PEER REVIEW HISTORY

ARTICLE DETAILS

TITLE (PROVISIONAL)	Current pesticide suicide surveillance methods used across the African continent – A scoping review protocol
AUTHORS	Brassell, Maxine; Karunarathne, Ayanthi; Utyasheva, Leah; Eddleston, Michael; Konradsen, Flemming; Rother, Hanna-Andrea

VERSION 1 – REVIEW

REVIEWER	Zhu, Baoli Jiangsu Provincial Center for Disease Prevention and Control
REVIEW RETURNED	10-Nov-2021

GENERAL COMMENTS	The authors have done a good job here of documenting and providing an analysis of the pesticide suicide surveillance methods used across the African continent. 1. The scope of the article is the African continent, but the review mentioned in the content, the countries covered in the article do not reflect the actual situation across the African continent, and some related discussions can be added. 2. The data and comparative findings in the Introduction section do not indicate the source or the basis. For example, "Pesticide poisoning deaths are more common in rural areas". 3. In the inclusion and exclusion criteria (Page13), non-English articles are excluded, but the article also states that the exclusion of English articles has caused bias in the review of pesticide suicide monitoring methods currently used in the African continent which is contradictory. 4. In addition to sensitivity, specificity, positive predictive value, and negative predictive value, which are indicators of authenticity, it is suggested to add reliability-related indicators such as compliance rate (consistency) in the assessment of attributes proposed in the "Assessment of detection systems" section (page 16) of this paper. 5. In "stage 5", "the outcome data will be aggregated by country/region, number of pesticide suicides, and time period", but as mentioned above, pesticide poisoning depends on the type of pesticide used, the time of exposure, and the exposure to the pesticide. It is suggested that the indicator of "pesticide type" be included in the final summary. 6. The scope of the article is the African continent, but the review mentioned in the content and the countries covered in the article do not reflect the actual situation of the whole African continent, and some related discussions can be added. 7. The research purpose of the article is relatively macro, and the experiments designed in the article cannot accurately solve the problems raised at the beginning.

	8. The article does not get a specific conclusion, and the ending part is relatively insufficient.

REVIEWER	Tong, Yongsheng Peking University, Huilongguan Clinical Medical School
REVIEW RETURNED	05-Mar-2022

GENERAL COMMENTS	Pesticide ingestion is a common suicide method, especially in agricultural countries in East and South Asia. Nevertheless, few studies focused on pesticide suicide in Africa. This study is interesting and important. Here are my several minor concerns: 1. As have been proven in China and other countries, there are substantial rural-urban differences of pesticide suicide. More than half of the suicide and suicide attempt in rural areas were involved in pesticide ingestion, however, it accounts for 10%-20% suicidal behaviors occurred in urban areas. Thus, to obtain high quality data on pesticide suicide, it is essential to establish suicidal behavior surveillance system in rural areas rather than urban areas with adequate resources. 2. Proportion of suicidal behavior using pesticide forges suicide rates pattern, including sex-differences, geographical differences, etc. Partly due to relatively high lethal pesticide widely used, suicide rates in LMICs are relatively high. 3.To explore pesticide suicide further, case-fatality of pesticide self-harm should be considered. For this purpose, suicide attempts using pesticide should also be monitored. If case fatality of pesticide ingestion substantially reduced, suicide rates of pesticide would not increase alongside the increases of pesticide consumption. Improvements of capacity of medical treatment of pesticide poisoning, including sufficient human resources, equipments, and knowledge and skills on resuscitation in rural hosptials, would contribute to decrease of the case fatality.

VERSION 1 – AUTHOR RESPONSE

Reviewer's comments	Authors' response
Reviewer # 1	
Comment to the authors: The authors have done a good job here of documenting and providing an analysis of the pesticide suicide surveillance methods used across the African continent.	We thank the reviewers for their insightful comments and positive feedback.
1. The scope of the article is the African continent, but the review mentioned in the content, the countries covered in the article do not reflect the actual situation across the African continent, and some related discussions can be added.	Thank you for highlighting this. Additional information on the situation on the African continent has been added from the following references on page 5 of this protocol: 1. Lekei E, Ngowi A V., London L. Hospital-based surveillance for acute pesticide poisoning caused by neurotoxic and other pesticides in Tanzania. Neurotoxicology [Internet]. 2014;45:318–26. Available from: http://dx.doi.org/10.1016/j.neuro.2014.02.007

	2. Ndosi NK, Mbonde MP, Lyamuya E. Profile of suicide in Dar Es Salaam. East Afr Med J. 2004;81(4):207–11. Additional text added to the paper to address this comment on page 5: "There is a significant lack of primary data on the pesticide suicides in countries of the African continent. Currently, the available data are limited and based on a few hospital-based studies in Tanzania, Zimbabwe, Uganda, Malawi, and South Africa. A Tanzanian hospital-based retrospective study from 2000-2005 reports that majority (64.4%) of the acute pesticide poisoning cases (688) were suicides, and in 2006 a prospective study reported 84.6% (230) in the same hospital(13). Another Tanzanian study in Muhimbili University hospital in 2004 revealed that 24% (n=24) of the suicides were due to pesticides (14)." It is worth noting, as we have already mentioned in the protocol, there is limited information on the pesticide suicide situation in the African continent.
2. The data and comparative findings in the Introduction section do not indicate the source or the basis. For example, "Pesticide poisoning deaths are more common in rural areas".	The following references have been added as a source for this statement on page 7 of the protocol: 1. Pedersen B, Ssemugabo C, Nabankema V, Jørs E. Characteristics of Pesticide Poisoning in Rural and Urban Settings in Uganda. Environ Health Insights. 2017;11. 2. Cha ES, Khang Y, Lee WJ. Mortality from and Incidence of Pesticide Poisoning in South Korea: Findings from National Death and Health Utilization Data between 2006 and 2010. PLoS One. 2014;9(4):1–8. 3. Zhang J, Stewart R, Phillips M, Prince M. Pesticide exposure and suicidal ideation in rural communities in Zhejiang province, China. Bull World Health Organ. 2009;87(January):745–53. 4. Rother HA. Pesticide vendors in the informal sector: Trading health for income. New Solut. 2016;26(2):241–52. 5. Rother HA. Falling through the regulatory cracks street selling of pesticides and poisoning among Urban Youth in South Africa. Int J Occup Environ Health. 2010;16(2):202–13. The text was amended to the following to accommodate these sources: "Deaths from pesticide poisoning are believed to be more common in the rural areas where there is limited access to health care services and where highly hazardous pesticides are widely used and accessible (18,22,23).

	However, several factors complicate this assumption. Firstly, poisoned patients are frequently transferred from rural to urban hospitals for advanced care and intensive care unit beds(18). Urban, particularly poor, households have been shown to illegally use pesticide agricultural pesticides as a rodenticides and household insecticides (i.e., street pesticides) and also for suicides(24–26). Urban settings, may therefore, not be entirely representative of pesticide suicide deaths, but they cannot be excluded. Ideally a sufficient surveillance system would include data collection from both rural and urban settings, regardless of resource availability, providing a more complete picture of pesticide suicides."
3. In the inclusion and exclusion criteria (Page13), non-English articles are excluded, but the article also states that the exclusion of English articles has caused bias in the review of pesticide suicide monitoring methods currently used in the African continent which is contradictory.	The exclusion of studies not published or translated to English was a decision made due to a lack of resources with respect to time, cost, and expertise in non-English languages. This has been listed as a limitation to this study and a potential bias. This limitation is what would introduce bias. We have adjusted the wording to this in our "Article summary" to avoid confusion around bias in this study. The text was adjusted to the following on page 3: "• A limitation is that only English language studies will be included in the review."
4. In addition to sensitivity, specificity, positive predictive value, and negative predictive value, which are indicators of authenticity, it is suggested to add reliability-related indicators such as compliance rate (consistency) in the assessment of attributes proposed in the "Assessment of detection systems" section (page 16) of this paper.	It has come to our attention that assessing the surveillance methods identified through this scoping review may be beyond the scope of this research and not possible to achieve. Therefore, the methodology on assessing the surveillance systems has been removed and this review will instead stay true to the nature of a scoping review, with the focus being on an exploration of the existing surveillance systems rather than an assessment. The text of this review has been changed to the following to be consistent with this decision: • Page 2 – Abstract – the following was removed from the abstract "Each identified surveillance system will be evaluated based on the surveillance attributes described by the European Centre for Disease Control and Prevention (ECDC)." • Page 11 – Scoping Review Objectives "In this scoping review we aim to present a broad picture of how pesticide suicide deaths and attempted pesticide suicides in Africa by identifying and exploring the various surveillance systems in place, as well as highlighting key limitations and data collection barriers."

	• Page 12 – Scoping Review Objectives – the following objectives were removed from the text "3. To assess these existing surveillance methods based on quality and coverage. 4. To identify associations, if any, existing between possible social, economic, and cultural practices and the type of surveillance used." • Page 19 – Critical appraisal of individual sources of evidence – the following text was removed from the article "Each of the identified surveillance systems will be evaluated based on the surveillance attributes described by the European Centre for Disease Control and Prevention (ECDC). Some of such attributes are as follows: 1. Completeness and validity 2. Sensitivity, specificity, positive predictive value and negative predictive value, case ascertainment 3. Timeliness 4. Usefulness 5. Representativeness" • Page 20 – Synthesis of results – the following text was removed from the article "Completeness, timeliness, sensitivity and specificity, usefulness and representativeness of the surveillance system will be assessed."
5. In "stage 5", "the outcome data will be aggregated by country/region, number of pesticide suicides, and time period", but as mentioned above, pesticide poisoning depends on the type of pesticide used, the time of exposure, and the exposure to the pesticide. It is suggested that the indicator of "pesticide type" be included in the final summary.	"Pesticide type" has been added as a data extraction item as well as "Number of reported deaths from pesticide type" in Table 2 page 18. A good suggestion, thank you!
6. The scope of the article is the African continent, but the review mentioned in the content and the countries covered in the article do not reflect the actual situation of the whole African continent, and some related discussions can be added.	Duplicate comment to number one.
7. The research purpose of the article is relatively macro, and the experiments designed in	Based upon existing published information we are exploring existing surveillance systems and their associated strength and limitations to inform future

the article cannot accurately solve the problems raised at the beginning.	research agenda and priorities for further studies into improving these surveillance systems. This has hopefully brought clarity between our desired outcomes and the methods we will use to achieve this.
8. The article does not get a specific conclusion, and the ending part is relatively insufficient.	Thank you for this comment. The following texts have been added on page 20 to the conclusion: "CONCLUSION Pesticide suicides in Africa have not been well explored yet and this is evident through the current gap in the literature and lack of adequate data available on this matter. This scoping review will therefore contribute to the literature in this area of research, identifying gaps and a way forward for such research in the future. With pesticide use on the rise in Africa, it seems fitting to explore the potential consequences of such a change."
Reviewer # 2	
Comments to the author: Pesticide ingestion is a common suicide method, especially in agricultural countries in East and South Asia. Nevertheless, few studies focused on pesticide suicide in Africa. This study is interesting and important.	Thank you for the useful comments.
1. As have been proven in China and other countries, there are substantial rural-urban differences of pesticide suicide. More than half of the suicide and suicide attempt in rural areas were involved in pesticide ingestion, however, it accounts for 10%-20% suicidal behaviors occurred in urban areas. Thus, to obtain high quality data on pesticide suicide, it is essential to establish suicidal behavior surveillance system in rural areas rather than urban areas with adequate resources.	We agree with this statement. Coverage is one parameter to consider when looking at surveillance. Ideally it should include both urban as well as rural settings. We do agree that most of the pesticide suicides occur in rural areas and if the resources are limited, surveillance system should focus on the rural areas where most pesticide suicides occur. However, pesticide use is seen in urban areas, patients are transferred from rural hospitals to urban hospitals for better care. Therefore, to get a complete picture, surveillance system should cover both urban and rural area. We have added some of these thoughts into our review. The following text was added to page 7 of the article: "Urban, particularly poor, households have been shown to illegally use agricultural pesticides as a rodenticides and household insecticides (i.e., street pesticides) and also for suicides(24–26). Urban settings, may therefore, not be entirely representative of pesticide suicide deaths, but they cannot be excluded. Ideally a sufficient surveillance system would include data collection from both rural and urban settings, regardless of resource availability, providing a more complete picture of pesticide suicides."

2. Proportion of suicidal behavior using pesticide forges suicide rates pattern, including sex-differences, geographical differences, etc. Partly due to relatively high lethal pesticide widely used, suicide rates in LMICs are relatively high.	Thank you for your insights and reflections in this comment, we appreciate it.
3. To explore pesticide suicide further, case-fatality of pesticide self-harm should be considered. For this purpose, suicide attempts using pesticide should also be monitored. If case fatality of pesticide ingestion substantially reduced, suicide rates of pesticide would not increase alongside the increases of pesticide consumption. Improvements of capacity of medical treatment of pesticide poisoning, including sufficient human resources, equipments, and knowledge and skills on resuscitation in rural hosptials, would contribute to decrease of the case fatality.	The authors agree with this consideration of suicide attempts and will be considering suicide attempts as well when continuing this review. The following text has been added to the paper: • Page 11 – Rationale "Furthermore, it is essential to be aware of the prevalence of pesticide self-harm cases or attempted pesticide suicide, which do not end in death." • Page 11 and 12 – Scoping Review Objectives "The following objectives will be studied to address the aim of this review: 1.To review the current literature on pesticide suicides and attempted suicides in Africa. 2.To determine which surveillance methods, including those of collecting, compiling, reporting, and analysing, are currently being used to identify pesticide suicides and attempted suicides in Africa."

VERSION 2 – REVIEW

REVIEWER	Zhu, Baoli Jiangsu Provincial Center for Disease Prevention and Control
REVIEW RETURNED	16-Jun-2022

GENERAL COMMENTS	The author has basically addressed the issues I raised and made changes.

REVIEWER	Tong, Yongsheng Peking University, Huilongguan Clinical Medical School
REVIEW RETURNED	08-Jun-2022

GENERAL COMMENTS	All my concerns have been well addressed.