

Short Communication

Repeated training of accredited social health activists (ASHAs) for improved detection of visceral leishmaniasis cases in Bihar, India

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Accredited Social Health Activists (ASHAs) are incentive-based, female health workers responsible for a village of 1000 population and living in the same community and render valuable services towards maternal and child health care, polio elimination program and other health care-related activities including visceral leishmaniasis (VL). One of the major health concerns is that cases remain in the endemic villages for weeks without treatment causing increased likelihood to treatment failure and disease transmission in the community. To address this problem, we have begun a training program for ASHAs to enhance early detection of potential VL cases and referring them to their local Primary Health Centers (PHCs) for diagnosis and treatment. The result of this training showed increased referral rate to PHCs for diagnosis and treatment. Encouraged with the results from a single training session, we determined in the present study whether repeated training of ASHAs resulted in an a further increase in VL case referral to the local PHCs. After two training sessions, VL referrals by ASHAs increased to 46% as compared to 28% after a single training session in this cohort and a baseline of 7% before training. ASHA training is an effective way to conduct active case detection of VL cases and should be repeated once a year.

Keywords: Visceral leishmaniasis, ASHAs, Bihar India, *Leishmania donovani*

Introduction

Visceral leishmaniasis (VL), also known as Kala-azar is a fatal infectious disease caused by *Leishmania donovani* and is transmitted by the bite of infected female sand fly (*Phlebotomus argentipes*).¹ The global annual incidence of VL, affecting 62 countries, is estimated to 2,00,000–4,00,000 new cases every year.^{2,3} Over 90% of VL cases are reported from India, Nepal, Ethiopia, Bangladesh, Sudan, and Brazil.^{4,5} The state of Bihar is among the worst affected, contributing 90% of the disease burden in India^{6–8} and is most prevalent in the poorest population in the rural villages.⁹ Though an effective Rapid Diagnostic Test (RDT) (rk39) and treatment with oral miltefosine or single dose liposomal amphotericin¹⁰ are available, the risk of VL transmission continues due to failure of early detection in endemic villages. Therefore, it is important to identify and treat VL cases as early as possible to reduce the risk of infecting family members.

We have therefore initiated a study to determine whether village ASHAs can be trained to identify and

refer potential VL cases to local PHCs for diagnosis and treatment of VL.¹¹ The National Rural Health Mission (NRHM) has provided one Accredited Social Health Activists (ASHA) for every village with a population of 1000.¹² There are 82,000 ASHAs for a population of 100 million people in the state of Bihar [Source: State Health Society, Bihar]. ASHAs are women between 25 and 45 years of age with a formal education and act as an interface between the villages and public health system. These ASHAs receive performance based incentive for promoting immunization, referral and escort services for reproductive and child health care, and other healthcare-related activities.¹²

In our initial study on case detection for VL,¹¹ training was provided to ASHAs regarding identification of suspected VL cases, early referral to PHCs for diagnosis by rk39 RDT, treatment, transmission dynamics, vector and its control by indoor residual spray (IRS), and their social responsibilities related to prevention of the disease. Six months following the first training session, referral of VL cases by ASHAs increased from a baseline of about 7–28% and this was accompanied by an overall increase in

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Table 1 Visceral leishmaniasis case referral by ASHAs before and after training

Category	PHC	2011 (Baseline) [†]				2012 [‡]				2013–2014			
		Total cases	ASHAs referral	Referral percentage	Training	Total cases	ASHAs referral	Referral percentage	Training	Total cases	ASHAs referral	Referral percentage	Training
Repeated Training	Paroo & Marhaura	302	21	7 [*]	First Training	136	38	28 [*]	Second Training	115	53	46 [*]	
Single Training	Baniyapur & Sahebganj	310	17	5 [#]	No training	168	29	17 [#]	First Training	131	57	44 [#]	

^{*}In Paroo and Marhaura PHCs, the increased referral rate from 2011 (Baseline) to 2012 (After first training) is statistically significant ($p < 0.0001$) and from 2011 (Baseline) to 2013–2014 (After second training) is statistically significant ($p < 0.0001$). From 2012 (After first training) to 2013–2014 (After second training) is statistically significant ($p = 0.0037$).
[#]In Baniyapur and Sahebganj PHCs, the increased referral rate from 2011 (Baseline) to 2012 (After no training) is statistically significant ($p < 0.0001$) and from 2011 (Baseline) to 2013–2014 (After first training) is statistically significant ($p < 0.0001$). From 2012 (After no training) to 2013–2014 (After first training) is statistically significant ($p < 0.0001$).
[†]Data from years 2011 (baseline) and 2012 is taken from reference ¹¹; Das et al. PLOS NTD 8: e2774, 2014.

knowledge about the disease.¹¹ Since public health-related resources are limited in Bihar, it is necessary to know whether a single or repeated ASHA training sessions are required for optimal VL case detection. We therefore have continued to provide training to this cohort of ASHAs to determine whether repeated training resulted in a further increase in VL case referral and the results are reported within.

Methods

The study was undertaken in two highly endemic districts of the state – Muzaffarpur and Saran. Two PHCs were selected in each district having the highest number of VL cases according to Bihar State Government records for the year 2009 and 2010. ASHAs from two PHCs Paroo (Muzaffarpur) and Marhaura (Saran) were given repeated training in March–April, 2012 and October–December, 2013 whereas two PHCs Sahebganj (Muzaffarpur) and Baniyapur (Saran) were given a single training in October–December, 2013. Data were collected from the four PHCs by field technicians regarding the total number of VL case referral before and after training along with their village location. Data were entered in the Software EpiInfo (version 3.5.1), specifically designed for the study and analysis was performed using GraphPad, online Statistical Software.

Approximately, 1000 ASHAs in total from the 4 PHCs were trained in the batches of 100–150 by the faculty from Rajendra Memorial Research Institute of Medical Sciences (RMRIMS), Patna for VL/PKDL identification, symptoms, transmission, treatment, vector control, and DDT spray. VL training sessions were carried out at concerned PHCs during monthly meetings on ASHA Day. The training was given through power point presentation, photographs, and discussion. During the training sessions, ASHAs were given a booklet on Kala-azar written in local language – Hindi, a register for keeping the records of VL/PKDL cases, field carry bag, referral slips, and VL awareness poster for displaying in their villages at common places such as schools, rural child care centers, health sub-centers, primary health centers, etc. The main aim of the training was to increase the VL active case detection and referral to nearest PHCs for diagnosis and complete treatment.

Results and discussion

We previously reported that after a single round of ASHAs training in the PHCs of Paroo and Marhaura, VL referral rates by ASHAs increased from a baseline of 7–28% as shown from years 2011 (before training) to 2012 (after training).¹¹ In the PHCs of Baniyapur and Sahebganj where no training was given, the referral rate by ASHAs also increased from a baseline of about 5–17% (discussed below).¹¹ In the present continuing study, we performed a second round of training approximately one year later in 2013 in the PHCs of Paroo and Marhaura, where the referral rate by ASHAs then increased to 46% (Table 1). ASHAs from the PHCs of Baniyapur and Sahebganj which

did not receive training in 2012, also received a first training in 2013 where the referral rate increased to 44%.

It is noteworthy that although no ASHAs training was performed initially in 2012 in the PHCs of Baniyapur and Sahebganj, the referral rate nevertheless also increased significantly from the baseline in 2011 (Table 1). We believe that this is due to the repeated interaction of the project team in the villages of Baniyapur and Sahebganj which included interviewing VL cases, their family members and village ASHAs throughout the project period, resulting in increased sensitization and awareness about VL. These interactions at the village level resulted in a dramatic increased referrals by ASHAs from Baniyapur and Sahebganj in 2013–2014 despite having only a single training session. It is also noteworthy that in these four PHCs, the number of VL cases has dropped substantially from 2011 to 2014.

Encouraged by the result of this study, on directions of Government of India, approximately 2500 ASHAs of 16 PHCs of Vaishali district of Bihar have now been provided with VL training. We are also in the process of training ASHAs from 25 PHCs with the highest number of VL cases in eight districts in Bihar and intend to carry out two rounds of training as per the present study.

With early diagnosis and treatment together with vector control activities over the past five years, there is now a strong trend towards a reduction in VL cases throughout most of Bihar. To maintain this VL case reduction scenario, ASHA training programs will assume greater importance for routine surveillance in the endemic communities and thereby continue to reduce transmission which is the mainstay of VL elimination program. Furthermore, repeated training is required to update the knowledge of ASHAs regarding new strategies which are being adopted from time to time in the VL elimination program, i.e. single-dose treatment with AmBisome, use of Insecticide Quantification Kit (IQK), change in insecticides, referral system for patients to upgraded PHCs, etc. The ASHA training program should now form part of the government policy.

Conclusions

The essence of repeated ASHAs training is to enhance their participation for early detection of VL cases in the community, referral to PHC for treatment and supervision of the case detection activities in their respective villages. This will help to reduce the transmission of disease and facilitate achievement the VL elimination goal.

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Disclaimer Statements

Author Contributions

Conceived and designed the experiments: VNRD, RNP, GM, and PD. Performed the experiments: VNRD, RNP, VK, KP, NAS, RBV, GM, and PD. Analyzed the data: VNRD, RNP, GM, and PD. Contributed reagents/materials/analysis tools: VK. Wrote the paper: VNRD, RNP, VK, GM, and PD.

Competing interest

None declared.

Ethical approval

The study was approved by the ethics committee of Rajendra Memorial Research Institute of Medical Sciences, Agamkuan, Patna, India. Subjects participated in the research after a written consent.

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