Review of: "Knowledge of Risk Associated with Exposure to Per- and Polyfluoroalkyl Substances in Abuja, Nigeria"

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Potential competing interests: No potential competing interests to declare.

Overall

Overall, this is a draft manuscript and lacks a lot of finesse. It requires a full rewrite, and I'm not sure of the value of it as a paper. The questionnaire was very basic and did not link to hard data. For example, if there was a study showing that Abuja, Nigeria, was a local hot area of PFAS, or that Nigeria as a whole was heavily impacted compared to other places, I would understand the project. If the author wishes for some studies to be done in the region to know the current state of the region, this is great, but I feel the manuscript is more likely to cause confusion than provide some positive outcomes.

As it stands, it is good that someone is concerned about PFAS, but the questionnaire could have been more broad, perhaps a blanket consideration of exposure and health to synthetic compounds rather than just one compound class. Or if PFAS was the only area of interest, to provide the reader with factual context, for example, do products in Nigeria contain excess PFAS compared to Europe, or is there evidence that your nation receives substandard products, etc.

Be cautious of fearmongering, as globally, PFAS exposure is a major concern, but unless you know that Abuja is different than other places or there is an increase in a specific disease that has been linked to PFAS exposure, it may cause undue concern. Being informed is something everyone needs, but if they only get half the message, it can do as much harm as good.

The Text:

The abstract I would write is:

Abstract

Per- and polyfluoroalkyl substances (PFAS) are a group of synthetic chemical compounds that contain mostly carbon and fluorine in their structure. Over the past thirty years, studies have shown that some PFAS compounds meet the criteria as outlined by the Stockholm Convention on persistent organic pollutants (POPs) of environmental persistence, ubiquitousness, and toxicity. Though there are estimated to be over 9000 potential polyfluorinated compounds, the PFAS compounds focus on a small group considered high production volume compounds. Though there has been a phaseout of some of the most ubiquitous compounds in North America and Europe, they were rapidly substituted with alternative PFAS compounds. In African markets, there is concern that both legacy and emerging PFAS products are finding their way to consumers who are not aware of the potential risks associated with their use. This project's aim was to focus on

the city of Abuja in Nigeria, where the study first established through questionnaires the level of knowledge within the populace. Over 91% of the questionnaires were completed, and it was found that 9% of respondents had prior PFAS knowledge and understanding. The findings from this study indicate that across Nigeria and potentially all African nations, greater work is needed to inform individuals not just of the risks associated with PFAS but also of mitigation strategies. Further work on the study should include additional contaminants of global and regional concern to ensure health risks are minimized, as well as closer collaboration with industrialized nations that are the primary sources of these potentially toxic compounds.

Your keywords don't provide much to get them noticed. I recommend:

‘Per- and polyfluoroalkyl substances (PFAS), Health Risk, Public Awareness, Contaminants, Exposure’

Introduction:

This is not an introduction; this is a series of quotes. What you need to tell the reader is:

- What are PFAS?
- What are the uses of the chemicals?
- Toxicity data
- Global exposure
- Your regional exposure
- Why you are doing the study.

Bring the reader from knowing nothing of PFAS to knowing why we use it, then why it’s a risk, then the global significance, and then why you are doing it in Abuja.

Materials and Methods

Here, provide a map, not the coordinates. How was the survey done? How were the questionnaires distributed? Who reviewed the questions to validate them? What was the ethics approval used? What is the population of the city? 365/400 is a high response. Was there bias in the distribution?

Table 1: The table needs work; the style and design make it hard to read. Column one contains numbers, and the second column contains % per column. I would use numbers and brackets %, i.e., 62 (17%).

Table 2. Response from completed questionnaires (n=365) This questionnaire is relatively basic and would require more detail. PFAS is not one compound but many and may be hidden under names; you should have identified the most commonly used PFAS-containing materials in Nigeria and presented them as images, for example. There is risk here in alarming the local population as you provide limited details, barring suggeting an awareness meeting.

Discussion

This is a series of bullet points, not a discussion:

Agencies and research on PFAS globally are freely available from many sources, though potentially not in your city per se.

For working with Africa, many groups across the world do have partnerships to help in detection and identification of PFAS compounds. It would be useful to pressure local universities to establish links with universities globally with known PFAS analytical capabilities. The instrumentation for detection is hundreds of thousands of dollars, and the skilled technician is also not cheap, but many universities are happy to form partnerships where samples can be sent or projects developed.

The Stockholm Convention only has PFOA and PFOS in its list to be POPs; you require multiple channels of evidence for additional compounds, which limits what UNEP can do at present in terms of action. A body of evidence of other PFAS compounds being present and toxicity data, etc., is needed. For this, we need samples on the ground showing global exposure.

There are emerging kits for cheap PFAS analysis via home collection and detection in reputed labs that may make the costs associated with detection cheaper, if university links are not established.

There are alternatives to some PFAS within the PFAS family; for example, the C8 (PFOA, PFOS) is now superceeded in many industrial uses by the C4 (PFBA and PFBS); these do not bioaccumulate. A major question here is not only to look for alternatives but also to identify where they are needed; PFOA and PFOS, for example, were used in AFFs (aqueous film-forming foams), and that has a vital safety use, though most AFFs don't use C8s anymore. But also, some PFAS were used in cardboard to stop grease from fast food; this was an alternative to wax paper, but was it needed?