

Adhesive cards for monitoring flying insects in a neonatal intensive care unit in a hospital in the Triângulo Mineiro – Minas Gerais – Brazil

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Resumo

Placas adesivas para o monitoramento de insetos voadores em uma unidade intensiva neonatal em um hospital no Triângulo Mineiro – Minas Gerais – Brasil. Utilizando-se placas adesivas coloridas, foram capturados 1.016 insetos voadores em Unidade de Terapia Intensiva Neonatal de um hospital. A Ordem Homoptera foi a mais frequente (84,7%). Foi demonstrada atração diferenciada pela cor da placa. Insetos são vetores mecânicos de patógenos, e este trabalho demonstra a necessidade e a relevância do controle em ambientes hospitalares.

Palavras-chave: Insetos alados, Infecção hospitalar, Saúde pública

Abstract

Using adhesive colored cards, 1,016 flying insects were captured in a neonatal intensive care unit of a hospital. Homoptera were the most common (84.7%), and attraction based on card color was demonstrated. Insects are mechanical vectors of pathogens, and this work demonstrates the necessity and the relevance of insect control in hospital environments.

Key words: Hospital infection, Public health, Winged insects

In Brazil, many groups of insects are important in medicine and human hygiene, such as houseflies (*Musca domestica* Linnaeus, 1758), blowflies (Calliphoridae – Diptera), flesh flies (Sarcophagidae – Diptera), horseflies (Tabanidae – Diptera), midges (Ceratopogonidae – Diptera), mosquitoes (Culicidae – Diptera), Heteroptera

(bedbugs), Siphonaptera (fleas) and Anoplura (lice). They may directly interact with humans, or indirectly interact with them due to their affinities with feces and decomposing organic material, thereby being potential vectors of infectious agents (PRADO et al., 2002; DA COSTA et al., 2006; PELLI et al., 2007a; 2007b; 2008),

especially for patients in intensive critical care units (DANCER, 1999). Due to the difficulty of monitoring and controlling these organisms, insects can move between different environments and hospital beds, making them mechanical vectors of microorganisms and causing infections in hospitals (CHADEE; MAITRE, 1990; COSTA et al., 2006). The purpose of this study was to learn more about the fauna of flying insects in the neonatal intensive care unit of the hospital at the Federal University of Triângulo Mineiro. Collections were made using four adhesive cards (two blue and two yellow), measuring 24.5 x 10 cm, in October of 2003. The sticky cards were placed near lights for a period of one week. The plates were then removed, preserved with PVC film, and the insects were identified using a stereomicroscope and a taxonomic key (BORROR; DWIGHT, 1988). The results were described using descriptive statistics, and were analyzed by the Chi square test using Statistic 7.0.

We captured a total of 1,016 insects, of which 38% which caught on the yellow cards and 62% on the blue cards. Homoptera were the most common insects captured (84.7%), and the proportion of these insects captured on the blue cards was higher than those collected on the yellow cards (Chi-square 60.06; $p < 0.05$). The second most common order was Hymenoptera that, unlike Homoptera, were more abundant on yellow cards (Chi-square 16.23; $p < 0.05$). The other captured orders were Diptera (5.6%), Heteroptera (3.3%), Coleoptera (2.2%) and Orthoptera (0.8%), but the numbers collected for these groups were not significant relative to card color. As in other studies, (MELO et al., 2001; RODRIGUES-NETTO et al., 2002; MACEDO et al., 2003; SILVEIRA et al., 2005), the attraction of certain species to specific card colors demonstrates the complexity of the dynamics of the targeted insects. The statistical difference in the groups Homoptera and Hymenoptera, in relation to card color, suggests the possibility that these groups should be monitored separately using blue (Homoptera) and yellow (Hymenoptera) cards.

The results point to the need to implement policies to monitor and control insects in this hospital. According to the Commission of Hospital Infection Control (HICC), from this hospital, insects are controlled with chemicals when requested or when infestations are observed, something that happens (on average) every two weeks.

The data also point to the need to implement new methods of monitoring and control based on different assumptions and methodologies, because what is currently used is ineffective. The adhesive cards used in this study were effective in monitoring the orders Homoptera and Hymenoptera, which are known to be responsible for the transmission of pathogenic microorganisms, especially those that cause fungal and bacterial infections (DA COSTA et al., 2006, KONTSEDALOV et al., 2008, HUGHES et al., 2011).

Screens and windows in the hospital should be checked for the presence of hiding insects and insect eggs, as well as other hiding places, such as cracks, electric cable drivers, electrical outlets, drains and closets. The HICC maintains a key role in promoting programs not only in cleaning and sanitation, but also plans and adopts measures related to the control of both insects and pathogens related to hospital infections.

In conclusion, this work demonstrates that single strategies of control are not effective for insects in hospitals because the diversity of species is high. Therefore, it is necessary, before taking control measures, to evaluate the weed species to verify their temporal and spatial distribution. Moreover, the composition of the HICC should be revised to include a professional that is well educated in environmental issues because these insects play an important role not only in public health, but also in the hospital. The monitoring of insects can prevent the mechanical transmission of nosocomial pathogens and risk factors in an intensive treatment ward, which is caused by the groups studied, especially Homoptera and Hymenoptera.

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