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LETTER

"Virological Outcomes Among Pregnant Women Receiving Antiretroviral Treatment in the Amhara Region, North West Ethiopia" by Alamneh et al [Letter]

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Dear editor

I read article entitled "Virological Outcomes Among Pregnant Women Receiving Antiretroviral Treatment in the Amhara Region, North West Ethiopia" written by Alamneh et al[1] with great passion. Congratulations to the authors. While I was reading this article, I got the wrongly used term, which is not in line with the precision of the used study design. It is significant for the readers if corrected. The issue is this; the objective of this article was

> The objective of this study is to determine the magnitude of viral non-suppression rate among pregnant women and identify the risk factors associated with viral non-suppression

by using a cross-sectional study design. The authors have used the term "risk factors" within the entire document.

The term "risk factor" was used in 1961 for the "Framingham Study", which was focused on "Factors of Risk in the Development of Coronary Heart Disease Six-Year Follow-up Experience".[2] A risk factor is a measurable characterization of each subject in a specified population that precedes the outcome of interest. It is used to divide the population into groups (high-risk and low-risk groups). "The probability of the outcome in the high-risk group of subjects must be shown to be greater than the probability of the outcome in the low risk group". In a risk assessment study, time needs to be well defined and measured as part of the definition of the outcome.[3]

A cross-sectional study design is used to assess the selected population at a given period of time and permits to describe the associations between several factors and determine their prevalence. However, this study design does not test cause–effect relationships.[4–6] During this, the investigators measure outcomes and exposures of the study subjects at the same time. It is described as taking a "snapshot" of a group of individuals. There is no prospective or retrospective follow-up. The investigators will collect the data and assess the associations between outcomes and exposures.[7] It helps to determine the frequencies, exposure level and the relationship or association of the exposure and outcome. However, it cannot distinguish between incidence and natural history for the purpose of causal inference.[8] Furthermore, this study design does not test cause–effect relationships.[4–6]

To identify the risk factors, it is important to measure the incidence. Incidence is typically estimated from clinical trials and from cohort studies, which involve the follow-up of subjects over time.[9] Cohort study design allows to create a time sequence for causality and investigate rare exposures to risk factors.[4] "Cohort study design is used to compare the group of subjects who are exposed to a certain risk factor with a comparison group who are not exposed".[10] Generally, the prevalence concerns only survivors, so that cases that died prior to the time that prevalence is measured are ignored. Thus, prevalence measures are not as well appropriate as incidence measures for identifying the risk factors.[9]

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Apart from this, the authors used the "odds ratio" for cross-sectional study. However, since the use of "odds ratio" overestimates the association, the use of "prevalence ratio" would have been a better measure of association.[11,12] The "prevalence ratio" should be used in preference to the "odds ratio" because it is conservative, consistent, and interpretable.[13] The use of "prevalence ratio" in cross-sectional studies should be encouraged since it is easier to interpret. "Prevalence ratio" is the preferred measure of association in cross-sectional studies, which could be easily estimated with the advance of statistical software.[14]

As a conclusion, considering the mentioned strong epidemiological evidences, we can understand that a cross-sectional study design could not assess "risk factors". This is because when we say "risk factors", the exposure should precede the outcome variable. However, the cross-sectional study assesses both exposure and outcome variables at the same time, which does not describe which come first the exposure or outcome variable. Besides, the "risk factors" is determined from the incidence, but cross-sectional study design could not assess the incidence, rather it assesses the prevalence. Moreover, time needs to be well defined and measured as part of the definition of the outcome in a risk assessment study, but this is not suitable in cross-sectional study design.

Therefore, I recommend the authors to replace the term "risk factors" with "associated factors" in the entire document to avoid confusion among the readers of this article. This is because utilizing the most appropriate epidemiological terms in research is very critical for the readers as well as the researchers to have a common understanding that would enhance their knowledge. Lastly, the proper use of statistical techniques when conducting a cross-sectional study must be encouraged to avoid possible inappropriate estimates and interpretations.

Disclosure

The author declares that there is no conflict of interest regarding this communication.

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