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HUMAN LICE

THEIR PREVALENCE, CONTROL AND RESISTANCE TO INSECTICIDES

A REVIEW 1985 - 1997

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1. INTRODUCTION

Historical and archeological evidence shows that human lice infestations were present throughout the world thousands of years ago (118). Infections carried by body lice, such as epidemic or louse-borne typhus and epidemic or louse-borne relapsing fever, killed millions of people. Infestations of body lice were common in every army during World War I. During this period, outbreaks of typhus, relapsing fever and trench fever occurred in troops, prison camps and among refugees as well as in central Europe, the Balkans and the middle east (30). Though epidemic typhus and relapsing fever have disappeared from Europe and most of Asia, infections persist in the mountainous areas of eastern Africa and Central and South America. (132). Furthermore, body lice are reappearing in many countries and trench fever has returned to the United States and Europe (19, 83,138), where the infestations are clearly a manifestation of poverty and homelessness (115).

Neither head lice (*Pediculus capitis*) nor pubic nor crab lice (*Pthirus pubis*) are vectors of disease, though head lice have been infected in the laboratory with typhus rickettsiae (123). Pubic lice have never been found to harbor any disease organism, but infestations by this species are frequently associated with the infection of other sexually transmitted diseases (STDs) (55, 56, 141, 155).

Head lice infestations are rampant among school children in both developed and developing countries (69) and large sums are spent on the purchase of medications to treat infestations. It has been estimated that the cost of head lice infestations is $367 million annually in the USA, including sums expended for the purchase of across the counter pediculicides and expenses to school systems (39). Schools will often send home infested children, insisting that they be treated before returning to class (14). Often, there is a sense of shame on the part of parents whose children have infestations, as many do not realize how commonly children are infested.

There are many surveys on the extent of head lice infestations, particularly among school children. Rates of infestation vary greatly from place to place, but in many countries more than half the school children may be infested. Unlike body lice, head lice are found among children at all socioeconomic levels. Generally, rates are heavier among girls but the influence of length of hair on frequency of infestations appears to be unresolved, with some surveys finding it significant (154, 163) while others fail to find differences between children with long and short hair (42, 156). It is equally unclear as to whether racial differences are a factor in infestations (105,131, 135).

Human lice infestations has been reviewed by many authors (23, 24, 68, 69, 118, 148) although a plethora of recent literature warrants a new, comprehensive review. Information on the current distribution of human lice, the extent of louse-borne diseases, developments in the control of lice and problems encountered in the control such as that of insecticide resistance, will therefore be examined below.

2. THE SPECIES OF HUMAN LICE

There are three species of human lice: the body louse, *Pediculus humanus*, the head louse, *P. capitis* (formerly *Pediculus humanus capitis)* and the crab or pubic louse, *Pthirus pubis*. There is now general agreement that head and body lice are two valid and separate species (29, 53, 69, 92, 147, 169, 179) and they will be so considered in this review. The only host for the three species are