

ABSTRACT

Cancer is one of the critical illnesses strongly associated with unhealthy lifestyle habits. It carries a high risk of mortality and requires significant treatment costs. Health insurance can serve as a solution by transferring the substantial financial burden of cancer treatment to the insurance provider. The determination of health insurance premiums is related to the risks that may be faced by the insured. These risks can be estimated using a multi-state model based on markov chains, which assumes that certain events occur depending on previous events. In this study, the markov chain method with four states is applied to calculate the premium value for critical illness insurance (CII) that provides coverage against cancer. CII premiums are determined using cancer prevalence rates and mortality rates in Indonesia. The premium calculation begins by interpolating the prevalence values, constructing the transition matrices, and computing the CII premiums. The results indicate that the insured's age at policy issuance, gender, and insurance duration are the determinants in premium calculation. This analysis substantiates that the markov chain method is viable for determining premiums for critical illness insurance, particularly for cancer, in Indonesia.

Keywords: Cancer, Multi-State Model, Markov Chain, Critical Illness Insurance, Transition Matrices.