Related factors to Integrated Management of Childhood illnesses at 18 Colombian Cities

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Abstract

Background: Integrated Management of Childhood Illnesses (IMCI) is a strategy developed by the World Health Organization (WHO) and UNICEF in 1992. It was deployed as an integrated approach to improve children's health in the world. This strategy is divided into three components: organizational, clinical, and communitarian. If the related factors to Integrated Management of Childhood Illnesses in low- and middle-income countries are known, the likelihood of decreasing infant morbidity and mortality rates could be increased. Objective: To identify, from the clinical component of the strategy, the related factors to Integrated Management of Childhood Illnesses at 18 Colombian cities.

Methods: A quantitative cross-sectional study was performed with a secondary analysis of databases of a study conducted at Colombia by the Public Health group of Universidad de Los Andes in 2016. An Integrated Care Index was calculated as a dependent variable and descriptive bivariate and multivariate analyses to find the relationship between this index and the relevant variables from literature.

Results: Information was obtained from 165 medical appointments made by nurses, general practitioners, and pediatricians. Health access is given mainly in the urban area, in the first level care and outpatient context. Essential medicines availability, necessary supplies, second level care, medical appointment periods longer than 30 minutes and care to child under 30 months are often related to higher rates of Integrated Care Index

Conclusion: Health care provided to children under five remains incomplete because it does not present the basic minimums for the adequate IMCI´s implementation in the country. It is necessary to provide integrated care that provides medicine availability and essential supplies that reduce access barriers and improve the system's fragmentation. Keywords Health care, infant mortality, IMCI, Primary health care.

Background

In 1992, the World Health Organization (WHO) and UNICEF developed a strategy for children's health care, known as Integrated care for childhood illnesses (IMCI). This strategy was designed as an integral approach to improve children's health in the world (1). The IMCI provides unified health care instead of separate management of diseases affecting children under five. Moreover, this approach also focuses on the reduction of morbidity and mortality rates associated with the most common diseases in childhood. The strategy is divided into three components: organizational, clinical, and community. The IMCI approach has introduced several ways to mitigate infant risks in several action fronts.

According to the WHO, about 68 million children around the world will die before reaching five years by 2030 (2). Most of these deaths are caused by one of the following diseases or a combination of them: acute respiratory infection (ARI), acute diarrheal disease (ADD), measles, malaria and malnutrition (1, 3). The 70% of such cases occur in low-income countries. Moreover, starting from the fact that the IMCI was created in line with the Millennium Development Goal (MDG) number four, which indicated the need to

reduce by two-thirds the infant mortality by 2015, the correct application of the strategy would allow the reduction of the expected morbidity and mortality in the upcoming years (4).

On the other hand, and considering Alma-Ata's statement, the conceptual framework of IMCI is close to Primary Health Care (PHC). Specifically, in several countries of the Americas region, where the strategy was introduced, there has been a "Primary Health Care for children" (PHC) (5). Additionally, the IMCI focuses on the first contact of children with the health system, thus, it promotes health access and quality for this population group (6). Similarly to the development of PHC, the IMCI has been deployed attending the specific needs and capacities of each country in the region (5).

Since 2004, more than 100 countries, including Colombia, have adopted the components of the IMCI. Specifically, the clinical component for the evaluation, treatment and prevention of sick children, as well as, counseling to caregivers was mainly implemented (7). When the strategy was introduced at Colombia, it was based on the right of every child to be treated with quality and warmth. It adopted a risk identification approach, of total integration, and was aimed at responding to the main causes of morbidity and mortality of children in the country (7). Despite all efforts of the Health Ministry to implement the strategy in all country's departments, the main challenge was poor adherence by trained professionals in this strategy (6).

If the factors that influenced the implementation of the IMCI strategy had been considered in the country, it would have increased the probability of reducing the infant mortality rate from 19.5 deaths per 1,000 live births in 1998, to 6.5 deaths in 2015. However, in 2013, there were 11.6 deaths per 1,000 live births (6.7). Since its introduction in low-income countries, the IMCI strategy has shown positive results in reducing infant mortality. Unfortunately, factors such as the availability of medications, enough technical equipment and permanent training for health professionals have not been studied in the Colombian context. Figure 1 illustrates the factors and benefits related to the implementation of the strategy in the global context, with reference to PHC (8).

Moreover, Kiplagat (2014) mentioned that in Tanzania factors such as personal training, monitoring, and vocation, lead to improve health care and improve adherence to treatments by families and infants (8). It was also stated that the availability of medications, vaccines, the correct financing, and leadership by administrators can lead to the improvement of the quality of children's care (8). On the other hand, Rowe (2012) asserted that the presence of enough equipment, essential medicines, supervision visits and the duration of training not only determine the performance of health workers, but also the level of coverage of the intervention (9). Therefore, by gathering the basic minimums to offer a correct strategy, better health care for children under 5 years of age could be achieved. Similarly, the strategy offers integrated management for childhood predominant illnesses, by achieving a reduction in infant mortality and morbidity (10). Nevertheless, several international studies have shown that it is not carried out and it is presumed to be that the understanding of the motivations could improve health care (11).

Although, the impact of the strategy has not been documented given the lack of national coverage (12), it has been identified a decrease in the infant mortality rate that seems to be related to the inclusion of the

strategy in 2004 (13). Moreover, there is no clarity about what factors determine the applicability of the IMCI at Colombia. In 2011, a document published by Universidad Nacional defined the care conditions provided from the clinical component of the strategy. Nevertheless, the factors related to its applicability were not identified. Thus, in 2016, the Universidad de los Andes in agreement with the Pan American Health Organization and the Health Ministry carried out an assessment of the integrated health care received by children under five by practitioners formed in the clinical component of the strategy between 2012 and 2014.

The IMCI provides children's health monitoring through promotional, preventive and therapeutic approaches, as well as interactions with the child, the family, health services and other social sectors. Therefore, this work proposes an integrated care that involves general information, identification, evaluation, classification, treatment, and counseling to children and their caregivers in the most prevalent pathologies of childhood (14). Moreover, framed in the clinical component of the strategy, this work is also aimed at identifying the related factors to IMCI at 18 Colombian cities.

Methods

A quantitative cross-sectional study was performed with secondary analysis of the study conducted at Colombia by the Public Health group of Universidad de los Andes in 2016 in agreement with the Pan American Health Organization and the Ministry of Health. This study was called "Comprehensive evaluation of children by the human talent trained in the clinical component of IMCI between 2012–2014". Such work included the assessment of the consultation of 189 practitioners who were trained in the clinical component of the strategy between 2012 and 2014. The selection of these professionals was carried out through a probabilistic sampling with municipal and health care providers representativeness. Moreover, this study included the characterization of the consultation provided by professionals trained in IMCI that were working as health care personnel. This characterization was obtained directly from the PAHO Colombia website and was divided as shown in Table 1, where the components indicated each instrument with which the data were collected. Indicators were included in each instrument to calculate the percentage of compliance with the strategy by the evaluated staff.

Table 1

Primary database characterization.

Components	Information	Observations
A Component	Information about the health service and health personnel	75 evaluated institutions
B1 Component	Evaluation of the child from 2 months to 5 years	235 evaluated children
B2 Component	Evaluation of the child under 2 months	31 evaluated children
B3 Component	Applicability of IMCI and training course	189 evaluated professionals
C Component	Verification of support facilities	75 evaluated institutions
D Component	Final interview with mother or companion	306 interviewes
F Component	Review of medical records	378 revised medical records

Based on the information found, the observations of the IMCI consultation (i.e., containing the total of the calculated indicators) were taken as the eligible population for this project. Subsequently, the indicators of all the components were joined, and the observations that contained missing data of the sociodemographic variables were dismissed (i.e., health service´s type, geographical area, complexity level, type of training, practitioner gender, type of practitioner, IMCI supervision, health care provider, and duration of the consultation). Specifically, two observations were eliminated, as they presented inconsistencies in the data of two health care providers at Huila.

To obtain all the available information, the observations containing the total data for the selected variables were included in the study. It was considered the calculation of the indicators for each component, as well as the observations that had a linking variable to make the information crossing. Repeated observations were found evidenced in the codes of the observed professionals, and thus 24 repeated records were removed. By having the complete information, a total of 165 effective observations, an integrated care index (ICI) was proposed, which correlated with each variable chosen. This value was taken as a continuous variable and was interpreted within the bivariate and multivariate analysis as the dependent variable. This index was obtained as shown below:

Integrated Care Index (15)

ICI: indicators with a score equal to 1 / total number of indicators

ICI in children less than two months: X / 24

ICI in children from two months to 5 years: X / 27

Table 2
Indicators by component.

Component	Number of Indicators
B1 Component	21 indicators
B2 Component	18 indicators
C Component	5 indicators
D Component	1 indicator

With the total calculation of the ICI, a descriptive analysis was carried out through the selected variables and it was described in relation to variables such as the type of service, the scope of the service, the duration of the consultation, and others. According to this, tests for differences between means were used in the discrimination between type of practitioners in the variables that were considered. Subsequently, the relationship of the precoded variables with the ICI was estimated. Pearson correlation coefficients for continuous variables and Chi square tests for categorical variables were used. Finally, a multivariate analysis was performed through a multiple regression by ordinary least squares with adjustment for robust standard errors. This analysis was aimed at analyzing the relationship between the ICI of each consultation and its natural logarithm with independent variables that showed a relationship in the bivariate analysis, including the controls that the literature mentioned as relevant.

Results

The evaluation was obtained from 165 consultations carried out with children under 5 years of age. These evaluations were distributed at 18 municipalities and 12 departments, including Bogotá as a department. The municipalities included cities such as Medellín, Cartagena, Cali, Neiva, Bucaramanga, among others (Fig. 2). Likewise, the evaluation was obtained for the 165 health professionals distributed at 70 health care providers. These institutions represented the majority of the centers with the highest influx of patients in the municipalities evaluated, as well as the provision of services by insurers from both the contributory and subsidized systems. The health professionals evaluated included 103 women and 62 men. A total of 30 pediatricians, 91 general practitioners and 43 nurses distributed by sex were evaluated, as shown in Fig. 3.

Table 3 shows the distribution of the evaluated practitioners by the variables of interest and discriminated by type of health practitioner, including the average for each professional for the continuous variables. The average age of the professionals was 40 years, the average age of the children was 20 months, the average duration of each consultation was 31.5 minutes, and the professionals had trained at least twice in the strategy. There were no statistically significant differences in these variables between physicians and nurses ($P > 0.05$).

Table 3
Sample Characterization

	Pediatrician (n = 30)	General Practitioner (n = 91)	Nurse (n = 43)
GENDER OF PROFESSIONAL			
Male	16	43	3
Female	14	48	40
AVERAGE AGE	49,29	39,57	33,19
AVERAGE DURATION OF MEDICAL CONSULTATION	30,46	32,56	34,39
AVERAGE AGE OF CHILD	15,13	22,27	21,51
GENDER OF CHILD			
Male	16	45	25
Female	14	46	18
IMCI CHART BOOKLET			
Yes	18	31	18
No	12	60	25
IMCI MEDICAL RECORDS			
Yes	18	56	28
No	12	35	15
SUPPLIES			
Yes	11	55	19
No	19	36	24
CONPLEXITY LEVEL			
First level	14	71	34
Second level	7	15	8
Third level	9	5	1
GEOGRAPHICAL AREA			
Rural	0	4	3
Urban	30	87	40

	Pediatrician (n = 30)	General Practitioner (n = 91)	Nurse (n = 43)
HEALTH ATTENTION TYPE			
Public	3	58	28
Private	27	33	15
AVERAGE TRAINING TIMES	3,3	2,04	2,06
TRAINING TYPE			
Virtual	14	40	21
Presential	11	38	17
Mixed	5	13	5
STRATEGY SUPERVSION			
Yes	11	35	14
No	19	56	29
ORAL REHYDRATION UNIT			
Yes	11	16	6
No	19	75	37
VACCINE APPLICATION CENTRE			
Yes	2	16	3
No	28	75	40
ESSENTIAL MEDICINES			
Yes	6	3	0
No	24	88	43
HEALTH SERVICES TYPE			
Scheduled consultation	23	76	42
Urgencies	7	15	1

Figure 4 shows the consultation time distribution spent by the health practitioners. The average duration for doctors was 31 minutes per consultation. On average, the nurses spent more time doing the IMCI consultation, but this difference was not statistically significant ($P > 0.05$). Of the 165 queries evaluated, 119 corresponded to a first level of care, 31 to a second level and 15 to a third level. Similarly, 158

professionals were assessed in the urban area, while 7 were from rural areas, 90 consultations were made in public health services, while 75 were in private services.

Figure 5 shows the distribution of the received type training by the health professionals. The type of training that predominated was virtual, however, the difference was not statistically significant ($P > 0.05$). The most trained professionals were the pediatricians, however, the ones who most attended the children were the general practitioners, as evidenced in Fig. 3. Similarly, at least 33 health professionals were trained less than three times in the strategy. This relationship was less clear in the group of general practitioners.

Figure 6 shows the distribution of the ICI calculated for the consultation of the 165 health professionals. The minimum value of the index was 0 while the highest was 0.62, for a range from 0 to 1. The above indicates that the model may explain the correlation between the variables only in the range delimited by Fig. 6. The average value of the index was 0.36 for all the consultations without differences by type of professional ($p < 0,05$). With the achievement of the distribution of the ICI, the correlation coefficients shown in Table 4 were obtained. The variables that showed positive association with the ICI and that had statistical significance were essential medicines, scheduled consultation, virtual training, IMCI evaluation method, second level of complexity, necessary supplies, IMCI medical records, IMCI chart booklet and duration of the consultation. That is, the professionals who had mixed training and a method to evaluate the IMCI, who attended at a second level, who had the necessary supplies, who had the IMCI medical records with the IMCI chart booklet and who invested more time in their consultations, obtained a higher ICI. The variables that showed a negative association with the ICI and that had statistical significance were the geographic scope and the age of the child. That is to say, the professionals who attended in an urban environment and who attended larger children had lower integrated attention rates.

Table 4
Correlation coefficients for the selected variables.

	ICI ®	Valor de P	IC 95%
Women practitioner	− .0190093	0.374	− .0611197 .023101
Schedule consultation	.0702918	0.001***	.0307424 .1098412
Essential medicine	.0898326	0.048**	.0008836 .1787817
Unsupervised	− .0377376	0.078*	− .0796859 .0042107
Blended training	.0633333	0.040**	.0028527 .1238139
Number of trainings	.0082675	0.234	− .0054072 .0219422
IMCI assessment	.0702918	0.001***	.0307424 .1098412
Private health care provider	.0059877	0.774	− .0350608 .0470361
Urban area	− .1130994	0.027**	− .2130133 − .0131855
Second level complexity	.1003019	0.000***	.0496115 .1509924
Necessary supplies	.1379834	0.000***	.1030836 .1728832
IMCI medical records	.0731969	0.000***	.0325304 .1138634
IMCI chart booklet	.1074908	0.000***	.0694276 .145554
Child age	− .0015122	0.009***	− .0026443 − .0003802
Consultation duration	.0039008	0.000***	.0002261 .0055056
Nurse	− .0335379	0.287	− .0955232 .0284474
Practitioner age	.0009118	0.350	− .001008 .0028317
*** p < 0.01, ** p < 0.05, * p < 0.1			

For the multiple regression model, it was obtained that the explanatory variables included in the model provide a 51% explanation to the dependent variable. The statistically significant variables were essential medicines, IMCI assessment, second level of complexity, necessary supplies, the age of the child and the duration of the consultation ($p < 0.05$), as shown in Table 5. In this sense, it was obtained that the provision of essential medicines in the institutions, where the service is provided, increased the integrated care rate by 37% (see Table 6). Moreover, when children under five were attended at a second level of complexity, with the necessary inputs and with the provision of an IMCI assessment method, the ICI was improved by 18%, 34%, and 15% in the evaluated population (see Table 6). On the other hand, it was found that consultations that took less than 30 minutes reflected a decrease in the ICI of more than 10% (see Table 6). Finally, in the consultations where children between 40 and 60 months of age were treated,

an average reduction of 30% was obtained in the ICI compared to of those under 30 months, as shown in Table 6.

Table 5
Multiple regression model with adjustment for robust standard errors.

ICI	Coef.	P	IC 95%
Essential medicines	.0943297	0.021**	.0142346 .1744247
Scheduled consultation	− .0387982	0.120	− .0878904 .0102941
Virtual training	− .0056011	0.768	− .0429957 .0317934
Blended training	.0048903	0.853	− .0472048 .0569853
IMCI assessment	.0719643	0.000***	.0350198 .1089089
Urban area	− .0496218	0.026**	− .1287203 − .0294767
Second level complexity	.0545436	0.020**	.0087911 .100296
Third level complexity	.0381114	0.239	− .0255796 .1018024
Necessary supplies	.0986498	0.000***	.0591626 .1381371
Not IMCI chart booklet	− .0276792	0.136	− .064167 .0088085
Not IMCI medical records	− .0226047	0.219	− .0587703 .0135609
Child age	− .0009609	0.042**	− .0018876 − .0000341
Consultation duration	.0004051	0.005***	.0003947 .0012049
*** p < 0.01, ** p < 0.05, * p < 0.1			

Table 6
Multiple regression model with robust standard error adjustment for percentage changes.

VARIABLES	nIICI
Essential medicines	0.371**
	(0.145)
Scheduled consultation	-0.150
	(0.123)
Virtual training	0.0271
	(0.0827)
Blended training	0.00559
	(0.0893)
IMCI assessment	0.154**
	(0.0733)
Urban area	0.0923
	(0.0978)
Second level complexity	0.184**
	(0.0744)
Third level complexity	0.0341
	(0.189)
Necessary supplies	0.344***
	(0.0647)
IMCI chart booklet	0.0460
	(0.0774)
IMCI medical records	0.0997
	(0.0709)
10 minutes consultation	-0.227*

	(0.127)
20 minutes consultation	-0.160**
	(0.0768)
40 minutes consultation	0.0220
	(0.0904)
50 minutes consultation	-0.0134
	(0.118)
60 minutes consultation	0.00454
	(0.101)
70 minutes consultation	0.143
	(0.113)
1–12 months child	-0.147
	(0.101)
1-year child	-0.106
	(0.107)
2-year child	-0.0350
	(0.111)
4-year child	-0.223**
	(0.107)
5-year child	-0.378***
	(0.129)
Constant	-1.121***
	(0.136)
Observations	165
R-squared	0.514
Robust standard errors in parentheses	
*** p < 0.01, ** p < 0.05, * p < 0.1	

Discussion

On the one hand, the IMCI is a cost-effective strategy that improves the quality of health care using protocols on evidence-based medicine for the most common causes of morbidity and mortality in children under five (16). However, what is evident in this study are the low rates of integrated care reflecting the non-monitoring of the strategy in strict control by the regulatory bodies, as well as at Peru or Bolivia where it has not been properly carried out (12, 17). This may be due to the lack of vocation of health professionals and the lack of willingness of health institutions for the proper approach of children under five, as mentioned in the literature.

On the other hand, a systematic literature review carried out by Amaral and Victoria in 2008, concluded that the training improves the evaluation, communication and the rational use of antibiotics. At Colombia, it is not clear whether continuing medical education is improving skills in other areas, such as vaccines and nutritional counseling, among others, as well as the magnitude of these benefits (18). These data differ from what was obtained in this study, since the number of training sessions does not affect the quality of care. However, professionals who had mixed-type training showed better results without statistical significance.

In this sense, Rowe in 2012 mentioned that the presence of sufficient equipment, essential medicines, supervision visits and the duration of training, not only determine the performance of health workers, but also the level of intervention coverage (19). In this work, only the availability of the necessary supplies and the availability of essential medicines were identified as influential factors. To the date, only a systematic literature review by Goga et al. explored the adequacy of the implementation as a confounding factor in the doctors' performance, although within a slightly different context, decreasing the time of the training would seem to have the same effect (20). In this case, different outcomes were obtained, but the duration of the consultation and the supervision of the strategy by control entities showed an association with better health care.

In accordance with the strategy, the evaluation, classification and treatment tables, the related training materials (i.e., known as the IMCI chart booklet and IMCI handbook), the training materials (i.e., to improve communication with parents during the evaluation of their children) and the follow-up guides to health personnel (i.e., to support the effective application of the clinical component of the IMCI strategy) (4), have a positive association with the quality of care, which is aligned with the fundamental principles of the IMCI strategy. However, this association loses its significance when included in the multivariate model.

In relation to the health care context, it was found that children who were treated in urban facilities received a lower level of care compared to the rural area, indicating the lack of availability in the urban area. On average, the queries that are made in rural areas last longer than those in the urban environment. Considering that duration plays an important role in integrated care, this finding may be influenced by the relationship discussed above. Thus, it is also stated that the second level of complexity provides a positive association with the integrated care index. The foregoing, together with the fact that younger

children receive more attention and require more specialized services, the finding of this relationship could be understood. Although the IMCI strategy is thought to be the first contact of the population with health systems, the previous finding indicates that it can be extrapolated to the other levels of care and attention must be reinforced in the first levels.

Although the separate analysis of the factors that influence integrated attention to childhood diseases, associations were found, when the possible relationships were included in a multivariate model, they lost their statistical significance. Aspects such as having an IMCI history, having a chart of procedures, having types of training that motivate the health professionals, and conducting the consultation in the context of the external consultation should not be overlooked. These factors could contribute in an alternate way to achieve better care for children under 5 years of age.

Study Limitations

Being a cross-sectional study, the greatest limitation is the impossibility of finding causal relationships. However, we tried to adjust the homoscedasticity principle when making an adjustment in the multivariate model with robust standard errors. Likewise, it is important to consider that the results consist only of internal validity, in such a way that they cannot be applied outside the observations of the database. Despite the above, the results obtained constitute a starting point for further studies throughout the Colombian territory.

Moreover, the primary base had some level of bias, given that the sampling ended up being for convenience. This implies that the results will be applicable to the professionals of the base and to a greater extent to the health care providers in which they were performing at the time of the data collection, but there will be no national representativeness. Finally, this work does not provide an insight or explanation of the results from the different actors involved in the process of care to children under five. Thus, it is not possible to characterize the dynamics that are immersed in the implementation of the clinical component of the IMCI strategy.

Conclusion

The health care provided to children under five remains incomplete due to the lack of basic minimums for the correct IMCI implementation at Colombia. It is required an integrated care that provide medicines and necessary supplies, reducing access barriers and improving the fragmentation of the system.

Moreover, the fracture of the system is evidenced in the achievement of integrated care in the second levels of care and in rural areas. An articulation between the clinical, institutional and community component is required, allowing the improvement in the factors.

In spite of the evidence found, it is important to carry out studies with another methodological design and with another type of sampling to establish causality and national representativeness, respectively.

Abbreviations

WHO
World Health Organization
UNICEF
United Nations Children's Fund
PAHO
Pan American Health Organization
IMCI
Integrated Management for Childhood Illnesses
ICI
Integrated Care index
ARI
Acute Respiratory Infection
ADD
Acute Diarrheal Disease
PHC
Primary Health Care
MDG
Millennium Development Goal

Study Implications

The general benefit of the IMCI strategy is to contribute to the reduction of the under-five mortality rate, which is in line with MDG 4. The identification of the factors that influenced integrated care for prevalent diseases of childhood will help government agencies and decision makers to improve their implementation at Colombia. The findings and recommendations will be available to the territorial entities of the municipalities evaluated. The results will also be shared with other stakeholders that may include: service providers, health professionals and universities.

Declarations

Ethics Approval and Consent to Participate

In order to guarantee the ethical aspects of the present investigation, the following criteria, both legal and evaluative, were considered:

According to Resolution 008430 of October 4, 1993 of the Ministry of Health, this research study can be considered as WITHOUT RISK, since it did not anticipate any intervention or modification of any physiological, psychological or social variable. The study is derived from the database obtained by the Universidad de los Andes and only a statistical analysis of said information will be made. The Ethics

Committee of the Vice-Rector for Research and the Ethics Committee of the School of Government of the Universidad de los Andes issued a letter of approval of the project classifying it as risk-free.

Consent to Publish

This section does not apply.

Availability of Data and Materials

The databases from which the present study is derived can be found on the PAHO Colombia website. They are freely accessible and have an assignment code for each observation to keep the information confidential.

Competing Interest

The authors have no conflict of interest to declare. However, it is reported that the authors were part of the technical team that performed the evaluation in 2016 from which this study was derived. The results here presented do not differ from those presented in the technical report provided to the Pan American Health Organization and the Ministry of Health.

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Author´s Contributions

AG had the research idea, designed the work, found the databases, analyzed the information, interpreted the analyzes, read and approved the final manuscript. JO hade made substantial contributions to the conception, designed the work, analyzed the information, interpreted the analyzes, read and approved the final manuscript.

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Figures

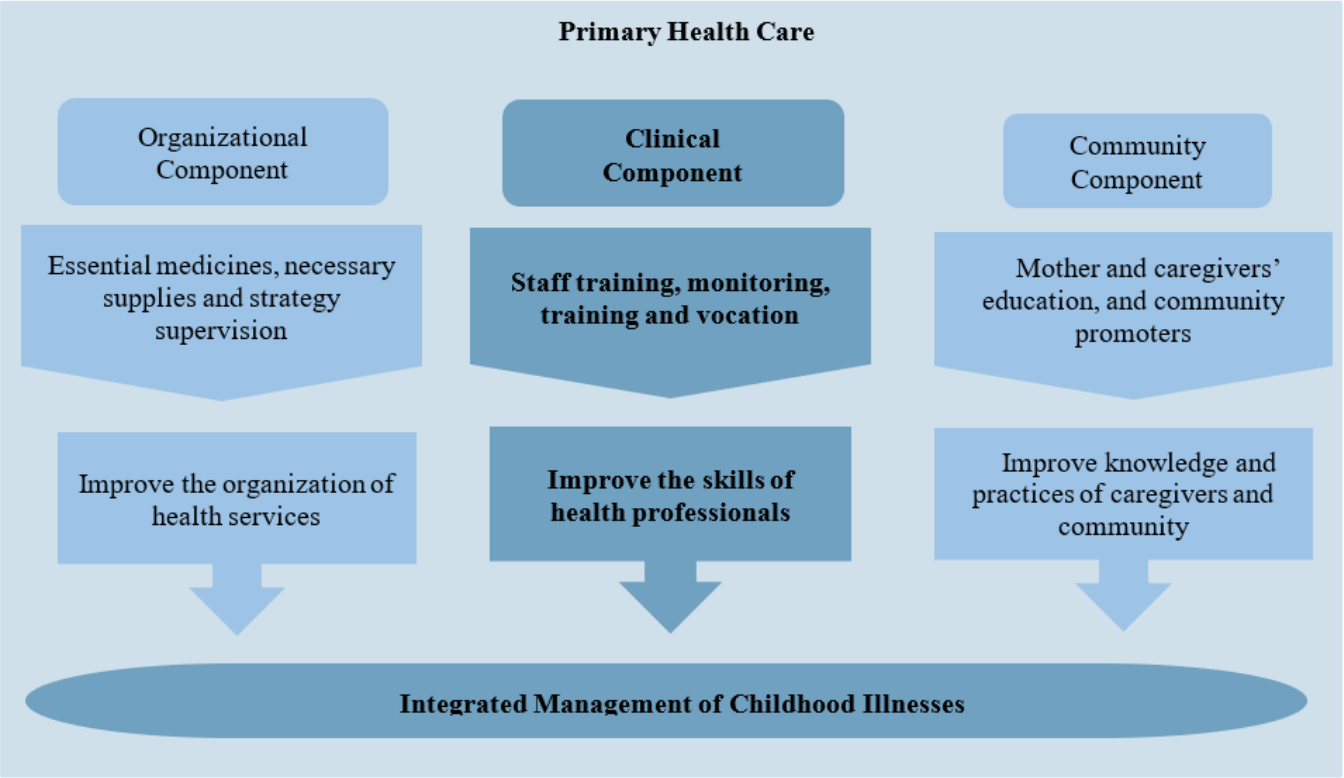

Figure 1

Conceptual framework of the factors that influence Integrated Management for Childhood Illnesses

Figure 2

Distribution of research cities.

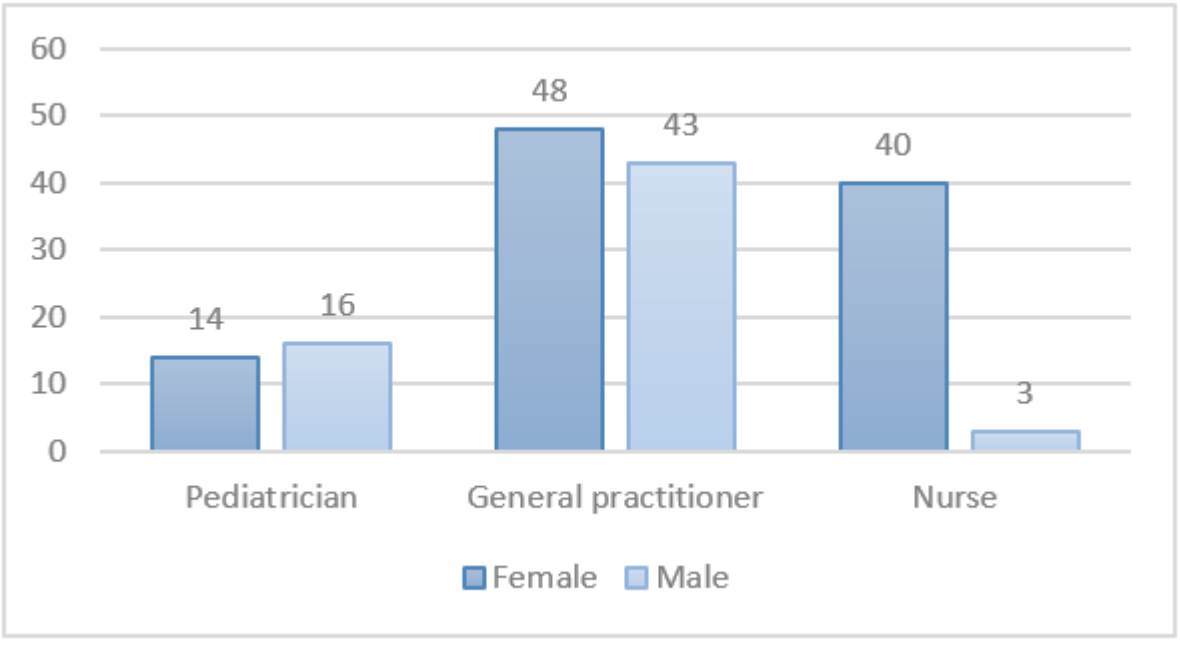

Figure 3

Distribution of health professionals by gender. Light blue shows the number of men and dark blue the number of women.

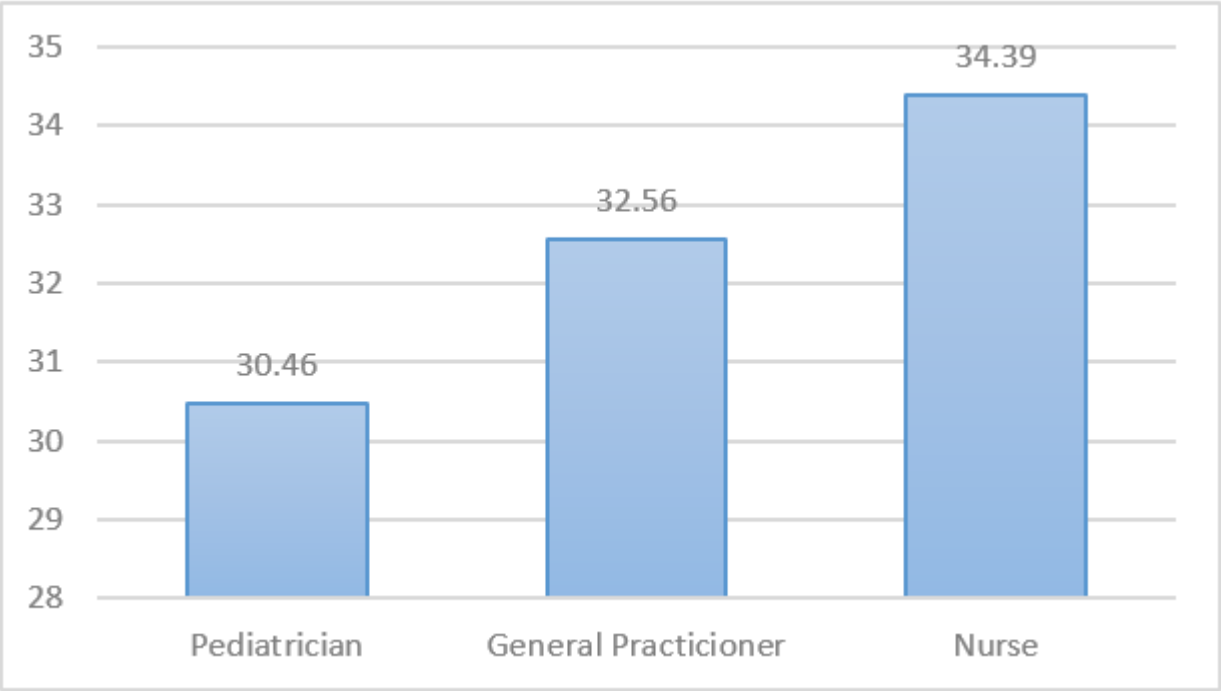

Figure 4

Average length of consultation by Health practitioners

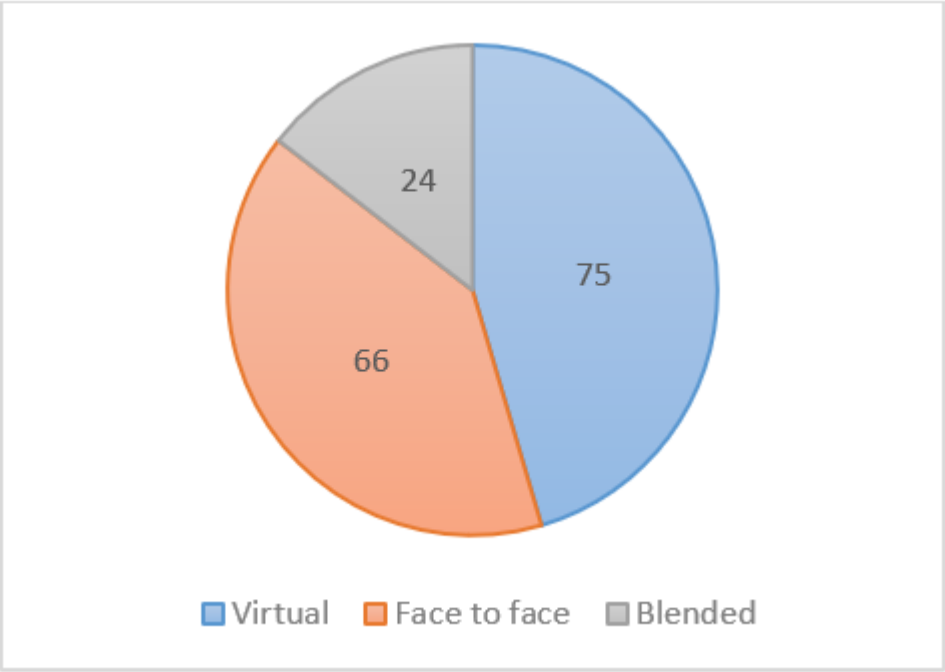

Figure 5

Distribution of the type of training. The number of people trained virtually is shown in blue, the number of people face to face trained in orange and the number of people trained blended in gray.

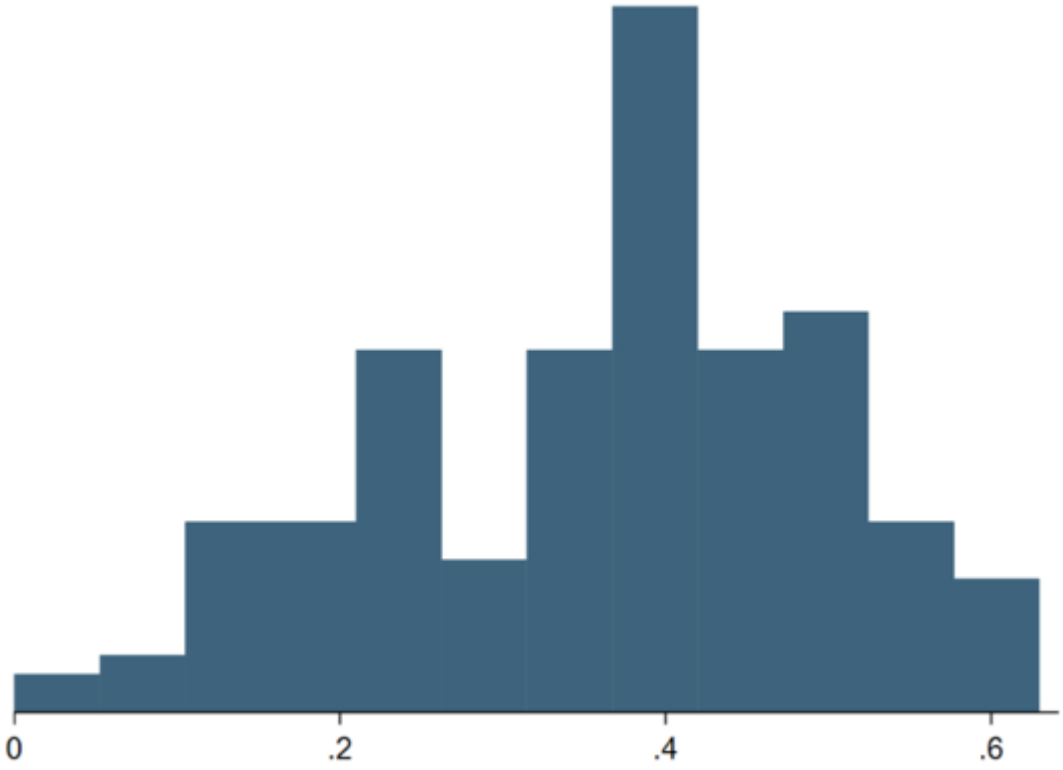

Figure 6

Distribution of the ICI for the 165 queries evaluated. The minimum value of the index was 0 while the highest was 0.62, for a range from 0 to 1. This indicates that the model may explain the correlation between the variables only in the range delimited by the figure.