HOSTED BY
ELSEVIER

Contents lists available at ScienceDirect

Asian Pacific Journal of Tropical Biomedicine

journal homepage: www.elsevier.com/locate/apjtb

Original article http://dx.doi.org/10.1016/j.apjtb.2016.05.009

Skin problems in children under five years old at a rural hospital in Southern Ethiopia

José Manuel Ramos[1,2,3*], Paula Molés-Poveda[4], Dalu Tessema[1], Mubarack Kedir[1], Gamadi Safayo[1], Abraham Tesfasmariam[1], Francisco Reyes[1], Isabel Belinchón[5]

[1]*Department of Paediatrics and General Medicine, Gambo General Rural Hospital, Ethiopia*

[2]*Department of Internal Medicine, Hospital General Universitario de Alicante, Alicante, Spain*

[3]*Department of Clinical Medicine, Universidad Miguel Hernández de Elche, Alicante, Spain*

[4]*Department of Dermatology, Hospital Arnau de Vilanova, Valencia, Spain*

[5]*Department of Dermatology, Hospital General Universitario de Alicante, Alicante, Spain*

ARTICLE INFO

Article history:
Received 15 Jan 2016
Received in revised form 3 Feb 2016
Accepted 13 Mar 2016
Available online 7 Jun 2016

Keywords:
Children
Under five years
Skin problem
Scabies
Impetigo

ABSTRACT

Objective: To examine the prevalence of cutaneous disorders in children under 5 years old who attended a rural hospital in Southern Ethiopia.

Methods: A prospective cross-sectional study was conducted from January 26 to February 20, 2015 in children under 5 years old who attended Gambo Rural Hospital in West Arsi of the Oromia Region, Ethiopia.

Results: A total of 324 children were included (59.6% male) whose median age was 16.4 months. In total, 147 children [45.4%; 95% confidence interval (*CI*): 40.0%–50.8%] under 5 years had a skin problem, of which 101 (68.7%) consulted for that reason. The other 46 (31.3%) consulted for a general health problem and the dermatological condition was a secondary finding during the physical exploration. In 93 children (28.7%; 95% *CI*: 20%–33.8%), it was the main disease, and in 54 children (16.5%; 95% *CI*: 13.0%–21.1%) it was concomitant with other diseases. The most common dermatological disease was scabies (n = 44, 13.6%; 95% *CI*: 10.3%–17.7%). Impetigo was diagnosed in 32 children (9.9%; 95% *CI*: 7.1%–13.3%), of which 23 (71.9%) had complicated impetigo. Nineteen children (5.9%; 95% *CI*: 3.8%–9.0%) had eczema, 10 (3.1%) had eczema associated to other conditions. The following most frequent skin problems were tinea (n = 9; 2.8%), infected wound and ulcer (n = 7; 2.2%), and burns (n = 6; 1.9%).

Conclusions: Skin problems, mainly scabies, impetigo, and eczema were common in young children attended at a rural hospital in Southern Ethiopia. Children under 5 years should be examined thoroughly to rule out skin diseases, especially scabies.

1. Introduction

Pneumonia, diarrhea, and malaria are among the leading causes of mortality in children younger than 5 years old [1]. Integrated Management of Childhood Illness (IMCI) is an approach to child health that focuses on the well-being of the child as a whole according to the recommendations of the World Health Organization and the United Nations Children's Fund [2]. Their activities include management of childhood diarrhea (with oral rehydration salts only), malaria, malnutrition, measles, ear infection, and anemia. IMCI is performed at outpatient clinics in children under five years old [3] and in community case management performed by community health workers [4].

In the past, studies from developing countries have reported a high prevalence of skin disorders in pediatric populations [5]. Few population-based studies focus on disorders in children in low-income countries, and some of these studies are performed on healthy children at school [5–9]. Despite the high frequency of certain skin diseases in developing countries, they have yet to be regarded as a significant health problem in the development of public health strategies [10].

*Corresponding author: José Manuel Ramos, Department of Internal Medicine, Hospital General Universitario de Alicante, Calle Pintor Baeza, 12, 03010 Alicante, Spain.
Tel: +34 965933000
E-mail: jramosrincon@yahoo.es

The study protocol was performed according to the Helsinki declaration and approved by Institutional Ethical Review Board of the Gambo Rural Hospital and the Ethical Review Committee of the Ethiopian Catholic Secretariat. Informed written consent was obtained from parents/guardians. Confidentiality about patient information was maintained.

Foundation Project: Valencian Territorial Section of the Spanish Academy of Dermatology and Venereology (Sección Territorial Valenciana de la Academia Española de Dermatología y Venerología) (Solidary Grant No. 1/2014).

Peer review under responsibility of Hainan Medical University. The journal implements double-blind peer review practiced by specially invited international editorial board members.

This study was performed to learn about the burden of skin morbidity in children younger than 5 years old attended at an outpatient department of a rural hospital in Ethiopia with a view towards future integration of matters relating to skin diseases in children with the IMCI program.

2. Materials and methods

2.1. Settings

The study was performed at the Gambo General Rural Hospital (GRH), which is located in Gambo (Kore), West-Arsi province of the Oromia region. It is located in Southern Ethiopia, 245 km from Addis Ababa. A Catholic missionary order manages the hospital and also the Gambo School. It is located at an altitude of 2 200 meters above sea level. Subsistence farming and animal husbandry are the main occupations of the region's inhabitants.

2.2. Type of study

A prospective cross-sectional study was conducted from January 26 to February 20, 2015. Children under 5 years who attended at GRH during the study period and visited by one of the three nurses at the under five-year-old outpatient clinic were included. In all, 985 children visited the outpatient clinic at GRH, of which 324 were included in the study.

2.3. Socio-demographic information and physical examination

The research team consisted of one Spanish dermatologist and an Oromic-speaking nurse. First, the nurse visited the children according to the IMCI protocol of the Ethiopian Ministry of Health [3,4]. Then, a dermatologist performed a dermatological examination. The medical and dermatological diagnosis was based on the anamnesis and physical examination. The dermatologist recorded clinical and epidemiological data. Infants were screened to assess general skin health, and attention was focused on skin diseases.

Clinical information was obtained using a standardized data collecting form, including variables such as place of residence, age, sex, weight, height, and type of skin disorders. Dermatological diagnosis was made based on clinical findings. Laboratory tests to confirm diagnoses were not performed.

The skin problems were classified as: (1) a skin problem as a main diagnosis and referred by relatives; or (2) a skin problem not referred by relatives but diagnosed after specific dermatological screening.

2.4. Data management

Data were coded and entered into logbooks and then analyzed using SPSS for Windows version 22.0 (IBM, Chicago, Ill, USA). Continuous variables were presented as mean with standard deviation or median and interquartile range, and qualitative variables were expressed as absolute and relative frequencies. Estimates of prevalence were obtained with a 95% confidence interval (*CI*) using the Wilson procedure. Correlation between scabies and categorical risk factors were conducted using the *Chi*-square test and Student's *t*-test. The Kruskal–Wallis test was performed on continuous variables to see whether they had a normal or non-normal distribution (the Kolmogorov–Smirnov test with $P < 0.05$). Statistical significance was accepted for $P < 0.05$.

2.5. Ethical considerations

The study protocol was performed according to the Helsinki declaration and approved by Institutional Ethical Review Board of the Gambo Rural Hospital and the Ethical Review Committee of the Ethiopian Catholic Secretariat. Informed written consent was obtained from parents/guardians. Confidentiality about patient information was maintained.

3. Results

During the study, 324 children were included; 59.6% were male and 40.4% female. Their mean age was 16.4 months. The main cause of medical consultation was respiratory tract problems (n = 135; 41.7%), followed by skin problems (n = 102; 31.2%) and gastrointestinal problems (n = 64; 19.8%) (Table 1). In 93 (91.2%) of the 102 children who consulted for a skin problem, this was the unique problem, and 9 cases (8.8%) presented with another medical condition. Moreover, 46 (14.2%) cases were diagnosed with an additional skin problem that was not the main consultation after the physical examination. In total, 147 children (45.4%; 95% *CI*: 40.0%–50.8%) under 5 years had a skin problem and 54 (16.5%; 95 *CI*: 13.0%–21.1%) were associated with another medical condition.

Table 2 shows the distribution of skin problems in children. The most common skin disease detected was scabies (n = 44, 13.6%); 25 cases were scabies without complication, and 19 cases were complicated scabies, mainly scabies with impetigo (n = 15) (Table 2). Children with complicated scabies were more

Table 1
Epidemiological characteristics of children under five years old included in the study.

Epidemiological characteristics		Value
Median age in months (IQR)		10 (5–24)
Age group [*n* (%)]	0–6 months	103 (31.8)
	7–12 months	98 (30.2)
	>12 months	123 (38.0)
Sex [*n* (%)]	Male	193 (59.6)
	Female	131 (40.4)
Cause of medical consultation [*n* (%)]	Respiratory tract disease	135 (41.7)
	Skin problem*	102 (31.2)
	Gastrointestinal problem	64 (19.8)
	Ear or throat problem	12 (3.7)
	General bad condition	10 (3.1)
	Neurological problem	4 (1.2)
	Orthopedic problem	3 (0.9)
	Urinary problem	3 (0.9)
Skin problem [*n* (%)]	As main cause of consultation	93 (28.7)
	As a co-main cause of consultation	8 (2.3)
	Not referred by relatives but diagnosis after dermatological screening	46 (14.2)
	Any skin problem	147 (45.4)

IQR: Interquartile range. *: There were 333 cases of medical consultation in 324 patients; 9 cases had more than one main cause for the consultation.