

# Pediculosis Capitis among Primary Schoolchildren in Urban and Rural Areas of Kwara State, Nigeria

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**ABSTRACT:** The prevalence of head lice (*pediculosis humanus capitis*) was investigated among urban and rural schoolchildren in Ilorin, capital of Kwara State, Nigeria, and two neighboring rural communities. Among the pupils, 57 (3.1%) of 1,842 urban schoolchildren examined were infested, compared with only one (0.1%) of 1,056 rural school pupils. More female pupils had infestations. Children less than age five, primary I pupils, and pupils in primary VI were not infested. Urban schoolchildren with 41-45 lice per head constituted 7.7% of those infested with nits and lice. Most infested children had one-five and 11-15 lice per head. The school health component of the national primary health care scheme should be intensified to screen schoolchildren regularly for pediculosis and other childhood diseases. (J Sch Health 1988;58(3):101-103)

To ensure Nigerian schoolchildren benefit from the universal primary health care scheme, they must be screened regularly for common infestations such as *pediculosis humanus capitis*, *tenia capitis*, *otitis media*, visual impairments, protein energy malnutrition, and other childhood diseases. These diseases can interfere with the ability of school-age children to learn and perform psychomotor activities.

*Pediculosis humanus capitis* and louse-borne diseases constitute major public health problems in many developing countries of the world where dissemination of the universal primary health care scheme is haphazard and inefficient.<sup>1</sup> Though *pediculosis capitis* infestation is found on the head, it hybridizes easily with other strains such as *pediculosis humanus corporis* which is found on the body.<sup>2</sup> Researchers have found that *Pediculosis* species are transmitters of etiological agents of typhus and relapsing fever. The natural foci of these diseases abound not only in Africa but in other parts of the world.<sup>3,4</sup>

*Pediculosis capitis* is transmitted by personal contact, combs, hats, scarfs, mufflers, and headgear. The infestation, which is common among school pupils, has been investigated in several countries.<sup>5-7</sup> Kwaku-Kpikpi<sup>8</sup> reported a prevalence rate of 49% among 319 schoolchildren in Accra, Ghana. In Ethiopia, a prevalence rate of 24.4% among 2,435 pupils was reported by Scholdt, Holloway, and Frank.<sup>9</sup> In Mahe, Seychelles, Grainger<sup>10</sup> found a prevalence rate of 18.2% among school-age children. In western Nigeria, Ogunrinade and Oyejide<sup>4</sup> recorded a prevalence rate of 5.7% among 1,860 urban schoolchildren. While most of these studies were conducted in urban areas, the investigators concurrently detected *Pediculosis* to be common among schoolchildren, regardless of social status. Children living in overcrowded homes with inadequate personal hygiene facilities were more prone to contact lice.<sup>9,10</sup>

In Kwara State, Nigeria, the prevalence of *pediculosis* had not been studied. Therefore, this project compared the prevalence of *pediculosis capitis* among urban and rural schoolchildren. The relationship between gender and prevalence of *pediculosis* also was examined.

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## PROJECT DESIGN

### School Selection

The project was completed at six randomly selected primary schools at Asa and Moro Local Government Areas of Kwara State. In the urban area, the project was conducted at Oko-Erin (School A), St. James (School B), and C. Wesley (School C) elementary schools. These schools are located in Ilorin, the state capital with a population of 477,564. Children younger than age 14 constitute about 20.7% of the population.<sup>11</sup>

The other three primary schools are located at Oloru (School D), 32 kilometers northeast of Ilorin, and Shao (Schools E and F), 15.8 kilometers from the capital. Shao is a rural village of 3,756 females and 3,510 males.<sup>12</sup> Oloru village had 444 males and 601 females. Both villages are farming communities in which most women are small-scale traders. Children younger than age four constitute 50.5% and 28.3% of the population at Shao and Oloru, respectively.

### Procedures

Written permission was obtained from the schools' headmasters before beginning the project. All pupils agreed to participate and the abstention rate generally was less than 5%.

Two principal community nursing officers and six final-year medical students were trained at the Epidemiology and Community Health Laboratory, University of Ilorin, on the standard techniques for screening for *pediculosis capitis* and related infestations. A questionnaire was used to obtain information about the pupils' age, gender, perceived source of parasite, source of water supply, previous infestation, number of nits present, number of lice, and local management of the disease. Also elicited were the pupils' grade and parents' occupation. All children in attendance were examined individually between May 4 and June 3, 1987.

### Screening Protocol

Using a hand lens, the scalp and hair shafts of each pupil were examined for small ovoid, grayish-white nits (ova). When nits were detected, the pupil's occiput and areas behind the ears were inspected thoroughly for lice before being combed on to a 60 cm x 75 cm sheet of white paper. The time for combing and grooming was about 10 minutes per child. The total nits and lice detected were separated, counted, and transferred into

two separate universal bottles containing 10% formalin. For female pupils with braided hair where nits were detected, the plaited hairs were loosened and combed. One research assistant, a principal nursing officer, re-groomed the pupil after prescription of 1% gamma benzene hexachloride (lindane). Parents of pupils with lice were invited to school to help conduct home visits and provide health counseling.

## RESULTS

Table 1 contains a summary of the prevalence of head infestation among urban and rural schoolchildren. Not one case of *pediculosis capitis* was detected at Schools D and F, rural primary schools. School E, the other rural primary school, recorded one case (0.2%).

Table 1  
Prevalence of Head Lice Infestation among Urban and Rural Schoolchildren in Kwara State, Nigeria

School	No. Examined	No. with Nits Only (%)	No. with Nits and Lice (%)	Total No. Infested (%)
Urban (A) Oko-Erin	590	10 (1.7)	8 (1.4)	18 (3.0)
(B) St. James	856	13 (1.5)	11 (1.3)	24 (2.8)
(C) Wesley	396	8 (2.0)	7 (1.8)	15 (3.8)
Total	1,842	31 (1.7)	26 (1.4)	57 (3.1)
Rural (D) Oloru	157	0 (0)	0 (0)	0
(E) Shao	541	1 (0.2)	1 (0.2)	1 (0.2)
(F) Shao	358	0 (0)	0 (0)	0 (0)
Total	1,056	1 (0.1)	1 (0.1)	1 (.1)

Table 2  
Prevalence of Head Lice Infestation by Gender at Urban Schools

School	No. Examined	No. with Nits Only (%)	No. with Nits with Lice (%)	Total No. Infested (%)
Oko-Erin	M 299	3 (1.0)	2 (0.7)	5 (1.7)
	F 291	7 (2.3)	6 (1.0)	13 (4.5)
Total	590	10 (1.7)	8 (1.4)	18 (3.0)
$X^2 = 0.250$ 1df $P > 0.05$				
St. James	M 416	6 (1.4)	6 (1.4)	12 (2.9)
	F 440	7 (1.6)	5 (1.1)	12 (2.7)
Total	856	13 (1.5)	11 (1.3)	24 (2.8)
$X^2 = 0.020$ 1df $P > 0.05$				
Wesley	M 206	3 (1.4)	2 (0.9)	5 (2.3)
	F 190	5 (2.6)	5 (2.6)	10 (5.3)
Total	396	8 (1.9)	7 (2.6)	15 (3.6)
$X^2 = 2.020$ 1df $P > 0.05$				
All Urban Schools	M 921	12 (1.3)	9 (1.0)	21 (2.3)
	F 921	19 (2.1)	17 (1.8)	36 (3.9)
Total	1,842	31 (1.7)	26 (1.4)	57 (3.1)
$X^2 = 3.828$ 1df $P < 0.10$				

Table 3  
Prevalence of Head Lice Infestation by Age Group at Urban Schools

Age	5	6-7	8-9	10-11	12-13	14-15
	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)
Oko-Erin	0	6 (1.0)	6 (1.0)	4 (0.7)	2 (0.3)	0 (0)
St. James	0	5 (0.6)	5 (0.6)	7 (0.8)	7 (0.8)	0 (0)
Wesley	0	2 (0.5)	4 (1.0)	9 (0)	6 (1.5)	3 (0.8)
Total	0	13 (0.7)	15 (0.8)	11 (0.6)	15 (0.8)	3 (0.2)

Among urban primary schoolchildren, prevalence ranged from 2.8% to 3.8% with a mean of 3.1%. Table 2 presents prevalence of head infestation by gender at the urban schools. At two urban schools, the proportion of female pupils with infestations was larger than for the male children. The largest infestation rate (3.6%) was recorded at School C, where females had a proportionately larger infestation rate than male pupils.

Using chi-square statistics at each of the primary schools, no significant association existed between infestation rates (nits and lice) and gender among the urban pupils studied. However, when combined, a larger proportion of female pupils had more infestations than did males. The association between the infestation and gender was weak ( $X^2 = 3.830$ , 1df  $P < 0.1$ ).

The prevalence of head infestation by age among urban schoolchildren is in Table 3. No infestations were identified in children less than age five; the largest infestation rate was observed among pupils ages eight-nine and 12-13. Table 4 contains prevalence rates by grade distribution among urban schoolchildren. In all urban schools, no infestation was detected in primary I pupils, but infestation increased among children from primary II to IV.

Intensity of lice and nit infestation among 26 children in the three urban primary schools is summarized in Table 5. Two children (7.7%) were heavily infested with 41-45 lice. Six children (23%) were found to be infested with 1-5 lice.

## DISCUSSION

In neighboring Oyo State, Ogunrinade and Oyejide<sup>4</sup> reported a prevalence of 5.7% and 1.5% in urban and rural areas, respectively. Geographically, Kwara State lies within the Guinea Savanna belt of West Africa with a biome of evenly dispersed grasses and scattered trees. Temperatures range from 22°C to 34°C with an annual rainfall between 40-45 inches.<sup>13</sup> Climatic factors influence distribution of *pediculosis humanus capitis*.<sup>14</sup> The

Table 4  
Prevalence of Head Lice Infestation by Primary Class in Urban Schools

Primary Class	I	II	III	IV	V	VI
	N	N (%)	N (%)	N (%)	N (%)	N (%)
Oko-Erin	0	6 (1.0)	4 (0.7)	4 (0.7)	4 (0.7)	0 (0)
St James	0	5 (0.6)	7 (0.8)	9 (1.0)	3 (0.4)	0 (0)
Wesley	0	3 (0.8)	4 (1.0)	4 (1.0)	4 (1.0)	0 (0)
Total	0	14 (0.7)	15 (0.8)	17 (0.9)	11 (0.5)	0 (0)

Table 5  
Intensity of Lice Infestation among Children in Urban Schools

No. of Lice per Head (10-minute search)	No. of Children	%
1 - 5	6	23.0
6 - 10	4	15.4
11 - 15	6	23.0
16 - 20	0	0.0
21 - 25	0	0.0
26 - 30	4	15.4
31 - 35	4	15.4
36 - 40	0	0.0
41 - 45	2	7.7

3.1% prevalence rate detected among urban schoolchildren in this project was similar to results reported for Oyo State and a few temperate countries.<sup>4</sup>

In Czechoslovakia, Palicka et al<sup>13</sup> reported a prevalence rate of 4.1% among 4,374 schoolchildren. Gromzig<sup>16</sup> recorded prevalence rates of 4.7%, 11.8%, and 8.6% among schoolchildren between 1966-1968. In Tucson, Lang<sup>17</sup> detected a prevalence of 4.3% among 24,000 children. In Malaysia, Sinniah et al<sup>18</sup> obtained an overall prevalence rate of 10.7%. In the Malaysian observation, rural schoolchildren had a larger prevalence rate (41.5%). Other investigators<sup>14</sup> have recorded prevalence rates of 30% for Israel, 31% for Iran, and 41% for India. Prevalence rates obtained in those investigations were larger than in this survey.

Table 2 indicated females were more heavily infested than were male schoolchildren. Hoffmann<sup>7</sup> observed head lice to be three times more frequent among females. Also, Currier et al<sup>19</sup> and Lolio et al<sup>20</sup> reported *pediculosis humanus capitis* rates larger in females but generally declined with age. Explanations provided include hair length and braiding of hair.

Seasonal variation was not studied thoroughly in this preliminary investigation. However pediculosis was common in the first few days of school. Children younger than age five were free of infestation, while those between ages eight-13 were infested. This observation conforms with the report of Buxton<sup>21</sup> who maintained *pediculosis capitis* was common among children ages 11-15, but declined with age for both genders.

In Nigeria, males and females in urban and rural areas wear short hair that can be groomed easily. The process in which African females plait their hair could account for the increased prevalence of pediculosis among the female schoolchildren. Braided hair often remains unwashed for three weeks or more, facilitating pediculosis infestation.

Infestation rates for pediculosis increased among schoolchildren in primary II to IV and declined in primary V. Parents generally pay more attention to children younger than age five. Also, as pupils mature, they can maintain personal hygiene more effectively.

## CONCLUSION

The intensity of infestation with *pediculosis humanus capitis* noted in this project was similar to results reported in Oyo State, Nigeria,<sup>4</sup> and Ethiopia.<sup>9</sup> Children with one-five lice encompassed 23% of the participants, while pupils with 41-45 lice were 7.7%. Most students were unaware of their infestation, though most complained of severe itching.

The technology required for effective screening and delousing of schoolchildren as a component of primary health care is quite simple and inexpensive. Local school health authorities need to cooperate with and obtain assistance from health situations to facilitate screening schoolchildren for pediculosis and other childhood diseases. ■

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