

Kaleidoscopic use of World Health Organization's Study on global AGEing and adult health data set to explore multimorbidity and its outcomes in low and middle-income countries: An insider view

Dear Editor,

We read with interest the article on “Prevalence of multimorbidity among adults attending primary health care centres in Qatar: A retrospective cross-sectional study” by Mohideen FS *et al.*^[1] It was interesting to have a primary data on multimorbidity since mostly the reports are based on secondary data obtained from nationally representative surveys. The authors highlight the prevalence and patterns of multimorbidity in primary health care centres of Qatar. They further stratified their sample based on the regions where the prevalence of multimorbidity among Qatari nationals (327%) was comparable to their Southeast Asian (28.3%) counterparts whereas North Africans (16.7%) tend to have a little less burden than the formers.^[1] This reflects the co-occurrence of two or more long-term conditions, known as multimorbidity is becoming a norm amongst populations in low and middle-income countries (LMICs) too.^[2] This could be attributable to the increase in the burden of non-communicable diseases (NCD) along with chronic infectious diseases in LMICs.^[3]

Multimorbidity though synonymously used with co-morbidity is a distinct concept which encompasses all the conditions present in an individual rather than considering only an index condition.^[4] It requires a holistic care approach and substantial health system improvement to combat.^[5] Previous studies report an increased healthcare utilization,^[6] lowered physical functioning and quality of life,^[7] and psychological distress^[8] among those with multimorbidity. This often results in complex care trajectories leading to an increase in healthcare utilization and thus expenditure.

Primary care is the first and foremost point of care catering to the majority of these people. Our previous study to estimate the burden of multimorbidity in primary care in India identified

multimorbidity to be common among older people with the prevalence varying from 25% to 44.4% among adults aged 45 years and above.^[9] A recent scoping review to estimate the burden of multimorbidity in LMICs identified multimorbidity to be common among adults with the prevalence varying from 3.2% to as high as 90.5% across age groups.^[10] Yet, there is a scarce of available literature and evidence on multimorbidity and its outcomes in India as well as other LMICs. The major share of evidence is garnered through the use of secondary data available in the public domain with very few studies reporting primary data.

One such widely used data set is World Health Organization's multi-country Study on global AGEing and adult health (WHO SAGE) wave 1 conducted in 2007–2010.^[11] SAGE is a nationally representative study among the aging population from six countries (India, China, Russia, Ghana, South Africa, and Mexico) which are at different levels of demographic and epidemiological transition. Here, we would draw attention toward the varied use of this data set in assessing multimorbidity and its outcomes in LMICs. Interestingly, the data from WHO SAGE wave 1 has been used in fifteen different studies with significantly varied or overlapping outcome measures of multimorbidity [Table 1]. While ten studies^[12-21] utilized data from all six countries of SAGE, one study excluded Mexico^[22] due to a high proportion of missing variables of interest and two studies reported data from India only.^[23,24] While one study reported data from Ghana only,^[25] one study used data from China and Ghana both.^[26] Out of the twelve studies using multi-country data, eight studies reported country-specific results and outcomes whereas four studies gave a pooled result of all countries.

Most of the studies reported multimorbidity prevalence and correlates along with a varied set of outcomes. The outcomes of multimorbidity were measured in terms of mild cognitive impairment (MCI),^[12] disability,^[20] loneliness,^[22] smoking,^[22] memory,^[22] verbal fluency,^[22] physical activity,^[22] social participation,^[18] handgrip strength,^[19] socio-economic inequality^[26] and association of body mass index (BMI) with multimorbidity^[17] in one study each. Self-rated health (SRH),^[14,22] out of pocket expenditure (OOPE),^[13,23] depression^[14,20] and quality of life (QoL)^[14,15] were reported by two studies. Limitations in activities of daily living^[14,21,22] formed the outcomes in three studies whereas healthcare utilization and expenditure^[13,15,23] together formed the outcomes in four of the studies which were overlapping.

While SAGE was conducted in 2007–2010, the earliest study based on this data was published in 2014.^[13,23] It may also be noted that SAGE never intended to measure multimorbidity but it has been used by researchers for it. Also, there are few limitations of this data set in estimating multimorbidity

Table 1: Reporting characteristics of studies using WHO SAGE Wave 1 data

Author Name (Year)	Countries Included	Outcome (s) Measured	Country Specific Results reported
Koyanagi <i>et al.</i> , 2018 ^[12]	China, Ghana, India, Mexico, South Africa and Russia	Mild Cognitive Impairment (MCI)	None
Lee <i>et al.</i> , 2014 ^[13]	China, Ghana, India, Mexico, South Africa and Russia	Healthcare utilization and out-of-pocket expenditures	Yes
Arokiasamy <i>et al.</i> , 2015 ^[14]	China, Ghana, India, Mexico, South Africa and Russia	Self-rated health, depression, physical functioning: limitations in activities of daily living, and Quality of life.	Yes
Sum <i>et al.</i> , 2019 ^[15]	China, Ghana, India, Mexico, South Africa and Russia	Implications of different NCD dyad combinations on Health care utilization and Quality of life	None
Garin <i>et al.</i> , 2016 ^[16]	China, Ghana, India, Mexico, South Africa and Russia	Multimorbidity patterns	Yes
Agrawal <i>et al.</i> , 2016 ^[17]	China, Ghana, India, Mexico, South Africa and Russia	Association between body mass index and prevalence of multimorbidity	Yes
Ma <i>et al.</i> , 2021 ^[18]	China, Ghana, India, Mexico, South Africa and Russia	Association between social participation and multimorbidity	None
Vancampfort <i>et al.</i> , 2019 ^[19]	China, Ghana, India, Mexico, South Africa and Russia	Association between handgrip strength and physical multimorbidity	Yes
Kowal <i>et al.</i> , 2015 ^[20]	China, Ghana, India, Mexico, South Africa and Russia	Disability and Depression	None
Lestari <i>et al.</i> , 2019 ^[21]	China, Ghana, India, Mexico, South Africa and Russia	Activities of daily living-Related Disability	Yes
Bayes-Marin <i>et al.</i> , 2020 ^[22]	China, Ghana, India, South Africa and Russia	Multimorbidity clusters, Loneliness, Smoking, Physical activity, Limitations in activities of daily living, self-rated health, memory and verbal fluency	Yes
Pati <i>et al.</i> , 2014 ^[23]	India	Health care utilization and out-of-pocket expenditure	Yes
Agarwal <i>et al.</i> , 2016 ^[24]	India	Relationship between lifestyle factors and multimorbidity	Yes
Awoke <i>et al.</i> , 2017 ^[25]	Ghana	Health care utilization	Yes
Kunna <i>et al.</i> , 2017 ^[26]	China, Ghana	Measurement and decomposition of socioeconomic inequality in single and multimorbidity	Yes

as the age groups are skewed and the number of selected chronic conditions are limited. Also, it does not take into account chronic infectious diseases. Despite this, the data still seems to be of immense interest for the researchers of multimorbidity as it has been used as recently as 2021 owing to the insufficiency of data in the domain.^[18] It is difficult to rely on the reports of a decade-old data when LMICs are undergoing a rapid epidemiological and demographic transition. Therefore, there seems to be an urgent need to ascertain the most recent epidemiological evidence on multimorbidity through conducting nationally representative surveys across LMICs. These surveys should be especially designed to capture multimorbidity and its outcomes so that we have better and updated evidence in this domain.

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Conflicts of interest

There are no conflicts of interest.

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