Incidence of scabies among patients treated at the Orbílio Machado Family Health Center, Bom Jesus do Itabapoana, Rio de Janeiro, Brazil

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Milena de Souza Furtado Ávila
Dermatologist
Faculdade Metropolitana São Carlos - FAMESC

Marcos Loureiro Meireles Ávila
Medical Student
Faculdade Metropolitana São Carlos - FAMESC

Fernanda Castro Manhães
Doctor in Educational Sciences
Sugarcane Planters Hospital – HPC

Bianca Magnelli Mangiavacchi
Doctor in Biosciences and Biotechnology
Faculdade Metropolitana São Carlos - FAMESC

Lígia Cordeiro Matos Faial
Doctor in Health Care Sciences
Faculdade Metropolitana São Carlos - FAMESC

Paulo Roberto Blanco Moreira Norberg
Doctor of International Law
Faculdade Metropolitana São Carlos - FAMESC

Antonio Neres Norberg
Doctor in Parasitic Diseases
Faculdade Metropolitana São Carlos - FAMESC

Renato Mataveli Ferreira Filho
Medical Student
UniRedentor University Center

Fabiana Pereira Costa Ramos
Master of Arts
Faculdade Metropolitana São Carlos - FAMESC

Paulo Cesar Ribeiro
Master in Parasitic Diseases
Iguaçu University – UNIG

ABSTRACT
Scabies is a parasitic disease caused by the mite Sarcoptes scabiei and is an important public health problem. A retrospective study was conducted on the incidence of scabies among patients treated at the dermatology department of the Orbílio Machado Family Health Center, in the city of Bom Jesus do Itabapoana, state of Rio de Janeiro, Brazil. Among the 211 patients examined, 13 (6.16%) were diagnosed with scabies and 30.77% were five-year-olds. Although the incidence of scabies is low among the patients treated, it is suggested that actions to control scabies should focus on the child population at the beginning of school age.

Keywords: *Sarcoptes scabiei*, Scabies, Dermatoses, Ectoparasitoses.

1 INTRODUCTION

Human scabies is a parasitic skin infestation caused by the mite *Sarcoptes scabiei* var. *hominis*., included in the class Arachnidae, and transmission is carried out through direct skin contact between individuals or through contaminated objects (BURKI, 2023). The importance of this infestation for global public health led international health authorities to create the International Alliance for the Control of Scabies (WHO, 2017) in 2012. The WHO's recognition of the large number of people affected worldwide led to the disease being added to the list of Neglected Tropical Diseases, and in March 2018 a WHO working group was signed for the monitoring and evaluation of scabies in the world (ENGELMAN et al., 2019). The estimated global prevalence of scabies for the year 2010 was

100625000 infested people. The analysis in the study of the Global Burden of Disease group estimated for the year 2013 a global prevalence of more than 204151000 cases of scabies in the world (MILLER et al., 2018). For the year 2017, the number of cases of scabies in the world was estimated at 175406000 (GBD, 2018). Zhang et al. (2020), in an epidemiological analysis of GBD prevalence data obtained between 1990 and 2017, pointed to a declining trend in the incidence of scabies worldwide. Although scabies is unlikely to be fatal, systemic morbidities and complications from secondary bacterial lesions negatively affect 1.5 million people each year (KABURI et al., 2019).

According to Engelman et al. (2019), scabies has a worldwide distribution, although it does not affect uniformly the different populations and regions. The WHO points to prevalence rates ranging from 0.3% to 46% (WHO, 2017). In developed countries, prevalence is generally low and the disease is concentrated in outbreaks in hospitals and care facilities for the elderly. In low- or middle-developed countries, where living conditions and access to health services are unsatisfactory, prevalence rates tend to be higher. Regions with hot and humid climates have the highest prevalence rates, especially in some Pacific islands, northeastern Australia and Central America, where prevalence rates reach 20% and 30% of the total population studied, with the age group under 18 years of age having prevalence rates of 40% to 50%. Prevalence rates in Brazil among children and adolescents, according to Engelman et al. (2019), is estimated to be between 10% and 19%. Poverty, overpopulation, and lack of access to health services are factors that facilitate the endemism of scabies in certain communities (CHANDLER & FULLER, 2019).

The life cycle of *Sarcoptes scabiei* begins with a fertilized female that penetrates human skin. The mite can lay two or three eggs a day. The larvae emerge after a period of 48 to 72 hours, reaching maturity between 10 and 14 days, continuing the reproductive cycle. Direct contact of the skin of the infested individual with that of other individuals leads to the transmission of the mite, which is able to survive outside the human body for a period of 24 to 36 hours. Indirect transmission of *Sarcoptes scabiei* through clothing, bed-sharing, and other contaminated inanimate surfaces, although less common, is also a major source of contagion (CHANDLER & FULLER, 2019; SANTIAGO & JANUÁRIO, 2017).

The most characteristic symptom of scabies is pruritus, usually intense especially at night. The pruritus is the result of a hypersensitivity immune reaction of the host to *Sarcoptes scabiei* and its secretions, eggs and excrement. The furrows caused by mites are characteristic lesions of the disease, the most common aspect of which is that of thin, brownish or reddish linear lesions, but not always evident, and may be masked by abrasions or secondary infections usually caused by bacteria (BORALEVI et al., 2014; SHAHID et al., 2023). The appearance of the lesions has a characteristic pattern, with papules, and the most affected body sites are the armpits, elbows, buttocks, genital area, and periumbilical (MARTÍNEZ-NAVARRO, 2020).

The host's immune response influences the severity of the infestation. In immunocompetent people, the average number of mites infesting the individual is 10 to 15, contrasting with thousands of mites present in scabies lesions in immunocompromised individuals, which often have the crusted or Norwegian clinical form. This more severe clinical form is related to a greater number of mites on the scales, which makes it more contagious through fomites to other hosts (CHOSIDOW, 2006; LAUSE et al., 2023). Paul & Papier (2020) state that more than 45% of scabies cases escape the diagnosis of health professionals, both due to the lack of training in the identification and laboratory procedures for the confirmation of the disease and the presentation of misdiagnosed atypical clinical forms.

In order to evidence the incidence of scabies in the population of Bom Jesus do Itabapoana, this research aimed to conduct a retrospective study of dermatological infections by *S. scabiei* observed at the Orbílio Machado Family Health Center from January to December 2019.

2 METHODS

The research was conducted during 2019 among 209 patients with dermatological problems who attended the medical outpatient clinic of the Orbílio Machado Family Health Center, in the city of Bom Jesus do Itabapoana, state of Rio de Janeiro, Brazil. The clinical diagnosis and appropriate treatment were performed by a dermatologist and students of the undergraduate course in Medicine at Faculdade Metropolitana São Carlos - FAMESC. The diagnosis of scabies was made by observing the clinical characteristics of the disease and by investigating the history of scabies in the family.

3 RESULTS

The results showed 13 positive cases among the 211 patients examined, which corresponds to a prevalence rate of 6.16%.

Table 1: Cases of scabies among patients treated at the Orbílio Machado Family Health Center, distributed by gender and age.

Gender	Age
M	5
M	5
M	5
M	5
M	17
M	19
M	25
F	27
F	40
F	57
F	65
F	71
F	78

The low number of cases does not allow an analysis that infers statistically relevant trends or correlations in the gender distribution, but the repetition of cases among individuals aged 5 years (30.77% of the total cases of scabies) suggests that school-age admission, with greater contact between children, may be a risk factor for *Sarcoptes scabiei contamination*.

4 DISCUSSION

The prevalence of scabies among 1879 inhabitants of 30 villages in Sanma Province, Vanuatu, was investigated by Callum et al. (2019), which found 563 individuals with scabies, a prevalence of 30% in the population studied. Children between 6 and 10 years of age were the most affected by the infestation, and 38.8% of individuals in this age group had scabies.

Osti *et al*. (2019) found high levels of prevalence of scabies and impetigo among Solomon Islanders. In a total of 324 students examined in 2018, 54.3% were positive for scabies, with a higher prevalence among males (63.5%) and more frequent in the age group of 10 to 12 years (61.4%). The authors recommended the development and implementation of control of this disease as a matter of urgency. The high prevalence rates found by Callum *et al.* (2019) and Osti *et al*. (2019) corroborate the studies of Engelman (2019), who point to Oceania as one of the regions most afflicted by scabies. The rates found in our research in Bom Jesus do Itabapoana are substantially lower than those found in these countries.

A study among 300 patients presenting with dermatoses in the Khammam region, India, between the years 2018 and 2019 was conducted by Kumar & Shivani (2020). Scabies was the most frequent skin condition, with 85 cases, corresponding to 28.3% of the skin diseases diagnosed. The incidence of scabies in Khammam, India, was higher than that found in Bom Jesus do Itabapoana, where only 6.16% of the patients treated in the dermatology sector of the PSF Orbílio Machado were diagnosed with scabies.

Chaudhry et al. (2018) conducted an epidemiological survey regarding risk factors and prevalence of scabies in Pakistan. The results revealed that scabies accounted for 38.15% of the dermatological diseases diagnosed at the Military Hospital of Rawalpindi. The infestation was higher in males (53.81%), and children at the beginning of school were the most affected group (46.88%). The authors pointed out scabies as a neglected disease and suggested education and health actions with family members of children at the beginning of school age and the training of health agents who serve the poorest population. As in the research conducted by Chaudhry et al. (2018), our results also point to a higher infestation rate among children at the beginning of school age, which corresponded to 30.77% of the total number of patients diagnosed with scabies in the PSF Orbílio Machado in 2019.

Researchers Marks et al. (2019) investigated the prevalence of several dermatoses in the population of the Bijagos archipelago, Guinea-Bissau, in specific populations, such as children, elderly

people hospitalized in shelters, and prisoners. These authors investigated an outbreak of scabies among students at a school in Accra, Ghana, with 92 confirmed cases among 823 preschool children, corresponding to a prevalence of 11.2%. The most affected age was 3-year-olds. In our study, the most affected age was concentrated at the age of 5 years.

In a study on the prevalence of dermatological diseases among school-age children treated at the Port Harcourt Teaching Hospital, Nigeria, Altraide & Alex-Hart (2020) found 37 cases of *Sarcoptes scabiei* infestation among 2132 patients examined, corresponding to a prevalence of 1.73%. Scabies was the second most frequent dermatological disease, surpassed only by papular urticaria. In a retrospective study that analyzed the medical records of 19129 patients treated between 2012 and 2017 at the dermatology service of the Regional Hospital of Thiès, Senegal, Dione et al. (2020) found only 69 cases of scabies, with a prevalence of 0.36%, demonstrating that the infestation is only incidental in this locality. The dermatology service of the PSF Orbílio Machado, in Bom Jesus do Itabapoana, recorded a rate higher than that found by Altraide & Alex-Hart (2020) and Dione et al. (2020) in Nigeria and Senegal, with an incidence of 6.16%. Sociocultural and environmental differences may determine the variation in incidence in different populations.

Heukelbach et al. (2003) investigated infectious skin diseases in the Vicente Pinzón II favela, in the municipality of Fortaleza, state of Ceará, Brazil. The total prevalence of scabies was 8.8%, with the age group of 0 to 4 years being the most affected. The authors commented that only 28 of the 54 patients with scabies received previous medical care, and that the physicians of the primary health care centers only diagnosed the parasitic skin diseases when they were pointed out by the patients themselves. The results showed that parasitic skin diseases, including scabies, are neglected by both the population and physicians, and that primary health care center records do not reflect the actual prevalence of this disease in the community. In this sense, investigations such as those carried out by Heukelbach et al. (2003) and in Bom Jesus do Itabapoana have the purpose of estimating the incidence of scabies in the population in order to establish strategies for the control and eradication of scabies in the affected population.

The study of the epidemiology and morbidity of scabies in the Morro do Sandra's favela in Fortaleza, and in the Balbino community, in the city of Cascavel, both in Ceará, was studied by Heukelbach et al. (2005). Scabies had a prevalence rate of 8.8% in the community of Morro do Sandra's and 3.8% in the community of Balbino. The authors did not find a consistent pattern of distribution of infestation by age group or gender. The prevalence of scabies among patients treated at the Orbílio Machado FHP is on average between the two regions studied by Heukelbach et al. (2005).

Ferreira et al. (2020) outlined the profile of dermatological diseases reported in a total of 75229 visits to health units in the municipality of Florianópolis, state of Santa Catarina, Brazil, in 2016 and

2017. The prevalence of scabies in these patients was 4.55%, and it represented the most frequent dermatological communicable disease.

In a study with 196 patients with dermatological diseases treated in the Boa Esperança neighborhood, in the city of Sinop, Mato Grosso state, Brazil, it was found that scabies occurred in 8.2% of the study population (AGOSTINHO *et al*., 2013). The incidence of *Sarcoptes scabiei* infestation in the municipality of Sinop is close to that found in our study in Bom Jesus do Itabapoana.

The epidemiological profile of patients treated at the dermatology service of the BWS Faculty Health Institution in São Paulo, Brazil, was outlined by Sena et al. (2020). Retrospective analysis of 855 patients revealed that only 7 (0.82%) were diagnosed with scabies. The incidence rate among the total number of patients treated in Bom Jesus do Itabapoana was higher than that found in the health service of the BWS college.

The prevalence of scabies in children from the São Francisco de Assis community, in the city of Manhuaçu, Minas Gerais State, Brazil, was determined by Norberg et al. (2020). Out of a total of 154 children, 14 were diagnosed with scabies, corresponding to a prevalence coefficient of 9.09%. The most affected age group is between 4 and 6 years old. The most affected age group coincides with that found in our study, whose fashion analysis points to the age of 5 years as the one that recorded the most cases of scabies among patients treated in 2019.

The examination of dermatological diseases among 180 patients from a fishing community in the municipality of Picinguaba, state of São Paulo, Brazil, revealed that scabies accounted for only 4.4% of the dermatoses that occur in this population. Eight cases of scabies were diagnosed exclusively in the child population (Haddad-Júnior, 2019). In Bom Jesus do Itabapoana, children accounted for 30.77% of the total number of cases, and the child population, as in Picinguaba, seems to be the most affected by scabies.

Andrade et al. (2018) studied the most prevalent dermatological conditions in pediatric hospital admissions at the Luis Gioseffi Jannuzzi Teaching Hospital, in the city of Valença, state of Rio de Janeiro, Brazil. These authors reviewed 39 medical records of patients admitted to the pediatric ward of the hospital between July 2016 and July 2017, and selected those whose reasons for hospitalization were dermatological conditions. The most frequent causes were skin infections such as impetigo, cellulitis, and abscess. Among the skin infections, 3 (1.17%) cases of dermatitis caused by *Sarcoptes scabiei* were recorded. The rates found among the 211 patients treated in our study at the Orbílio Machado FHP (6.16%) point to higher infestation rates than those found in the city of Valença.

5 CONCLUSION

Scabies is an incident dermatosis in the city of Bom Jesus do Itabapoana, state of Rio de Janeiro, Brazil, and was diagnosed in 13 patients treated at the Orbílio Machado FHP (13/211) in 2019,

representing an incidence of 6.16%. The repetition of cases among five-year-old patients (30.77% of the total diagnosed) indicates that the onset of school age is a risk factor for infestation, and this group should be the target of greater attention in the fight against *Sarcoptes scabiei* in the region.

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