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Research Article

Contribution of primary health care teams to equity in universal access to health services

Introduction

Since Alma Ata Declaration, 40 years ago, the Health Service Systems has undergone significant changes, but those achievements are unevenly distributed, with an increasing number of people without coverage by basic health services. Advances in technology, including the arrival of big data, together with the adoption of evidence-based care models have been transformative, especially for primary health care [1].

The strengthening of Primary Health Care (PHC) has been proposed as the best instrument to achieve more efficient and equitable health systems. When comparing several countries with the same degree of economic development, for the same investment, those who have organized health care around the postulates of primary health care enjoy a higher level of health [2].

Recently, an international meeting on PHC promoted by WHO was held in Astana, Kazakstan. At this meeting, it was concluded that modern PHC should be supported by societies that prioritize and protect people, families, and communitie's health, provides affordable and safe health care for everyone, everywhere; treat people with respect, dignity, and health officials committed to the promotion and maintenance of health [3].

Currently, many countries are committed to the continuous improvement of their population's health and are experiencing changes: an accelerated demographic transition; a permanent change in the patient's expectations; and budget constraints, that demand improving the way health care is organized and provided. Therefore, to achieve universal access, and improve population health, it is necessary to implement PHC through the interaction of its key factors as community participation, family health care, health promotion, and research [4,5].

For this reason, putting primary health care at the center of the health system reform is a political objective shared by almost all countries, in order to respond more efficiently and equitably to the changing needs and expectations of the population as well as the rising costs in medical care [6].

However, health care seek patterns differ within human groups and social territories depending largely on how the supplied health services is utilized by individuals and families; they must be taught how to navigate the health system. Gaps in universal access to health care may be exacerbated by this situation, making it difficult to accomplish the mission of reducing health inequalities.

There are considerable inequities in access to health services, which are more marked among the human groups with greater social vulnerability. These disparities partly reflect the differences in access to the social determinants of health in living conditions and in the health-related behaviors of different populations. People living in economically depressed areas used to have lower levels of education; higher rates of unemployment; lower income than people from more developed areas; a higher proportion of long-term disabling diseases; as well as poorer health [7].

In some countries, there have been reports of the alarming negative experiences of patients, with permanent difficulty for contacting the health care system, with a consequent search

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for care at higher levels of complexity, which produces an increase in the cost of medical attention [8].

Children constitute an important and vulnerable social group from the perspective of public health, since they constitute the future of society; and so, achieving their optimal health and quality of life is essential. Within and outside territorial entities there are different patterns in the provision of health services for children, due to a broad division between generalist and specialized models. Children who live in disadvantaged areas often resolve their health problems through emergency rooms, usually when the course of their illness is very advanced [9].

To break this negative circuit, the practice of primary care must find a way to develop mechanisms that allow the health offer to execute and maintain the balance between the main components of the strategy: becoming the first point of contact with the network of services; and providing comprehensive, coordinated, and continuous care throughout the life course [10].

A similar situation is reported in the municipality of Santiago de Cali, for that reason in 2001 started the Family and Community Health Strategy (ESFC), implemented to overcome some barriers, which impeded access to health care services. The purpose is to bring the public healthcare services closer to families living in conditions of high vulnerability in commune 20, characterized by poor living conditions along with poverty [11,12].

Primary care plays an important role in early detection and treatment for people who have an undetected disease or are at risk of developing it. The objective of this study was to estimate the contribution of the extra mural PHC team towards equity, concerning access to basic health care service, through the early detection and referral of new cases to the health center, in the public network of ESE Ladera in the municipality of Santiago de Cali, in Colombia.

Methodology

The Ladera Public Health Network covers the geographical area where the Family and Community Health (SFC) strategy was implemented, The territory is composed by of six communes located in the western zone of the city of Cali (Communes 1, 3, 17, 18, 19 and 20), 90% of the population living in this area is classified as stratum 1 and 2, the poorest. A large part of living in difficult social and economic conditions, which puts them in a high social and economic vulnerability.

Cali is the third largest city of Colombia, located in the tropical zone, near to the equator line, therefore, it has no marked seasons, and there are only two: the rainy season and the dry season. All the families in the studio were exposed to fluoride in the water, just like the rest of the city's population. Except for this population intervention, these families did not receive any other preventive actions.

A multilevel study was carried out to evaluate the contribution of the four primary health care teams (PHC), covered 1000 families in the poor area selected. These families represent 15% of the families that reside in the prioritized area.

Source of data

The source of the health activities carried out on the children was the Individual Healthcare Procedures Registry (RIPS, in Spanish) of 2011 available in the Statistics Department of the municipality healthcare network.

For the estimation of the sample size along with the multilevel analysis, the number of census tracts in each of the neighborhoods visited by the strategy was taken into account, obtained from the Administrative Department of National Statistics (DANE). Noting the number of families in each census tract, an intercalase correlation coefficient of 0.20 was assumed, determining that 10 census sectors with nine children each should be selected, in order to control, as far as possible, redundant information due to the homogeneity of the population in study, at family level.

The response variable was the number of referrals for care to the health center in 2011 for children under 6 years of age due to dental cavities, diarrhea, and acute respiratory disease. The multilevel analysis takes into account several variables, such as, the child age; the presence of pets at home; overcrowding; humidity at home; educational level of the parents; family income; whether the family recycle or not; tobacco and alcohol consumption by adults; type of roofing material; if the house is owned; home ventilation; if house has an excreta system; type of floor and ceiling material; visits by the PHC team; referrals for attention in the health center; type of family; and population.

Analysis plan

To identify the variables of first and second level along with their respective contribution to the variation of the response variable, a multivariate linear regression model (MRLM) was applied, which can be conceptualized as a regression model, that occurs at different levels simultaneously, which takes into account the correlation along with the non-independence of the data to be nested.

This work includes variables belonging to two levels: families plus their children represents the first level; and the second level represented by the primary health care team and its mode of operation. The families are nested in the four PHC teams.

The purpose was to build the most parsimonious model that best fit the data, to achieve this goal, we started with the unconditional or null model, which is a regression model without any covariate. This model was used to estimate the inter-class correlation coefficient (ICC), which estimates the magnitude of the variation in the response or outcome variable, caused by the second level variables.

The models were constructed using the maximum likelihood (ML) procedure, which allows evaluating the goodness of fit using the AKAIKE information criterion (CIA) plus the Bayesian information criterion (CIB) when the nested model evaluates random or fixed effects.

The comparative advantage of this procedure is that both measures can be used when you want to evaluate the goodness of fit whether the model is nested, or not. In both measures, the lowest values indicate the best fit of the model [13]. 10% was used as a level of significance (alpha), in order to increase the power (probability) of the study to detect associations if this exist [14].

Results

The PHC team presence, at the homes, accounted for 54.4% of the dental cavities cases referred to the health center. Other factors involved were child's age 30.05%; overcrowding in the home 1.2%; use of tobacco by one of the parents 0.5%; and the presence of good ventilation 0.5%. The goodness of fit of the adjustment of the model was –2lo likelihood = 59.8, CIA = 71.8 and CIB = 59.8 (Table 1).

The PHC team, at the homes, accounted for 58.5% of the acute respiratory infection cases referred to the health center. Other factors were child's age 19.2%; presence of a system of excreta in the house 1.7%; material of the floor 10.3%; and subsidized health insurance 10.1%. The goodness of fit of the adjustment of the model was –2lo likelihood = 108.1, CIA = 120.1 and CIB = 59.8 9 (Table 2).

The PHC team, at the homes, accounted for 52.8% of the Acute Diarrheal Diseases cases referred to the health center. Other factors involved were the presence of pets at home 1.1%, and overcrowding in the house 1.5%. The goodness of fit of the model was –2lo likelihood =36.6, CIA =46.6 and CIB =36.6 (Table 3).

Discussion

According to these findings, 54.4% dental cavities, 58.5% acute respiratory infections, and 52.8%, acute diarrheal disease, were cases known and referred by the PHC team's presence in the area.

In other words, did not go to those homes, approximately half of those cases would not have been referred in time. Accordingly, the children with dental cavities may have never received dental care, because there are no mobile dental units in that area.

In the first level of analysis, in relation to the search for care of dental cavities, child age was the most important variable of the first level, which accounted for 30.05%. Overcrowding at home, tobacco consumption, and poorhouse ventilation contributed with 1.2%, 0.5%, and 0.5%, respectively.

Concerning the search for ARI care, child age accounted for 19.2%, the presence of a system of excreta at home 1.7%, the dwellings with a dirt floor 10.3%, and subsidized health insurance 10.1%. The aforementioned results were the most important at first level.

Concerning the ACD, the presence of animals at home accounted for 1.1% and overcrowding made a significant contribution but of little importance, just 1.5%. Overcrowding is a variable of confusion; therefore, it remained in the model.

It was not possible to find, in the scientific literature reviewed, a study aimed to estimating the contribution attributable to the PHC team, since most of the studies reviewed pointed to evaluating the participation of the family physician, and this type of professional is not included in the APS team in Colombia. We, nevertheless, found some experiences that evaluated the participation of the professional and technical nursing staff within the PHC team [15,16].

Nursing interventions seem to be very cost-effective for improving health outcomes in PHC. Additional studies are required to evaluate their performance in several factors, such as, the development of intersectoral coordination; community leadership; health research; and in ethical skills for decision making in primary care services [17,18].

In Sweden, a study assessed to evaluate the impact of the application of health promotion resources to the most disadvantaged groups of society. The study aimed to capacitate people who do not seek care despite the need and to increase awareness about how their lifestyle affects personal health. The key results were the reduction in time to achieve medical attention, facilitating access to care, and increase coverage. The researchers noted a decrease in exclusion and an increase in family social participation in health issues [19]. This study yielded results similar to ours.

In Finland, a study reported that 20% of PHC visits were related to undetected acute respiratory infection [20], in our

Table 1: Fixed Effects Model for Dental Cavities.

Effect	Estimate	Error Standard	Degrees Freedom	t Student	P-value
Intercept	-0.0256	0.09696	96	-026	0.792
Child's Age	0.06822	0.02366	96	2.88	0.005
Overcrowding	01645	0.06913	96	2.38	0.014
Tobacco use	0.1900	0.09257	96	-2.05	0.043
House Ventilation	-0.1296	0.07557	96	-1.72	0.081

Table 2: Fixed Effect Model for Acute Respiratory Infection.

Effect	Estimate	Error Standard	Degrees Freedom	T Student	P-value
Intercept	0.5489	0.2473	96	3.73	0.000
Child's Agea	0.06588	0.2957	96	2.73	0.028
Excreta System	-0.03601	0.1978	96	-1.82	0.072
Flooring material	0.1712	0.09432	96	1.82	0.073
Health insurance	-0.136	0.06876	96	-1.98	0.051

Table 3: Fixed Effects Model for Acute Diarrheal Disease.

Effect	Estimate	Error Standard	Degrees Freedom	T Student	P-value
Intercept	0.1004	0.5183	96	1.94	0.059
Pets	0.1343	0.06105	96	2.2	0.030
Overcrowding	-0.1033	0.06032	96	-1.71	0.090
Recycling Habits	-0.1511	0.0948	96	-1.59	0.114

study it was 58.4%. The difference can be explained by several factors, such as, differences in culture; society organization and functioning; and health services. Cuba reported an increase of 56.6% in the number of dental consultations after a process of transformation in the operation of primary health care [21].

In the United States of America, through an intervention named the Affordable Care Act (ACA), a National Health Interview Survey (NHIS) was conducted between 2011 and 2014, which aimed to compare the main problems reported when accessing primary care in adult consultations, during the 2011–2013 period before the implementation of health insurance Mandatory ACA, and in 2014 after the implementation took place. The main finding was that surveyed people reported progressively fewer problems in accessing basic health services [22].

Conclusions and Recommandations

The magnitude of the contribution from the PHC team found in this study, justifies its presence in the most vulnerable areas. These findings reinforce the principle established by the APS in the sense of being a strategy with positive discrimination; that is, it contributes to social and health equity due to its special emphasis on the attention of those population groups, who are not regularly attended by health institutions.

It is an ethical imperative, in the interests of health equity, to implement strategies that provide basic health services beyond the walls of the health institutions since, for various reasons, there are groups of families that do not have easy access to intramural services. The situation deepens inequalities in health, contributing to increase the condition of vulnerability as well as poor health of these families and communities, as a whole.

These findings indicate, that extramural health care provides a unique opportunity to develop community–based health promotion interventions, and provides an organized institutional response to those out to reach.

Although it is recognized that strengthening of PHC services is a political priority, and an ethical imperative, to achieve greater equity in health, its implementation is a challenge in a system dominated by a health system, which is focused on the disease treatment. To achieve this change it is necessary to develop greater technical and scientific community competencies in the PHS team; this is a critical and unavoidable task.

Community primary care services should be promoted with greater intensity, among other reasons, because they are centered on people. Furthermore, since they are extramural, they have a unique opportunity to know the living and working conditions of families and communities. The PHS teams can record the impact of health determinants on the health of these families. This knowledge cannot be obtained exclusively from hospital care registries. Additionally, PHC teams strengthen the universal access strategy promoted by the World Health Organization [23,24].

Among the weaknesses of the study, we can highlight the deficiency in the routine records of extra mural care, and also that there was not data enough to evaluate the quality of the care, provided to the children by the PHC teams, which is the central theme of the project known as "Manager, Owner, Consulted, Helper, Approver (MOCHA, for its acronym in English)," whose main objective was to evaluate the primary healthcare activities, at community level, to identify which ones had a demonstrable impact according to the evidence available [25].

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