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Usability of Documentation Software Used by Direct Support Providers: A Proof-of-Concept Study

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ABSTRACT

Direct support professionals (DSPs) face high levels of stress and burnout while providing care for individuals with intellectual and developmental disabilities (I/DDs). This paper examines the usability challenges associated with documentation software used by DSPs. A proof-of-concept study surveyed six DSPs to assess the subjective usability of the software using the Usefulness, Satisfaction, and Ease of use (USE) Questionnaire. Results showed that DSPs rated the software neutrally or negatively across dimensions of Usefulness (mean = 4.12; SD = 2.66), Ease of use (mean = 3.65; SD = 2.17), Learnability (mean = 3.46; SD = 2.52), and Satisfaction (mean = 2.75; SD = 1.50). Addressing usability issues is crucial to improve DSPs' well-being and the quality of care provided to individuals with I/DD. User-centered design principles and usability testing are necessary to improve health information technology (HIT) systems, reduce cognitive load, streamline workflows, and increase user satisfaction. By recognizing the significance of HIT usability and its impact on burnout, organizations can prioritize the design and implementation of systems that support DSPs. Future research include larger sample size and qualitative data collection to gather user feedback to create intuitive and effective documentation software to better support DSPs.

Keywords: Direct support professionals, Intellectual and developmental disabilities, Usability, Burnout, Professional, Health information technology

INTRODUCTION

Direct support professionals (DSPs) are instrumental in promoting the well-being and independence of individuals with intellectual and developmental disabilities (I/DDs). They assist with various tasks, including personal care, medication administration, community integration, and skill development. However, the demands of this profession can be overwhelming, leading to high levels of stress and burnout (Finkelstein et al., 2018). Burnout is a psychological syndrome characterized by emotional exhaustion, depersonalization, and reduced personal accomplishment (Maslach et al., 2001).

Usability of Health Information Technology

Health information technology (HIT) has the potential to revolutionize healthcare delivery, but poorly designed systems can introduce significant

usability issues. Badly created HIT systems often suffer from complex interfaces, unintuitive workflows, and inconsistent terminology, all of which can lead to usability challenges for healthcare professionals (Patel & Kannampallil, 2015). These issues can result in increased cognitive load, frustration, and errors, ultimately undermining the efficiency and effectiveness of healthcare delivery. For example, a study by Poorly designed electronic health record (EHR) systems can lead to information overload, leading to difficulties in locating and interpreting essential patient data (Raj M Ratwani et al., 2018). Such usability issues not only disrupt healthcare workflows but also contribute to burnout and dissatisfaction among healthcare providers (Shachak et al., 2009). To improve usability, it is crucial for HIT developers and implementers to prioritize user-centered design principles, conducting thorough usability testing and incorporating feedback from end-users throughout the development process.

Direct Support Professionals Experience With HIT Usability

Usability can be defines as, "he extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency, and satisfaction in a specified context of use." (International Organization for Standardization, 2013). Usability refers to the ease of use and overall user experience when interacting with a technology (Nielsen, 1994). Poor usability can result in increased cognitive load, decreased efficiency, and frustration, ultimately contributing to burnout among DSPs (Edward R Melnick et al., 2020). For example, complex interfaces, and unintuitive workflows can hinder DSPs' ability to efficiently complete tasks and may lead to errors or delays in providing care. Furthermore, the unique needs and challenges faced by individuals with I/DDs require DSPs to adapt and customize the technologies they use. However, many existing systems lack flexibility and customization options, forcing DSPs to work around rigid workflows that do not align with their specific requirements (Simmons et al., 2023). This lack of customization can further exacerbate usability issues and impede DSPs' ability to provide personalized and effective care.

Improving HIT Usability

By improving the design and functionality of technology systems used by DSPs, organizations can reduce cognitive load, streamline workflows, and increase user satisfaction, ultimately mitigating burnout and improving the quality of care provided to individuals with I/DDs. Recognizing the significance of HIT usability and its impact on burnout, is the first step to improve the design and implementation of these systems. User-centered design principles, comprehensive usability testing, and iterative feedback loops involving healthcare providers are essential for creating HIT systems that are intuitive, efficient, and supportive of clinical workflows. By addressing the usability challenges and reducing burnout among healthcare professionals, organizations can enhance the overall well-being of their workforce and improve patient outcomes.

Objective

Direct support professionals (DSPs) play a crucial role in providing care and support to individuals with intellectual and developmental disabilities (I/DDs). However, the demanding nature of their work, combined with usability issues associated with the technologies they use, has resulted in increased levels of burnout among DSPs. Burnout can have detrimental effects on both the well-being of DSPs and the quality of care provided to individuals with I/DDs. This objective of this paper is to examine the usability of documentation software used by DSPs.

METHODOLOGY

To gain insights into the perception of usability regarding the software used for daily documentation among DSPs, a proof of concept study was conducted.

Data Collection

The study involved surveying six DSPs who regularly utilize the software in their daily work (Figure 1). The survey aimed to assess the subjective usability of the software, employing the USE Questionnaire: Usefulness, Satisfaction, and Ease of use (USE) (Gao et al., 2018; Lund, 2001). The USE survey is a widely recognized and validated 30-item questionnaire that evaluates the subjective usability of a product or service. It encompasses four key dimensions: (1) usefulness, (2) ease of use, (3) ease of learning, and (4) satisfaction. These dimensions provide a comprehensive understanding of the usability of the software from the perspective of the DSPs. For the study, DSP were recruited from the University of Nebraska Medical Center (UNMC) Munroe Meyer Institute (MMI) Adult I/DD clinic. The recruitment took place following their clinic visit.

Data Analysis

To maintain data security and integrity, the survey responses were securely recorded and stored in a database. Descriptive statistical analysis was conducted, which includes frequency, percentage, mean, median, and standard deviation, enabling a comprehensive understanding of the DSPs' perceptions of the software's usability. The software is rated positively in the USE if average scores are higher than 5, neutral if average scores is rated an average of 4,and negatively if average is below 4.

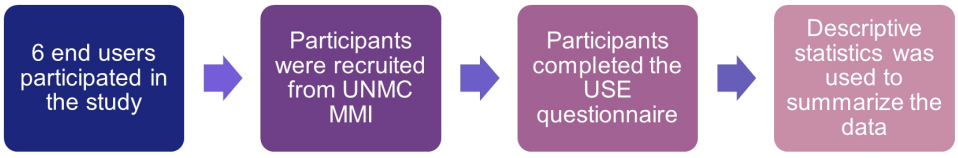

Figure 1: Proof of study methodology.

Table 1. DSP participant demographics.

Demographics		%	n
Age range	27 - 57		
Gender	Man	67%	4
	Woman	33%	2
	Transgender	0%	0
	Non-binary / third gender	0%	0
	Prefer not to say	0%	0
Race	Black or African American	67%	4
	Asian		
	White	33%	2
	American Indian or Alaskan Native		
	Pacific Islander		
Ethnicity	Hispanic or Latino(a)	17%	1
	Non-Hispanic	83%	5
Education	Did not graduate high school		
	High school graduate/GED	17%	1
	Trade / some college	17%	1
	College graduate	33%	2
	Post graduate degree	33%	2
Comfort level using computers	Very uncomfortable	33%	2
	Neutral	17%	1
	Comfortable	0%	0
	Very comfortable	50%	3
	Uncomfortable	0%	0

RESULTS

Demographics

Table 1 shows participants' demographics. Majority of participants identified as a man (67%), were Non-Hispanic Black or African American (67%), have a college or post graduate degree (67%), and felt very comfortable using computers (50%).

Usefulness

Usefulness is the system's capability to assist users in achieving their intended goals or completing specific tasks effectively (Figure 2). DSPs rated the documentation software neutrally in the USE for the Usefulness subscale (mean = 4.12; SD = 2.66).

Ease of Use

Ease of use refers to the user's ability to accomplish tasks with minimal effort or challenges (Figure 3). DSPs rated the documentation software negatively in the USE for the Ease of use subscale (mean = 3.65; SD = 2.17).

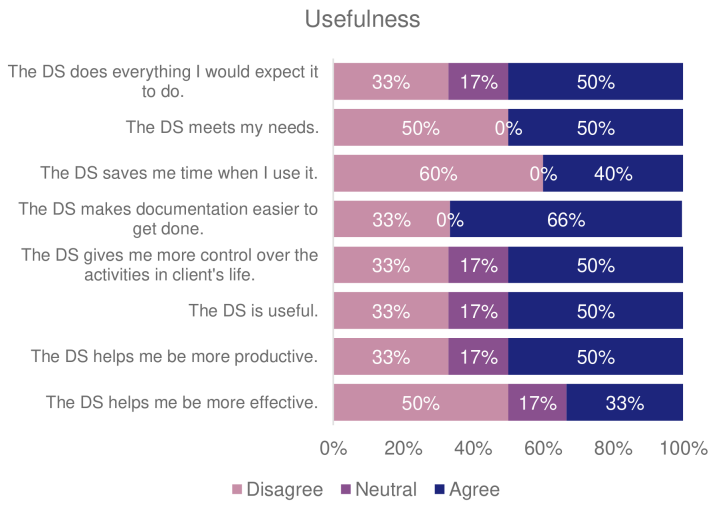

Figure 2: Average results of the usefulness subscale from the USE survey about documentation software use. DS - documentation software.

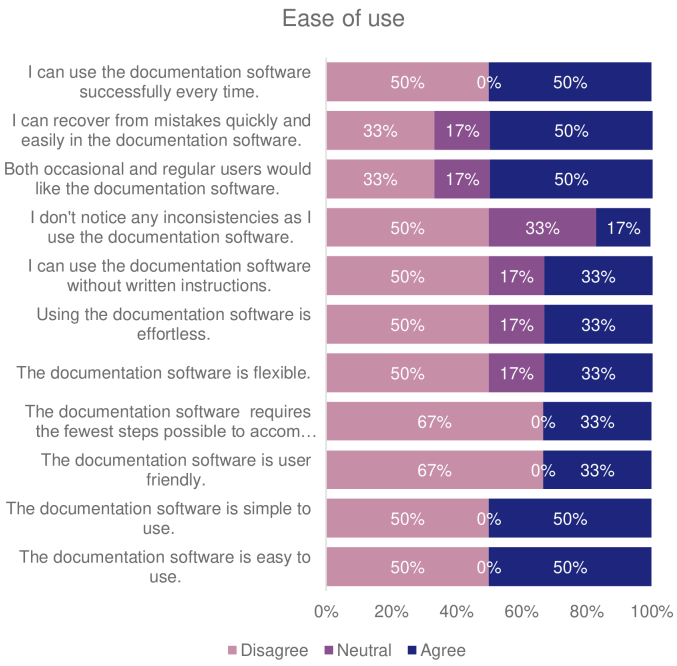

Figure 3: Average results of the ease of use subscale from the USE survey.

Learnability

Learnability is the ease with which users can grasp and successfully perform basic tasks when first encountering the design (Figure 4). DSPs rated the documentation software negatively in the USE for the Learnability subscale (mean = 3.46; SD = 2.52).

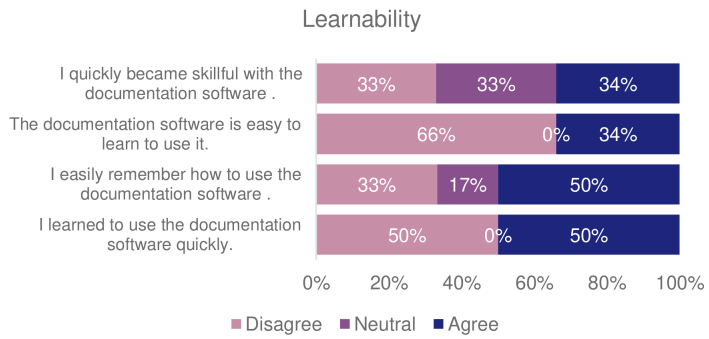

Figure 4: Average results of the learnability subscale from the USE survey.

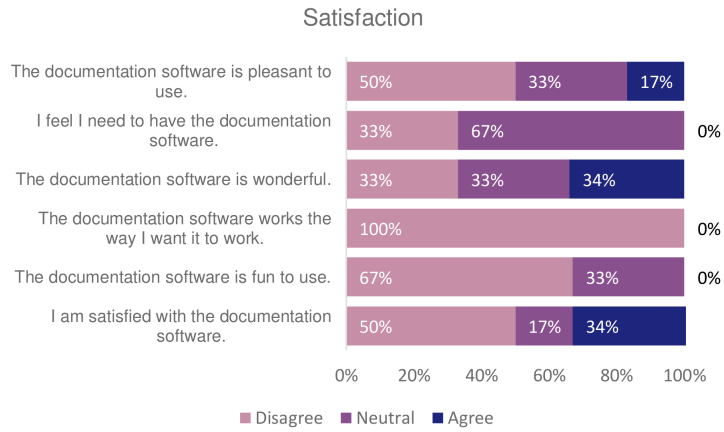

Figure 5: Average results of the satisfaction subscale from the USE survey.

Satisfaction

Satisfaction relates to the overall pleasantness experienced by users while using the system (Figure 5). DSPs rated the documentation software negatively in the USE for the Satisfaction subscale (mean = 2.75; SD = 1.50).

DISCUSSION

Participants rated the documentation system negatively or neutrally in all four subscales. These results are similar to previous studies that shows poor usability in EHR systems being associated with negative effects on healthcare providers and patient care (Edward R. Melnick et al., 2020; Middleton et al., 2013). Previous research demonstrates that usability issues in EHRs can lead to decreased efficiency, increased cognitive workload, and potential patient safety risks (R. M. Ratwani et al., 2018; Schwappach & Ratwani, 2023). Poor usability can disrupt workflow and hinder the effective use of EHRs in complex healthcare systems (Sittig & Singh, 2015). It can also result in user stress, errors, and decreased job satisfaction (Kaihlanen et al., 2020). These usability challenges can also contribute to medication-related errors and reduced adherence to clinical decision support alerts (Hardenbol et al., 2018). EHR design

flaws can negatively impact patient safety and contribute to communication failures between healthcare providers (Zahabi et al., 2015). Like clinicians, poor EHR usability can have detrimental effects on DSP's performance, client safety, workflow efficiency, and overall satisfaction.

The burnout experienced by DSPs poses significant challenges to the quality of care provided to individuals with I/DD. Usability issues associated with the technologies used by DSPs contribute to this burnout, impeding their ability to fulfill their responsibilities efficiently and effectively. These issues can also exacerbate the DSP Workforce crisis. Addressing these usability issues is crucial to enhance the overall well-being of DSPs and improve the care and support provided to individuals with I/DDs.

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