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Journal Name:	<u>International Journal of TROPICAL DISEASE & Health</u>
Manuscript Number:	2014_IJTDH_13191
Title of the Manuscript:	Spatial Modelling of Fever Prevalence and Suspected Malaria Cases among Children in Ethiopia
Type of the Article	Original Research Article

General guideline for Peer Review process:

This journal's peer review policy states that **NO** manuscript should be rejected only on the basis of '**lack of Novelty**', provided the manuscript is scientifically robust and technically sound.

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PART 1: Review Comments

	Reviewer's comment	Author's comment (if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)
<u>Compulsory</u> REVISION comments	This manuscript-spatial modelling of fever prevalence and suspected malaria cases among children in Ethiopia whose substantive objective is to model the spatial dependence of both fever prevalence and suspected malaria cases among children and develop spatial regression models specifying the associated proximate risk factors, contributed and dedicated much of its time on justifying rigorous statistical and mathematical procedures that is known and already exist in the literature. It however, contributed less (below expectation) to spatial modelling of disease and health. For instance, 5 of the 6 and half pages on methodology was dedicated to explaining known spatial statistical model. This manuscript is quite interesting if it focuses more on the spatial aspect of the disease in Ethiopia. The introduction need more documented evidence on the identified problem and issues. The author(s) must enlighten the readers (who may not know much about fever and malaria in Ethiopia) more and justify that these diseases are actually prevalent in Ethiopia. Support this with recent literature on disease modelling, which are plenty and free on the internet. It is recommended that the author(s) review more literature on the actual spatial disease modelling. This is a case study research work and it is surprising that the manuscript only looked at the administrative categorization of the area. I believe it will make more sense if the author(s) can tell the readers some more details about study area such as the geographical location and delineation of the area, the nature and spatial	We tried to revise more papers on the spatial aspect of the disease in Ethiopia as well as in some African countries (on pages 3-4, Kandala et al 2008, Ingrid et al 2009, Hay S et al 2004, Asnakew et al 2009, Lawrence et al 2007, Grillet et al 2010, Frank 2006 are revised after accepting the comments). So the interested bodies can get more evidence regarding the spatial nature of the disease from the citations The study was conducted on the two regional states of Ethiopia, Oromia regional state and Southern Nations Nationalities and Peoples Regional State (SNNPR). We explained the



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	distribution of fever and malaria among children in the area, an administrative map of the area showing the various districts used in the cluster mapping (this study area map must at least the names of the districts and include an insert so as to enable quick and ease of understanding of the location of the study area in relation to Ethiopia). This is important because this study focus goes beyond spatial clustering and examines how near features affect their surrounding activities. The variables are not properly explained and characterised i.e. there is no clear cut distinction between the variables use in various ESDA and regression model. I recommend a tabulation of the variables for the various analysis and their characterization, this will provide clear understanding of how the analyses used the parameters. In fact, so many fundamental issues and questions need to be addressed in the methodology. For instance, what tool and software were used for the modelling? Source of the vector data used in the cluster mapping and what data/variables were loaded into it? What kind of Moran's <i>I</i> is adopted-a univariate or bivariate? Whichever is applicable, should be specified in the methodological section. Let it be explicit whether you are using global or local Moran statistic. How was the OLS model used for diagnostic? It will make sense if the author(s) can present a brief information on this in the methodology, not just presenting the result from with no prior understanding of how the result was arrived at. When the author(s) addresses these methodology issues, then we are good to go and importantly it will make the modelling procedure replicable by other researchers. xxxxxxxxxxxxxxxxxxxxxx With respect to the analysis section, the author(s) repeatedly use 5% as the alpha or confidence level while the Figure 2 shows <i>P</i>-value of 0.05 which the author(s) also used for hypothesis testing. The question is which	geographical location and some details about these regional states under "Description of the Study area and Population" on page 4. The spatial distribution of the diseases was also revised under introduction part (page 2-3) Under ESDA, we analysed the two dependent variables (Childhood Fever and Suspected Malaria Rates) and under spatial regression model, the corresponding proximate risk factors (explanatory variables, which are described in "variables considered under the study" in methodology part, page 5) are included in the spatial regression models. Both Univariate and Bi-Variate Moran's <i>I</i> are adopted. Univariate Moran's <i>I</i> as a Measure of spatial autocorrelation between neighboring districts and Bi-Variate Moran's <i>I</i> to test whether there is spatial autocorrelation between the two dependent variables or not. Statistical computations were carried out with GeoDA for spatial analysis, GIS for mapping and variable selection and SPSS for descriptive and correlation analysis (Paragraph 2 of the Result and Discussion part describes this). We adopted 5% level of alpha in our analysis (of course there occurred type error before and we corrected it now). If it is discovered from ESDA that there exist a spatial autocorrelation in disease prevalence, then our objective is to develop spatial regression models specifying the associated proximate risk factors (which takes in to account the existing spatial autocorrelation, as opposed to the usual OLS regression).
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	alpha level is been adopted here 95% or 5%? However, the null hypothesis reveals that there exist spatial autocorrelation, how does this affect the analysis or better still, what information is provided about fever and malaria in the area? I suggest the author(s) present a detailed discussion of the results of the analysis and relate them to policy issues as stated in the introduction of the manuscript in the 3rd paragraph, “ this will facilitate the work of decision makers in the health sector to plan strategy to ensure safer.....”. I discovered that most of the results emanating from the analysis were left hanging when vital information could be extracted from such for the purpose of planning. The author(s) should make the manuscript more policy relevant, since this significance of the research is tended towards that angle.	
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Minor REVISION comments	There are too many grammatical errors and incomplete sentences across every section of the manuscript. Some examples are: Paragraph 2 “Spatial spill overs may cause to geographically dependent regions..... Paragraph 3 line 4 and 6-“.....to ensure safer living conditions to people without.....” and “The our analysis studies.....” respectively. Paragraph 1 of the Data collection procedures section, line 9, “.....corresponding district where the children is come from.” Line 18 of same paragraph “....context to mean district where children leaving.” Methods of measuring spatial autocorrelation section, “ observation to other unit relaying on knowledge....”. Results and discussion section, paragraph 1 line 1, “The main goal of this study were to.....”. Paragraph 4 of same section, “The cluster map of childhood fever rate in Figure 1 shows both the locations significant local spatial autocorrelation from significance map (Figure 2). Red, blue, yellow and green colors in the cluster map indicates a district with high childhood fever prevalence rate was surrounded by districts with high childhood fever prevalence rate (HH), a district with low childhood fever rate was surrounded by districts with low childhood fever rate (LL), a district with low childhood fever rate was surrounded by districts with high childhood fever rate (LH), and a district with high childhood fever prevalence rate was surrounded by districts with low childhood fever prevalence rate (HL), respectively at 5% level of significance. White color in the cluster map indicates districts for which LMI didn't reject the null hypothesis of random distribution of childhood fever at 5% level of significance, i.e there exists a non significant local spatia autocorrelations patterns of childhood fever in these districts.” There are many others, so	
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	take time to go through the manuscript and correct all grammatical errors. Other identified defects are too long a paragraph, making reference to equation 14 that does not exist, indicating and referring to sections in the analysis as “part one and part two”. Some literature cited in the manuscript were not reflected in the references section. These are: Haining, 2003; Bailey and Gratrell, 1995; Anselin and Griffith, 1998 and Tobler, 2002.	
<u>Optional/General</u> comments	The manuscript is publishable but need to concentrate more on the spatial aspect of the disease and less mathematical justification that is known.	