SCABIES AMONG CHILDREN IN POLICE AND ARMY BARRACKS, AND AT MADO VILLAGE OF JOS PLATEAU STATE OF NIGERIA.

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ABSTRACT

Introduction:

Several species of mites infest humans and can thereby transmit certain diseases like rickettsial pox and scrub typhus. Furthermore, ***sarcoptic acariasis***, a non-infectious but contagious disease, is caused by the skin-burrowing mite, ***Sarcoptes scabiei***. This infection has been a public health problem for long, particularly in the less developed countries.

Objective:

The objective of this study was to determine the prevalence of scabies among pre-adolescent children in the police and army barracks, as well as in Mado Village of Jos, Plateau State of Nigeria.

Subjects and methods: A cross-sectional descriptive study was done. The study subjects consisted of pre-adolescent children, aged 0 to 10 years found at the police and army barracks, and Mado village. By means of probability sampling technique, 330,105 and 105 children were selected from Mado village, police and army barracks respectively. Questionnaires were designed to ascertain factors, which may be associated with scabies. These factors included maternal literacy, sanitation status, over crowding and health knowledge. Chi-square test was used to establish association between scabies and risk factors, and the student t-test for the comparison of means.

Results:

There was significantly higher prevalence rate of 16.2% in the police barracks than 5.7% at the army barracks, and 16.1% in Mado Village. At the police barracks, more males (6.2%) than females (43.5%) were infected; while at Mado village, slightly more females (9.1%) than males (7.0%) were infected. Prevalence of scabies was 25.0%, which is the highest among children aged 2 to 3 years and those of 10 years old at the police barracks followed by those in age-group 4 to 5 years (24.0%). At the army barracks, highest prevalence (12.5%) was among children aged 6 to 7 years, and at Mado village, it was commonest among the under-fives (7.0%) and least common in those over 10 years of age (2.4%). At Mado village, no association was established between scabies and maternal literacy level, over crowding and health knowledge. There was a strong association between scabies and personal hygiene ($P<0.05$). There was also association between scabies and overcrowding, poor personal hygiene, and low socio-economic status in the two barracks.

Conclusion:

This study has shown that scabies is a health problem in the barracks and Mado village, Plateau State of Nigeria. Scabies infection was associated with over crowding, infrequent bathing and scarcity of water. The literacy level, socio-economic class that correlated with awareness of the mothers were contributory factors. Improved housing conditions of both policemen and soldiers, as well as for the general public are recommended. Improved health, and levels of personal and domestic hygiene should be encouraged.

Introduction

Scabies is a highly contagious, intensely pruritic disorder, caused by the human itch mite, ***Sarcoptes scabeii var hominis***. It can be acquired by direct contact with an infected person or indirectly through contaminated clothing, bedliners and handholding materials. This obligate parasite burrows downwards into the epidermis[1]

Every year, 5% of the world's population (300 million) have scabies. Canizares[2] asserted that scabies is the most common parasitic skin disease throughout the tropics. It is found in endemic proportions and often becomes epidemic. In a study in Rwanda, the author reported that the prevalence of scabies was 30.6% in the urban areas, and 29.7% in rural areas. In another study in Guatamala, Honduras and Nicaragua, it was shown that the average prevalence rate was 36.4% of the total population[2].

Prevalence studies conducted in Mali, Malawi and Cambodia showed scabies infection rates to be 4%, 0.7% and 47% respectively[3]. Whittle[4] described two seasonal peaks in Nigeria; one during the cold, dry period and the other at the end of the rainy season.

Four fundamental factors are involved in the severity of scabies which include overcrowding, inadequate indoor water supply, lack of health education in the population and poor distribution of medical resources[5]. The economic consequences of scabies were elaborated by Taylor[6] as causing suffering, sleeplessness, and diminished efficiency during the valuable socio-economic years. The role of scabies in contributing to debilities and death under extraordinary circumstances such as great crowding and inordinate numbers of prolonged physical contacts is known in Britain.

The scenario described above is thought to be reminiscent of lives of children many police and military personnel. It has been observed that homes in many barracks in Nigeria are clustered and the general environmental conditions are grossly unhygienic, most homes have only one or two bedrooms housing many people and of course, it is a common feature to see police and military personnel with large families.

In Jos metropolis as a whole, and particularly in the barracks, water supply is scarce. Most of the non-commissioned officers in the two barracks received little or insufficient education before recruitment into the force. It was in view of these lapses which constitute recognized, predisposing factors in scabies pathogenesis that led to the present study, whose primary objective was to determine the prevalence of scabies in police and army barracks in Jos, as well as Mado village in Tudun-wada District of Jos North Local Government Area, Plateau State Nigeria.

MATERIALS AND METHODS:

The Study Areas:

1. **Police barracks**

The major police barracks in Jos is the A Division, located along Joseph Gomwalk Road, Jos. It is bounded by the Jos zoological Garden on the North, West of Mines street on the East, the Hill Station Hotel on the South and Tudunwada on the West. It has a population of 2595 police officers and men. In the barracks houses are crowded, sanitation is poor and water supply is via public taps and wells.

2. **ARMY BARRACKS:**

Rukuba barracks is the headquarters of the 3rd Armoured Division of the Nigerian Army. It is located on the out skirts of Jos but in Bassa Local Government Area. This barracks has a population of 13,416 military officers and men, women and children. The houses are reasonably well spread out and hygienic standards and waste disposal are fairly good. Water supply is from public taps and water wells.

3. **MADO VILLAGE:**

Mado village is surrounded by Anglo-Jos to the South, Kabong Village to the North, Dung village to the east and Gada-Biyu to the West. The village has a population of about 1839

people, Mado Village is inhabited by an admixture of tribes and ethnic groups, but predominantly Jarawa, Angas, and Taroh. Others include Hausa, Eggon and Fulani. Most of the inhabitants of this community are low-income civil servants, drivers, artisans, petty traders and labourers. Water supply is mainly from public water supply and wells consists of taps and water wells. Sample sizes were determined using the probability method as described by Lemeshow and Lwanga[7]. Therefore, using a prevalence rate of scabies in the rural areas of Rwanda of 29.7% [8] a confidence level of 95% with absolute precision of 5%, and Z-value at α = 1.96, samples sizes of 330, 105 and 105 children were selected from Mado village, police and army barracks respectively.

The materials used included hand lens, hand gloves, scalpel blade and questionnaires. The hand lens was used to examine the skin lesions seen for the presence of the female mite. The scalpel was used to dissect out the mite from the burrows in the skin.

The questionnaires were interviewer – administered and the following information were obtained:

- Age and sex of the child
- Occupation and literacy level of parents, (for soldiers and police, this was measured in terms of rank of father).
- Family size and number persons per room
- Source and location of water supply
- Regularity of bathing, washing cloths and bed linens.
- Presence of skin rashes among family members
- Enquiry about the cause, mode of transmission, prevention and treatment of scabies.

Data were collected and analysed using the Epi-Info version 5 software.

RESULTS:

The overall prevalence of scabies were 5.7%, 16.1%, 16.2% in the army barracks, police barracks and Mado village respectively. Out of 105 children from the police barracks, 47 (44.8%) were males while 58 (55.2%) were females. Of this number 8 (7.6%) males and 9 (8.6%) females had scabies. At the army barracks, 59 (56.2%) males and 46 (43.8%) females were examined; and of this number, 6 (5.7%) males and 1 (1.0% females had scabies. At Mado village, 175 (53.0%) and 155 (47.0%) were females and males respectively out of 330 children examined. The sex distribution of scabies was such that more females (9.1%) than males (7.0%) had scabies.

In terms of age distribution of scabies in the three communities, it is evident from **Table 1** that children of various ages in police barracks and Mado village had higher infection rates than those from army barracks, particularly in age groups 0-4 and 5-9 years.

In Mado village, children of civil servants had the highest infection rate (8.2%) followed by children of drivers (4.2%) and the artisans (2.4%) **Table 2a.** But in the police barracks, it was children of corporals that were mostly infected (9.5%) while in army barracks it was the children of Warrant Officers that had the highest infection (3.8%) as shown in **Table 2b.**

The children of mothers who attained primary and secondary education in police barracks had the highest infection rate; (10.6%) but in the army barracks children of illiterate mothers (4.%) and mothers who had primary education (2.15%) had the highest prevalence. In Mado village however, children of illiterate mothers (5.2%) and mothers with secondary education (4.6%) were mostly infected. There was no statistical association between these relationships (P>0.05).

In **Table 3**, the distribution of scabies in children in relation to other environmental health criteria is demonstrated. The data show that crowding in rooms is an important factor in the spread of scabies as it accounted for 14 (13.3%), 5 (4.8) and 18 (5.5%) of infections at the police and army barracks, and Mado village, respectively. However, in Mado village, more of the children who were less than three per room were infected 35 (10.6%). This is in contrast to the situation at the barracks. Personal hygiene, measured in terms of regularity of bathing with water and soap, was another important factor. Children who had at least a bath per day with soap had higher infection rates in all the study locations compared with children who bathed more than once with soap and water.

Table 1: Age distribution of scabies in three communities near Jos, Plateau State of Nigeria.

Age Group (years)	Prevalence of Scabies in Barracks		
	Police	**Army**	**Mado village**
0-4	5(4.8)*	1(1.0)	23(7.0)
5-9	9(8.6)	2(1.9)	22(6.7)
≥10	3(2.9)	3(2.9)	8(2.4)
Total	**17(16.2%)**	**6(5.7)**	**53(16.1)**
	N = 105	N=105	N=330

* Figures in parenthesis indicate percentages.

TABLE 2a: Distribution of scabies in children according to paternal occupation in Mado village, Plateau State of Nigeria.

Occupation of father	No of children with scabies	%
Civil Servants	27	(8.2)
Drivers	14	(4.2)
Artisans	8	(2.4)
Others	4	(1.2)
Total	**53**	**(16.1)**

Table 2b: Distribution of scabies infection in children according to paternal rank in the police or army barracks in Plateau State of Nigeria.

Rank of father	Police		Army			
	No of children with scabies	%	No of children with scabies	%	No of children	%
Constable/recruit	3	(2.0)	1	(1.0)	3	(1.4)
Corporal	10	(9.5)	2	(1.9)	10	(4.4)
Sergent	4	(3.8)	Nil	-	4	(1.9)
Staff sergent	Nil	-	1	(1.0)	2	(1.0)
W.O/Inspector	Nil	-	2	(1.9)	4	(1.9)
Total	**17**	**(16.2)**	**6**	**(5.7)**	**23**	**(11.0)**

Table 3: Distribution of scabies in children in relation to other environmental characteristics

Environmental characteristics	Scabies Infection in children					
	Barracks					
	Police		Army		Mado Village	
	No pos	%	No pos	%	No pos	%
Crowding*						
More than 3 people/room	14	(13.3)	5	(4.8)	18	(5.5)
Less than 3 people/room	3	(2.9)	1	(0.9)	35	(10.6)
Personal Hygiene						
At least a bath/day	12	(11.4)	5	(4.8)	46	(13.9)
More than one bath/day	5	(4.8)	1	(0.9)	7	(2.2)
Regularity of soap usage						
Always	9	(8.6)	4	(3.8)	51	(15.4)
Most times	9	(7.6)	3	(2.9)	2	(0.6)

*Overcrowding is regarded by WHO as >3 persons in a standard room of $16m^2$ area [13]

DISCUSSION:

The prevalence of scabies varied significantly between children in the police barracks, Mado village and those who lived in the army barracks. The values obtained from the police barracks and Mado village corroborated the 16.0% obtained among children in Quaranic schools in Zaria[9]. Although the prevalence rates obtained in this study were higher than what is obtainable in developed countries, it is however, below the various prevalence rates reported in most developing countries. The low prevalence recorded in this study could be an indication of improved primary health care delivery services in the areas of health education, control of communicable diseases and treatment of common ailments in Jos North and Bassa LGA of Plateau State.

More females than males were infected at the police barracks and Mado village but not in the army barracks. Results from previous studies also suggested male/female disparity[10], which was attributed to increased incidence of handholding among girls and their role as care givers to younger children. However, other studies have reported that there is no sex preponderance in scabies infection[5,11].

The age groups 0-4 years and 5-9 years were relatively more infected than children who are over ten years of age. These early ages are when most children begin to explore their environment and play very actively in and around homes, and hence make more contact with their unhygienic environments. This is in keeping with the work of Downs *et al* [12] who reported that the degree of personal contact is the predominant factor for risk and susceptibility among young infants, nursing mothers, older children, female adolescents, male adolescents and adult males in that order.

Environmental characteristics such as overcrowding, poor personal hygiene, unavailability of water and irregular of soap use were factors that contributed to the level of scabies infection in the present study. Children who were crowded in their sleeping rooms (over 3 people per room) were more infected. The acceptable number of persons per room is 2 for a room of $16m^2$[13]. This shows that overcrowding is a major factor in the spread of scabies. This finding is supported by Parry[14] who stated that scabies is endemic in much of Africa particularly among the poor, overcrowded and dirty individuals. Personal hygiene, measured by the frequency with which the children took their bath with soap and adequate water supply, also played an important role in scabies prevalence. Poor personal hygiene led to high rates of scabies at all three locations studied, but highest at the police barracks and Mado village than at the army barracks. Observations during sampling indicated that the children of soldiers maintained better personal hygiene than the other children. Thus, poor personal hygiene and unhygienic environmental conditions would predispose the children more to scabies especially, when there is contact with other infected children while playing.

The degree of personal hygiene achieved by an individual depends on the availability and adequacy of water. This factor was present in the three study locations, and was a major contributory factor to the cases of scabies seen. The lower prevalence found at the army barracks compared to that at the police barracks and Mado village could partly be accounted for by the more regular nature of tap water supply to army barracks, the availability of a water tanker that supplied water regularly and the availability of more wells in the barracks. This agrees with Church [15] that the prevalence of scabies varies from place to place depending on the extent of overcrowding, poor hygiene and scarcity of water. Even in a community as noted by Ochoa[16] the distribution of this infestation in the population is more likely due to overcrowding, inadequate indoor water supply, and lack of health education in the population. He further observed that where there was enough water the control of scabies was easy, but where water supply was inadequate the problem was similar, just as they were similar at the police barracks and Mado village in the present study. This could explain why Lucas and Gilles[17] in their classification of water – related diseases, classified scabies as a "water shortage disease" after associating water shortage with increased incidence of scabies.

For obvious reasons, the health status of the family in general and that of children in particular is for most part dependent on the level of awareness and literacy of the mother. Results were similar in all locations in showing that the prevalence of scabies was highest among illiterate mothers. However, it was somewhat surprising that the children of women who had post secondary school education were more infected with scabies than the less educated women at Mado village. It is possible that such women who are mainly in the "working class" could have had less time to care for their children and relied more on house helps who, in most cases were ill-informed, or had a flippant attitude towards the welfare of their wards. At both the police and army barracks, scabies was not found among children whose mothers had tertiary education. This contrasts significantly with the result from Mado village. Landwehr *et al*,[3] pointed out that, literacy level, which relates to the level of awareness and socio-economic lass, is also an important factor in the transmission of the disease.

At the barracks the children of corporals showed the highest infection rate, whereas, at Mado village, it was the children of civil servants that were more infected. It would appear that these two ranks whose children were more infected might have had smaller rooms which made their children to be crowded in a small space.

In conclusion, this study has shown that scabies is a health problem in the barracks and Mado village, Plateau State of Nigeria. Scabies infection was associated with overcrowding, frequency of bathing and scarcity of water. The literacy level, socio-economic class which correlated with awareness of the mothers were contributory factors.

It is recommended that government should improve on the housing conditions of both policemen and soldiers, as well as for the general public. There should also be increased health education activities to inform people about the predisposing factors to scabies infection and improved level of personal and domestic hygiene, particularly in the primary and secondary schools.

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