

Prevalence of Pediculosis among Urban–Rural School Children in Misurata–Libya

Faraj Soliman Elserite

Faculty of Medical Technology, Misurata, Libya

Abstract— From January to May (2015) a cross sectional study which included a visual inspection and wet combing techniques for *P. Humans capitis* (PC) school children in Misurata–Libya (n = 4617, aged from 6 to 11 years). The results of 4617 children living in Misurata–Libya The prevalence rate of pediculus humans capitis among the 2768 urban school children was 7.33%. But the infestation rate among the 1849 rural school children was 12.06%. The overall rates of females between 2.79-8.85% and males 3.32-2.43%.

Keywords: Pediculosis, age, humans, prevalence, urban, rural, school, children.

INTRODUCTION

Lice (order: Phthiraptera) are wingless; dorsally flattened. Permanent actoparasites of birds and mammals. More than 3000 species have been described. Mainly parasites of birds. Lice infest a wide range of domestic livestock, including pigs, cattle, goats and sheep, and cause a chronic dermatitis (Pediculosis). Lice are divided into two main groups: the Anoplura (sucking lice) and Mallophage (chewing or biting lice) [1]. Pediculosis capitis (PC), the infestation of human hair and scalp by the head louse *Pediculus humanus capitis*, is common in school children [2]. It has been attributed to individual characteristics (i, e. gender, age group, hair type and length, race, etc.), and surrounding environmental (V,gr. socioeconomic), conditions, often with contradictory associations [3,4] The pathology associated with PC normally includes constant scalp pruritus which can occasionally result in excoriations and superinfections [5]. Moreover, head Lice infestation is also associated with the detriment of family, community levels [6].

Here we report an analytical study in which we assess the root cause and environmental factors associated with PC infestations in Libya school children from Misurata–Libya rural–urban schools.

MATERIALS AND METHODS

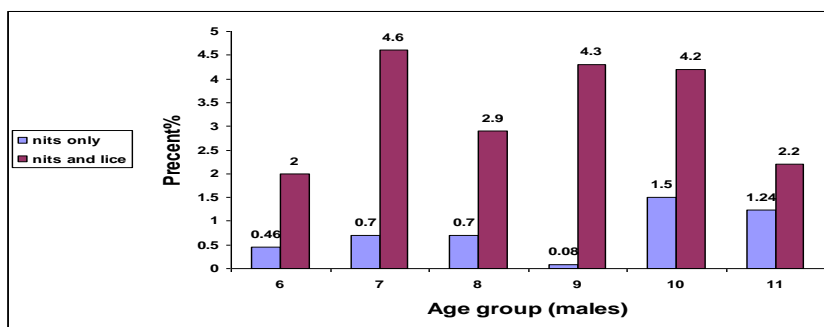
From January to May 2015 a cross sectional study which included a visual inspection and wet – combing techniques for *P. humans* (nits or mobile stages) was carried out in all urban and rural. School children in Misurata Libya. (n = 4617, aged 6 to 11 years) using a hand lens each pupil was examined for small, ovoid greyish–white nits by inspecting the scalp and hair shafts. Whenever nits were detected, the pupil's occiput and areas behind the ears were inspected thoroughly for lice before being combed onto a 60 cm × 75 cm piece of white paper. The time spent combing and then grooming each child was 10 minutes. The total nits and lice detected were separated, counted and transferred into two separate universal bottles containing 70% ethanol [7,8] (**Table 1**).

**Table 1:** Prevalence of pediculosis among urban school children in Misurata–Libya

| Age (y) | no. of examined | Males | | Females | | Total no. Infested % |
|---------|-----------------|----------------------|-----------------------|-----------------------|-----------------------|----------------------|
| | | no. with nits, only% | no. with nits, Lice % | no. with nits, only % | no. with nits, Lice % | |
| 6 | 650 | 3(0.46) | 13(2.0) | 5(0.76) | 41(6.30) | 62(9.5) |
| 7 | 534 | 4(0.74) | 25(4.6) | 1(0.18) | 9(1.6) | 29(5.9) |
| 8 | 472 | 0(0.0) | 14(2.9) | 2(2.42) | 5(1.05) | 21(4.44) |
| 9 | 393 | 3(0.76) | 17(4.3) | 2(0.50) | 5(1.2) | 27(6.87) |
| 10 | 398 | 6(1.50) | 17(4.2) | 0(0.00) | 8(2.01) | 31(7.78) |
| 11 | 321 | 4(1.24) | 8(2.4) | 3(0.93) | 8(2.4) | 23(7.16) |
| Total | 2768 | 20(0.72) | 94(3.39) | 13(0.46) | 76(2.74) | 203(7.33) |

Table 2: Prevalence of pediculosis among rural school children in Misurata–Libya

| Age (y) | no. of examined | Males | | Females | | Total no. Infested % |
|---------|-----------------|----------------------|-----------------------|-----------------------|-----------------------|----------------------|
| | | no. with nits, only% | no. with nits, Lice % | no. with nits, only % | no. with nits, Lice % | |
| 6 | 355 | 3(0.84) | 8(3.25) | 4(1.12) | 27(7.60) | 42(11.8) |
| 7 | 343 | 7(2.04) | 5(1.45) | 2(0.51) | 40(11.6) | 54(15.7) |
| 8 | 306 | 4(1.30) | 7(2.28) | 1(0.32) | 28(9.15) | 40(13.07) |
| 9 | 323 | 0(0.0) | 12(3.71) | 3(0.92) | 19(5.88) | 34(10.5) |
| 10 | 258 | 4(1.55) | 10(3.87) | 0(0.0) | 20(7.75) | 30(11.62) |
| 11 | 264 | 3(1.13) | 3(1.13) | 8(3.03) | 15(5.68) | 23(8.71) |
| Total | 1849 | 21(1.13) | 45(2.43) | 18(0.97) | 149(8.85) | 223(12.06) |

**Figure 1:** Urban school children in Misurata–Libya

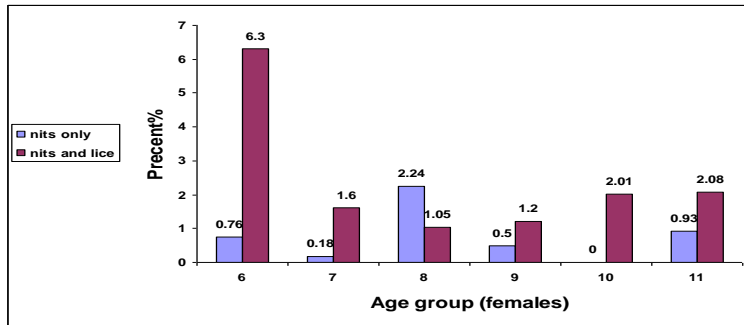


Figure 2: Urban school children in Misurata-Libya

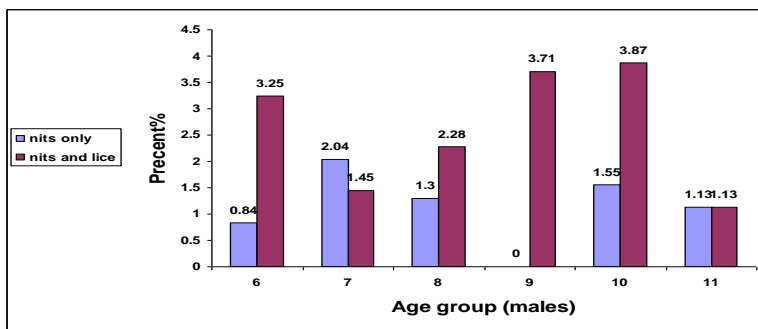


Figure 3: Rural school children in Misurata-Libya

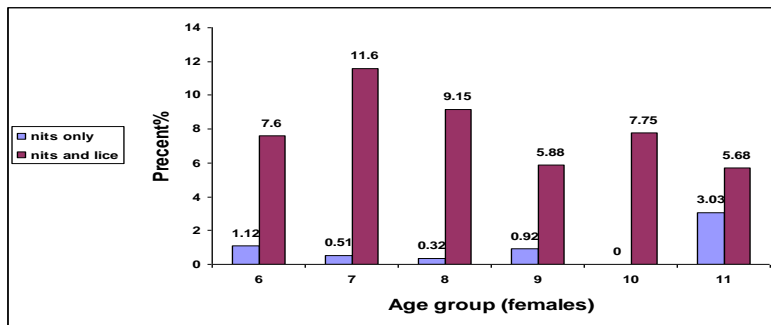


Figure 4: Rural school children in Misurata-Libya

Results and Discussion

The prevalence rate of pediculosis among the 2768 urban school children was 7.33% (Table 1). But the infestation rate among the 1849 rural school children was 12.06% (Table 2). The infestation rate according to age of urban School children pupils who were 6 years old had the highest infestation rate 9.8% (Table 1). Girls had an overall lower infestation rate 2.74% than boys 3.39% (Fig. 1) and (Fig. 2). The infestation rate according to age of rural school children pupils who were 7 years old had the highest infestation rate 15.7% (Table 2). Boys had an overall lower infestation rate 2.43% than girls 8.58% (Fig. 3), (Fig. 4), (Fig. 5) and (Fig. 6).



Figure 5: Nymph Lice

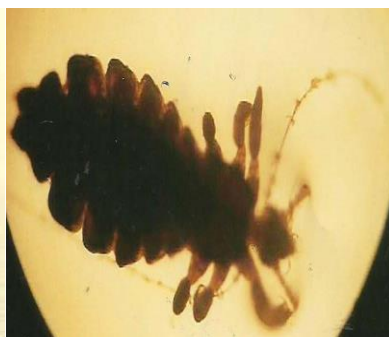


Figure 6: Adult Lice

Pediculosis capitis has been documented since ancient times and remains a common ectoparasite worldwide. Infestation rates differ according to geography, season, examination technique, reporting of active infestation or presence of nits and potential introduction of effective pediculicides [9,10]. This study reported the overall prevalence of (12.06% rural school children and 7.33% urban school children in the city of Misurata–Libya. Epidemiological studies performed in primary school children found that the prevalence of pediculosis capitis was 28.8% England, 1.5% in Poland, 8.9% Belgium, 15.0% in France, 9.39% in Spain, 78.6% in Libya, 5.5% in Palestine, 8.0% in Lebanon, 26.6% in Jordan, 6.85% in Iran, 16.59% in India, 40.0% In Taiwan, 4.1% in Korea, 33.7% in Australia, 42.7% Brazil and 29.7% In Argentina [11-13]. The prevalence of head lice in Turkey was 50.8% in girls and 9.8% in boys children in the age group 6-12 are at the highest risk for *P. capitis*. A study from Jordan reported a higher infestation rate in younger children (<9 years) [13]. Whereas a survey from Greece showed that risk increases by 15% for every year of age [9]. Prevalence of head lice with increasing age (Mustafa 2013). Pediculosis was defined as an urban problem in Nigeria [14]. However, higher rates of head lice infestation were detected in rural schools in Poland [15] as well as our study.

In our study is lower than frequencies observed in previous studies on school children in Peru (39.4-49.0%) (Robles) and Brazil (35%) [16] but higher than in a study in a rural community in Tanzania 5.3% (Henderson 1996). Sinniah et al.[17] reported a prevalence rate of 10.7% among primary school children in Malaysia.

In Nigeria in the Christian area, the Infestation rate was 3.0%, girls had a higher infestation rate (5.6%) than boys (2.1%) [4]. In Pakistan, the prevalence of *P. capitis* was highest (80.0%) in age group of 61-75 years and lowest (46.2%) in age group of 31-45 years (Bibi 2011). *P. capitis* affects millions of humans globally especially children of 3-14 years of all socioeconomic groups [18]. Kocuturk *et al*[10] examined in 2003 the relationship between *P. capitis* and sex the prevalence of infestation was significantly higher in girls (13.3%) than in boys (1.1%). [15] examined in 2004 a total of 95,153 school children living in urban and rural areas. *P. capitis* was observed most sequent in girls both in the urban (63.5%) and rural (75.3%) schools.



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دراسة لانتشار قمل الرأس بين تلاميذ مدارس مصراته الابتدائية في المناطق الحضرية والريفية

فرج سليمان السريتي

كلية التنقية الطبية، مصراته، ليبيا

الخلاصة:

أجريت الدراسة على عدد 4617 تلميذ بمدارس مصراته الابتدائية خلال الفترة من يناير إلى مايو 2015: وكانت النتائج كالتالي: كانت نسبة الإصابة الكلية للمناطق الحضرية (7.33%) والمناطق الريفية (12.06%) وكانت الإصابة بين الذكور في المناطق الحضرية بالصنبان فقط (0.72%) والإصابة المختلطة بالصنبان والبالغات (3.39%). أما الإصابات في الإناث فكانت (0.46%) بالبيوض و 2.74% مشتركة بيوض وبالغات، أما الإصابات بالمناطق الريفية فكانت فالذكور (1.13%) إصابة بالبيوض و(2.43%) بالبالغات والبيوض، أما الإصابة في الإناث فكانت (0.97%) بالبيوض بينما (8.85%) بالبيوض والبالغات. أما من الناحية العمرية سجلت أعلى إصابة للمرحلة العمرية من 9-11 عام وكانت نسبة الإصابة بها 7.33% كان هذا بالمنطق الحضرية، أما في المناطق الريفية فكانت نسبة الإصابة بالمرحلة العمرية من 6 - 8 سنوات هي الأعلى، وسجلت نسبة إصابة وصلت إلى 13.07%.

الكلمات المفتاحية: قمل الرأس، مصراته الابتدائية، المناطق، الحضرية، والريفية