Review Article

Conducting International Diploma Course on Malaria Program Planning and Management (1996–2012)

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(Received 4 Aug 2013; accepted 20 Aug 2013)

Abstract

Background: Malaria is still a public health problem in the world. One of the main objectives of World Health organization is capacity building of authorities who are involved with malaria control activities.

Methods: The first course was conducted in 1996 in Bandar Abbas Training center. The course was conducted jointly by the Ministry of Health and Medical Education of Iran, WHO-EMRO and School of Public health, Tehran university of Medical Sciences. In year 2002, Iran has been designated as WHO regional Malaria Training Center. Prior to initiate the course, pre-test evaluations including 11 subjects were carried out. The examinations include multiple choice questions. Different methods of teaching including lecture, laboratory, workshop, team work, field exercise and presentation were used. The duration of the course was 9 weeks. A total of 360 contact hours were taught. The main subjects were Basic epidemiology and Simple Statistics, Malaria Parasitology, Malaria disease Management, Malaria Entomology, Vector Control, Epidemiological approach, Filed work and Planning.

The requirement for achievement of the course was to have at least 60% of the total mark for awarding the diploma certificate. The 13th course was conducted by the financial support of Islamic Development Bank (IDB).

Results: A total of 300 participants from 26 different countries have been graduated from these courses so far.

Conclusion: This course is providing the skill for decision making, how to combat against malaria in their country and is parallel to the policy of the malaria control for capacity building in malarious areas of the world.

Keywords: Malaria, Course, Iran

Introduction

Malaria still a major public health problem in the world. According to WHO (2010) the main strategy for malaria control is prevention and treatment. These activities should focus mainly on case diagnostic and prompt treatment, vector control using larviciding, Impregnated bednet, Indoor Residual Spraying (IRS), biological control, monitoring and evaluation of drug and insecticide resistance and health education to the health workers and community.

Malaria is still a major endemic disease in foci located in south and southeast of Iran. The annual malaria cases have been reported from 66075 to 3200 during 1995–2011, indicating the sharp decline of disease (Fig. 1). It is unstable with two seasonal peaks mainly in spring and autumn. These areas include the Provinces of Sistan and Bluchistan, Hormozgan and Kerman. Iran is going to eliminate the malaria by 2025. The achievement of malaria control in the country is attributed due to bilateral collaborating between Ministry of health and Scientist. School of Public Health, Tehran University of Medical Sciences with long history of work on malaria and publication of several papers on different aspects of malaria including insecticide resistance moni-

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Published Online: August 31, 2013

toring (Salari Lak et al. 2001, Enayati et al. 2003, Vatandoost et al. 2004b, 2005, Davari et al. 2006, Hanafi-Bojd et al. 2006, Davari et al. 2007, Abai et al. 2008, Vatandoost and Abai 2008, Vatandoost and Zahirnia 2010, Vatandoost and Hanafi-Bojd 2012, Soltani et al. 2013), sibling species, molecular study, new record (Dezfouli et al. 2003, Naddaf et al. 2003, Oshaghi et al. 2003, Sedaghat et al. 2003, Azari-Hamidian et al. 2003, Oshaghi et al. 2007, Mehravaran et al. 2011, Naddaf et al. 2012), novel methods for vector control (Soltani et al. 2008, Omrani et al. 2010a,b, Omrani et al. 2012, Chavshin et al. 2012, Soltani et al. 2012), faunestic study (Moosa-Kazemi et al. 2009, Oshaghi et al. 2011), use of plants for larval control (Hadjiakhoondi et al. 2000a,b, Hadjiakhoondi et al. 2003, Oshaghi et al. 2003, Vatandoost and Vaziri 2004, Sadat-Ebrahimi et al. 2005, Hadjiakhoondi et al. 2005, Hadjiakhoondi et al. 2006, Vatandoost et al. 2008, Shahi et al. 2010, Khanavi et al. 2011, Sedaghat et al. 2011a,b, Vatandoost et al. 2012, Khanavi et al. 2013), using bednets and long lasting impregnated nets (Vatandoost et al. 2006, Moosa-Kazemi et al. 2007, Rafinejad et al. 2008, Vatandoost et al. 2009, Soleimani-Ahmadi et al. 2012a,b, Vatandoost et al. 2013), morphological studies (Doosti et al. 2006, Emami et al. 2007, Doosti et al. 2007), malaria epidemiology (Vatandoost et al. 2003, Hanafi-Bojd et al. 2010, Vatandoost et al. 2010, Hanafi-Bojd et al. 2012a,b, Hemami et al. 2013), ecology of malaria vectors (Vatandoost et al. 2006a,b, Vatandoost et al. 2007, Hanafi-Bojd et al. 2011a, Vatandoost et al. 2011a,b, Hanafi-Bojd et al. 2012c, Mehravaran et al. 2012, Soleimani-Ahmadi et al. 2012b, Soleimani-Ahmadi et al. 2013), biodiversity (Oshaghi et al. 2006, Nikookar et al. 2012), community participation (Hanafi-Bojd et al. 2011b, Soleimani-Ahmadi et al. 2012), vector control (Vatandoost et al. 2009), repellent evaluation (Vatandoost and Hanafi-Bojd 2008), anthropophic index of malaria vectors (Oshaghi et al. 2006a,b,c), training (Vatandoost et al. 2004a) is designated as malaria training center by WHO.

Course contributors

This course was organized jointly by the Ministry of Health and Medical Education, Islamic Republic of Iran, the School of Public Health and National Institute of Health Research, Tehran University of Medical Sciences, World Health Organization, Eastern Mediterranean Region and the Islamic Development Bank Group (IDB). It provided participants with the knowledge and skills in malaria control program planning and management, through small group work, field exercises, exchange of experiences and discussion with qualified specialists.

Course objectives

The objectives of the course was for the participants to gain sufficient knowledge and skills to be able to: Analyze the malaria situation and problems and find solutions, plan, implement, manage and evaluate antimalaria programs and develop and organize a training program for capacity building for malaria control.

Entry requirements: The course is designed for medical officers and scientists involved in disease control, particularly malaria, which are presently, or will be in future, responsible for antimalarial control activities. This includes managers and potential managers of disease control program and provincial and district medical officers. Candidates had at least a medical degree or a PhD or MSc in medical parasitology, medical entomology or a related subject and had a good command of the English language.

Time and duration of the course: The duration of this intensive course was 8–9 weeks and was practical oriented (laboratory

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and field) with lectures kept to a minimum, and with emphasis on group work. A minimum length of time was devoted to each subject in the class. The minimum total structured time is 360 tutor contact hours for the entire course. Sessions be held for a minimum of seven hours each week day (Saturday–Thursday). Formal sessions were not being held on Fridays. Towards the end of the course, during planning, participants are required to work irregular and longer hours to complete their assignments. This course provides intensive training in planning and management of malaria control programs. It conducted entirely in English. Participants were expected to be fluent in spoken and written English. This course had a maximum capacity of 24 places. Selections of candidates were made in consultation between experts of course contributors. Applicants prepared themselves for the course. This should include compiling data and obtaining maps and charts on the demographic, climatic, geographic, economic, social, health and malaria status of their country and area of work in their country over the past three years. This data were brought to the course as it was needed during the planning sessions where each participant individually developed a plan for malaria control for his or her country or place of work, as an exercise in planning.

Attendance and certification: The participants attended all sessions throughout the course and to attend the opening and closing ceremonies without exception. Those participants fulfilling the attendance requirements and reaching a satisfactory standard received the Diploma in Malaria Program Planning and Management (DMPPM) from the Tehran University of Medical Sciences, IR Iran.

Follow up activities by the participants: Participation in a practical, intensive training course such as this is only the first step towards better management of national malaria control programs and human resources development. After completion of the course, participants need to put to good use the knowledge, skills and competence acquired. It is hoped that governments will select participants for this course who will, upon returning to their countries or place of work, be deeply involved in antimalarial activities. This would include planning and re-planning malaria control activities, managing, supervising or implementing antimalaria action, and to pass on their knowledge and skills to other health workers.

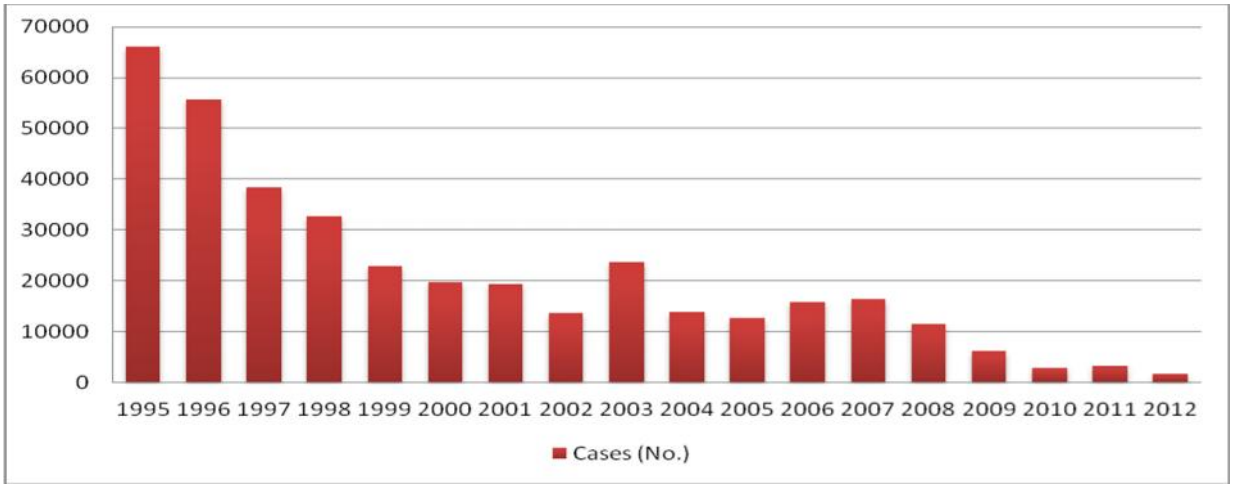

Fig. 1. Malaria incidence in Iran (1995–2012)

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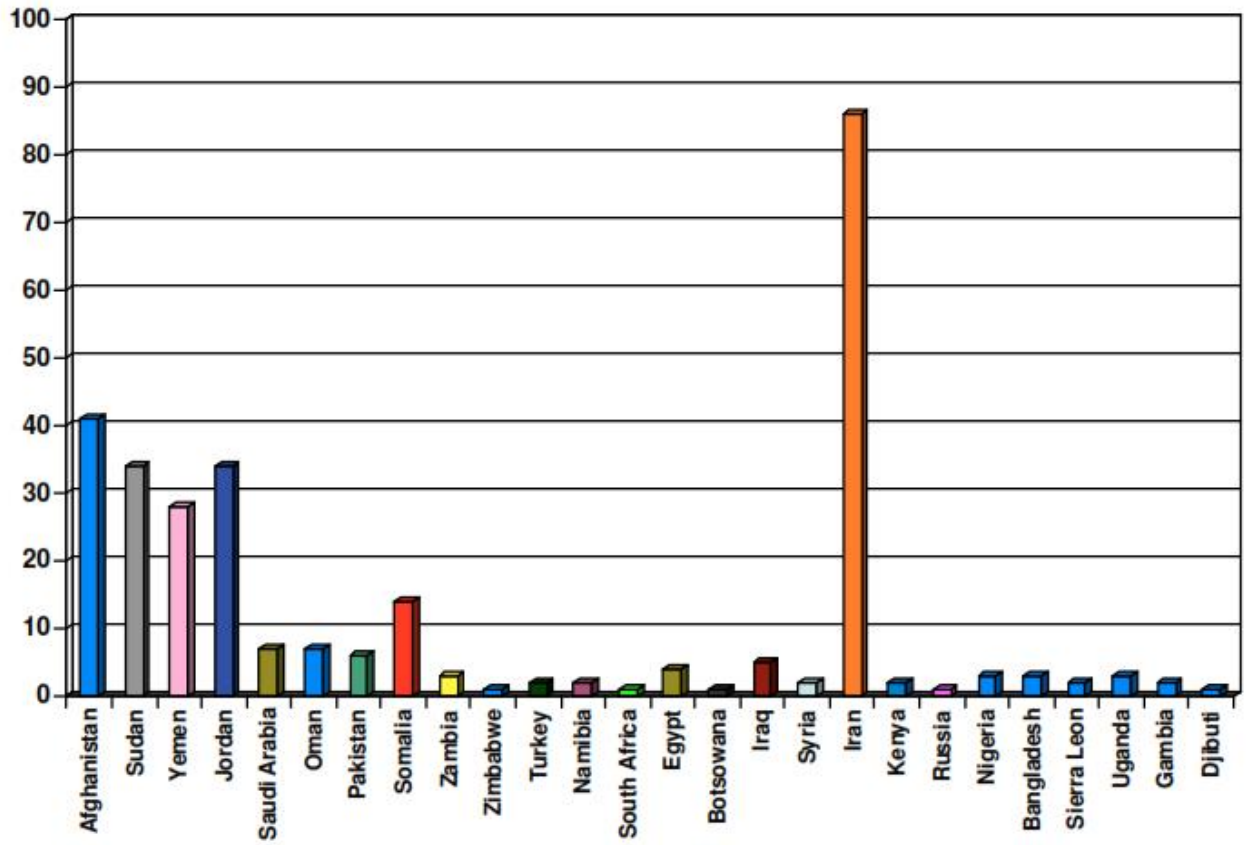

Fig. 2. The number of participants from 26 countries in the 15 courses (1996–2012)

Fig. 3. Global distribution of participants from malaria courses

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Course contents

The major subjects for study were:

1- Basic epidemiology and biostatistics: This session include, Introduction to epidemiology, rates, ratios, proportions, prevalence and incidence, type of data, frequency tables, statistical graphs and charts, computer practice: Excel, measures of central tendency and variability, normal distribution and Chi-square test, health facility based epidemiological studies, surveys and data management, introduction and designing questionnaire, computer practice: MS PowerPoint software, surveys and data management, sampling techniques, sample size calculation for surveys, design effect, finite population-correction, principles of surveillance system, assessing the accuracy of a test or surveillance system, computer practice: PowerPoint software, implementation of rapid survey in a village near to the training centre, analysis of the surveys and conclusions.

2- Basic malaria microscopy: Malaria parasites, life cycle of malaria parasites and blood cells morphology, morphology of erythrocytic stages of *Plasmodium vivax* and *Plasmodium falciparum* in thin films, laboratory practice (examining thick blood films of *P. malariae*, *P. vivax*, *P. falciparum* and *P. ovale* and counting of parasites, orphology of *P. vivax* and *P. falciparum* in thick films and counting of parasites, differential diagnosis of human Plasmodia and practical notes on malaria microscopy, practical work on identification of human Plasmodia in thin and thick films, antimalarial drugs and chemotherapy of uncomplicated malaria and resistance.

3- Malaria Disease management: Clinical features of malaria, and antimalarial drugs, management of uncomplicated malaria and sever malaria, what you know about diagnosis and management?, severe malaria, pathophysiology of severe malaria, guidelines for diagnosis, picture quiz, management of severe malaria, assessment of recovery, case studies, discussion on outcome of questionnaires, ACs: scientific rationale and global situation, WHO case management manual, WHO malaria treatment guidelines, malaria rapid diagnostic tests, practical and theoretical aspects, QA of malaria diagnostic tests, QC of antimalarial medicines, supply chain management, ACTs and RDTs, pharmacovigilance of ACTs, passive and active surveillance systems, case management indicators, definitions and expected trends, ACs: scientific rationale and global situation, case reporting form, data flow and interpretation, malaria drug policy in participants country , general discussion on ACT.

4- Malaria Entomology and Vector Control: Biology and ecology of anopheline mosquitoes, study and identification of adult anopheline mosquitoes and larvae, introduction to various vector control methods especially integrated vector control, epidemiological principles (vectorial capacity) of malaria transmission in relation to vector control, WHO and IRS strategy guidelines, classification of pesticides, introduction to various vector control methods especially integrated vector control, insecticides used for vector control including formulations and their use, judicious use of insecticides, pesticide management, study and identification of adult anopheline mosquitoes and larvae collected from the field, indicators for monitoring and evaluation of vector control, scaling up of interventions-ITNs financing, distribution and networking, Inter-sectoral coordination/collaboration, multiple use of intervention, vector control needs assessments through community participation and role of primary health care-group work, vector resistance to insecticides, concepts, mechanisms and genetics, practical work for ITN impregnation, spray equipments, training of spraying team, measurement of pesticide, vector control: Important factors for the se-

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lection of appropriate insecticides and equipment, interpretation of results of adult and larval susceptibility tests, methods of testing mosquitoes for susceptibility to insecticides for adult and larvae and the safe use of equipment-observation and practice in the field, capacity strengthening in vector control, areas of operational research in vector control, impregnated mosquito nets-important principles and methods, mosquito rearing, fogging machine, biological control of mosquito.

5- Epidemiological approach to malaria control: The natural history of malaria in the human host-group discussions, social and economic aspects, introduction completion of questionnaire, indicators for malaria control, drug resistance, vector control, control of malaria, general discussion on outcome of questionnaires, application of the epidemiological approach in malaria control of participants' workplace, general program management for disease control.

6- Situation Analysis field exercise: Effective small team work, organization of the field work, situation analysis field exercise, some guidance on an analysis of the situation, assessing community participation in malaria control, visit to District Health Authorities for briefing on Primary Health Care structure and general health situation, accomplish tasks identified in the work plan, evening review the findings of the day, analyze data, discuss the work plan and write up report, spend the day discussing outcome of situation analysis, agree upon stratification, and describe in detail, discuss work plan, continue writing the report, presentation of situation analysis by four participants followed by discussion.

7- Planning and management of malaria control programs: Introduction to planning and basic principles, situation analysis, stratification, selection of malaria control measures, formulation of disease reduction objectives, development of approaches to achieve objectives, setting operational targets, field teams brainstorm raw data requirements for the field exercise, primary health care and malaria control, writing the plan, support activities and milestones, preparation of individual plans, situation analysis, program budgeting, the research and development approach, preparation of individual plans, stratification, presentation of the malaria situation analysis, stratification, objectives, approaches, activities and targets by colleagues and senior faculty examiner.

Overall a total of 15 courses have been conducted so far and from them 300 participants graduated from the courses coming from 26 different countries including, Russia, Turkey, South Africa, Saudi Arabia, Iraq, Oman, Egypt, Jordan, Syria, Sudan, Djibouti, Somalia, Afghanistan, Botswana, Pakistan, Zambia, Zimbabwe, Kenya, Namibia, Uganda, Gambia, Sierra Leon, Bangladesh, Yemen, Nigeria and Iran (Figs.2,3). According to the experience of the School of Public Health, we also conducted the International Course on Management and control of leishmaniasis. All the participants who wish to take part in these courses are able to have access to the announcement in the WHO-EMRO as well as Tehran University of Medical Sciences websites. All the alumni of the past participant are available at the site of International Affairs, School of Public Health, Tehran University of Medical Sciences.

Acknowledgments

The authors would like to appreciate the internal and external course tutors including: Prof K Mohamad, Prof R Majdzadeh, Prof K Holakouie Naieni, Dr A Rahimi, Dr M Osouli, Dr M Rezaei, Prof GH Edrissian, Dr M Nateghpour, Dr A Motavali-Haghi, Dr H Jabbari, Prof E Saebi, Dr Andrea Bosman, Prof E Javadian, Prof H Vatandoost, Prof Y Rassi, Dr H Edallat, Dr HR Basseri, Dr H Mousa-Kazemi, Dr MA Oshaghi, Eng MR Abai,

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Published Online: August 31, 2013

Eng K Akbarzadeh, Dr AA Hanafi-Bojd, Dr A Raeisi, Dr M Ostowar, Dr F Gholami, Dr A Rashidian, Dr M Jafari, Dr A Akbari-Sari, Prof P Beales, Dr H Atta, Dr G Zamani, Dr M Warsame, Dr Belajev, Dr Kondrachin, Dr Sadrizadeh, Prof H Keshavarz, Prof MR Eshraghian, Prof H Azordegan, Dr H Zeraati, Dr F Abedi, Dr A Daryanavard, Dr F Malek, Dr N Safi, Dr R Safari, Mrs M Mashayekhi, Dr A Mnzava, Mr G Mohseni, Prof MM Gouya, Dr AH Madani.

Also thank to the course facilitators including: WHO representatives in Iran, Dr El Bashier Sallam, Prof M Rezaian, Prof M Mohebali, Dr EB Kia, Dr B Rokni, Dr Gh Moulavi, Dr A Fallahi, Dr Mousavi, Eng M Sheshbaradaran, Eng V Verdizadeh, Mrs Fasihi, Mrs Hassan-Zadeh, Eng Hassanpour, Eng AR Salehi, Eng E Shojaizadeh, Eng B Poya, Mr A Zomoredian, Mr SA Mirzakhanlo, Mrs Rezai, Mrs Ramazani, Mrs Riazi, Mr M Sadeghi, Mr M Shiri, Mr M Naseri, Mrs M Masoudi, Mr A Rahimi, Mr Seyed-Somea, Mr Heidari, Mrs Charedar, Mrs Ariaepour, Mr Hosseini, Mrs Rafi, Eng Aboulhassani, Mrs H Samimi, Mr Bayat, Mr A Pakari, Mr H Javedan, Mr H Shabkhiz, Mrs E Torabi, Mrs R Kamyabi, Mr A Darvishi, Dr M Ranjbar, Mrs F Nikpour, Mrs L Faraji, Dr S Bozorgzadeh, Dr H Malikul.

According to the announcement of the course, all the tuition fees for the participants are being paid by World Health Organization as well as IDB for capacity building of malaria managers. There is no conflict of interest.

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Published Online: August 31, 2013

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