ABSTRACT

Background

Prevention of re-introduction of malaria is a challenge for Sri Lanka after being certified 'malaria-free' by WHO in September 2016 as receptivity and vulnerability to malaria continues to be high. In addition, social vulnerability plays a role in predisposing populations to get malaria infections and their ability to mitigate the risk of getting malaria. At this juncture, addressing social vulnerability to malaria during the prevention of re-introduction phase is crucial for planning and implementing suitable interventions to keep the country malaria-free.

Objectives

The main objectives of this study were to assess social vulnerability to malaria in the prevention of re-introduction phase in Sri Lanka and to develop country specific standards for health institutions for PoR phase.

Methodology

The study was conducted in 3 phases. In phase 1, the conceptual framework was adapted from Kienberger and Hagenlocher (2014) and a tool (national survey questionnaires) was developed based on an extensive literature review, a validation study and discussions with experts. Country specific standards for health institutions were developed following an extensive literature review, inputs from the validation study referred to earlier with field visits, and inputs from experts using a modified Delphi technique.

A national survey was conducted among 3454 households, 766 healthcare providers and 394 health institutions in phase 2. The social vulnerability index was derived and mapped in phase 3.

Household sampling was done using a multistage cluster sampling technique and data were collected using an interviewer administered questionnaire. Health institutions were selected by simple random sampling after stratifying institutions by type. Simple random sampling was used to select healthcare providers from the selected institutions. Participatory observation questionnaire and self-administered questionnaire were used for health institutions and healthcare providers, respectively.

Social vulnerability was assessed based on the developed conceptual framework for social vulnerability. Items in the developed country specific standards were used as a guide to assess resilience of health institutions. SPSS version 20 package was used for statistical analysis. Social vulnerability index was modeled using principal component analysis. The social vulnerability index was mapped at district and population level using the natural neighbourhood technique in arcGIS software.

Results

The overall social vulnerability to malaria during the PoR phase for the country was 0.27. The social vulnerability index (SVI) was mostly influenced by the resilience indicators including health system response. There were inter-district variations in SVI ranging from 0.10 to 0.81; Nuwara Eliya district had the lowest SVI and Colombo district had the highest SVI. There were intra-district variations in spatial mapping. Social vulnerability was significantly lower in urban areas (0.09), migrant populations (0.18) and high in upper socio-economic strata (0.28).

There was zero prevalence of malaria in the general population as well as in fever patients. The mean malaria awareness score of the public was 28.6% (SD-9.03) while that of healthcare providers was 54.7% (SD-10.6). The majority of migrant population with fever (81.4%, n=35) sought medical care within one week of the onset of fever and were checked for malaria. Among those who had fever within 2 weeks prior to the survey, 91.3%(n=125) sought medical care within one week of onset of fever but only 3.6% were tested for malaria. Around 20% of persons who had a fever episode 2 weeks prior to the survey perceived that they do not have access to universal health coverage for fever management. Around 10% of the population with fever within 2 weeks of the survey did not seek medical care or self-medicated themselves.

Anti Malaria campaign offices were up to the developed country specific minimum standards except in some aspects - human resources and documentation. Diagnostic and treatment facilities were available in accordance with the developed country specific standards. However, there were no Anti Malaria Campaign offices in 6 districts including Colombo which had the highest social vulnerability index in this study. In addition, there were many lapses in the other healthcare institutions.

Conclusions and recommendations

The overall social vulnerability of the country shows the continued need for resource allocation for prevention of re-introduction of malaria to increase the resilience of the health system. The regional disparities of social vulnerability show the need for more resource allocations for the high socially vulnerable districts; allocations should take into account intra-district disparities.

Upper social class populations should be targeted for raising awareness on malaria and prevention of its re-introduction. Zero prevalence of malaria supports the malaria-free status of the country. Pooled blood samples may be tested for malaria parasites to detect parasite reservoirs in the community as a more efficient cost-effective approach.

As the awareness on malaria among both public and healthcare providers was low, more awareness programmes should be conducted for both public and healthcare providers to keep malaria on the radar through television, mobile phones and newspapers. Both television advertisements and SMS alerts from mobile phones could be used to increase awareness on malaria. As around 10 % of the population did not seek medical care or self-medicated themselves, this group should be specially targeted through pharmacists to prevent re-introduction of malaria.

The health system responsiveness of the anti-malaria campaign offices and other health institutions including the private sector should be upgraded according to the developed country specific standards.

As the social vulnerability to malaria is a dynamic phenomenon, the assessment could be done periodically in every 4 or 5 years. Future research could be done by combining environmental, parasitological and entomological aspects to obtain an integrated and complete assessment of the risk of re-introduction of malaria.

Key words: Malaria, Social vulnerability, Prevention of Reintroduction, Sri Lanka