Predicting the Prevalence of Diabetes in Wisconsin Using System Dynamics

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Diabetes is a disease that affects 250 million people worldwide, and is one of the fastest growing diseases. Once acquired, the patient is faced with lifelong medication, treatment, and risks for organ failure. The incidence of diabetes in the US mirrors the worldwide trend. However, projections for diabetes in Wisconsin are not readily available. This study looks to predict the prevalence of diabetes in Wisconsin over the next 25 years. It uses a simulation technique called system dynamics to examine the prevalence of diabetes in Wisconsin. The use of a simulation technique provides an opportunity to model progress of the disease through different stages, and also understand the implications of organ failure in extreme cases of the disease. The simulation is run for a variety of scenarios. The effect of changes in the level of obesity is examined. In addition, the impact of alternative health care coverage is also studied. The simulation is also run for an extended period to check for convergence. The results suggest that the number of diabetics in Wisconsin will increase steadily over the next few years. The numbers will increase dramatically if the obesity epidemic is not turned around. Overall, unless there is a change in current patterns, diabetes in Wisconsin will increase considerably, though it may lag the prevalence for the US.

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