Speaking Of Value: A Mixed-Methods Evaluation of Speech Driven Reporting in Long-Term Care I.L.G. Dantuma, T.R.C. van Hoesel, P. Rood, H.P. Buimer, H.H. Nap. *Gerontechnology* 25(s)

Purpose The long-term care (LTC) sector faces critical challenges driven by workforce shortages, an aging population, and a growing population of people living with dementia [1,2]. Administrative burdens add to this pressure, with healthcare professionals spending up to 40% of their working time on administration and documentation [3]. Speech driven reporting (SDR) is viewed as a technological solution to alleviate administrative workload and enhance the workflow efficiency of care workers [4]. This study aimed to empirically evaluate the effects of SDR on documentation time, accuracy measured by Word Error Rate (WER), user experiences, and the client-caregiver interaction within Dutch nursing homes and home care settings. **Method** A mixed-methods study was conducted in the Netherlands involving 21 healthcare organizations in the province of Noord-Brabant. The research consisted of four components: *1. Experimental Evaluation (n=35):* a controlled evaluation study comparing the duration of SDR versus traditional typing on both smartphones and laptops using videos of care scenarios using linear mixed models for analysis. Also, the quality of the speech driven reports was assessed using the WER. *2. Survey (n=293):* a questionnaire based on the Technology Acceptance Model (TAM3) [5] and work pressure scales (VAR2) [6] assessed user experiences and job satisfaction. *3. Qualitative Inquiry:* a focus group with 9 innovation managers of care organizations and interviews with 5 older adults investigated the impact of dictation on client privacy and interaction. The focus group was audio-recorded, for the client interviews no recordings were made, but notes were taken. Both were analyzed using a rapid ("quick") thematic analysis approach. Initial themes were generated inductively from the focus group data using a bottom-up approach. The themes were validated and iterated upon by adding the data from the interviews with the older adults. **Results and Discussion** The controlled evaluation study demonstrated a significant reduction in reporting time. SDR was found to be 3.5 times faster than typing on smartphones (34 seconds (s) vs. 122s) and 2.3 times faster on laptops (43s vs. 102s). The SDR software demonstrated high accuracy, with a Word Error Rate (WER) generally below 0.05 (5%). The survey results indicated that no immediate statistical correlation was found between the duration of SDR use and technology acceptance or the overall perceived work pressure. However, SDR changed the reporting process: healthcare workers reported more directly after they provided care for their clients, and fewer reports were made after the end of their shift. Yet, caregivers expressed hesitation regarding privacy and the social awkwardness of dictating sensitive health information in the presence of clients. This study confirms that current SDR technology offers time savings and high accuracy regardless of the device used (smartphone or laptop). However, the technological capability alone does not automatically translate to reduced perceived work pressure by care workers. Moreover, the findings suggest that the challenge has shifted from technical feasibility to implementation strategy and behavioral change [7].

References

1. Page B, Irving D, Amalberti R, Vincent C. Health services under pressure: a scoping review and development of a taxonomy of adaptive strategies. BMJ Qual Saf. 2023 Nov 29;33(11):738–47. Available from: http://dx.doi.org/10.1136/bmjqs-2023-016686
2. WHO - Ageing and health [Internet]. Who.int. [cited 2025 Nov 30]. Available from: https://www.who.int/news-room/fact-sheets/detail/ageing-and-health
3. De Groot K, De Veer AJE, Munster AM, Francke AL, Paans W. Nursing documentation and its relationship with perceived nursing workload: a mixed-methods study among community nurses. BMC Nurs. 2022 Jan 28;21(1). Available from: http://dx.doi.org/10.1186/s12912-022-00811-7
4. van Buchem MM, Boosman H, Bauer MP, Kant IMJ, Cammel SA, Steyerberg EW. The digital scribe in clinical practice: a scoping review and research agenda. npj Digit Med. 2021 Mar 26;4(1). Available from: http://dx.doi.org/10.1038/s41746-021-00432-5
5. Venkatesh V, Bala H. Technology Acceptance Model 3 and a Research Agenda on Interventions. Decision Sciences. 2008 May;39(2):273–315. Available from: http://dx.doi.org/10.1111/j.1540-5915.2008.00192.x
6. Vendrig AA, Schaafsma FG. Reliability and Validity of the Work and Well-Being Inventory (WBI) for Employees. J Occup Rehabil [Internet]. 2017 Sept 8;28(2):377–90. Available from: http://dx.doi.org/10.1007/s10926-017-9729-7
7. Dantuma ILG, Van Hoesel TRC, Rood P, Buimer HP, Nap HH. Spraakgestuurd rapporteren Van kansen naar meerwaarde in de VVT. Vilans. [cited 2025 Nov 30]. Available from: https://www.vilans.nl/kennis/spraakgestuurd-rapporteren

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