

Positive Bias of COVID-19 Mortality in Males with Advanced Age and Comorbidities due to Reduced Membrane-bound ACE2 Expression

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ABSTRACT

Introduction: Current data report higher COVID-19 death cases in males than females in many countries. Indeed, advanced age and presence of comorbidities are also factors detrimental to patient survival. Evidence suggests that clinical complications are associated with membrane-bound angiotensin-converting enzyme 2 (ACE2) receptor downregulation following COVID-19 spike protein attachment. This counter-regulates ACE2 role in immunoprotection. It remains a question whether gender influences ACE2 availability, thereby COVID-19 death. **Methods:** This study aimed to explore the understanding of gender disparity in COVID-19 mortality with consideration of ACE2 involvement based on national data. Anonymised patient information reported from 17 March 2020 up to 18 June 2021 were collected from MalaysiaKini COVID-19 tracker (<https://newslab.malaysiakini.com/covid-19/en>) and data were analysed according to risk factors. Subsequently, literature appraisal on ACE2 regulation was conducted. **Results:** A total of 4270 cases was studied. Deaths in males (60.7%) were 1.5-fold higher compared to females (39.3%) as it is instead, oestrogen in females that maintains increased expression of membrane-bound ACE2 receptor to synthesise the immunoprotective Ang 1-9 and Ang 1-7 hormones, vital for organ protection. Advanced age, particularly at 60-69 years, increases COVID-19 death risk irrespective of gender. Hypertension (relative risk (RR), 1.4), diabetes (RR, 1.4) and chronic kidney disease (CKD) (RR, 1.8) were the most common with death rates consistently higher in males. Cardiovascular diseases and CKD are known to reduce membrane-bound ACE2 availability due to heightened inflammatory response, thus COVID-19 infection will worsen the prognosis. **Conclusion:** Findings from this study contribute to global epidemiological results for better understanding of COVID-19 pathophysiology and supporting ACE2 as future therapeutic target.

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Prevalence of Overweight and Obesity Among Healthcare Workers: Report from a Single Centre Health Screening Programme

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ABSTRACT

Introduction: Half of adults in Malaysia were either overweight (30.4%) or obese (19.7%). Obesity among healthcare workers (HCW) is a vital issue as it can affect both their health status and their professional capability. This study aimed to study the prevalence of obesity and the association factors among HCWs in Kepala Batas Hospital, Penang. **Methods:** This is a retrospective observational study with data retrieved from the KOSPEN PLUS health screening database. In all 652 among 700 HCWs participated in this programme with a response rate of 93%. Data from 25 pregnant staff were excluded from this study. Sociodemographic, anthropometric and personal medical history were captured via self-reported survey under supervision of the health screening team. Body mass index (BMI) was categorized according to WHO criteria. **Results:** More than two-third (70.9%) HCWs were females, with an average age of 38.2±8.76 years, and predominantly of Malays ethnics (89.5%) followed by Chinese (6.4%), Indians (2.7%) and others (1.4%). The average BMI was 26.4±5.93 kg/m², and similar among males and females. About 3.8% were underweight, 42.5% normal weight, and 31.8% overweight. One fifth (21.8%) were obese, among whom 70% were obesity category 1, 21% category 2 and 9% being morbidly obese. Higher proportion of overweight and obese HCWs reported having diabetes and hypertension (both p<0.01). **Conclusion:** Obesity and overweight are prevalent among HCWs in our study. The Hospital Administrator should introduce health intervention program to improve the health status of HCW.