Peer Review Report

Review Report on Spatio-temporal distribution characteristics of syphilis ریال on the scale of towns (streets) in Nantong City, Jiangsu Province, China

Original Article, Int. J. Public Health

EVALUATION

Q 1 **Please summarize the main findings of the study.**

This study presents a robust analysis of the trends and spatial distribution of syphilis incidence over a decade. The findings of increasing incidence, particularly in latent syphilis, and the identification of specific high-risk areas, are valuable for public health planning and targeted interventions for the local government.

Q 2 **Please highlight the limitations and strengths.**

Strengths include a long-term follow-up and a large number of cases. The methodologies adopted are well-suited for identifying trends and clusters in epidemiological data. However, the paper could be enhanced by providing a clearer illustration of the study design and methods.

Q 3 **Please provide your detailed review report to the authors. The editors prefer to receive your review structured in major and minor comments. Please consider in your review the methods (statistical methods valid and correctly applied (e.g. sample size, choice of test), is the study replicable based on the method description?), results, data interpretation and references. If there are any objective errors, or if the conclusions are not supported, you should detail your concerns.**

This study presents a robust analysis of the trends and spatial distribution of syphilis incidence over a decade, incorporating Joinpoint regression, spatial autocorrelation, and SaTScan spatiotemporal scanning. The methodologies are well-suited for identifying trends and clusters in epidemiological data. The findings of increasing incidence, particularly in latent syphilis, and the identification of specific high-risk areas, are valuable for public health planning and targeted interventions for the local government.

However, the paper could be enhanced by providing a clearer illustration of the study design and methods.

1. Whether the geographic data corresponds to the case's residence address, working address, or another location (e.g., place of diagnosis)? This distinction is crucial for accurately interpreting the spatial distribution of cases and understanding potential exposure patterns.

2. A clear definition of the five types of syphilis considered in the study should be provided. This includes specifying the diagnostic criteria and whether these categories are mutually exclusive. Additionally, it should be addressed whether individuals can transition between different types of syphilis over time. For example, can a case initially reported as latent syphilis in 2013 later present as primary syphilis in 2020? This information is helpful to understand the changes over time, such as whether decreases in secondary syphilis might correspond to increases in tertiary syphilis.

3. Clarify the criteria used to determine statistical significance.

4. The tables is not clear in several aspects:
• The title of Table 1 and 2 contains Chinese characters for the unit of measurement. Please revise.
• The Tables should clearly state what the values and those in parentheses.

• Rather than using a general threshold of P<0.05, the manuscript should provide exact p-values, to give a more precise indication of statistical significance.
• Please specify in the title that Table 2 refers to total syphilis cases.

4. It would be informative to include an analysis of syphilis incidence by sex and other demographical factors, if possible. The trends could be distinct by sex, which would provide important information in understanding the epidemic and aiding in the development of gender-specific interventions.

5. Please provide a more detailed explanation of the definition of the clusters in the context of local spatial autocorrelation.

PLEASE COMMENT

Q 4 — **Is the title appropriate, concise, attractive?**

yes

Q 5 — **Are the keywords appropriate?**

yes

Q 6 — **Is the English language of sufficient quality?**

yes

Q 7 — **Is the quality of the figures and tables satisfactory?**

No.

Q 8 — **Does the reference list cover the relevant literature adequately and in an unbiased manner?)**

yes

QUALITY ASSESSMENT

Q 9 — Originality

Q 10 — Rigor

Q 11 — Significance to the field

Q 12 — Interest to a general audience

Q 13 — Quality of the writing

Q 14 — Overall scientific quality of the study

REVISION LEVEL

Q 15 — **Please make a recommendation based on your comments:**

Major revisions.