Integrating graphical networks with expert knowledge to identify determinants of undiagnosed hypertension among adolescents in Malaysia

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ABSTRACT

Introduction: Based on the National Health and Morbidity Survey (NHMS) report in Malaysia, it has persistently shown that hypertension is a silent killer and led to significant public health concern. Besides, hypertension has been identified as a strong risk factor for total mortality and cardiovascular disease (CVD). Hence, identifying the determinants of undiagnosed hypertension is essential to curb the prevalence of overall hypertension in Malaysia. **Materials and Methods:** This study employed secondary data from the National Health and Morbidity Survey (NHMS) 2015 which was a cross-sectional study that utilized a two-stage stratified random sampling. There were 803 adolescents interviewed, but only 772 completed the survey. χ^2 test and Bayesian networks modelling were performed in accordance with experts' knowledge to identify the determinants of undiagnosed hypertension. **Results:** χ^2 test and experts' knowledge identified three significant determinants of undiagnosed hypertension among Malaysian adolescents – body mass index (BMI), gender, and strata. Analysis of Bayesian network shows that the highest conditional probability of developing undiagnosed hypertension is led by obese individual given they stay in rural area (pr = 0.0877), followed by individual with normal BMI given they stay in rural area (pr = 0.0865), obese individual given they are male (pr = 0.0860), and general population of rural area (pr = 0.0855). Male respondents (pr = 0.0846) were found to have almost double the probability of having undiagnosed hypertension compared to female (pr = 0.0405). **Conclusion:** By identifying the relationship between determinants, it can give a better perception to the government on how to effectively set up intervention on the high prevalence of undiagnosed hypertension before it contributes to the increment of prevalence of overall hypertension among adolescents in Malaysia.

Keywords: Undiagnosed hypertension, adolescents, determinants