

## ABSTRACT

Sleep is a vital activity for every individual, especially for the elderly. Adequate sleep is crucial to maintaining physical and mental health and reducing the risk of various diseases. However, many elderly individuals experience sleep problems, which can negatively impact their quality of life. This research investigates sleep disorders in the elderly, with a focus on their causes and health impacts.

Based on our survey, approximately 80% of individuals aged 65 and above reported experiencing sleep problems, including difficulty initiating sleep, waking up at night, and restless sleep. Sleep disorders in the elderly can be attributed to various factors, including environmental conditions, medical conditions, depression, medications, and other factors. Furthermore, our research indicates that sleep disturbances in the elderly are associated with decreased cognitive function and an increased risk of falls.

In the management of sleep disorders in the elderly, accurate diagnosis is a crucial step. Sleep history, including the number of hours of sleep, sleep quality, and sleep patterns, is key information in this diagnosis. The importance of accurate diagnosis is to understand the root causes of sleep disturbances and plan appropriate interventions.

Sleep quality monitoring systems offer a solution for recording historical data and sleep quality as a first step in treating sleep disorders. This system focuses detection on eye images and body position using an image processing approach with the Haar Cascade Classifier and Mediapipe methods. With an accuracy rate of 73.56%, this tool can be a means to facilitate proper handling, so that it is hoped that the quality of sleep and well-being of the elderly can improve.

Keywords: Sleep disorders, Elderly, Elderly well-being, Sleep quality, *Image processing*, *Haar Cascade Classifier*, Mediapipe