



Medical Entomology: Education and Research in India

Introduction

Medical Entomology (ME) is related to the study of insects, arthropods, and their impact on human life/health. [1] It is a global burden of Vector-Borne Diseases (VBD) such as malaria, dengue, yellow fever, and plague; it is also a infectious disease. ME is further divided into two major topics such as basic entomology and applied entomology. Basic entomology is related to insect morphology, anatomy, physiology, taxonomy, and systematics. Whereas applied entomology covered ecology, and economic importance of insects. ME is to understand the basics of biology and ecology of the arthropods of public health importance. As per World Health Organization (WHO) report, VBDs have developed as an important and serious public health problem in many countries like developed and developing countries including India. Many diseases like kala-azar, chikungunya, lymphatic filariasis, Japanese Encephalitis (JE) and malaria have caused more deaths in every year. As per WHO report Malaria causes 219 million cases worldwide and >400000 deaths every year. [2] Diseases transmitted by mosquitoes and other insect vectors as a critical burden to the world, especially tropical and subtropical areas including countries in South-East Asia Region. Strengthening entomology in a cost-effective and sustainable way in all countries and the importance of overall VBD control. [3]

Medical Entomology Education in India

Medical Entomology is a very important and essential subject to study in India. It is a public health problem worldwide. So, there is a growing need for entomologists in the field of public health in view of emerging and re-emerging VBDs in India and other tropical countries.

Training programme in Medical Entomology

In India MD training is divided into three ways.

- a. It is a part of a curriculum in teaching medical colleges to under and post graduate students.
- b. Academic courses in medical entomology as a long-term course.
- c. Training in medical entomology in a short-term course.


Medical Entomology teaching and training to undergraduate medical students

Medical entomology is the public health importance. So, it is taught as a subject to the undergraduate medical students in the Department of Community Medicine (formerly it was named as preventive and social medicine). In this course/curriculum ME as a part of the subject and taught ME as theoretically about arthropod vectors, diseases, and how the diseases are transmission through vectors. Moreover, it was explained that through showing the entomology specimen slides.

Under this syllabus, medical students are trained in vector biology and ecology in the topic of vector borne diseases transmission, management, and its control. Furthermore, the UG Medical students are educated in various vector management methods, cost effective methods, and integrated vector control methods. In India as per the year 2023, medical entomology is taught to 107798 medical students per annum across 704 medical colleges as per National Medical Commission (NMC). [4]

Medical Entomology teaching training to postgraduate medical students

Many types of courses are conducting by Indian Council of Medical Research (ICMR) in related to Entomology. Full time two years

Article Summary: Submitted: 20-April-2023 Revised: 20-May-2023 Accepted: 5-June2023 Published: 30-June-2023		
Quick Response Code: 	<p style="text-align: center;">Web Site</p> <p style="text-align: center;">http://ijmsnr.com/</p> <hr/> <p style="text-align: center;">DOI</p> <p style="text-align: center;">10.55349/ijmsnr.20233213</p>	<p>This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-Non-Commercial-ShareAlike 4.0 International License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given, and the new creations are licensed under the identical terms.</p> <hr/> <p>How to cite this article: Sureshbabu J. Medical Entomology: Education and Research in India. Int J Med Sci and Nurs Res 2023;3(2):1-3</p>

course in post graduate course in Public Health Entomology are conducted by 5 ICMR institutions affiliated with Pondicherry University. The ICMR institutions are as shown in **Table – 1**.

Table–1 Distribution of ICMR institutes whose conducting medical entomology courses

Institute	Place	Website
Vector Control Research Centre	Pondicherry	https://vcrc.icmr.org.in/
Regional Medical Research Centre	Gorakhpur	https://www.indiascienceandtechnology.gov.in/organisations/industry-and-departments/indian-council-medical-research-icmr/regional-medical-research-centre-gorakhpur
Regional Medical Research Centre	Dibrugarh	https://rmrcne.org.in/
National Institute for Research in Tribal Health	Jabalpur	https://www.nirth.res.in/
Regional Medical Research Institute of Medical Sciences	Patna	https://www.rmrimso.org.in/

The subject medical entomology (ME) is an integral part in the postgraduate courses in community medicine, which is mentioned as Master of Doctor in Community Medicine (CM) and postgraduate diploma courses in public health such as Diploma in Public Health (DPH) and Diploma in Community Medicine (DCM). The courses like MD/DPH/DCM candidates are essential to have the knowledge of medical entomology and application of medical entomology in prevention and control of VB illnesses at field level training. The postgraduate curriculum includes details of vector biology and transmission. This course also includes international initiatives and national programmes directed towards prevention and control of VBDs. Postgraduate programmes in tropical medicine, at the School of Tropical Medicine, Kolkata, [5] also include medical entomology as a main component. Long-term research programme only to improve the research skills/knowledge in deep to the undergraduate and postgraduate medical students and other students also. [6]

Research courses in Medical Entomology in India

Medical Entomology (ME) research is very important and essential in India. Research courses are available in many Indian universities as shown in **table – 2**.

Conclusion

Medical entomology is a very important subject to under and post graduate medical students. All over India, Medical entomology teaching is going on to all medical students in teaching medical institutions. Nevertheless, Government of India has to take a prompt action to add medical entomology as a one of the major subjects in the medical curriculum because vector borne diseases, its area and impacts are very vast. Then only, the medical students must learn and trained in medical entomology. Furthermore, medical students to serve to the rural and urban communities in good manner/way. More research is needed in this medical entomology, its applications, training and in related to the medical curriculum.

References

1. Rasnitsyn SP. The concept of medical entomology: the determination of the effect of arthropods on human health. *IZV Akad Nauk Ser Biol* 1996;4:437-445. **PMID:** 8991527
2. World Health Organization: Vector-borne diseases – Key facts. **Available from:** <https://www.who.int/news-room/fact-sheets/detail/vector-borne-diseases> [Last Accessed on: 4th April 2023]
3. World Health Organization: Strengthening field entomology and integrated vector management capacity for vectorborne diseases of public health importance. **Available from:** <https://www.who.int/southeastasia/news/detail/02-01-2023-strengthening-field-entomology-and-integrated-vector-management-capacity-for-vectorborne-diseases-of-public-health-importance-in-the-who-south-east-asia> [Last Accessed on: 8th April 2023]
4. National Medical Commission: List of Colleges Teaching MBBS. **Available from:** <https://www.nmc.org.in/information-desk/for-students-to-study-in-india/list-of-college-teaching-mbbs/> [Last Accessed on: 10th April 2023]
5. The West Bengal University of Health Sciences. **Available from:** <https://wbuhs.ac.in/Affiliated%20Courses/school-of-tropical-medicine/> [Last Accessed on: 12th April 2023]
6. Jie Lee GS, Chin YH, Jiang AA, Han Mg C, Nistala KRY, Iyer SG, et al. Teaching Medical Research to Medical Students. *Med Sci Educ* 2021;31(2):945-962. **PMID:** 34457935

Table–2 Distribution of research institutes those conducting medical entomology in India

Institute and Places	Course Name	Duration of Course	Eligibility	Website
Tamilnadu Dr. MGR Medical University, Institute of Vector Control and Zoonoses, Hosur	Postgraduate Diploma in Public Health Entomology	2 years	B.Sc. Zoology/Microbiology/MB BS	https://www.tnmgrmu.ac.in/
Pondicherry University, Pune University, and Madurai Kamaraj University	Ph.D in Medical Entomology	3 – 5 years	MD in Community Medicine/M.Sc (Medical Entomology)	https://www.pondiuni.edu.in/ http://www.unipune.ac.in/ https://mkuniversity.ac.in/new/
Vector Control Research Centre (ICMR), Pondicherry	M.Sc. (Public Health Entomology)	2 years	B.Sc. Zoology/Life Sciences/Botany, Medical Laboratory Technology, Microbiology, Biochemistry, MBBS, BVSc, BE, and B. Tech.	https://verc.icmr.org.in/
National Centre for Disease Control	Fellowship training programme on Malaria Entomology and Parasitology Fellowship training programme on Malariology	1 month	World Health Organization – Nominated Candidates	https://ncdc.mohfw.gov.in/
National Institute of Malaria Research in Collaboration with Goa University, Jiwaji University, Maharshi Dayanand University, Rohtak, Kumaun University, Nainital.	Ph.D in Medical Entomology	3 – 5 years	Life science graduation and Cleared National Eligibility Text Exam conducted for Junior Research Fellowship	https://nimr.org.in/ https://www.unigoa.ac.in/ http://www.jiwaji.edu/ https://mdu.ac.in/ https://www.kunainital.ac.in/

Jayanthi Sureshbabu 

Editor-In-Chief,
International Journal of Medical Sciences and Nursing Research, Coimbatore, Tamil Nadu, India
and
Formerly Lecturer in Medical Entomology, Department of Community Medicine, Pondicherry Institute of Medical and Sciences, Kalapet, Pondicherry, India. **Email ID:** Editor-in-chief@ijmsnr.com

Publish your research articles with
International Journal of Medical Sciences and Nursing Research
Website: <http://ijmsnr.com/>
eISSN: 2583-0996