Prevalence of head louse infestation among Russeifa school children

Atallah Rabi, MPH, PhD, Nimr Al-Khateeb, MD
Mahmoud N. Abo-Shehada, PhD

Abstract  Objective: This study is aimed at studying the prevalence and contributing factors of head lice among school children.

Methods: To calculate the prevalence, all students (3440) in the study area in Al Russeifa were screened for head lice infestation. To study the contributing factors, structured questionnaires were filled out by the researchers for 484 students (232 who were infested and the rest were free from head lice).

Results: The overall prevalence of head lice was 6.7% (232 of 3440). The prevalence of pediculosis capitis was significantly (p<0.05) higher among secondary school children, aged 15-18 years, 7.4% (166 of 2240) than primary school children, 6-14 years, 5.5% (66 of 1200) and among the secondary school boys 11% (126 of 1140) than secondary school girls 3.6% (40 of 1100). The prevalence was influenced by age, sex, family size, house occupancy and father’s employment.

Conclusions: Head lice is a serious public health problem among school children in Jordan. Control measures are badly needed.


KEYWORDS: Epidemiology, Jordan, Pediculus humanus var. capitis, school children.

Head louse infestation is an infestation of the head with Pediculus humanus var. capitis. The insects are harbored on the scalp and may lead to severe itching. The intense scratching may cause excoriations, secondary bacterial infection, edema and adenopathy. Also, they may transmit serious epidemic diseases such as epidemic typhus, trench fever and relapsing fever. Pediculosis has also a social and psychological impact on infested children and their parents. Such an impact leads to avoidance in seeking advice from health care providers, which leads to underestimation of the magnitude of the problem. Outbreaks of pediculosis generally take place during periods of economic crisis or wars, as happened in the Second World War. Pediculosis was rare in the post Second World War period, but since the 1970s it has increased considerably.

This work investigates the prevalence of head lice among school children in the Russeifa area of Jordan.

Materials and methods

Study area and community The study area is located within the Zarqa Governorate, between the Greater Amman area and Zarqa City, the second largest city in Jordan after the capital Amman. The population of the study area is a heterogeneous group of about 20,000 urban and rural people. It is a newly developed area with a mixture of all socioeconomic hierarchies of Jordan. The area is totally served by public water distribution and partially by liquid waste disposal systems and can be considered a good representative of the Jordanian population.

Sampling All 3 primary and secondary schools serving the study area were surveyed. All students enrolled in the 3 schools were examined for head lice with a total number of 3440 students.

Head examination for lice The children were examined by a team consisting of a physician, 2 nurses and a sanitarian. Children were examined within their school. The standard examination...
procedure was performed according to Andrews and Tonkin.4

**Questionnaire** A purposely designed, structured questionnaire was completed for each infested child and 252 randomly selected non-infested children. A table of random numbers was used for this purpose. The questionnaire provided information on the family size, parental occupation and the number of rooms in the family home. Also, age and sex of the student were recorded.

**Statistical analysis** Data were analyzed using the Fisher's exact test.

**Results** The overall prevalence of head lice was found to be 6.7% (232 of 3440). The prevalence of *pediculosis capitis* was significantly (p<0.05) higher among secondary school children 7.4% (166 of 2240) than primary school children 5.5% (66 of 1200) and higher among the secondary schoolboys 11% (126 of 1140), than secondary schoolgirls 3.6% (40 of 1100). The prevalence was 5.5% among the primary mixed school children.

Tables 1-3 summarize the relationship of head lice infestation and family size, working parents and number of rooms in the house. The number of persons per room was calculated for the infested and non-infested groups to be 3.58:1 and 4:1 respectively.

**Table 1:** The effect of family size on prevalence of head lice infestation among Russeifa school children.

<table>
<thead>
<tr>
<th>Family size</th>
<th>Infested No. (%)</th>
<th>Non-infested No. (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 5</td>
<td>3 (1.3)</td>
<td>12 (4.8)</td>
</tr>
<tr>
<td>6 - 8</td>
<td>103 (44.4)</td>
<td>162 (64.3)*</td>
</tr>
<tr>
<td>9 - 12</td>
<td>126 (54.3)</td>
<td>78 (30.9)*</td>
</tr>
</tbody>
</table>

* Significant (p<0.05) difference between infested and non-infested groups.

**Table 2:** The effect of working parents on the prevalence of head lice infestation among Russeifa school children.

<table>
<thead>
<tr>
<th></th>
<th>Infested No. (%)</th>
<th>Non-infested No. (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mother</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working No. (%)</td>
<td>15 (6.5)</td>
<td>217 (93.5)</td>
</tr>
<tr>
<td>Non-working No.</td>
<td>174 (75)*</td>
<td>58 (25)*</td>
</tr>
<tr>
<td><strong>Father</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working No. (%)</td>
<td>13 (5.2)</td>
<td>239 (94.8)</td>
</tr>
<tr>
<td>Non-working No.</td>
<td>228 (90.5)</td>
<td>24 (9.5)</td>
</tr>
</tbody>
</table>

* Significant (p<0.05) difference between infested and non-infested groups.

**Discussion** This is the first report on pediculosis in school children from Jordan. The prevalence rate of head lice among Russeifa school children in Jordan was found to be 6.7% (232 of 3440). Head lice infestation has a worldwide distribution, with comparable prevalence among school children of both developed and developing countries. There is an increasing trend of prevalence in industrialized countries, such as USA, Canada, Britain, and Germany. Prevalence of head lice was reported to be 15-20% among school children of industrial areas in Britain, 2.4% among school children of different grades in England, 4.7% in Germany, 9.4%, in Spain and in schools of Touraine, France, more than 15% of the children are infested with *Pediculus capitis*.

Higher prevalence rates of head lice were reported among school children of developing countries, with varying rates. The rate of infestation is as high as 78.6% in Libya, 55% in Israel, 46% in Pakistan, 25.9% in Cameroon, 17.1% Kenya, 12.9% Malaysia, and 3.1% in Nigeria.

Age was reported to influence head lice infestation. Daraghmeh reported a head lice prevalence of 13.2% (63 of 477) among children of pre-school age in the Irbid area of Jordan. The current results showed significantly (p<0.05) higher prevalence among secondary schoolboys and schoolgirls than primary mixed school children. This shows an increase in prevalence with age, in agreement with previous studies.1,8,19

Sex is reported to influence head lice infestation with higher prevalence in girls than boys.3,4,11,15,20 The lack of significant association between sex and head lice infestation was reported in three countries, Kenya,14 Saudi Arabia16 and Israel.21 This study showed a significantly higher prevalence of head lice among secondary schoolboys than secondary schoolgirls. This may be explained by the religious and social local practices in the Middle East of covering the hair with a scarf thus preventing transmission of lice between girls and also caring for the appearance of
teenage girls as they approach marriageable age, unlike boys.

Lice are spread more rapidly in large families living in crowded conditions, were bed-sharing and poor hygiene exists. Significant relationships between head lice infestation and crowding was reported by many workers. In the current results, both infested and non-infested groups studied, shared bedrooms at high rates 4:1 and 3.58:1 respectively. Prevalence positively correlated to the size of the family (Table 1).

The infested groups of children had a significantly (p<0.05) higher rate of unemployment among their fathers compared to the non-infested group. This may explain the socioeconomic standard effect on head lice infestation. The mothers of infested and non-infested children had a similar rate of employment (Table 3).

Head lice prevailed among school children in Jordan. The prevalence was influenced by age, sex, family size, crowding and father's employment.

References

17. Daraghmeh TK. Head lice infestation among kindergarten children in Iribid city, Jordan. MSc Disseratat, Jordan University of Science and Technology, 1993.
دراسة إنتشار قتل الرأس بين أبناء المدارس في الأردن

الدكتور عطا الله ربيع
الدكتور زهر الحطيب
الدكتور محمد أبو شحاده

الخلاصة:

تهدف هذه الدراسة إلى معرفة مدى إنتشار قتل الرأس بين طلبة المدارس والعوامل المؤثرة في هذا الانتشار.

طريقة البحث:

لتقييم مدى إنتشار قتل الرأس تم فحص جميع طلبة المدارس (3400) في منطقة الدراسة والتي تعتبر ممثلة للمجتمع الأردني. كما تم تعريف إستبيان خاص بالعوامل المؤثرة في إنتشار قتل الرأس من قبل الباحثين لـ 330 طالب منهم 230 طالب مصاب والباقي غير مصابين.

نتائج الدراسة:

وجد أن نسبة إنتشار قتل الرأس بين الطلبة هي 7.7% (232 من بين 3444). ووجد أن نسبة الانتشار بين الطلبة في المرحلة الثانوية (15-18 سنة) هي 7.4% (226 من 3400) وهي تزيد بشكل واضح عنها بين الطلبة في المرحلة الإعدادية (6-14 سنة) حيث كانت النسبة بينهم 5.9% (26 من 1000). كما وجد أن نسبة الانتشار بين الطلبة الذكور في المرحلة الثانوية هي 11% (122 من 1100) مقابل 3.3% (40 من 1200) بين الإناث في نفس المرحلة. كما بنيت الدراسة أن العوامل المؤثرة في هذا الانتشار هي: العمر، الجنس، عدد أفراد الأسرة، مستوى الأردن داخل المنزل ومهنة الوالد.

الاستنتاج:

يصبح من الدراسة أن قتل الرأس ينتشر بنسبة عالية بين طلبة المدارس في الأردن وان هناك ضرورة ملمحة لوضع وتنفيذ برنامج صحي للمكافحة.