KNOWLEDGE AND ATTITUDE OF PARENTS AND SCHOOL’S STAFF TOWARDS HEAD LICE INFESTATION IN RIYADH

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Introduction:-

Pediculosis is one of the common health problems that has an impact on a lot of families in the beginning of academic years. Being highly contagious, this problem might spread and involve other family members even adults if missed or undertreated.¹ Pediculosis can develop secondary infections if not treated as well.¹ Most studies on pediculosis in Saudi Arabia have focused on prevalence and treatment among primary school students. Misdiagnosis of head lice infestations is common.² Family awareness is needed to implement proper personal hygiene practices and cease sharing personal items. Periodic screening of students at school and at home is recommended for early recognition and prompt treatment to prevent the spread of infestations among family members and peers.

Background: Head lice infestation is a parasitic skin infection that is commonly prevalent globally, especially in areas with poor economic status. This parasite lives in both human and animal body. This parasite feeds on the blood of host and transmits among different individuals by using of claws of the leg.

Objective: To investigate the knowledge and attitudes of parents towards head lice in Riyadh.

Subjects and Methods: This is a cross sectional study which was conducted on mothers of school girls in schools in Riyadh, Saudi Arabia. The study was performed using self- administrated questionnaire which was distributed among participants.

Results: The prevalence of head lice among children of participants was 56.5%. Appearance of lice in head was the most common mark to know about infestation by 52.2% of the participants. The large majority (96.6%) treated the affected child. Level of knowledge was significantly affected by age (P-value=0.023), being infested with head lice (P-value=0.000) and source of awareness about head lice (P-value=0.001), whereas attitude significantly affected by monthly income (P-value=0.036).

Conclusion: There was a high prevalence of head lice among girl students in Riyadh with moderate practice among mothers. Knowledge was significantly influenced by age, infestation with lice and source of awareness about head lice, whereas attitude was significantly influenced by monthly income.

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detection and treatment.\textsuperscript{[4]} Moderate pediculosis prevalence among the primary school girls at Albaha governorate was recorded to be 12.88%.\textsuperscript{[5]} The prevalence of skin diseases and conditions among female schoolchildren in the Al-Khobar area was high as 98.6%.\textsuperscript{[6]} The increase in head lice infestation among the elementary school girl students may be due to the students’ overcrowding in one classroom. The head lice prevalence in Jeddah was greatly lower than that in Mafraq governorate, Jordan that recorded higher prevalence of pediculosis infestation as 26.6%\textsuperscript{[7]}, this result were slightly higher than 11.26% which was recorded recently in Jeddah.\textsuperscript{[8]} However, few studies have investigated the knowledge gap and attitudes of parents and school staff regarding head lice. There is a knowledge gap on head lice infestation among parents of children as well as a trend towards application of natural substances for prevention and treatment.\textsuperscript{[3]} Pediculosis is an embarrassing problem which is still increasing in the first academic year of life. The parents and school staff have lack of knowledge about how to identify head lice, take right actions and sometimes resist to treatment, which might lead to progression of the disease and infection can be transmitted to surrounding children.\textsuperscript{[9]}

In this study, we will investigate the knowledge and attitudes of parents and school staff towards head lice in some schools in Riyadh. We will address the issues related to the way of discovering the affected child and as well as the steps taken by school staff and parents towards this problem, in addition to the psychological and educational impacts on affected children. Results of this study will help to improve awareness in parents and school staff about pediculosis and to have clear guidelines toward identifying this common problem, control, and prevent it from being progressed.

**Subjects and Methods:-**

**Subjects and study design:**

This is a cross sectional study which involved mothers and school’s staff in female primary schools Riyadh. A self-administrated questionnaire was distributed to teachers and mothers of student girls. The questionnaire is formed of 4 parts including 34 questions. It was derived from previous studies.\textsuperscript{[5,8]} Sing sample size formula, at 95% confidence level and 0.5 confidence interval, expected proportion 50% was used to calculate the sample size.

**Statistical Analysis:**

Data was analyzed using IBM SPSS Statistics 20. Descriptive statistics in terms of means, standard deviation, median and interquartile ranges was used to describe criteria of the studied sample. Association of qualitative variables by chi-square test was conducted. P-value Less than 0.05 was considered as statistically significant.

Ethical approval was obtained from IRB of Princess Nourah Bint Abdulrahman University.

**Results:-**

The present study included 526 participants, the large majority 507(96.4%) were Saudi, while only 19(3.6%) were non-Saudi. Also, the large majority were above 25 years old 483(92.4%), whereas 40(7.6%) were below 25 years old. There were 332(63.1%), 181 (34.4%) and 13 (2.5%) who had bachelor or higher education, secondary school or lower and illiterate respectively. 258(49%) of participants were working in either governmental or private field, 216(41.1%) were working in medical field, whereas 23(4.4%) and 29 (5.6%) were house wives and working in other jobs respectively. There were 441(83.8%) living in Riyadh and 85(16.2%) were living outside Riyadh. Regarding monthly income, 231(43.9%) of participants said that it just fulfills their needs, 140(26.2%) reported that it fulfills their needs and allow for saving, while 60 (11.4%) and 95(18.1%) reported that it is insufficient or they don’t want to mention respectively. Demographics of participants are shown in table 1.

| Character                  | Number | Percentage |
|----------------------------|--------|------------|
| Nationality                |        |            |
| Saudi                      | 507    | 96.4%      |
| Non Saudi                  | 19     | 3.6%       |
| Age                        |        |            |
| Above 25 years old         | 483    | 92.4%      |
| Below 25 years old         | 40     | 7.6%       |
| Educational level          |        |            |
| Bachelor and higher        | 332    | 63.1%      |
| Secondary school and lower | 181    | 34.4%      |
| Illiterate                 | 13     | 2.5%       |
| Occupation                 |        |            |
| Governmental/private field | 258    | 49%        |
| Description                        | Number | Percentage |
|-----------------------------------|--------|------------|
| Medical field                     | 216    | 41.1%      |
| Housewife                         | 23     | 4.4%       |
| Others                            | 29     | 5.6%       |
| Residency                         |        |            |
| Riyadh                            | 441    | 83.8%      |
| Outside Riyadh                    | 85     | 16.2%      |
| Monthly income                    |        |            |
| Just fulfills my needs            | 231    | 43.9%      |
| Fulfills my needs and allow for saving | 140    | 26.6%      |
| Insufficient                      | 60     | 11.4%      |
| I don’t want to mention           | 95     | 18.1%      |

There were 56.5% of participants reported having child affected by head lice, whereas 36.9% denied that as in figure1.

Most of participants showed that they knew the infestation of children by seeing lice in children’s hair (52.2%), the large majority 71% weren’t informed about the infestation of their child from school staff, 96.6% reported that they treated their affected child, and 65% reported treating them for 1-7 days. 32.1% of participants reported getting advices from pharmacist, and the most commonly used agent for treatment of head lice was medical comb (67.7%) followed by medical topical treatment (65.7%) and the most common non-medical agent was pesticides (28.6%). The majority (74.1%) reported repeating treatment after 1 week as shown in table 2.

**Figure1:** Prevalence of head lice among children.

| Description                        | Number | Percentage |
|-----------------------------------|--------|------------|
| Recognition method                |        |            |
| head scratching                    | 110    | 37.0%      |
| Lice visible in hair              | 155    | 52.2%      |
| Informed by school                | 26     | 8.1%       |
| School notification by parents    |        |            |
| yes                               | 82     | 27.6%      |
| No                                | 211    | 71.0%      |
| I forget                          | 4      | 1.3%       |
| Treatment                         |        |            |
| Yes                               | 287    | 96.6%      |
| No                                | 7      | 2.4%       |
| Duration of treatment             |        |            |
| 1-7 days                          | 193    | 65%        |
| 1-2 weeks                         | 61     | 20.5%      |
| 1-2 months                        | 39     | 13.1%      |
From where did you get medical advice to treat your child for head lice?

| Source                  | Count | Percentage |
|-------------------------|-------|------------|
| Pharmacist              | 169   | 32.1%      |
| Physician               | 27    | 5.1%       |
| Friends/relatives       | 65    | 12.4%      |
| Media/other             | 77    | 14.6%      |

Treatment modality

| Treatment modality       | Count | Percentage |
|--------------------------|-------|------------|
| Medical topical treatment| 195   | 65.7%      |
| Vaseline                 | 10    | 3.4%       |
| Medical comb             | 201   | 67.7%      |
| Oral tablets             | 3     | 1%         |

Treatment cycles and continuity

| Continuity               | Count | Percentage |
|--------------------------|-------|------------|
| Yes                      | 220   | 74.1%      |
| No                       | 54    | 18.2%      |
| I don't know             | 17    | 5.7%       |

Non-medical treatment

| Treatment                  | Count | Percentage |
|----------------------------|-------|------------|
| Pesticides                | 85    | 28.6%      |
| Shaving of her/his scalp  | 35    | 11.8%      |
| Cutting of hair           | 72    | 24.2%      |
| Propane gas               | 7     | 2.4%       |

59% of mothers were annoyed from getting head lice to her child, and other hand 40% of children were not care about getting head lice as in figures 2, 3.

![Figure 2](image1.png)

**Figure 2:** The mother's feeling about her child’s infestation with head lice.

![Figure 3](image2.png)

**Figure 3:** The child's feeling about head lice infection.
For school practice, 80% of mothers were not informed by school staff to keep their children for a couple of days at home because of head lice, 12% reported that they were informed to keep their children at home for a couple of days, while 35% of them were reported to keep their children at home for 1-5 days as in figures 4, 5.

![Figure 4](image1.png)

**Figure 4:** Notification from school staff about head lice infestation.

![Figure 5](image2.png)

**Figure 5:** The time of keeping the child at home due to the infestation.

There were several factors that act as barriers and frustrating for parents, the most common one was the time taken to treat children (59.3%) followed by re-infestation (42.1%), then combing representing 39.1% and psychology impact on the child representing 38.7% as shown in table 3.

**Table 3:** Difficulties toward head lice infestation.

| Difficulties                                    | Number | Percentage |
|-------------------------------------------------|--------|------------|
| Time taken to treat children                     | 176    | 59.3%      |
| Which of the following items will be frustrating to you if your child gets head lice? |        |            |
The demographics of participants were correlated with knowledge and attitude in tables 4, 5. Knowledge of participants was significantly affected by age of the participant (P-value=0.023), infestation by head lice (P-value=0.000), and the source of awareness about head lice (P-value=0.001). Poor knowledge was associated with younger age (below 25 years old), being not infested with head lice and using social media as a source of awareness about head lice, as in table 4. The attitude of participants was significantly affected by monthly income only (P-value=0.036); where poor attitude was more prevalent in those who didn’t mention their monthly income as in table 5.

Table 4: Relation between knowledge and demographics of participants.

|                      | Good knowledge | Poor knowledge | P – value |
|----------------------|----------------|----------------|-----------|
|                      | N   | %     | N   | %     |          |
| Nationality          |     |       |     |       |          |
| Saudi                | 95  | 18.7% | 412 | 81.3% | 0.135    |
| Non Saudi            | 1   | 5.3%  | 18  | 94.7% |          |
| Age                  |     |       |     |       |          |
| Below 25 years old   | 2   | 5.0%  | 38  | 95.0% | 0.023*   |
| Above 25 years old   | 94  | 19.5% | 389 | 80.5% |          |
| Educational          |     |       |     |       |          |
| Illiterate           | 1   | 7.7%  | 12  | 92.3% |          |
| Secondary school and lower | 32 | 17.7% | 149 | 82.3% | 0.569    |
| Bachelor and higher  | 63  | 19.0% | 269 | 81.0% |          |
| Occupation           |     |       |     |       |          |
| Governmental/private field | 46 | 17.8% | 212 | 82.2% |          |
| Medical field        | 5   | 21.7% | 18  | 78.3% | 0.595    |
| Business woman       | 3   | 21.4% | 11  | 78.6% |          |
| Housewife            | 37  | 17.1% | 179 | 82.9% |          |
| retired              | 5   | 33.3% | 10  | 66.7% |          |
| Residency            |     |       |     |       |          |
| Riyadh               | 85  | 19.3% | 356 | 80.7% | 0.166    |
| Outside Riyadh       | 11  | 12.9% | 74  | 87.1% |          |
| Monthly income       |     |       |     |       |          |
| Fulfill my needs and allow for saving | 30 | 21.4% | 110 | 78.6% |          |
| Just fulfill my needs | 47 | 20.3% | 184 | 79.7% | 0.146    |
| Insufficient         | 7   | 11.7% | 53  | 88.3% |          |
| I don't want to mention | 12 | 12.6% | 83  | 87.4% |          |
| Infested with head lice |    |       |     |       |          |
| Yes                  | 95  | 32.0% | 202 | 68.0% | 0.000*   |
| No                   | 1   | 0.5%  | 193 | 99.5  |          |
| Source of awareness about head lice |     |       |     |       |          |
| Read a book          | 4   | 14.8% | 23  | 85.2% |          |
| Read an article      | 2   | 11.8% | 15  | 88.2% | 0.001*   |
| Search in social media | 24 | 11.2% | 191 | 88.8% |          |
| Ask pharmacist        | 66  | 24.7% | 201 | 75.3% |          |

Table 5: Relation between attitudes and demographic characteristics of participants.

|                      | Good attitude | Poor attitude | P – value |
|----------------------|---------------|---------------|-----------|
|                      | N   | %     | N   | %     |          |
| Nationality          |     |       |     |       |          |
| Saudi                | 284 | 56.0% | 223 | 44.0% |          |
| Non Saudi            | 7   | 36.8% | 12  | 63.2% | 0.099    |
Discussion:-
In the present study, the prevalence of head lice among children was 56.5%. A previous study conducted in Riyadh showed a prevalence of 12.2%.\textsuperscript{10} A study conducted in Jeddah, Saudi Arabia, showed that infestation was prevalent in 9.7% of elementary school girls\textsuperscript{8}, while the study conducted in Al-Khobar city showed that the prevalence was 5.2% among female school children.\textsuperscript{11} A recent study from Jeddah published in 2016 showed an increase in the prevalence of pediculosis, which was 11.26% among girl students in both public and private schools.\textsuperscript{12} The prevalence was higher in Jordan representing 14.5%\textsuperscript{13} and also it was higher among Egyptian females representing 37.8%.\textsuperscript{14} This diversity of infestations among different communities and areas is due to the variation in gender, age, economic, social and cultural status.\textsuperscript{15} Our participants in the present study knew the infestation of children by seeing head lice in their hair (52.2%), the large majority of participants (96.6%) treated their affected child, often for 1-7 days (68%), the most common medical treatment used was medical comb (67.7%) followed by medical topical treatment (65.7%), whereas pesticides (28.6%) was the most common as non-medical treatment. 80.3% of participants reported that they repeated the treatment after 1 week and they obtained the medical advice to treat child from pharmacist (48%). Time taken for treatment was the most common issue for frustrating participants (59.3%) followed by re-infestation (42.1%) then combing (39.1%). A study from Nigeria reported that the most commonly used treatment methods was grooming (46.3%) followed by combing (27.2%), while only 4.6% used pediculicides. The most common difficulties during lice treatment was detecting head lice, safety and effectiveness of the used products and difficulties in treating the children.\textsuperscript{16} Another study reported that 73% of parents of infested children received information about treatment from pharmacist, 15% asked their doctors, 59% used chemical agents for treating their children, 38% used natural oils, and 79% used wet combing.\textsuperscript{17} The current study revealed that the level of knowledge of participants was significantly associated with age, infestation with head lice and source of awareness about head lice. Those with younger age and those who reported no infestation tended to have poor knowledge, also searching in social media as the source of awareness about head lice was associated with poor knowledge, while asking pharmacist was associated with good knowledge. Nationality, education level, residency and monthly income didn't influence the knowledge level. The level of knowledge was reported to be limited in several previous studies.\textsuperscript{11, 18, 19} A study from Greece showed that there was a lack in knowledge about the
prevention and treatment of head lice among healthcare professionals.\textsuperscript{[20]} Perceptions and beliefs of parents included confusion and worry and it was demonstrated that the educational level of parents inversely associated with positive cases.\textsuperscript{[18]} Another study showed a gap in knowledge of parents about head lice infestation in children.\textsuperscript{[16]} A study from Pakistan showed that knowledge and perception of teachers aren’t affected by educational degrees or years of experience.\textsuperscript{[21]} Attitudes in this study was significantly influenced by monthly income only, where those who didn’t want to mention their monthly income were of poor attitude.

**Conclusion:**
There is a high prevalence of head lice among school children in Riyadh, however there is a moderately good practice and action of mothers towards the infestation. There are several factors that influence the level of knowledge of participants including age, infestation and source of information about head lice, while the attitude was influenced by monthly income.

**Recommendation:**
We recommend that the parents and teachers should receive training courses about how to avoid head lice infestation especially in winter season and its spread in family and school so as to prevent it. Also, it is recommended to increase the awareness among children in schools by distributing a brochures or stories about head lice.

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