

## Assessment of Home-Based Telemedicine Systems

Morteza Taymoori<sup>1</sup>, Mahsa Hossein Khanli<sup>2</sup>

1-Graduate student, Department Computer Engineering, Faran University-Head of Computer Department SINA Hospital

2-MSc, Faculty of Information, Communication and Security Technology, Malek-Ashtar University

Expert-System Software , Research Institute of Petroleum Industry

### Abstract

Telemedicine is essentially “the use of information and telecommunications technologies to provide and support health care services when distance separates the participants. Many product developments have taken place resulting in various medical devices becoming commercially available which may form part of a telemedicine solution.

To foster user acceptance of telemedicine technologies, it is important for healthcare consumers to have a positive attitude toward using such systems. A key factor that influence user acceptance is the usability of the telemedicine system. It is critical, for real-world applicability to situate telemedicine applications within the context-specific needs of the people benefiting from or otherwise affected by them. Limited research is conducted in evaluating the usability of such tools from a home based video telemedicine system perspective has been conducted. To address this situation, this study investigates the usability issues associated with four home-based telemedicine software platforms using task performance metrics, and subjective measures.

At-home telemedicine visits are quickly becoming an acceptable alternative for in-person patient visits. However, little work has been done to understand the usability of these home-based telemedicine solutions. It is critical for user acceptance and real-world applicability to evaluate available telemedicine solutions within the context-specific needs of the users of this technology. To address this need, this study evaluated the usability of four home-based telemedicine software platforms: Doxy.me, Vidyo, VSee, and Polycom.

Statistically significant differences among the telemedicine software platforms were found for task completion time, total workload, mental demand, effort, frustration, preference ranking and computer system usability scores. Usability problems with installation and account creation led to high mental demand and task completion time, suggesting the participants preferred a system without such requirements. Majority of the usability issues were identified at the telemedicine initiation phase. The findings from this study can be used by software developers to develop user-friendly telemedicine systems.

**Keywords:** Telemedicine, Tele health, Home-based video telemedicine systems, Usability, human factors