

Introduction

The reason why the Smartwatch has been chosen is its ability to aid in the remote monitoring of a COPD and asthma patient. This device provides vital information and trends of vital signs, such as respiratory rate and oxygen saturation, one of the vital signs needed to control chronic respiratory diseases. I am interested in knowing how wearable technology, which is already usually tangible in everyday life, can become an efficient part of the care plan of a patient, to sustain his health and continuity of care. This selection was conducted through a research process. It consisted of the analysis of the given simulation documentation to identify the appropriate devices regarding remote monitoring of the specific conditions of the patient. This determined the logic behind the use of the smartwatch as a fundamental technology.

Annotation Elements

Støve, M. P., Graversen, A. H., & Sørensen, J. (2023). Assessment of noninvasive oxygen saturation in patients with COPD during pulmonary rehabilitation: smartwatch versus pulse oximeter. *Respiratory Care*, 68(8), 1041-1048. DOI: 10.4187/respcare.10760

This remains valuable for examining issues related to COPD management. Despite the weaknesses, the article still has some value when it comes to studying matters that concern the management of COPD. The primary aim of the study was to assess clinical accuracy and reliability of commercially offered smartwatches in determining peripheral oxygen saturation in “Chronic Obstructive Pulmonary Disease” (COPD) patients, at rest and once in post-exercise, the 30s sit-down-stand test, and the 6-minute walk test (Støve *et al.*, 2023). The devices constantly underestimated the lower concentration, whereas overestimated the higher concentration whenever it fell below 95% and overestimated the lower concentration whenever it fell above

95%, indicating that they cannot be trusted as reliable in assessing hypoxemia in a clinical or pulmonary rehabilitation context. In nursing practice and interdisciplinary teams, the publication can be used as a much-needed warning. It highlights that smartwatches are convenient devices, but should not replace the proven medical devices, such as conventional pulse oximeters, in the high-risk population, such as Lynn Tan.

Rezende, L. C., Ribeiro, E. G., Parreiras, L. C., Guimarães, R. A., Reis, G. M. D., Carajá, A. F., & Silva, K. L. (2023). Telehealth and telemedicine in the management of adult patients after hospitalization for COPD exacerbation: a scoping review. *Jornal Brasileiro de Pneumologia*, 49(3), e20220067. <https://dx.doi.org/10.36416/1806-3756/e20220067>

The protocol that the current research is going to focus on is meant to investigate the mechanisms of behavioral interventions. It is facilitated by activity-tracking devices such as smartwatches that influence the level of physical activity in moderate-to-severe asthmatics. The presented method does not merely provide monitoring but examines the issue of the smartwatch as a behavioral coach as part of the overall care design. The device has the potential to enhance the quality of care by enabling the self-management of patients with the help of individual feedback, motivational interviewing, and goal setting, depending on objective data (Rezende *et al.*, 2023). However, the effect on patient safety is not direct because the enhancement of PADL may hypothetically allow patients to gain cardiorespiratory fitness, which is useful in general health and resistance to exacerbations of not only asthma but also COPD. In the case of the nursing team, it is applicable because it confirms that smartwatches can be used not only to collect data passively, but also as a touchpoint of the health coaching process, as a critical part of the chronic illness management. The publication has significance to practitioners since it shows how to design a therapeutic telehealth program around a wearable device to achieve significant

behavioral change, which is a model of applying technology to eliminate the behavior of passive monitoring and adopt an active self-management behavior of patients.

Wu, R., Calligan, M., Son, T., Rakhra, H., de Lara, E., Mariakakis, A., & Gershon, A. S. (2024). Impressions and perceptions of a smartphone and smartwatch self-management tool for patients with COPD: a qualitative study. *COPD: Journal of Chronic Obstructive Pulmonary Disease*, 21(1), 2277158. <https://doi.org/10.1080/15412555.2023.2277158>

The absence of a powerful political force to alter the situation in Syria could lead to increased losses. This study was mainly a qualitative investigation into the experience of the patient, consisting of the impressions and perceptions of using a smartphone and smartwatch system to self-manage “Chronic Obstructive Pulmonary Disease” (COPD) over six months (Wu *et al.*, 2024). The study, based on semi-structured interviews, was formed to gain knowledge of the accessibility, acceptability, and utility of the wearable technology from the perspectives of the patient and determine which factors promote its adoption as well as what the current obstacles are. This qualitative strategy is pivotal in the design of telehealth systems to guarantee the anthropocentric nature of the systems. The general summary was based on four themes: (1) information, support, and reassurance, (2) barriers to adoption, (3) influence on communication with health care providers, and (4) measures to improve things. The results demonstrate that the device has a great impact on the quality of care as it gives a feeling of reassurance and connectedness, covering the fear of exacerbation. The article is also essential to the interdisciplinary team to read since it highlights the importance of successful remote monitoring as being based not only on data, but also on usability and comfort; issues of technological glitches and the comfort of the devices used by nurses are those that need to be dealt with by the

interdisciplinary team to maintain consistent patient adherence and the overall effectiveness of the remote monitoring program.

Chen, Y., Cao, L., Zhao, D., Meng, S., Li, D., Li, J., ... & Xie, L. (2025). Smartwatch-based ventilatory assessment for COPD screening: A diagnostic accuracy study. *Digital health*, 11, 20552076251377938. DOI: 10.1177/20552076251377938

Chen et al. (2025) explain that a smartwatch can monitor respiration and heart rate (not a review of many studies), which is more likely to succeed commercially than fail. The second one is a smarter watch to measure respiration and heart rate (not a summary of multiple research works), which ultimately has a better chance at succeeding in a market rather than failing. This study will center on the description and validation of a particular experimental smartwatch that will be used to non-invasively monitor the respiration rate (RR) and heart rate (HR) through the use of photoplethysmography (PPG) technology. The purpose of the study was to show the practicality and engineering accuracy of this task (to be able to extract these two vital signs by means of a wrist-worn gadget) through the use of specific sensors, band-pass filters, and frequency content analysis. The study is informational, since it forms the basis of the technical capacity of the smartwatch to do the prescribed physiological measurements needed to track the respiratory patients, such as Lynn Tan. According to the summary overview, the future outlook of patient safety and quality of care is positive because it confirms the technical ability of a wrist-worn device to utilize the continuous and unobtrusive monitoring of respiratory activity, which must be used in COPD and asthma to identify decompensation. The fact that it comes in a comfortable form shaped like a wristwatch is quoted as an overall strength, outweighing the pain of having chest straps, therefore, encouraging compliance. To the interdisciplinary team, this

article reveals the current progressive development of sensor technologies and how smartwatches are no longer mere trackers, but possibly valid clinical tools.

Artificial Intelligence (AI)

“Artificial Intelligence” (AI) plays a critical role in using smartwatch information to revolutionize the provision of healthcare and enhance patient outcomes of chronic respiratory illness. The smartwatch can be connected to AI to track continuous physiological data, such as heart rate, respiratory rate, and oxygen saturation, and predict an asthma or acute COPD attack days prior to it becoming severe enough to attract the attention of a patient. This predictive feature directly enhances patient safety by providing timely intervention. For example, a nurse changing a medication or scheduling a virtual visit can potentially avoid a very expensive and risky hospitalization. AI can be used to winnow out mass data into actionable alerts to streamline and concentrate nursing workflow and efficiency. The nurse does not need to review days of vital signs data manually, which will notify him or her of a prioritized notification whenever the data trends of the patient show a statistically high likelihood of worsening. This new development enables nurses to be proactive in care as opposed to being reactive. Clinical utility of AI-driven remote monitoring can be justified, as, according to the pattern provided by the qualitative study, patients consider the system reassuring and a means to improve their interaction with their providers.

Summary of Recommendation

The synthesized data of accuracy, patient perception, and predictive analytics must justify the implementation of wearable smartwatches in remote patient monitoring of chronic respiratory conditions. Most importantly, although AI algorithms could have a major benefit to patient safety and efficiency because the computer can independently utilize the data stream to

forecast COPD exacerbation (as it is in the AI analysis), the basis of this system must be based on proper inputs (Støve *et al.*, 2023). One of the key limitations of the research is that commercial smartwatches do not yet have the clinical accuracy needed to measure the value of SpO₂ in patients with hypoxemia, and thus, the company should provide such a use of organizational policy, and only then will the smartwatch be used as a behavioral and trend parameter. The organizational challenges that will help in successful implementation include a high level of organizational commitment to offer powerful technical support and training programs to counter perceived barriers to adoption and overcome patient discomfort. The benefits of the technology should not be limited to the possible better clinical results due to the early intervention, but also patient satisfaction and perceived reassurance (Wu *et al.*, 2024). Finally, AI allows prioritizing nursing workload, transforming the continuous data into an actionable alert, and only under these conditions, the telehealth solution can become appropriate, effective, and sustainable.

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