



ORIGINAL ARTICLE

# Prevalence of Head Lice Infestation and Its Associated Factors among Primary School Students in Iran: A Systematic Review and Meta-analysis

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**Abstract**

**Objectives:** Head lice infestation is one of the most important health problems, generally involving children aged 5–13 years. This study aims to estimate the prevalence of head lice infestation and its associated factors among primary school children using systematic review and meta-analysis methods.

**Methods:** Different national and international databases were searched for selecting the relevant studies using appropriate keywords, Medical Subject Heading terms, and references. Relevant studies with acceptable quality for meta-analysis were selected having excluded duplicate and irrelevant articles, quality assessment, and application of inclusion/exclusion criteria. With calculating standard errors according to binomial distribution and also considering the Cochran's Q test as well as I-squared index for heterogeneity, pediculosis prevalence rate was estimated using Stata SE V.11 software.

**Results:** Forty studies met the inclusion criteria of this review and entered into the meta-analysis including 200,306 individuals. Using a random effect model, the prevalence (95% confidence interval) of head lice infestation among primary school children was estimated as 1.6% (1.2–2.05), 8.8% (7.6–9.9), and 7.4% (6.6–8.2) for boys, girls, and all the students, respectively. The infestation rate was found to be associated with low educational level of parents, long hair, family size, mother's job (housewife), father's job (worker/unemployed), using a common comb, lack of bathrooms in the house, and a low frequency of bathing.

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**Conclusion:** This meta-analysis revealed that the prevalence of head lice infestation among Iranian primary school children is relatively high with more prevalence among girls. We also found that economic, social, cultural, behavioral, and hygienic factors are associated with this infestation.

## 1. Introduction

Public health is a main factor of development in each community [1]. Despite the promotions in health and medical education, external parasitic infestation is a threat for community health development which is still considered as a public health concern [2]. Head lice are insects living as external parasites on humans and animals body. Human infestations occur as head lice (the most common type), body lice, and pubic lice [3].

Head lice infestation is a main public health problem and a great threat for personal hygiene involving children aged between 5 years and 13 years [4]. The disease is widespread around the world but is more common in developing countries, among school age children, and in crowded places with low socio-economic and poor hygiene conditions [5–7]. Indicators concerning the infestation of head lice are used to assess the health, cultural, and economic situation of rural and urban communities [8].

Epidemic relapsing fever and epidemic typhus can be transmitted by lice. Because of frequent blood feeding and saliva injection, fatigue, psychological irritability, paranoia, and weakness can also occur. Other related complications are as follows: depression, hyperthermia, headache, feeling of heaviness in the body, muscle rigidity, attention deficit in the class and educational failure, insomnia, lack of social status, developing secondary infections, hair loss, and allergies [7–9].

Different prevalences of head lice among primary school children in the world have been reported. According to the results of a study [10], head lice prevalence was estimated as 4.8% (The Netherlands), 35% (Brazil), 1.2% (Turkey), 28.8% (Venezuela), and 29.7% (Argentina). Such variations have been observed in different provinces of Iran such as 4% in Urmia [10], 13.5% in Hamedan [8], 1.8% in Kerman [11], and 4.7% in Sanandaj [12].

The initial search results showed that different studies have been carried out to estimate the prevalence of head lice infestation among Iranian primary school children. There are remarkable variations in the results of these studies limiting their application for decision making and policy making. To provide reliable evidence, combining the findings of different studies using systematic review and meta-analytic methods is considered as an appropriate solution. This study aims to estimate the prevalence of pediculosis among Iranian primary school children using meta-analysis techniques.

## 2. Materials and methods

The current study is a systematic review and meta-analysis to determine the prevalence of head lice (*Pediculosis capitis*) among primary school children in Iran.

### 2.1. Search strategy

Different national (SID, Iranmedex, Magiran, and Irandoc) and international (PubMed, Google scholar, Scopus, and ScienceDirect) databases were investigated to provide articles published from January 1, 2000 until January 20, 2015. The search strategy was performed using keywords including: “epidemiology”, “prevalence”, “infestation”, “head louse”, “head lice”, “*Pediculus humans capitis*”, “pediculosis”, “primary school students”, “primary students”, “school children”, and “Iran”, as well as their Farsi equivalents.

Searching was conducted from January 21, 2015 to February 10, 2015. To increase the search sensitivity and to investigate more evidence, references of published articles were hand searched. Two researchers independently reviewed the studies for a possible inclusion in the review using an eligibility form. In addition, to find the results of unpublished studies, we interviewed some related experts and research centers.

### 2.2. Study selection

First the titles, then the abstract, and finally the full text of the articles were consulted to retrieve the studies fit for the review. The relevant studies were selected independently by two researchers. It should be noted that in order to prevent reprint bias, the findings of all studies were carefully reviewed and any duplicated research was excluded.

### 2.3. Quality assessment

Selected articles were assessed for quality using a standard checklist applied in previous studies [13]. Based on the components used in the STrengthening the Reporting of OBservational studies in Epidemiology checklist [14], a checklist was designed and used in the current systematic review including 12 questions about different methodological aspects of a study such as sample size estimation and selection, type of study, study population, data collection method and instrument, variable definition, diagnostic method of pediculosis infestation, statistical tests, objectives of the study, appropriate illustration, and presentation of findings according to the objectives. Studies obtaining at least

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