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Leishmaniasis trend and effects of climatic factors in the Polpithigama Medical Officer of Health area in Kurunegala district, Sri Lanka

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Climatic variability has been shown to affect the occurrence vector borne diseases such as Malaria and Dengue in Sri Lanka, and studies in other countries suggest that leishmaniasis is highly influenced by climatic variables. Since there are very limited published studies on the effects of climatic factors on leishmaniasis incidence in Sri Lanka, a study of this nature, addressing the effects of climatic variables on the trend of the disease is very important.Records of patientswho were confirmed positive for leishmaniasis and reported by hospitals to the Polpithigama MOH office from January 2013 to December 2016 (48 months) were obtained. Selected climatic data were also acquired from the Department of Meteorology. A total of 56 patients were identified from this MOH area during the above four years. All these cases were of cutaneous origin. The majority (67.86%; n=38) of the patients were from Pansiyagama PHI region, a rural area with chena cultivation being the popular livelihood, followed by Polpithigama PHI region (16.07%; n=9).Results revealed that 59% (n=33) of the infected individuals were males while 41% (n = 23) were females. From the affected group,the majority are in the 46-60 age group (29%; n=16) followed by 31-45 (23%; n=13) and 16-30 (21%; n=12) age groups. The annual incidence pattern was not auto-correlated at any lag period as shown by the autocorrelation function. It is evident that there is no seasonality in the disease occurrence as suggested by the box plot diagram and time series plot. The stable seasonality test also indicates the absence of an identifiable seasonality at the 5% significance level (F_s= 0.483; df= 11; p>0.05). Interestingly, a moderately strong correlation was detected between the number of patients and the rainfall, having three month lag period (r= 0.430, p < 0.005). This may be due to the fact that rainfall may enhance conditions suitable for larval habitation and adult survival. Other climatic variables did not show any correlation. Regression analysis shows that the changes in rainfall significantly predict the change of the number of disease incidence (F= 9.76; p< 0.005), however, rainfall accounted only for 18.5% of the variability of the number of patients after three months' lag.

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