There have been numerous case reports indicating that NCDs are more common among people who have either been hospitalized or died from COVID-19. Systematic reviews have indicated that hypertension, chronic obstructive pulmonary disease, cardiovascular disease, diabetes or a history of smoking are each associated with increased risk of either severe disease or death.\(^1\)\(^-\)\(^4\) While not covered in any of the systematic reviews to date, obesity has also been reported to be more common among cases, particularly in the United States.\(^5\)

The majority of the published literature, however, has not controlled for age or other confounders, making it difficult to assess the true relationship between NCDs and COVID severity or mortality. Age is the strongest predictor of COVID mortality; it is also strongly associated with NCD prevalence. It remains unclear if NCDs are implicated as a cause of severe COVID-19, or if increased age is simply a marker for frailty and waning immune system response, and NCDs are simply “innocent bystanders”.

To date, only seven studies have included analyses that controlled for age and other factors.\(^6\)\(^-\)\(^12\) All but one were in Chinese populations and four of the studies were small, with less than 200 patients. Four found that cardiovascular disease was an independent risk factor for either disease severity or death (one found that heart failure was a significant predictor but not coronary heart disease).\(^6\),\(^7\),\(^10\),\(^12\) One study found that hypertension was a significant predictor of severity on admission,\(^8\) and another that history of smoking was a predictor of disease progression.\(^9\) The one US-based study found that obesity, diabetes, and kidney disease were significant predictors of COVID hospitalization and obesity and diabetes significant predictors of death among those hospitalized.\(^10\)

Taken together, these results are suggestive of a link between at least some NCDs and severe or fatal COVID, but results are by no means definitive. Larger, better designed studies, however, are still needed to confirm these preliminary findings.

**NCDs in Africa in the context of COVID-19**

The burden of non-communicable diseases (NCDs) in Sub-Saharan Africa has increased over the past 30 years. From 1990 to 2017, disability adjusted life years (DALYs) attributed to NCDs rose by 67% and the proportion of all DALYs attributed to NCDs increased from 19% to 30%.\(^13\) Cardiovascular disease and cancer are the two of the major NCDs, responsible for 13 and 7% of deaths in the AFRO region respectively.\(^14\) Major risk factors for these diseases have risen as well. Approximately 30% of Africans over the age of 18 years have high blood pressure.\(^15\) Estimates of diabetes prevalence range from around 6% in West, East and Central Africa to 10% in women in Southern Africa.\(^16\) Obesity prevalence varies locally within the region: obesity prevalence is high in Southern African women (~35%) while closer to 10% in East and Central African women and 15% in West African women. Male obesity rates are relatively lower in all sub-regions.\(^17\)

Overall, the total NCD burden in Sub-Saharan Africa is lower than in other parts of the world, particularly those that have been hard hit by COVID-19 to date. For example, in Italy, Spain, the US, and China, NCDs make up around 90% of deaths.\(^18\) Diabetes rates, while rising, appear to be lower than the global average; as is obesity (except in Southern Africa).\(^18\) Much of the lower burden is due to the age
structure of the population and the continued competing burden of communicable, maternal, nutritional and neonatal disorders in Africa.

There are some indications that compared to other regions, Africans of similar ages may be at greater risk of NCDs. For instance, the WHO estimates that the risk of premature mortality due to NCDs is 21% in the WHO AFRO region compared to 18% globally; \(^{19}\) age-adjusted NCD mortality rates are similarly higher in African countries versus Western countries, despite the lower absolute NCD burden. \(^{20}\) Additionally, hypertension prevalence appears to be higher at younger ages. WHO STEPS surveys in Africa since 2010 have found that between 10 and 19% of younger adults (typically ranging from 18 – 29 or 25 – 34) have hypertension compared to just 7.5% of adults 18 – 39 in the United States. \(^{21,22}\) This is particularly problematic because awareness and treatment of hypertension are very low in the region as well (27 and 18% respectively). \(^{23}\) Assuming continued progress with control of maternal, nutritional, and infectious causes of disability or death, these data suggest that as the continent ages, NCD burden will compose an increasingly larger proportion of overall disease burden.

REFERENCES


