The research relates to the development and validation of a small area-based deprivation index for Malta, focusing on the relationship between socioeconomic inequalities and health outcomes. There is ample evidence of health disparities across different socioeconomic groups though more work needs to be done to enhance research in this area and improve health inequality monitoring. Traditional methods of measuring health inequalities often rely on self-reported data from surveys, which may suffer from low response, response bias and may be expensive and time consuming to conduct on a regular basis. Surveys may also underrepresent or exclude certain subsets of the population. While countries may have alternative data sources, such as health registers and administrative sources, these may not routinely collect any data on individual level socioeconomic characteristics.

The adoption of small area-based deprivation indices may enhance the measurement and monitoring of health inequalities by increasing the opportunities for the use of health data sources available within health systems. Such indices can be linked to any data source where the same geographical breakdown is available, thus facilitating the analysis of any outcome measure by area level deprivation. While these indices have their own limitations, they have proven useful tools in the study of health inequalities, especially when data on individual level socioeconomic characteristics are not available. Many well-established small area-based deprivation indices have been developed using data from the census, which is usually conducted decennially.

The small area-based deprivation index presented in this research was developed using 2005 and 2011 Census data applying Principal Component Analysis (PCA) as a method to select and combine relevant items into a concise index. The final index consists of five key items weighted according to their impact on deprivation from the domains of education, employment, and living conditions and assigns a deprivation level to each of the 68 localities in Malta. Before computing the final index, sensitivity analysis was conducted to assess the impact of selected changes in the analytical process on the index.

The index was applied to health outcomes, specifically all-cause mortality, and cancer incidence, to assess the impact of area deprivation on risk. Age-standardized rates were employed for these analyses to ensure comparability across different demographic groups. The results demonstrate a gradient in health outcomes related to deprivation levels, reinforcing the utility of the index in understanding socioeconomic disparities in health. Further analysis was conducted using multi-level modelling to analyse whether the area-based measure of deprivation still contributed to the analysis of health inequalities when individual level characteristics were included. This analysis highlighted that the small area-based deprivation index still contributed to the analysis of health inequalities even when adjusting for individual level socioeconomic predictors. The strongest relationships were maintained for the most deprived quintile, suggesting that something specific to these areas had an impact on health beyond the impact of the individual predictors.

To the author's knowledge, this is the first attempt to develop a small area-based deprivation index for Malta using census data. While over the past few years there has been clear recognition of the need to address social determinants in health planning and service provision within the Maltese health system, there is very limited local research available on which to develop them. The potential implications of the small area-based deprivation index developed in this research for future evidenced-based policy and strategy making are substantial. The index allows for more extensive and continuous patterning of health inequalities for a variety of outcomes. While this will allow for policy making to be based on data related specifically to the local scenario, the fact that the index identifies areas that are deemed as deprived, creates the potential for actions that are currently generic in nature to be more targeted to areas.

This research was part-financed by the ENDEAVOUR Scholarships Scheme (Group B).