

Conclusion: The internal personnel required to implement and manage the project drove most additional costs. A planning and implementation team is necessary to guide the project and assist with important communication to departments, units, and hospital leadership. A full-time project coordinator is critical to administer the program and fully implement the technology across all provider types. The project coordinator also provided the data analysis and end user feedback necessary in order for the technology to be impactful on the organization's hand hygiene practice.

Smaller organizations may have fewer unanticipated costs compared to larger centers; nevertheless, unexpected costs may also be more difficult for smaller organizations to absorb.

When considering implementation of an ECMS, the cost of the technology itself is one of the major deciding factors. However, there may be significant 'hidden' costs related to a successful deployment of an ECMS which should be considered.

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The efficacy of herbal shampoo from *Cymbopogon citratus* and ultrasonic sound to control head lice (*Pediculus humanus capitis*)



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Background: Pediculosis capitis is a scalp disease due to the infestation of obligate ectoparasites (mites/lice) species of *Pediculus humanus var. Capitis*. Pediculosis capitis infects 6 to 12 million people each year in the US. Furthermore, head lice develop resistance to the active ingredients of the chemical drug and become insensitive to treatment.

Methods & materials: A filter paper contact method was applied with three concentrations (0.01, 0.1 and 1 mL/cm²) of each *Cymbopogon citratus* shampoo as well as permethrin pediculicide (positive control) and drinking water (negative control) against eggs, nymphs and adults of *Pediculus humanus capitis*. Mortality rates of the eggs were recorded after 7 days of incubation while those of nymphs and adults were recorded after 5 minutes of contact. And, ultrasonic sound, those of egg, nymphs and adults were recorded after 5 minutes of contact.

Results: *Cymbopogon citratus* shampoo at the high concentration were highly effective against nymphs and adults, but not effective against the eggs at 5 min showed mortality rates against nymphs at 100% and against adults at 100% with LC50 values of 1 mL/cm². Ultrasonic sound exhibited the highest efficacy against the egg, nymphs and adults with 100% mortality rate at 5 min. Permethrin pediculicide was not effectively killing the eggs but showed 69.1%–83.2% and 43.4%–61.8% mortality rates against nymphs and adults.

Conclusion: These results indicate that *Cymbopogon citratus* shampoo can be used as an effective nymphicide and adulticide against *Pediculus humanus capitis*. While ultrasonic sound can be used as effective for all stages of the head lice.

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Novel therapy of Scabies's disease

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Background: Scabies is a common disease that is caused by *Sarcoptes scabiei var. hominis*. This disease is usually characterized by skin lesions which form straight or winding cuniculus coloured white or grey. These lesions generally located on the thin stratum corneum. It often accompanied by itching sensation at night and quickly spreads in dense environments. Scabies is a skin disease that is endemic in tropical and subtropical climates. In Indonesia, there are 14,798 Islamic boarding schools with a high prevalence of scabies. Treatment using permethrin 5% is felt to be less effective because if it not done simultaneously and massively, recurrence will occur immediately. The scabies disease certainly makes the students frustrated and decreased educational value.

Methods & materials: The utterly randomized design used in this experiment. This research conducted at some Islamic boarding houses in East Java, Indonesia. There are 189 samples were obtained, ranging in age from 13–24 years. These samples randomized, divided into three groups. The scabies patients treated by permethrin 5% as the positive control. The negative control was scabies patients without any treatment. And the last group were scabies patients treated by ultrasonic sound (70.000 Hz). The duration of ultrasonic sound was 3 hours each night. The severity before and after treatment were measured using the Scoring System of Severity in Scabies.

Results: In ultrasonic treatment, there is a drastic reduction in the degree of disease. In therapy using permethrin 5%, the decline is not so significant. Meanwhile, without treatment, the degree of illness is increased. Based on the results of the Kruskal Wallis test, the calculated chi-square value is higher than the chi-square table (61,994 > 5991). The p-value is smaller than α (0000 < 0.050), the H0 decision rejected, so it could conclude that there is a significant difference in the average decrease in the degree of disease between treatments.

Conclusion: The ultrasonic sound can consider as a novel therapy for scabies disease. Ultrasonic has a faster treatment capability and creates a scabies-free atmosphere, thereby reducing recurrence rates.

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