# The distance learning as a strategic for training health professionals in the management of malaria in the Pan-Amazon region:  report of an experience involving all the Amazon countries

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## Abstract

*Malaria occurs in almost 100 countries around the world and imposes a heavy social and economic burden on developing countries. This article presents the structure, the results and the resources used in a training course on diagnosis and management of malaria offered in the distance modality for health professionals to countries bordering the Amazon region. 868 health professionals from eight countries in Latin America and one Africa country were enrolled in the course Most participants rated the course as excellent and reported that they would recommend other.*

Keywords: *Telemedicine; Education Medical; Distance Learning.*

## Resumen

### El aprendizaje a distancia como una estratégia para la formación de profesionales de la salud en el manejo de la malária en la región Pan-amazónica: informe de una experiência que involucra a todos los países amazónicos.

*La Malaria de produce en casi 100 paises de todo el mundo y impone una pesada carga social y económica en los paises en desarrollo. Este artículo presenta la estructura, los resultados y los recursos utilizados en un curso de capacitación sobre diagnóstico y manejo del paludismo ofrecido en la modalidad a distancia para profesionales de la salud a países fronterizos con la región amazónica. Fueron inscritos en el curso 868 profesionales de la salud de ocho paises de America Latina y un país africano. La mayoria de los participants calificaron el curso como excelente y reportaron que recomendarían a otros colegas a hacer*

Palabras clave: *Telemedicina; Educación Médica; Educación a Distancia*

## Resumo

### Educação a distância como uma estratégia para a formação de profissionais de saúde no manejo da malária na região amazônica: relato de experiência que envolve todos os países da região amazônica.

*A malária ocorre em quase 100 países ao redor do mundo  e impõe um pesado fardo social e econômico aos países em desenvolvimento. Este artigo apresenta a estrutura, os resultados e os recursos usados no curso para diagnostico e manejo da malária, oferecido na modalidade de educação a distancia, para os países fronteiriços da região amazônica. A maioria dos*

Palavras-chave:  *Telemedicina; Educação Médica; Educação a Distância.*

## INTRODUCTION

Malaria occurs in nearly 100 countries worldwide and imposing a heavy social and economic burden in developing countries. According to the 2013 World Malaria Report[1], there were more than 200 million malaria cases in 2012 and about 627,000 persons died. Malaria is preventable and treatable, and history shows that it can be eliminated, as demonstrated by the malaria elimination in most of Western Europe by the mid-1930s and the achieved elimination of the disease in United States in 1951.. Malaria carries until the present day, deep social and economic impact in various parts of the globe and especially in the Pan Amazon region, where plaguing several countries.

Knowing the importance of this endemic disease in the Amazon region, the eight health ministries that belong to the "Pan-Amazonian Network of Science, Technology and Innovation in Health"[2] prioritized malaria as the theme to start joint action to combat the disease, using telehealth resources already installed in the region. As an initial step, it was decided offer training health professionals in the approach to diagnosis and clinical management of malaria by offering them a distance course.

This article presents the structure, the results and the resources used in a training course on diagnosis and management of malaria offered in the distance modality for health professionals to countries bordering the Amazon region.

## METHOD

The overall course coordination was made by the Health Technology Center (CETES) of Faculty of Medicine, Federal University of Minas Gerais, which has extensive experience in distance learning. Its mission is to optimize training, education and health care through the use of information and communication technologies and, since its inception in 1996, conducts videoconferences, distance courses, teleconsultations and home telemonitoring of chronic diseases and also teleneonatologia[3].

The theoretical content of the course was designed for professionals with extensive knowledge about the disease, covering notions of pathogenesis, pathophysiology, epidemiology; clinical pictures, diagnosis and treatment of malaria, with total workload of 80 hours. In the production of teaching materials, were used graphics features such as videos, images in 3D modeling and computer animation to facilitate understanding of epidemiological, pathophysiological and clinical aspects of the disease. Classes were offered in virtual learning environment (VLE), the Moodle platform. A mentoring and monitoring system was established for educational best results, doubts resolution and also to encourage student participation and facilitate access to the course.

Under the organizational point of view, the course had an overall coordination and two sub coordinations, 11 animation tutors which were responsible for monitoring 30 students groups (without monitor support) or 70 students (with monitor support); three tutors content ( malaria experts); nine monitors (undergraduate students in Medicine) responsible for assisting tutors. The communication between tutors and students was done by platform, messages (SMS), e-mail and discussion forums.

The didactic activities consisted in reading classes, participation in discussion forums and conducting assessment of knowledge. The participation of students is measured by the platform and tutors / instructors. The certifying institutions were the Federal University of Minas Gerais (UFMG), State University of Amazonas (UEA) and Fiocruz, supported by Pan American Health Organization (PAHO). The course was offered to the health professionals of the Amazon region countries between May and September 2014.

## RESULTS

Were enrolled in the course 868 health professionals from eight countries in Latin America and one African country. The students distribution enrolled by country was: Brazil 291 participants (33.5%); Bolivia, 28 (3.2%); Colombia 104 (12.0%); Ecuador 52 (6.0%); Guiana 02 (0.2%); Paraguay 01 (0.1%), 270 Peru (31%); Venezuela 102 (11.7%) and Angola 18 (2.0%).

Regarding the level of academic training, it was found that 48.6% of students have higher education master degree, 46% have higher education without graduate and 4.1% have education in the intermediate level. Considering the graduation area, 38% of students were graduated in Medicine, 20% in nursing and 45% in other areas. More than half of the students (54%) had no previous experience in participating in distance courses.

Were enrolled in the course 884 students but only 774 began the course. The number of students who have never used the platform was 10.8% and the number of students who have not completed all stages was 30,3% with an overall approval of 69,7%. These percentages are within the expected range for distance courses. (Figure 1)

There were no statistically significant differences in the distribution of students by gender (57% female, 43% male) and marital status (42% married and 54% single). The predominant age group was between 26 to 30 years (22%) and 31 to 35 (22%) revealing a younger students profile coinciding with the time of graduation. Most had up to five years after graduation (42%) followed by students 5 to 10 years of graduates (20%) and 11 to 15 years of graduates (14%). These data are statistically significant.

The countries with the highest number of students were respectively: Brazil and Peru (32% each one) , Venezuela (13%), Colombia (12%), Ecuador (6%) and Bolivia (4%). Suriname and French Guiana had, each one, only one student. (Figure 2).

The overall course evaluation (n = 481), shows that 68.4% of students rated the course as excellent; 28.8% as good; 2.5% fair and 0.2% did not answer the questionnaire. (Figure 3) . 99.1% of the students responded that recommend the course to other colleagues. The support of the tutors was evaluated as excellent by 58,8% students, good by 34,3% of the students , regular (5,6% ) and 0,2% bad.

## CONCLUSION

The Distance learning is a method that proves be ideal for training and upgrading health teams of professionals of large territorial extensions countries and isolated regions.

One of it most effective applications is the training of these professionals in the recognition and management of diseases related to the leading causes of mortality and morbidity in some specific region.

The challenge of completing the course of malaria and the results achieved in this course open paths for continuous distance education activities, coordinated and collaborative manner between countries of the Amazon region and Latin America.

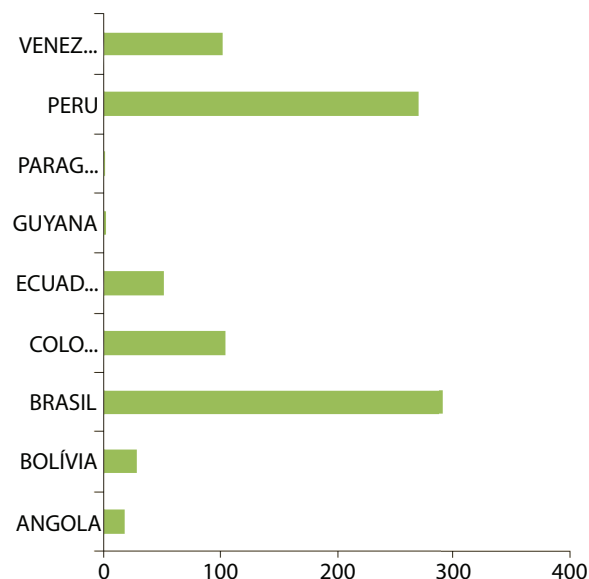| Status | Quantitative | Percentage (%) |
|---|---|---|
| Students enrolled | 868 | 100 |
| not active | 94 | 10,8 |
| Actives students | 774 | 892 |
| General approval | 538 | 69,7 |
| Certificates (grade ≥70%) | 451 | 58,2 |

Figure 1: General course results



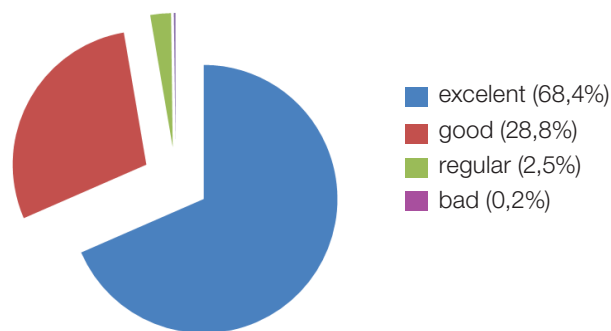Figure 2: Students enrolled by each country.



Figure 3: Course evaluation by students (n=481)

## REFERENCES

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