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Letter to the editor

Letter in response to article:

Human development index, maternal mortality rate and under 5 years mortality rate in West and South Asiancountries, 1980–2010: an ecological study

Alimohamadi Y; Khodamoradi F; Khoramdad M; Shahbaz M; Esmaeilzadeh F. Human development index, maternal mortality rate and under 5 years mortality rate in West and South Asian countries, 1980–2010: an ecological study. East Mediterr Health J. 2019;25(3):189–196 https://doi.org/10.26719/emhj.18.029

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Sir,

The valuable article recently published in the EMHJ examined the relationship between HDI, maternal and child (under 5 years) mortality in West Asia (1). In that paper, descriptive statistics and Spearman correlation coefficient were used for data analysis. There are several methodological points to seem to be debatable.

Firstly, for a comprehensive investigation of health-related socioeconomic factors, not only the HDI indicator but also other determinants of health status (maternal and child mortality) need to be considered. Even if the investigator's goal is not to examine the impact of such factors, their effects should be methodologically controlled. In this regard, there are several factors that have been ignored: skilled birth attendance, vaccination, fertility rate, health services/expenditure, urbanization and etc (2,3).

Secondly, regression models are often used to examine the factors affecting health status, referred to as health production function in health economics (4). In these models, which can be cross-sectional, time series, or longitudinal, not only all effective factors are assessable and controllable, the coefficients obtained are more reliable. In that study, correlation coefficients that do not have the capabilities of econometric models have been used. So direction of relationship between HDI and mortality indicators is not clear.

In addition to the abovementioned points, in the study by Alimohamadi et al., correlation coefficients have been reported for each individual country (1). Given that the number of time points examined from 1980 to 2010 (1980, 1985, 1990, 1995, 2000, 2005 and 2010) was only seven for each country, it seems that the coefficients are not so reliable due to the very small sample size.

In general, an appropriate method could be the use of a panel/longitudinal data model through which all the determinants might be included, the sample size would be increased, and the coefficients would be more reliable.

References

1. Alimohamadi Y, Khodamoradi F, Khoramdad M, Shahbaz M, Esmaeilzadeh F. Human development index, maternal mortality rate and under 5 years mortality rate in West and South Asian countries, 1980–2010: an ecological study. East Mediterr Health J. 2019;25(3):189-96.

2. Wang L. Determinants of child mortality in LDCs: empirical findings from demographic and health surveys. Health Policy. 2003 Sep 1;65(3):277-99.
3. Bayati M, Vahedi S, Esmaeilzadeh F, Kavosi Z, Jamali Z, Rajabi A, et al. Determinants of maternal mortality in Eastern Mediterranean region: A panel data analysis. Med J Islam Repub Iran. 2016;30:360.
4. Bayati M, Akbarian R, Kavosi Z. Determinants of life expectancy in Eastern Mediterranean Region: a health production function. Int J Health Policy Manag. 2013 Jun;1(1):57.

Response by authors

Firstly, the main limitation of the current study was the lack of additional information in under studied areas. The mentioned variables such as skilled birth attendance, vaccination, fertility rate, health services/expenditure, and urbanization etc. were not ignored in the current study but the data about such variables were not available in this setting and not accessible to us.

Secondly, the type of current study was an ecological (1) or correlational study (2), and the main purpose was to determine the correlation between factors under study and not determinant factors of maternal and child mortality. In other words, the regression models are used when there is a dependent variable and the purpose is to determine the effect of different factors (covariates) on that variable also controlling the confounding factors. This method is used when many variables are available and the main purpose of the analysis is the evaluation of the effect of the covariate on dependent variables, prediction and confounding control (3). However, in the current study the purpose was to determine the correlation between variables under study; we did not have dependent and independent variables. In such a situation, the use of correlation coefficients is more logical.

The correlation coefficient in different ecological studies, where used (4,5), is the main form of analysis. The correlation coefficient assesses the linear relationship between two variables and the amount of this coefficient can differ from -1 to +1. The negative sign indicates the reverse relationship between two variables (by increasing the amount of each variable, the other variable will decrease.) and the positive sign refer to a positive relationship (by increasing the amount of each variable, the other variable will also increase). There are some differences between correlation and linear regression but these differences are not impressive. In testing the hypothesis, the correlation and linear regression gives the same results. So if one’s main interested is the P value, the difference between correlation and regression is not a concern (6).

Due to the nonparametric distribution of data in the current study, the Spearman correlation

coefficient was used. The needed observation for performing the current test is at least 8 to 10 observations for each variable under study, but this test can apply to fewer observations. The disadvantage of a small sample size is an increased effect of chance error, a decrease in the precision of results, and finally affecting nonsignificant results. However, in the current study, all P values are significant and therefore a larger sample size or more years are not required.

Finally, it is emphasized that the aim of this study was to evaluate the changes in HDI, MMR and U5MR from 1980 to 2010 in certain West and South Asian countries as well as the relationship between these indices.

References

1. Alimohamadi Y; Khodamoradi F; Khoramdad M; Shahbaz M; Esmaeilzadeh F. Human development index, maternal mortality rate and under 5 years mortality rate in West and South Asian countries, 1980–2010: an ecological study. East Mediterr Health J. 2019;25(3):189–196 (https://doi.org/10.26719/emhj.18.029).

2. Pan American Health Organization/World Health Organization. Ecologic or correlational studies. Washington, DC: PAHO; 2018 (https://cursos.campusvirtualsp.org/mod/tab/view.php?id=34136&forceview=1).

3. Szklo M, Nieto FJ. Epidemiology: beyond the basics: Jones & Bartlett Publishers; 2014.

4. Almasi-Hashiani A, Sepidarkish M, Vesali S, Omani Samani R. The correlation of human development index on fertility and mortality rate: a global ecological study. Int J Pediatri. 2016;4(12):4071-80.

5. Ghoncheh M, Mirzaei M, Salehiniya H. Incidence and Mortality of Breast Cancer and their Relationship with the Human Development Index (HDI) in the World in 2012. Asian Pac J Cancer Prev. 2015;16(18):8439-43.

6. McDonald JH. Handbook of biological statistics. Baltimore, MD; Sparky House Publishing; 2009.

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