

## SCABIES INCIDENCE AMONG PATIENTS ATTENDED ON A PRIMARY CARE UNIT OF BOM JESUS DO ITABAPOANA, PROVINCE OF RIO DE JANEIRO, BRAZIL

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### ABSTRACT

Scabies is a parasitic disease caused by the mite *Sarcoptes scabiei*, and constitutes an important health problem. A retrospective study of scabies incidence among patients attended at the Orbílio Machado Primary Health Unit in the city of Bom Jesus do Itabapoana, Province of Rio de Janeiro, Brazil, from January to December 2019 was performed. Among the 211 examined patients, 13 (6,16%) were diagnosed with scabies, and 30,77% of them had five-years-old. Although the scabies incidence among the examined patients was low, we suggest that disease control measures should have the children in the early school-age as the main focus.

**KEYWORDS:** *Sarcoptes scabiei*, scabies, dermatoses, ectoparasitoses.

### INTRODUCTION

Human scabies is a parasitic skin infestation caused by the mite *Sarcoptes scabiei* var. *hominis*, included in the class Arachnidae, and the transmission occurs through direct skin contact between individuals or through contact with contaminated objects.<sup>[1]</sup> The importance of this infestation to global public health led international health authorities to create in 2012 the International Alliance for the Control of Scabies.<sup>[2]</sup> In recognition of a large number of affected people in the world, the World Health Organization included the disease in the Neglected Tropical Diseases list, and in March 2018 a WHO's working group was established to monitor and evaluate scabies worldwide.<sup>[3]</sup> The global prevalence for scabies estimated for the year 2010 was 100625000 infested people. The analysis in the Global Burden of Disease study estimated for the year 2013 a global prevalence of more than 204151000 cases of scabies worldwide.<sup>[4]</sup> For the year 2017, the number of scabies cases worldwide was estimated at 175406000.<sup>[5]</sup> Zhang *et al.*<sup>[6]</sup> in an epidemiological analysis of GBD prevalence data obtained between 1990 and 2017 pointed to a declining trend in scabies incidence. Although scabies is hardly fatal, morbidities and systematic complications from secondary bacterial lesions affect negatively 1,5 million people each year.<sup>[7]</sup>

According to Engelman *et al.*<sup>[3]</sup>, scabies has a worldwide distribution, although not affecting uniformly different

populations and regions. WHO points to prevalence rates ranging from 0,3% to 46%.<sup>[2]</sup> In developed countries, the prevalence is often low and the disease generally appears in hospitals outbreaks and in long permanence institutions for the elderly. In low and middle developing countries, where living conditions and access to health services are unsatisfactory, prevalence rates tend to be higher. Regions with warm and humid climate have the highest prevalence rates, especially in some Pacific islands, north-east Australia and Central America, where prevalence rates reach 20% to 30% of the examined population, where the age group under 18 years and may present prevalence rates from 40% to 50%. The prevalence rates in Brazil among children and adolescents, according to Engelman *et al.*<sup>[3]</sup>, are estimated between 10% and 19%. Poverty, overpopulation, and lack of access to health services are factors that ease scabies endemism in some communities.<sup>[8]</sup>

The life cycle of *Sarcoptes scabiei* begins with a fertilized female that penetrates the human skin. The mite can lay two or three eggs a day. The larvae emerge after 48 to 72 hours, reaching maturity between 10 and 14 days, restarting the reproductive cycle. Direct skin contact of the infected host with other people leads to the transmission of the mite, which is able to survive outside the human body for a period of 24 to 36 hours. The indirect transmission of *Sarcoptes scabiei* through

clothing, bed-sharing and other contaminated inanimate surfaces, although less common, is also an important source of contagion.<sup>[8,9,10]</sup>

The most characteristic symptom of scabies is itching, which is more intense at night. The itching is the result of the immune reaction of hypersensitivity of the host to the *Sarcoptes scabiei* bodies and their secretions, eggs and excrements. The tunnels dug by the mites represent characteristic lesions of the disease, usually presented as thin, brownish or reddish linear lesions. These lesions are not always evident and may be masked by rash abrasions or secondary infections usually caused by bacteria.<sup>[11,12]</sup> The lesions' appearance presents a characteristic pattern, with papules, and the most affected body sites are the armpits, elbows, buttocks, genital and periumbilical skin surfaces.<sup>[13]</sup>

Host immune response influences the severity of the infestation. In immunocompetent individuals, the mean number of mites infesting the individual ranges from 10 to 15, in contrast to thousands of mites present in scabies lesions in immunocompromised individuals, which often presents a crusted form, known as Norwegian clinical form. This more severe clinical form is related to a higher number of scale mites, which makes lesions more contagious through contact with unanimated surfaces or contact with other people.<sup>[1,14]</sup> Paul & Papier<sup>[15]</sup> state that more than 45% of scabies cases escape from diagnosis by health professionals due to a lack of training in identification and laboratory procedures, as for misdiagnosed atypical clinical forms.

Aiming to identify the scabies incidence in the population of the city of Bom Jesus do Itabapoana, Province of Rio de Janeiro, Brazil, this research performed a retrospective study of dermatologic infestations by *Sarcoptes scabiei* observed in the Orbílio Machado Primary Care Unit from January to December 2019.

## METHODS

The research was performed between January and December 2019 among patients attended at the dermatological sector of the Orbílio Machado Primary Care Unit in the city of Bom Jesus do Itabapoana, Province of Rio de Janeiro, Brazil. The attendance was performed by a dermatologist and medicine students of the São Carlos Metropolitan School - FAMESC supervised by the dermatologist who confirmed the suspicious cases. Scabies diagnostics were performed by clinical characteristics and following the familiar history of scabies previous cases.

## RESULTS

Results showed 13 positive cases to scabies among 211 examined patients, which corresponds to an incidence rate of 6,16%.

**Table 1: Distribution scabies cases among 211 patients examined at the dermatological sector of Orbílio Machado Primary Care Unit by age and gender.**

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 and the short temporal cohort do not permit an analysis to infer statistically significant trends or correlations for gender or age class distributions, although the modal repetition of cases among patients with 5 years-old (30,77% of total scabies diagnostics) suggest that the beginning of school-age, with more contact between children, should be a risk factor for the contamination by *Sarcoptes scabiei*.

## DISCUSSION

The prevalence of scabies among 1879 inhabitants of 30 villages in the province of Sanma, Vanuatu, was investigated by Callum *et al.*<sup>[16]</sup>, who found 563 individuals with scabies, a 30% prevalence in the studied population. Children between 6 and 10 years-old were the most affected by the infestation; 38,8% of individuals in this age group had scabies.

Osti *et al.*<sup>[17]</sup> found high levels of scabies and impetigo among Solomon Islands inhabitants. Among 324 examined students in 2018, 54,3% were positive for scabies, with a higher prevalence among boys (63,5%) and more frequent in the 10-12 age class (61,4%). The authors urgently recommended the development and implementation of control of this disease. The high prevalence rates found by Callum *et al.*<sup>[16]</sup> and Osti *et al.*<sup>[17]</sup> corroborate the studies by Engelman *et al.*<sup>[3]</sup>, who identified Oceania as one of the regions most affected by scabies. The rates found in our research in Bom Jesus do Itabapoana are substantially lower than those found in these countries.

Research involving 300 patients with dermatoses in the region of Khammam, India, between 2018 and 2019 was conducted by Kumar and Shivani.<sup>[18]</sup> Scabies was the most frequent skin condition, with 85 cases, corresponding to 28,3% of diagnosed skin diseases. The incidence of scabies in Khammam, India, was higher than that found in Bom Jesus do Itabapoana, where only 6,16% of the patients attended at the dermatology service

of Orbílio Machado Primary Care Unit was diagnosed with scabies.

Chaudhry *et al.*<sup>[19]</sup> conducted an epidemiological survey regarding risk factors and the prevalence of scabies in Pakistan. The results revealed that scabies corresponded to 38,15% of the dermatological diseases diagnosed at Rawalpindi Military Hospital. The infestation was higher in males (53,81%), and early school children were the most affected group (46,88%). The authors highlighted 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 attend the poorest population. As in the research conducted by Chaudhry *et al.*<sup>[19]</sup>, 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 at the Orbílio Machado Primary Care Unit in 2019.

Marks *et al.*<sup>[20]</sup> investigated the prevalence of several dermatoses in the population of the Bijagos archipelago, Guinea-Bissau, in specific populations, such as children, elderly in long term institutions and prisoners. These authors investigated an outbreak of scabies among students of a school in Accra, Ghana, with the confirmation of 92 cases among 823 preschool children, corresponding to a prevalence of 11.2%. The most affected age was 3-years-old. In our research, the most affected age was 5-years-old.

In a research on the prevalence of dermatological diseases among schoolchildren attended at Port Harcourt Teaching Hospital, Nigeria, Altraide & Alex-Hart<sup>[21]</sup> found 37 cases of *Sarcoptes scabiei* infestation among 2132 examined patients, corresponding to a prevalence of 1,73%. Scabies was the second most frequent dermatologic disease, surpassed only by papular urticaria. In a retrospective study that analysed the medical records of 19129 patients attended from 2012 to 2017 in the dermatology department of the Thiès Regional Hospital, Senegal, Dione *et al.*<sup>[22]</sup> found only 69 cases of scabies, with a prevalence of 0,36%, demonstrating that the infestation is only incidental in this place. The dermatology service of Orbílio Machado Primary Health Care, in Bom Jesus do Itabapoana, recorded a higher rate than that found by Altraide & Alex-Hart<sup>[21]</sup> and Dione *et al.*<sup>[22]</sup> in Nigeria and Senegal, with an incidence of 6,16%. Sociocultural and environmental differences may determine the variation of the incidence in diverse populations.

Heukelbach *et al.*<sup>[23]</sup> investigated infectious skin diseases in the Vicente Pinzón II community in the city of Fortaleza, Province of Ceará, Brazil. The total scabies prevalence was 8,8%, with the age class from 0 to 4 years-old being the most affected group. The authors commented that only 28 of the 54 patients with scabies received previous medical attendance and that the physicians of the primary health care centers only

diagnosed the parasitic skin diseases when attempted by the patients. 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 these diseases in the community. This way, investigations such as those conducted by Heukelbach *et al.*<sup>[23]</sup> and in Bom Jesus do Itabapoana aim to estimate 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 community in the city of Fortaleza, and in the Balbino community, city of Cascavel, both in the Province of Ceará, was studied by Heukelbach *et al.*<sup>[24]</sup> Scabies presented a prevalence rate of 8,8% in Morro do Sandra's community and 3,8% in Balbino community. The authors did not found a consistent pattern of infestation distributed by age or gender. The prevalence of scabies among patients seen at Orbílio Machado Primary Health Care is in the average between the two regions studied by Heukelbach *et al.*<sup>[24]</sup>

Ferreira *et al.*<sup>[25]</sup> determined the profile of dermatological diseases reported analysing 75229 consultations in health units in the city of Florianópolis, Province of Santa Catarina, Brazil, in the years 2016 and 2017. The prevalence of scabies in these patients was 4,55%, and it represented the most frequent communicable dermatological disease. The rate found by Ferreira *et al.*<sup>[25]</sup> in Florianópolis is below the incidence found in our research.

In a survey of 196 patients with dermatological pathologies attended in the Boa Esperança neighbourhood, in the city of Sinop, Province of Mato Grosso, Brazil, the prevalence for scabies was determined in 8,2%.<sup>[26]</sup> The incidence of *Sarcoptes scabiei* infestation in the city of Sinop is a bit higher than the rate found in our research in Bom Jesus do Itabapoana.

The epidemiological profile of patients attended in the dermatology service of the BWS health college in the city of São Paulo, Brazil, was investigated by Sena *et al.*<sup>[27]</sup> A retrospective analysis of 855 patients records revealed that only 7 (0.82%) were diagnosed with scabies. The incidence rate among the total number of patients seen in Bom Jesus do Itabapoana was higher than that of the BWS college health service.

The prevalence of scabies in children from the São Francisco de Assis community in the city of Manhuaçu, Province of Minas Gerais, Brazil, was determined by Norberg *et al.*<sup>[28]</sup> The authors examined 154 children, and 14 were diagnosed with scabies, corresponding to a prevalence coefficient of 9,09%. The age group from 4 to 6 years was the most affected and coincides with that found in our research, which modal analysis points to the

age of 5 years for almost a third patients with scabies diagnosed in 2019.

Exams of dermatological diseases among 180 patients from a fishing community in the city of Picinguaba, Province of São Paulo, Brazil, revealed that scabies represented only 4,4% of the dermatoses affecting this population. Eight cases of scabies were diagnosed exclusively in the infant population.<sup>[29]</sup> In Bom Jesus do Itabapoana, children accounted for 30,77% of the total cases, and the child population, as in Picinguaba, seems to be the most affected by scabies.

Andrade *et al.*<sup>[30]</sup> inquired the most prevalent dermatological conditions in pediatric hospital admissions at the Teaching Hospital Luis Gioseffi Jannuzzi, in the city of Valença, Province 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 admission were dermatological disorders. The most frequent causes were skin infections, such as impetigo, cellulitis and abscess. Registering only 3 cases (1,17%) of infestations by *Sarcoptes scabiei*. The incidence verified among the 211 patients attended in our research at Orbílio Machado Primary Health Care (6,16%) point to higher scabies infestation rate than those found in the city of Valença.

## CONCLUSION

Scabies is an incident dermatosis in the city of Bom Jesus do Itabapoana, province of Rio de Janeiro, Brazil, and was diagnosed in 13 patients attended at Orbílio Machado Primary Care Unit (13/211) in the year 2019, representing an incidence of 6,16%. The frequency of cases among patients with five years of age (30,77% of the diagnosed patients) indicates that the beginning of school-age is a risk factor for infestation, and this age group should receive more attention in the control and fight against *Sarcoptes scabiei* in the region.

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