

Michael Sullivan Folse
Undergraduate
Mississippi State University, Starkville, Mississippi

Lindsay Lasseigne, MD, MBA and Clarence Greene, MD, MHA
Louisiana State University Health Science Center, Department of Neurosurgery

“Smartphone Technology and its Effects on Patient Education and Hydrocephalus Management Outcomes”

Hydrocephalus is a neurological condition characterized by the buildup of cerebrospinal fluid (CSF) in the ventricles of the brain. The condition is commonly caused by CSF circulation abnormalities, absorption abnormalities, CSF overproduction, or a combination of these causes. The condition is commonly found in children and can be either congenital or acquired. The only known treatment for hydrocephalus is surgery to remove the cause of the obstruction, create an alternative pathway for CSF flow, or to place a shunt in the ventricles of the brain that will divert the excess CSF out of the brain. Most cases of hydrocephalus are lethal without treatment. The shunts that are used as the primary treatment for hydrocephalus are prone to failure and infections and can require subsequent revision surgery over the course of the patient’s life. Furthermore, shunts come in a vast selection of manufacturers, models, and types. For these reasons, management of hydrocephalus can be quite complex and requires specialty care. Low health literacy in patients on both the condition and its multivariate treatment as well as complex management of these patients, which may result in transfer to tertiary care facilities, represents a costly endeavor which can be a significant burden for hydrocephalus patients and their families, both financially and otherwise.

Healthcare technology has many emerging roles in the communication and enhancement of the delivery of healthcare. Previous studies have attempted to look at more elementary ways to improve hydrocephalus patients’ health literacy, but increasingly ubiquitous access to technology warrants exploration into new ways to enhance patient understanding of this condition. Our study looks to examine the role of a novel mobile application, HydroAssist®, which is the first mobile app to allow hydrocephalus patients to record and store their hydrocephalus treatment history with easy 24/7 access on their smartphone or computer. In the study, 50 pediatric hydrocephalus patients will be recruited from Children’s Hospital New Orleans, and their families will be invited to use the app for approximately six months. Upon the initiation of the study, the family’s baseline knowledge of their child’s hydrocephalus treatment history, including shunt type and settings, will be surveyed. After utilization of the application, a similar survey will be completed by the family at the conclusion of the study. Additional questions regarding the participant’s use of the app, confidence in their knowledge of the child’s condition/treatment, and if the app was able to help prevent transfer to a tertiary facility for care will be included. We hypothesize that use of the HydroAssist® mobile app will increase patients’ health literacy and reduce incidence of unnecessary transfer to tertiary care facilities for treatment.