

DESIGN GAP ANALYSIS OF EPILEPSY SEIZURE ALERT MOBILE APPLICATIONS FOR BYSTANDER SUPPORT

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Abstract

Seizure alert mobile applications were created as a solution to improve emergency response for People With Epilepsy (PWE). However, existing applications mostly focus on notifying remote caregivers, leaving a critical gap in on-site bystander support. This study presents a comparative analysis and design gap identification of four seizure alert mobile applications, such as Aura: Seizure First Aid, Epicentr, SeizAlarm, and SeizureAlert – MyMedicWatch from the perspectives of both primary users (PWE) and secondary users (bystanders as helpers). Using a feature comparisons framework grounded in Human-Computer Interaction (HCI) principles, this study identifies the design gaps across activation method, user focus, interaction output, and bystander guidance. Findings reveal that even though Epicentr, SeizAlarm, and SeizureAlert have adopted automatic heart rate-based activation, none provides guidance for bystanders, making PWE face the challenges of not being able to get proper help during a seizure. Aura: Seizure First Aid is the only app focused on bystander guidance during the critical five minutes yet remains limited by its dependence on manual activation by the PWE. This study concludes that the integration of automatic seizure detection with on-site bystander guidance represents the most critical unaddressed design gap in current seizure alert application development.

Keywords: Comparative Analysis; Epilepsy First Aid; Human-Computer Interaction; People With Epilepsy (PWE); Seizure Alert App

INTRODUCTION

The term “epilepsy” derives from the Greek word *epilepsia* (seized or snatched). This condition is characterized by seizures, behavioral changes, and/or loss of consciousness that occur suddenly due to abnormal electrical surges in the brain (Hawari, 2022). Epilepsy is a condition that affects people regardless of age, race, or gender (Harsono, 2021). According to data from the World Health Organization (2024), 50 million people worldwide suffer from epilepsy. Data on the incidence of epilepsy in Indonesia remains limited. Many cases of epilepsy go undetected and unreported. The estimated number of people with epilepsy in Indonesia is 1.5 million, with a prevalence of 0.5–0.6% of the Indonesian population (Menteri Kesehatan Republik Indonesia, 2026).

This condition is one of the most common neurological disorders in the world (GBD 2016 Epilepsy Collaborators, 2019). Triggers for epileptic seizures vary, including