IJBPAS, October, 2021, 10(10): 3412-3415

ISSN: 2277–4998

International Journal of Biology, Pharmacy and Allied Sciences (IJBPAS)

'A Bridge Between Laboratory and Reader'

www.ijbpas.com

STUDY OF ADVERSE EFFECTS OF MOSQUITO REPELLENTS ON HUMANS

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Received 28th Dec. 2020; Revised 27th Jan. 2021; Accepted 16th Feb. 2021; Available online 1st Oct. 2021

https://doi.org/10.31032/IJBPAS/2021/10.10.5641

ABSTRACT

Mosquitoes are increasing in both urban and rural areas. Mosquitoes transmit many diseases like malaria, filarial, dengue, etc. To prevent that many repellents are available in the market in the form of vaporizers, gels, creams, coils, mats. Many chemicals like allethrin, diethyl toluimide, etc are used in those repellents which are harmful not only to mosquitoes but to humans also. **Aims and Objectives**: To study the harmful effects of mosquito repellents. **Materials and Methods**: This was a questionnaire based study done among the users of repellents and medical practioners in Tambaram. **RESULTS**: This study showed 16% users had various side effects of repellents use. Breathing problems were the commonest (7%), rhinitis, sneezing (4%), exacerbation of bronchial asthma (2%). Few cases if skin rashes were also reported. **Conclusion**: Harmful effects of mosquito repellents are more. So alternative measures like source reduction, use of mosquito nets, window/ door mesh could be used to control mosquitoes.

Keywords: Mosquitoes, Repellents, Breathing Problems

INTRODUCTION

Mosquitoes are increasing in both urban and rural areas. They transmit diseases like malaria, filarial, dengue, etc. So it has become mandatory to control the growth of mosquitoes and prevent epidemic outbreak of these diseases. Therefore many mosquito

repellents are available in the market. Most repellents have Allethrin group of compounds, DEET (n-n diethyl toluimide). These produce various harmful health effects to consumers. The general population have been left with two options- to get exposed to chemicals of repellents or have high risk for mosquito spreading diseases.

AIM

To study the harmful effects of mosquito repellents

MATERIALS AND METHODS

This questionnaire based study was done among 100 families using mosquito repellents of various forms and 30 medical practitioners in East Tambaram. After getting consent the participants were given a questionnaire containing 8 questions related to use of mosquito repellents. Later the questionnaire was collected and statistical analysis was done.

Inclusion Criteria

Willing to participate in the study.

Exclusion Criteria

People with preexisting respiratory illness, skin allergies, eye diseases.

RESULTS

This study was done among 100 families consisting of totally 483 members. In that 16.53 % (80) users of all age groups and both sex had various side effects of repellents use. Remaining 403 users did not have any repellent induced side effects.

Table 1 shows that breathing problems and exacerbation of bronchial asthma were common (4.96% & 5.38%), 3.10% had rhinitis, sneezing and cold. 1.24% had skin allergies like rashes, itching and black spots. Total of 30 medical practitioners were interviewed for this study. They have treated 19 patients (in the time period of June 2015-June 2016) of acute toxicity due to use of repellents like breathing problems, skin allergy, throat pain, headache, etc. Among the 100 families involved in the study, 8 patients had encountered one of the disease spread by mosquitoes (malaria, dengue, chickungunya).

Table 1: Results of questionnaire based study

S. No	Harmful Effects	Number Of Participants Affected Out Of 483 Members In The Study	%
1	Cough, cold, sneezing, rhinitis	15	3.10
2	Breathing problems	24	4.96
3	Skin allergy	6	1.24
4	Headache	2	0.41
5	Exacerbation of bronchial asthma	26	5.38
6	Throat pain	4	0.82
7	Eye irritation	3	0.62
	Total	80	16.53%

DISCUSSION

This study shows that various harmful effects have been encountered due to the use of mosquito repellents. Mosquito repellents are made up of Allethrin, DEET, permethrin, picaridin (KBR-3023), oil of lemon eucalyptus (p-menthane3,8-diol [PMD]). Permethrin is a neurotoxin, Allethrin & DEET causes allergic or toxic reactions when applied to skin. Leading medical authorities and Indian Medical Association on a seminar "Challenges of today and the glimpses of future in medicine" have cautioned that prolonged use of mosquito coils is harmful to health.

DEET has an unpleasant odor, and inconvenience of the continuous application of the exposed skin at high concentrations **[1, 2]**. Picardin (1- piperidinecarboxylic acid 2-(2-hydroxyethyl)-1-methylpropylester) is a colorless, odorlesspiperidineanalog, effective against aedes, anopheles and culex with short effiacy of 5 hours and therefore need repeated application every 4-6 hours **[3]**. Long term exposure of newborn babies and children to pyrethroid based repellents causes clinical, biochemical and nuerological changes **[4]**. Diel *et al* reported the immunotoxic properties of s- bioallethrin caused by inhibiting lymphocyte proliferation in a dose dependent manner **[5]**. (Diel *et al*., 1998). D- transallethrin, through hormonal pathways, may contribute to reproductive dysfunction, development impairment and cancer .

CONCLUSION

Harmful effects of mosquito repellents are more. So alternative measures like source reduction, use of mosquito nets, window/ door mesh could be used to control mosquitoes.

ACKNOWLEDGMENTS

We express our sincere gratitude to all teaching and technical staff members of Department of Biochemistry, Sree Balaji medical college and Hospital,

CONFLICTS OF INTEREST

No conflicts of interest are declared by the authors.

LIMITATIONS OF THE STUDY

This study has involved a small number of subjects and the results must be confirmed in a large sample.

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