	52 (17.5)		
Birth weight (N = 566)				
< 2.500 grams	48 (88.9)	6 (11.1)	1.11 (1.00-1.23)	0.175
≥ 2.500 grams	411 (80.3)	101 (19.7)		
Born at the "Baby-friendly hospital" (N = 567)				
Yes	186 (81.6)	42 (18.4)	1.01 (0.94-1.10)	0.839
No	273 (80.5)	66 (19.5)		
Location of childcare consultation (N = 559)				
Private service / covenant	172 (86.9)	26 (13.1)	1.10 (1.02-1.19)	0.023
Public network (BHC, CHWP, FHP)	284 (78.7)	77 (21.3)		
Public service to perform the childcare consultation (N = 331)				
CHWP/FHP	159 (76.8)	48 (23.2)	0.93 (0.84-1.04)	0.300
BHC	102 (82.3)	22 (17.7)		

BHC = Basic Health Units; CHWP = Community Health Workers Program; FHP = Family Health Program. PR = Prevalence Ratio; CI = Confidence Interval.

handbook by parents[25]. A major challenge for the Unified Health System is to motivate, involve and ensure the participation of professionals in health actions, such as the CHH, as well as having effective social and user participation.

In contrast, in the United Kingdom, a study carried out in 2004, at the time of implementing the document in that country showed that almost all parents (98%) reported having used the handbook as a health record of their child and that they always (92%) carried it with them at consultations[26]. In Canada, health professionals considered the health manual as a reference standard for GD follow-up of children under five years of age[27]. Similarly, health monitoring and registration manuals used in Japan[13], the United Kingdom[12] and Indonesia[28] have become a very important instrument for monitoring children's health.

Table 3. Prevalence of at least two weight records in the Child Health Handbook according to the characteristics of children and mothers, in 2009.

Variables	Two weight records		PR (CI95%)	p-value
	Yes N (%)	No N (%)		
Characteristics of mothers				
Mothers' age group (N = 583)				
< 35years	358 (70.2)	152 (29.8)	1.28 (1.03-1.59)	0.012
≥ 35years	40 (54.8)	33 (45.2)		
Primiparity (N = 577)				
Yes	240 (71.0)	98 (29.0)	1.11 (0.99-1.25)	0.092
No	153 (64.0)	86 (36.0)		
Mother schooling (N = 572)				
≥ Secondary school	274 (69.9)	118 (30.1)	1.06 (0.94-1.21)	0.346
≤ Primary school	118 (65.6)	62 (34.4)		
Working outside the household (N = 588)				
Yes	98 (68.1)	46 (31.9)	0.99 (0.87-1.13)	1.000
No	304 (68.5)	140 (31.5)		
Characteristics of children				
Age (N = 727)				
≥ 6 months	355 (77.5)	103 (22.5)	1.43 (1.27-1.61)	0.000
< 6 months	146 (54.3)	123 (45.7)		
Gender (N = 727)				
Male	239 (66.0)	123 (34.0)	0.92 (0.83-1.01)	0.110
Female	262 (71.8)	103 (28.2)		
Birth weight (N = 679)				
< 2.500 grams	49 (77.8)	14 (22.2)	1.13 (0.98-1.30)	0.184
≥ 2.500 grams	424 (68.8)	192 (31.2)		
Born at the "Baby-friendly hospital" (N = 695)				
Yes	191 (68.0)	90 (32.0)	0.97 (0.87-1.07)	0.571
No	291 (70.3)	123 (29.7)		
Location of childcare consultation (N = 691)				
Private service / covenant	162 (66.4)	82 (33.6)	0.92 (0.83-1.02)	0.127
Public network (BHC, CHWP, FHP)	323 (72.3)	124 (27.7)		
Public service to perform the childcare consultation (N = 411)				
CHWP/FHP	188 (72.9)	70 (27.1)	0.99 (0.88-1.12)	1.000
BHC	112 (73.2)	41 (26.8)		

BHC = Basic Health Units; CHWP = Community Health Workers Program; FHP = Family Health Program. PR = Prevalence Ratio; CI = Confidence Interval.

In this study, significant differences were found in the records of height measures of children among public places of childcare. Children living in neighborhoods under CHWP or FHP actions had higher CHH completion rates when compared to those attended at the BHC.

A similar situation was found in the Belo Horizonte study, in which the best scores regarding CHH completion were observed in children monitored by general practitioners[19], that is, PSF members. Similarly, in the first study carried out in the municipality of Feira de Santana, the fact that the child resided in the area of activity of community health workers was a protective element to record the development curve[9].

The importance of the work carried out by CHWP and FHP health workers in the follow-up of children's GD is undeniable, and it has been suggested by some studies that the implementation of such programs in Brazil is associated with reduced infant mortality[2,3]. However, in this study, while the highest height curve filling rate

Ciência & Saúde Coletiva, 22(6):1943-1954, 2017

Table 4. Prevalence of at least two height records in the Child Health Handbook according to the characteristics of children and mothers, in 2009.

Variables	Two height records		PR (CI95%)	p-value
	Yes N (%)	No N (%)		
Characteristics of mothers				
Mothers' age group (N = 583)				
< 35years	250 (49.0)	260 (51.0)	1.49 (1.06-2.09)	0.014
≥ 35years	24 (32.9)	49 (67.1)		
Primiparity (N = 577)				
Yes	169 (50.0)	169 (50.0)	1.21 (1.00-1.45)	0.051
No	99 (41.4)	140 (58.6)		
Mother schooling (n = 572)				
≥ Secondary school	202 (51.5)	190 (48.5)	1.36 (1.10-1.68)	0.003
≤ Primary school	68 (37.8)	112 (62.2)		
Working outside the household (N = 588)				
Yes	69 (47.9)	75 (52.1)	1.02 (0.84-1.25)	0.899
No	208 (46.8)	236 (53.2)		
Characteristics of children				
Age (N = 727)				
≥ 6 months	245 (53.5)	213 (46.5)	1.45 (1.22-1.74)	0.000
< 6 months	99 (36.8)	170 (63.2)		
Gender (N = 727)				
Male	170 (47.0)	192 (53.0)	0.99 (0.85-1.15)	0.907
Female	174 (47.7)	191 (52.3)		
Birth weight (N = 679)				
< 2.500 grams	37 (58.7)	26 (41.3)	1.25 (1.00-1.57)	0.098
≥ 2.500 grams	289 (46.9)	327 (53.1)		
Born at the "Baby-friendly hospital" (N = 695)				
Yes	116 (41.3)	165 (58.7)	0.79 (0.67-0.93)	0.006
No	216 (52.2)	198 (47.8)		
Location of childcare consultation (N = 691)				
Private service / covenant	134 (54.9)	110 (45.1)	1.23 (1.06-1.44)	0.011
Public network (BHC, CHWP, FHP)	199 (44.5)	248 (55.5)		
Public service to perform the childcare consultation (N = 411)				
CHWP/FHP	127(49.2)	131(50.8)	1.32 (1.04-1.68)	0.024
BHC	57(37.3)	96 (62.7)		

BHC = Basic Health Units; CHWP = Community Health Workers Program; FHP = Family Health Program. PR = Prevalence Ratio; CI = Confidence Interval.

was associated with childcare in areas covered by the CHWP and FHP, the prevalence of records of this variable did not exceed 50%, a fact that demonstrates low adherence of services with regard to CHWP and FHP follow-up. No significant differences were observed in the prevalence of weight records in the CHH, through childcare consultations in private services/covenant or in the public network.

In this study, one characteristic associated with completing weight and height records in the growth curve was mothers aged less than 35 years, which, for its perfect understanding, requires further studies.

Regarding CHH reading, a significant percentage of mothers failed to perform it or partially read it. Greater probability of reading the handbook was associated with higher mother schooling, which demonstrates the great relevance of mothers' level of education in child health care and management of the CHH[9,19,29]. However, it is worth reminding that the imple-

Table 5. Results of Logistic Regression testing the association between selected variables and outcomes: reading, weight and height records in the Child Health Handbook, in 2009.

Variables	PR	CI 95%	Adjusted PR	CI 95%
CHH Reading				
Mother schooling				
≥ Secondary school	1.22	1.10-1.35	1.21	1.09-1.33
≤ Primary school	1.0		1.0	
Child age group				
≥ 6 months	1.15	1.06-1.33	1.13	1.04-1.23
< 6 months	1.0		1.0	
Weight records in the CHH				
Mother age group				
< 35years	1.28	1.03-1.59	1.30	1.04-1.63
≥ 35years	1.0		1.0	
Child age group				
≥ 6 months	1.43	1.27-1.61	1.48	1.29-1.69
< 6 months	1.0		1.0	
Height record				
Child age group				
≥ 6 months	1.45	1.22-1.74	1.56	1.18-2.06
< 6 months	1.0		1.0	
Public service to perform the childcare consultation				
CHWP/FHP	1.321	1.04-1.68	1.43	1.07-1.90
BHC	1.0		1.0	
Mother age group				
< 35years	1.49	1.06-2.09	2.57	1.21-5.44
≥ 35years	1.0		1.0	

CHH = Child Health Handbook; BHC = Basic Health Units; CHWP = Community Health Workers Program; FHP = Family Health Program. PR = Prevalence Ratio; CI = Confidence Interval.

mentation of new health actions goes beyond the knowledge hurdle[30] and appears to be focusing on motivation and behavioral change; in turn, the current CHH, which expands information contained in previous versions, requires a greater commitment of health professionals and parental participation to decode their content.

In the United Kingdom, 22% of parents indicated that, on delivery of the health manual, no explanation had been given as to its handling[26]. This can also explain CHH's underutilization by Brazilian mothers, because the odds of completion increase when sufficient guidance is given. The mere provision of CHH does not warrant its proper use. The inadequate management of CHH implies lost opportunities to establish preventive actions and intervention measures, especially for those children at risk of morbidity and mortality.

In addition to the weight and height measurements in growth charts, mothers need to be informed about the growth aspects of their children in all consultations performed at health centers[31], since family, especially mothers, is a fundamental unit to childcare. Furthermore, educational actions are required for these social stakeholders, with discussions about the value and handling of CHH in health surveillance.

A tool that can assist in these actions is the implantation of educational videos in prenatal waiting rooms and in childcare services, with information about CHH contents: encouraging breastfeeding, healthy eating behaviors, growth and neuropsychomotor development monitoring, vaccination, oral, visual and hearing health, diarrhea prevention, accident and violence prevention, as well as children's rights[13].

A child aged six months and over was shown to be a protective factor for mothers reading the CHH and the recording of growth curves. Thus, it is possible to consider the time variable as a

Ciência & Saúde Coletiva, 22(6):1943-1954, 2017

protective factor, as it favors a greater opportunity for weight and height measurements records and handbook reading, although this result did not occur in the evaluation carried out in 2001[9] and is not shared by other studies that demonstrate greater completion of the weight curve in children below the age of six months[19]. New studies are required to investigate and understand this association.

Finally, it is important to note that, given the importance of CHH as a mediator of the dialogue between health professionals and the family, it is fundamental that relatives or caretakers carry this document in all consultations. It was observed that almost a third of the interviewed mothers did not carry it because they did not receive it due to the difficulty of distribution by the Municipal Health Department (MHD), which may have had a negative influence on the assessment and importance of the use of this document by health professionals and children's parents and, in addition, have contributed to inadequate handling and underutilization of this document. The incident points out that similar situations may be occurring in other municipalities of the State of Bahia and in the national territory.

The lack of CHH for so many children also refers to a failure in government management and reflects in low effective use of this document, because intended results were not achieved with its implementation, as well as indicates the need for measures to ensure their distribution and continuous access. It is worth reminding that the production and distribution of CHH are under the responsibility of the Ministry of Health[32] and, according to Ministerial Ordinance Nº 1058/GM, dated July 4, 2005, it is ensured to every child born in Brazil[32].

It is also relevant to refer to the limitations of the current study, regarding the time elapsed between collecting data and publishing the results, an event that may be associated with a change in the profile of determinants, especially regarding portability due to the lack of distribution of the document by the MHD. In addition, since it is a study developed in a specific municipality, it may not reliably reflect other Brazilian realities. On the other hand, the comparability of the results of the survey conducted in the year 2009 with the survey carried out in 2001, in the same municipality, and with the same methodological characteristics, consisted of a character of relevance.

Conclusions

This study, through an investigation of CHH reading and completion in 2009 allowed us to conclude that, despite the undoubted quality of information incorporated in the document in recent decades, this was not accompanied by a significant increase in quality in its handling in the municipality, as it was noted that prevalence was lower than that required for mothers reading the document, and health professionals recording weights and heights.

In terms of use, it was observed that mothers with higher schooling had a greater probability of reading the document, as well as a higher prevalence of weight and height records in growth curves when they were younger than 35 years. Age of the child greater than or equal to six months was a predictor of all outcomes. The finding of increased likelihood of height records of children under one year in the CHH, when childcare monitoring occurred in FHP facilities, or when they resided in HWP work areas reinforces the idea that multiprofessional primary care teams can contribute to overcome modern epidemiological challenges.

The results also indicate the need for an intersectoral and intersectoral articulation network with municipal managers, actions to implement mother orientation strategies on the importance and handling of the CHH, as well as qualification and motivation of health professionals, enabling a reflection on the practice developed before a document of recognized importance in the follow-up of GD and capacity to promote child health.

Collaborations

GO Vieira participated in the study design, definition of methodological procedures, data analysis, paper writing and final review of the manuscript. MC Bastos participated in the study design, definition of methodological procedures, paper writing and final review of the manuscript. MR Reis participated in the study design, definition of methodological procedures, data collection and final review of the manuscript. ISS Moreira, CC Martins, DR Gomes and GS Santana participated in the study design, paper writing and final review of the manuscript. TO Vieira participated in the study design, definition of methodological procedures, data analysis, paper writing and final review of the manuscript.

Acknowledgments

We would like to thank the Foundation for Research Support of the State of Bahia (FAPESB), the Municipal Health Secretariat of Feira de Santana, the Technical Area of Child Health of the Ministry of Health, the students who participated in the data collection and, above all, the mothers who agreed to participate voluntarily in this work.

References

1. Programa das Nações Unidas para Desenvolvimento (PNUD). *Acompanhando a agenda 2030 para o desenvolvimento sustentável: subsídios iniciais do Sistema das Nações Unidas no Brasil sobre a identificação de indicadores nacionais referentes aos objetivos de desenvolvimento sustentável/Programa das Nações Unidas para o Desenvolvimento*. Brasília: PNUD; 2015.
2. United Nations. *The Millennium Development Goals Report 2011*. New York: Lois Jensen; 2011.
3. Victora CG, Aquino EML, Leal MC, Monteiro CA, Barros FC, Szwarcwald CL. Maternal and child health in Brazil: progress and challenges. *Lancet* 2011; 377(9780):1863-1876.
4. Barros FC, Matijasevich A, Requejo JH, Giugliani E, Maranhão AG, Monteira CA, Barros AJD, Bustreo F, Merialdi M, Victora CG. Recent Trends in Maternal, Newborn, and Child Health in Brazil: Progress Toward Millennium Development Goals 4 and 5. *Am J Public Health* 2010; 100(10);1877-1889.
5. Brasil. Ministério da Saúde (MS). *Manual para utilização da caderneta de saúde da criança.* Brasília: MS; 2005.
6. Brasil. Ministério da Saúde (MS). Portal da Saúde. *Caderneta traz mais informações e será distribuída a partir de janeiro para todas as crianças, usuárias regulares ou não do Sistema Único de Saúde*. [acessado 2010 fev 28]. Disponível em: http://portal.saude.gov.br/saude/visualizar_texto.cfm?idtxt = 21080.
7. Brasil. Ministério da Saúde (MS). *Caderneta de Saúde da Criança*. 3ª ed. Brasília: MS; 2007.
8. Brasil. Ministério da Saúde (MS). *Caderneta de Saúde da Criança*. 8ª ed. Brasília: MS; 2013.
9. Vieira GO, Vieira TO, Costa COM, Santana-Netto PV, Cabral VA. Uso do cartão da criança em Feira de Santana, Bahia. *Rev Bras Saúde Matern Infant* 2005; 5(2):177-184.
10. Costa JSD, Cesar JA, Pattussi MP, Fontoura LP, Barazzetti L, Nunes MF, Gaedke MA, Uebel R. Assistência à criança: preenchimento da caderneta de saúde em municípios do semi-árido brasileiro. *Rev Bras Saúde Matern Infant* 2014; 14(3):219-227.
11. Rourke L, Leduc D, Constantin E, Carsley S, Rourke J, Li P. Getting it right from birth to kindergarten: What's new in the Rourke Baby Record? *Can Fam Physician* 2013; 59(4):355-359.
12. Walton S, Bedford H, Dezateux C; Millennium Cohort Study Child Health Group. Use of personal child health records in the UK: findings from the millennium cohort study. *BMJ* 2006; 332(7536):269-270.
13. Nakamura Y. Maternal and Child Health Handbook in Japan. *JMAJ* 2010; 53(4):259-265.
14. Brasil. Ministério da Saúde (MS). *II Pesquisa de Prevalência de Aleitamento Materno nas Capitais Brasileiras e Distrito Federal*. Brasília: MS; 2009.
15. Barros AJD, Hirakata VN. Alternatives for logistic regression in cross-sectional studies: an empirical comparison of models that directly estimate the prevalence ratio. *BMC Med Res Methodol* 2003; 3:21.
16. R Development Core Team [Internet]. R: A language and environment for statistical computing. [acessado 2010 fev 28]. Disponível em: http://www.R-project.org.
17. Brasil. Ministério da Saúde (MS). Resolução CNS nº 196, de 10 de outubro de 1996. Aprova as diretrizes e normas regulamentadoras de pesquisa envolvendo seres humanos. *Diário Oficial da União* 1996; 16 out.
18. Figueiras ACM, Barros LCN, Barlete KCS, Faria ECF, Fernandes MSB, Santos JRP. Uso do cartão da criança no município de Belém. *Rev Para Med* 2001; 15:39.
19. Alves CRL, Lasmar FLMLBF, Goulart LMHF, Alvim CG, Maciel GVR, Viana MRA, Colosimo EA, Carmo GAA, Costa JGD, Magalhães MEN, Mendonça ML, Beirão MMV, Moulin ZS. Qualidade do preenchimento da Caderneta de Saúde da Criança e fatores associados. *Cad Saude Publica* 2009; 25(3):583-595.
20. Costa GD, Cotta RMM, Reis JR, Ferreira MLSM, Reis RS, Franceschini SCC. Avaliação da atenção à saúde da criança no contexto da Saúde da Família no município de Teixeiras, Minas Gerais (MG, Brasil). *Cien Saude Colet* 2011; 16(7):3229-3240.
21. Ceia MLM, Cesar JA. Avaliação do preenchimento dos registros de puericultura em Unidades Básicas de Saúde em Pelotas, RS. *Rev AMRIGS* 2011; 55(3):244-249.
22. Santos SR, Cunha AJLA, Gamba CM, Machado FG, Leal Filho JMM, Moreira NLM. Avaliação da assistência à saúde da mulher e da criança em localidade urbana da região Sudeste do Brasil. *Rev Saude Publica* 2000; 34(3):266-271.
23. Jesus GM, Castelão ES, Vieira TO, Gomes DR, Vieira GO. Déficit nutricional em crianças de uma cidade de grande porte do interior da Bahia, Brasil. *Cien Saude Colet* 2014; 19(5):1581-1588.
24. Goulart LMHF, Costa JGD, Alves CRL, Viana MRA, Moulin ZS, Carmo GAA, Almeida JSCB. Caderneta de Saúde da Criança: avaliação do preenchimento dos dados sobre gravidez, parto e recém-nascido. *Rev Paul Pediatr* 2008; 26(2):106-112.
25. Frota MA, Pordeus AMJ, Forte LB, Vieira LJES. Acompanhamento Antropométrico de Crianças: o ideal e o realizado. *Rev Baiana Saúde Pública* 2007; 31(2):212-222.
26. Walton S, Bedford H. Parents' use and views of the national standard Personal Child Health Record: a survey in two primary care trusts. *Child Care Health Dev* 2007; 33(6):744-748.
27. Rourke L, Godwin M, Rourke J, Pearce S, Bean J. The Rourke Baby Record Infant/Child Maintenance Guide: do doctors use it, do they find it useful, and does using it improve their well-baby visit records? *BMC Fam Pract* 2009; 10:28.
28. Osaki K, Hattori T, Kosen S. The role of home-based records in the establishment of a continuum of care for mothers, newborns, and children in Indonesia. *Glob Health Action* 2013; 6:1-12.
29. Faria M, Nogueira TA.Avaliação do uso da caderneta de saúde da criança nas unidades básicas de saúde em um munícipio de Minas Gerais. *Rev Bras Ciên Saúde* 2013; 11(38); 9-15.
30. Figueiras ACM, Puccini RF, Silva EMK, Pedromônico MRM. Avaliação das práticas e conhecimentos de profissionais da atenção primária à saúde sobre vigilância do desenvolvimento infantil. *Cad Saude Publica* 2003; 19(6):1691-1699.

31. Carvalho MF, Lira PIC, Romani SAM, Santos IS, Veras AACA, Batista Filho M. Acompanhamento do crescimento em crianças menores de um ano: situação nos serviços de saúde em Pernambuco, Brasil. *Cad Saude Publica* 2008; 24(3):675-685.
32. Brasil. Ministério da Saúde (MS). Portal da Saúde [Internet]. Caderneta de Saúde da Criança – Passaporte da Cidadania. [acessado 2010 out 16]. Disponível em: http://portal.saude.gov.br/portal/saude/odm_saude/visualizar_texto.cfm?idtxt = 35185

Article submitted 18/05/2015
Approved 08/06/2016
Final version submitted 10/06/2016