



Patient and Healthcare Provider Experiences with Technology-Based Medications in Cancer Therapy

Doby Indrawan ^{1*}, Dyah Pramesti Gayuh Utami Asih Lestari ²

^{1,2} Universitas Islam Negeri Maulana Malik Ibrahim Malang, Indonesia

¹dobyindrawan@kedokteran.uin-malang.ac.id, ²dpramesti121@gmail.com

Article Info

Article history:

Received 29-01-2026

Revised 23-02-2026

Accepted 17-03-2026

Keyword:

Patient Experience;
Healthcare Providers;
Technology-Based
Medications; Cancer
Therapy; Patient-Provider
Relationship; Emotional
Impact

ABSTRACT

The integration of technology in healthcare, particularly in cancer treatment, has led to significant advancements in treatment efficacy. However, the subjective experiences of patients and healthcare professionals regarding technology-based medications remain underexplored. While previous studies focus on clinical outcomes, little is known about how these technologies are perceived on an emotional and relational level. This study addresses this gap by adopting a phenomenological approach to examine the lived experiences of both patients and healthcare professionals using technology-based medications in cancer therapy. Data were collected through in-depth, semi-structured interviews with 12 participants, including 6 patients and 6 healthcare providers. Thematic analysis revealed three major themes: (1) enhanced therapeutic precision and monitoring, (2) emotional ambivalence toward technology use, and (3) perceived shifts in patient-provider relationships. Ten out of twelve participants emphasized improved treatment accuracy and real-time monitoring as key benefits, while eight participants reported feelings of emotional distance or reduced interpersonal interaction during technology-mediated care. Additionally, five healthcare providers expressed concern that increased reliance on digital systems limited opportunities for empathetic communication. These findings highlight the need for a balanced approach that integrates technology while maintaining human aspects of patient care. The results contribute to a deeper understanding of how technology affects the emotional and relational dynamics in healthcare, providing a foundation for future research aimed at improving the integration of technological advancements in patient-centered care.



©2026 Authors. Published by PT Mukhlisina Revolution Center.. This work is licensed under a Creative Commons Attribution-NonCommercial 4.0 International License.

(<https://creativecommons.org/licenses/by/4.0/>)

INTRODUCTION

The use of technology in healthcare, particularly in cancer therapy, has been rapidly advancing in recent years. With the integration of innovative technologies, such as targeted drug delivery systems and personalized medication based on genetic profiling, the landscape of cancer treatment is evolving (Still et al., 2020). These technological advancements offer potential improvements in treatment efficacy and precision, yet they also bring about new challenges, particularly in how patients and healthcare professionals perceive and engage with these therapies (Still et al., 2021). The social and cultural implications of these technologies, especially in the realm of patient care, are complex, as they affect not only the clinical outcomes but also the emotional, psychological, and social dimensions of the patient's journey through treatment.

In many cultures, healthcare is traditionally seen as a deeply personal and human-centered practice, with a strong emphasis on trust and communication between patients and healthcare providers. The introduction of technology into this setting raises questions about how these innovations influence the patient-provider relationship (Murphy et al., 2021). As medical technology becomes more complex and integrated into everyday practice, it is essential to explore how these changes are perceived by the patients who experience them and the healthcare providers who administer them (Mukhlis et al. 2023). Patients often face feelings of uncertainty and fear as they

navigate new treatments, while healthcare professionals must adapt to rapidly changing technologies in their practice.

The importance of understanding the subjective experiences of both patients and healthcare professionals in the context of technology-based medications cannot be overstated. These experiences shape their interactions, influence treatment adherence, and ultimately impact patient outcomes (Stockman et al., 2023). From a phenomenological perspective, it is crucial to explore how individuals interpret and make sense of these experiences, as this understanding is key to improving both the emotional and clinical aspects of cancer treatment. Phenomenology allows for an in-depth exploration of the lived experiences of those involved, offering insights into the meanings they attach to their encounters with technology in healthcare (Fogarty et al., 2022). By focusing on the subjective nature of these experiences, this research aims to shed light on how technological innovations are reshaping the cancer treatment landscape and the broader healthcare environment.

Research on the lived experiences of individuals, particularly in the context of healthcare and medical treatments, has become a significant field of study. Exploring the subjective experiences of patients and healthcare professionals offers invaluable insights into how individuals perceive and make sense of their interactions with healthcare technologies (Rasschaert et al., 2021). This exploration allows researchers to understand not just the outcomes of treatments, but also the emotional, psychological, and social dimensions that accompany the medical journey. The use of technology in cancer treatment, for example, is not only a matter of clinical intervention but also involves profound shifts in how patients and providers understand and relate to treatment processes (Mukhlis & Saidah, 2025). Therefore, research that delves into these experiences is vital to improving both the patient experience and the effectiveness of medical practices.

However, studying these subjective experiences presents significant methodological challenges. Traditional quantitative research approaches, which often focus on objective measures such as treatment success rates or survival statistics, are ill-equipped to capture the nuanced, personal meanings that patients and healthcare professionals attach to their experiences with technology (Gaspar et al., 2022). These methods fail to account for the richness of human experience, which is essential for understanding how technology is integrated into personal and professional narratives in healthcare (Murali & Lonergan, 2020). Phenomenological research, on the other hand, is specifically designed to address this gap by focusing on the essence of lived experiences, allowing for a deeper exploration of what individuals feel, think, and interpret in response to their encounters with medical technologies.

Despite the advantages of a phenomenological approach, previous research on this subject has often been limited by methodological constraints. Many studies have failed to go beyond surface-level analysis, and few have sufficiently captured the full complexity of the patient-provider relationship in the context of technological innovations (Ortiz Arduán et al., 2023). As a result, most existing studies are inadequate for fully understanding the profound impact that technology has on the subjective experience of treatment (Mukhlis, 2025). By addressing these limitations, phenomenological research can provide a more comprehensive and meaningful understanding of the ways in which cancer patients and healthcare professionals engage with and interpret technological advancements in treatment.

In the context of understanding the impact of technology-based medications in cancer therapy, most studies have relied on traditional, quantitative methods that focus primarily on clinical outcomes, such as treatment effectiveness or patient survival rates (Davies et al., 2021). These practical, outcome-driven approaches are crucial for assessing the efficacy of medical interventions. However, they fail to capture the rich, subjective experiences of patients and healthcare professionals, which are central to understanding the broader implications of these technologies (Mammen et al., 2021). While quantitative research provides valuable data on the "what" and "how" of treatment, it does not address the "why" behind individuals' perceptions and the emotional, psychological, and social dimensions of using technology in cancer care.

The primary limitation of these existing approaches is their inability to fully explore and comprehend the meanings that individuals ascribe to their experiences (Bailey et al., 2023). By

focusing on measurable outcomes, traditional methods neglect the depth and complexity of the lived experiences that patients and healthcare providers undergo during the course of cancer treatment (Mukhlis & Abdullah, 2025). This results in a partial understanding of the phenomenon, missing the nuances that shape how technology is perceived and integrated into treatment processes.

To address this gap, a phenomenological approach offers a more suitable alternative. Phenomenology allows for a deeper exploration of the lived experiences of patients and healthcare professionals, focusing on the meanings and interpretations they attach to their interactions with technology-based medications (Morales-Pillado et al., 2023). By adopting a phenomenological methodology, this study aims to uncover the essence of these experiences and provide a more holistic understanding of how technology influences the patient-provider relationship and the overall treatment experience. Through this lens, the research will go beyond clinical metrics to explore the emotional and psychological impact of technological innovations in cancer therapy, offering insights that are currently underrepresented in the literature.

Previous research has explored various aspects of technology-based medications in healthcare, but few studies have focused on the subjective experiences of patients and healthcare professionals in cancer therapy (Toscos et al., 2020). Existing literature primarily addresses the technical and clinical outcomes of such treatments, often overlooking the emotional, psychological, and social dimensions. Studies on patient experiences with medical technology typically employ quantitative methods, which are limited in capturing the deeper meanings and personal interpretations of these experiences (Mukhlis et al. 2025). Theories of healthcare, such as the biopsychosocial model, emphasize the importance of understanding the whole person in medical treatment. However, these studies often fail to provide an in-depth, experiential perspective on how patients and healthcare providers perceive and engage with new technologies in cancer care.

To address this gap, a phenomenological approach has been chosen for this study. Phenomenology is particularly suited to uncovering the lived experiences of individuals, as it focuses on the essence of how people perceive and interpret their world. By using phenomenological methods, this study aims to explore the meanings that patients and healthcare professionals attribute to their interactions with technology-based cancer therapies. This approach will offer a deeper, more holistic understanding of the phenomenon, capturing the emotional and psychological complexities that quantitative methods cannot. Thus, the study intends to answer the questions posed in the “Knowledge Gap” section by emphasizing the subjective, experiential aspects of healthcare technology.

The structure of this article is designed to guide the reader through the research process. The introduction provides an overview of the phenomenon and the knowledge gap that this study aims to address. The methodological section outlines the phenomenological approach and the rationale behind its use to explore patient and healthcare professional experiences. Following this, the article discusses the data collection process, including the in-depth interviews conducted with participants, and the analysis of the data using thematic analysis. The results section presents the key findings, while the discussion section interprets these findings in light of existing literature. Finally, the conclusion summarizes the study's contributions to understanding the role of technology in cancer care.

RESEARCH METHODS

Study Design

This study employed a phenomenological approach to explore the subjective experiences and perceptions of patients and healthcare professionals regarding the use of technology-based medications in cancer therapy (Schwartz & Ballard, 2022). Phenomenology is particularly suited for this research as it focuses on understanding individuals' lived experiences and the meanings they attach to these experiences. This approach allows for a deep exploration of the essence of participants' perceptions and provides valuable insights into how technology influences their experiences with cancer treatment.

The phenomenological approach was chosen because it enables the study to address the research question, which seeks to uncover the rich, complex experiences of both patients and healthcare providers. By utilizing this approach, the research emphasizes the importance of understanding the personal, subjective meanings participants ascribe to their encounters with technology in a medical context. Specifically, an interpretative phenomenological analysis (IPA) was applied, which focuses on how individuals make sense of their personal and social worlds. IPA was chosen because it allows for an in-depth exploration of how both patients and healthcare providers interpret and make sense of their experiences with technology-based medications in cancer therapy (Y. Li et al., 2022).

Participants

Participants were selected using a purposive sampling approach, which ensured that individuals who have directly experienced or interacted with technology-based medications in cancer therapy were included in the study (Bhidayasiri et al., 2025). This sampling strategy allowed for the inclusion of participants with relevant knowledge and experience of the phenomenon being studied.

The sample consisted of 12 individuals, including 6 cancer patients who were undergoing or had recently undergone treatment involving technology-based medications, and 6 healthcare professionals (doctors and nurses) who had been directly involved in administering or managing such treatments. The participants ranged in age from 30 to 65 years, with a balanced gender distribution (6 male, 6 female). The inclusion criteria for patients required that they had been diagnosed with cancer and had been prescribed or exposed to technology-based medications within the past year. For healthcare professionals, the inclusion criteria required at least two years of experience in oncology or related fields, and familiarity with technology-based treatments. Individuals with severe cognitive impairments or those unable to provide informed consent were excluded from the study.

Data Collection

Data were collected through in-depth semi-structured interviews, which allowed participants to express their experiences and perceptions in their own words. The interviews were conducted in a private setting to ensure participants felt comfortable and could speak openly. Each interview lasted approximately 45 to 60 minutes, providing ample time for participants to elaborate on their experiences and thoughts.

The interview guide was designed to facilitate discussion around the use of technology in cancer treatment, with questions focusing on participants' personal experiences, feelings, and perceptions of technology-based medications (Bergman et al., 2020). The guide was reviewed by experts in the field of oncology and phenomenology to ensure its relevance and clarity. Modifications were made to include additional prompts to encourage deeper exploration of emotional and psychological impacts.

The interviews were audio-recorded with the participants' consent, and notes were taken during the interview to document non-verbal cues. The recordings were transcribed verbatim for analysis.

Data Analysis

The data were analyzed using interpretative phenomenological analysis (IPA), a widely used technique in phenomenological research. The analysis followed a systematic process, beginning with a close reading of the transcripts to familiarize with the data (Mukhlis et al., 2024). This was followed by the identification of key themes, which were derived through an inductive process, ensuring that the analysis remained grounded in the participants' own descriptions.

Each transcript was analyzed separately, and emerging themes were identified by reviewing significant statements that reflected the essence of participants' experiences. These themes were then grouped and interpreted in relation to the overall research question. The analysis process was iterative, with regular checks to ensure that the findings accurately reflected the participants' lived experiences. NVivo software was used to assist in the organization and coding of data, but the focus remained on the thematic analysis rather than on any automated processes.

NVivo was used primarily for data management (storing transcripts, organizing codes, and retrieving coded segments). Theme generation remained interpretive and researcher-led: themes were derived through iterative comparison between coded excerpts, analytic memos, and the full narrative context of each participant. An audit trail was maintained (codebook versions, memos, and theme maps) to document analytic decisions and clarify how themes progressed from initial codes to final superordinate themes.

RESULTS

Patients' Perception of Technology in Cancer Therapy

Patients shared a variety of experiences regarding their use of technology-based medications, revealing both positive and negative perceptions. A recurring sentiment among participants was the feeling of reassurance brought by the integration of technology in their treatment process. One participant stated:

"When I first heard about the technology, I was skeptical. But after experiencing it, I felt more secure. It's like knowing that doctors are using the latest methods to help me. It gave me hope."

However, not all patients had positive experiences. Some expressed confusion or discomfort with the technological aspects of their treatment. One participant noted:

"I understand the need for technology, but sometimes it's hard to trust it. It feels like the personal touch is lost. I miss the old way of doctor-patient interaction."

These contrasting views illustrate the complexity of patients' perceptions and the diverse ways in which technology is experienced in the context of cancer therapy. While some patients embrace the advances, others find them alienating, reflecting the emotional and psychological impact of technology on their care experience.

Embrace Technology



Healthcare Professionals' Perspectives on Technology in Medication

Healthcare professionals also expressed a range of opinions about the integration of technology in cancer treatment, with most acknowledging the benefits but also recognizing the challenges. Doctors and nurses highlighted the efficiency and precision that technology brings to the therapeutic process. One healthcare provider shared:

"Technology has definitely made a difference in terms of accuracy. We can tailor treatments more effectively now. It's not just about medication anymore; it's about data-driven decisions."

However, some professionals raised concerns about the over-reliance on technology, fearing that it may diminish the human aspect of care. A nurse mentioned:

"While technology is invaluable, sometimes it feels like we're losing touch with the human side of treatment. We need to balance technology with empathy. Patients still need to feel heard and cared for."

These comments underscore a tension between technological advancements and the preservation of traditional patient care values, highlighting a critical challenge in the healthcare sector.

Technological Challenges and Limitations

Both patients and healthcare professionals identified several challenges associated with the use of technology in cancer treatment. Patients often mentioned the difficulty of navigating the new technological systems, which could be overwhelming at times. One patient explained:

"The technology itself is fine, but it's confusing sometimes. I don't know if I'm using it right or if it's doing what it's supposed to do."

Healthcare professionals echoed similar concerns about the complexities of integrating new technologies into the treatment process. One physician commented:

"We're constantly learning how to use these new technologies. There's a steep learning curve for both staff and patients, which can sometimes slow things down."

These challenges emphasize the need for comprehensive training and support systems for both patients and healthcare providers to fully benefit from technological advancements.

In conclusion, the study revealed that the integration of technology-based medications in cancer therapy is experienced differently by patients and healthcare professionals. While technology is generally viewed as a valuable tool for improving the precision and efficiency of treatment, it also presents challenges, particularly in terms of patient comfort and the potential erosion of the human touch in care. Both groups expressed a need for balance between technological innovation and traditional aspects of medical practice, particularly in terms of patient-provider interactions. These findings provide essential insights into how technology is reshaping cancer treatment and underscore the importance of considering both the benefits and drawbacks of such innovations in healthcare.

DISCUSSION

The main findings of this study reveal the complex and varied experiences of both patients and healthcare professionals regarding the use of technology-based medications in cancer therapy (Lyon et al., 2022). While technology is generally embraced for its potential to improve treatment accuracy, it also generates mixed emotions and perceptions, ranging from reassurance to discomfort (Mukhlis, Janwari, et al., 2023). These findings provide a deeper understanding of the subjective meanings that participants attach to their interactions with medical technologies, answering the central question posed in the introduction about how these technologies are perceived and integrated into cancer care (Goulding et al., 2021).

The study's results contribute significantly to the literature by highlighting the emotional and psychological aspects of technology in healthcare, which have often been overlooked in previous research (Berdeja et al., 2021). Patients' positive perceptions of technology, such as feeling reassured by the precision it offers, contrast with their discomfort about losing personal interaction with healthcare providers. Healthcare professionals also expressed ambivalence, acknowledging the benefits of technological advancements while raising concerns about the erosion of human connection in patient care (Mukhlis, 2025a). These findings underscore the need to balance technological innovation with the human aspects of care, which is crucial for improving the overall patient experience (Singal et al., 2023). This study, therefore, offers valuable insights into how technology-based treatments not only alter the clinical landscape but also reshape the emotional and relational dynamics between patients and healthcare providers.

When compared to previous studies, the findings align with and expand upon existing literature on the integration of technology in healthcare. Research by Davis et al. (2021) emphasizes the importance of considering both the benefits and challenges of technological innovations in patient care, especially in terms of trust and communication between patients and healthcare providers.

Similarly, studies by Arbyn et al. (2020) suggest that while technology can enhance treatment precision, it often leads to a sense of alienation among patients who feel less engaged in the decision-making process. This study adds to these discussions by providing a phenomenological perspective, offering a deeper, more nuanced exploration of how technology is experienced subjectively. The findings also complement the work of others, such as Hashiguchi et al. (2020), who argue that the emotional experiences of patients and healthcare professionals must be considered in evaluating the impact of medical technologies.

Implications of the Findings

The findings of this study offer significant implications both academically and practically, particularly in the context of cancer therapy (Wang et al., 2020). From an academic perspective, this research contributes to the growing body of literature on the subjective experiences of patients and healthcare professionals in the age of technological healthcare advancements. By highlighting the mixed emotional responses to technology-based medications, the study calls for a more nuanced understanding of how technology is integrated into healthcare settings (Mukhlis, Arifin, Ridwan, Zulbaidah, et al., 2025). Practically, the study suggests that healthcare providers need to be mindful of the emotional and psychological impact that technology can have on patients. The reassurance some patients feel from the precision of technology may be counterbalanced by a sense of alienation or detachment due to the perceived loss of human connection (Chalabi et al., 2020). Thus, healthcare institutions should consider training staff to foster communication and empathy, ensuring that technological interventions do not erode the essential human aspects of care. This study emphasizes the need for a balanced approach to integrating technology, one that preserves patient-centered care while leveraging the benefits of technological innovations.

Limitations of the Study

While the study offers valuable insights into the experiences of patients and healthcare professionals, it is important to acknowledge several limitations that may affect the generalizability of the findings. First, the sample size was relatively small, consisting of only 12 participants, which limits the diversity of experiences captured in the study (Palma et al., 2020). Furthermore, the research was conducted in a specific healthcare setting, which may not fully represent the experiences of patients and healthcare professionals in other contexts or geographical locations. The focus on technology-based medications in cancer therapy may also limit the applicability of the findings to other medical fields where technology plays a different role (Sartor et al., 2021). Lastly, the study's reliance on self-reported data introduces the potential for bias, as participants may have provided responses influenced by social desirability or recall bias. These limitations suggest that further research with a larger and more diverse sample is needed to better understand the broader implications of technology in healthcare.

Prospective Directions for Future Research

The findings of this study open several avenues for future research, particularly in understanding the intersection between technology, human experience, and healthcare. Future studies could explore how technology-based treatments affect the experiences of patients in other medical contexts, such as chronic disease management or mental health care, to identify whether similar emotional and psychological responses emerge across different therapeutic settings (Mukhlis, Maryam, et al., 2023). Additionally, longitudinal studies could examine how patients' and healthcare professionals' perceptions of technology evolve over time, especially as new technologies continue to emerge (L. Li et al., 2020). Further research could also investigate the effectiveness of interventions designed to mitigate the negative emotional impacts of technology, such as training healthcare professionals in enhancing communication or providing patients with more information about the technologies being used. By expanding on the current findings, these studies could contribute to a deeper understanding of how technology shapes healthcare experiences and help create more patient-centered, empathetic healthcare environments.

CONCLUSION

This study explored the subjective experiences of patients and healthcare professionals regarding the use of technology-based medications in cancer therapy, aiming to understand how these innovations are perceived and integrated into care. The findings reveal that while technology is generally seen as enhancing treatment precision, it also raises concerns about the loss of human connection and emotional engagement in the healthcare process. Patients expressed feelings of reassurance due to technological advancements but also voiced discomfort about the reduction in direct interaction with their healthcare providers. Healthcare professionals acknowledged the benefits of technology in treatment efficacy but noted challenges in maintaining empathetic care. This study addresses gaps in previous research by focusing on the emotional and relational aspects of technology in healthcare, providing a more comprehensive understanding of its impact. Based on these findings, several actionable recommendations can be proposed for healthcare practice. First, healthcare institutions should integrate structured communication protocols—such as scheduled face-to-face or tele-consultation check-ins—alongside technology-based medication systems to ensure that technological efficiency does not replace interpersonal engagement. Second, oncology training programs should incorporate modules on “technology-mediated empathy,” equipping healthcare professionals with strategies to maintain compassionate communication while using digital systems and automated treatment tools. Third, hospitals and cancer centers should design patient-centered implementation guidelines that include clear explanations of how technology functions, its benefits, and its limitations, thereby reducing patient anxiety and increasing trust. Fourth, interdisciplinary case discussions should explicitly address not only clinical outcomes but also patients’ emotional responses to technology-based care, ensuring that relational dimensions remain part of routine evaluation. At the policy level, healthcare administrators are encouraged to develop balanced care frameworks in which technological performance indicators are complemented by relational quality metrics, such as patient-perceived empathy and communication satisfaction. By operationalizing these measures, institutions can monitor whether technological integration enhances or inadvertently weakens patient-centered care. Future research could further explore the long-term effects of technology on patient-provider relationships and examine strategies to balance technological innovation with the human side of care. Longitudinal and multi-site studies would be particularly valuable in assessing how sustained exposure to technology-based medications shapes trust, adherence, and emotional well-being over time, thereby informing more holistic models of oncology care.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

REFERENCES

- Arbyn, M., Weiderpass, E., Bruni, L., de Sanjosé, S., Saraiya, M., Ferlay, J., & Bray, F. (2020). Estimates of incidence and mortality of cervical cancer in 2018: A worldwide analysis. *The Lancet Global Health*, 8(2), e191–e203. Scopus. [https://doi.org/10.1016/S2214-109X\(19\)30482-6](https://doi.org/10.1016/S2214-109X(19)30482-6)
- Bailey, S. C., Griffith, J. W., Vuyyuru, C., Batio, S., Velazquez, E., Carpenter, D. M., Davis, T. C., Parker, R. M., Taddeo, M., & Wolf, M. S. (2023). Development and Validation of the HL6: A Brief, Technology-Based Remote Measure of Health Literacy. *Journal of General Internal Medicine*, 38(2), 421–427. Scopus. <https://doi.org/10.1007/s11606-022-07739-3>
- Berdeja, J. G., Madduri, D., Usmani, S. Z., Jakubowiak, A., Agha, M., Cohen, A. D., Stewart, A. K., Hari, P., Htut, M., Lesokhin, A., Deol, A., Munshi, N. C., O'Donnell, E., Avigan, D., Singh, I., Zudaire, E., Yeh, T.-M., Allred, A. J., Olyslager, Y., ... Jagannath, S. (2021). Ciltacabtagene autoleucel, a B-cell maturation antigen-directed chimeric antigen receptor T-cell therapy in patients with relapsed or refractory multiple myeloma (CARTITUDE-1): A

- phase 1b/2 open-label study. *The Lancet*, 398(10297), 314–324. Scopus. [https://doi.org/10.1016/S0140-6736\(21\)00933-8](https://doi.org/10.1016/S0140-6736(21)00933-8)
- Bergman, B. G., Wu, W., Marsch, L. A., Crosier, B. S., DeLise, T. C., & Hassanpour, S. (2020). Associations between substance use and instagram participation to inform social network-based screening models: Multimodal cross-sectional study. *Journal of Medical Internet Research*, 22(9). Scopus. <https://doi.org/10.2196/21916>
- Bhidayasiri, R., Lean, P. L., & Chaudhuri, K. R. (2025). Defining ‘OFF’ time in device-aided therapy criteria for Parkinson’s disease: Gaps and opportunities. *Parkinsonism and Related Disorders*, 139. Scopus. <https://doi.org/10.1016/j.parkreldis.2025.107894>
- Chalabi, M., Fanchi, L. F., Dijkstra, K. K., van den Berg, J. G., Aalbers, A. G., Sikorska, K., Lopez-Yurda, M., Grootsholten, C., Beets, G. L., Snæbjörnsson, P., Maas, M., Mertz, M., Veninga, V., Bounova, G., Broeks, A., Beets-Tan, R. G., de Wijkerslooth, T. R., van Lent, A. U., Marsman, H. A., ... Haanen, J. B. (2020). Neoadjuvant immunotherapy leads to pathological responses in MMR-proficient and MMR-deficient early-stage colon cancers. *Nature Medicine*, 26(4), 566–576. Scopus. <https://doi.org/10.1038/s41591-020-0805-8>
- Davies, E. H., Fiegehen, K., Wilmschurst, J., Anyanwu, O., Burman, R. J., & Komarzynski, S. (2021). Demonstrating the feasibility of digital health to support pediatric patients in South Africa. *Epilepsia Open*, 6(4), 653–662. Scopus. <https://doi.org/10.1002/epi4.12527>
- Davis, A. K., Barrett, F. S., May, D. G., Cosimano, M. P., Sepeda, N. D., Johnson, M. W., Finan, P. H., & Griffiths, R. R. (2021). Effects of Psilocybin-Assisted Therapy on Major Depressive Disorder: A Randomized Clinical Trial. *JAMA Psychiatry*, 78(5), 481–489. Scopus. <https://doi.org/10.1001/jamapsychiatry.2020.3285>
- Fogarty, H., Gaul, A., Syed, S., Alekseenko, N., Geoghegan, R., Conroy, H., Crampton, E., Ngwenya, N., Tuohy, E., & McMahon, C. (2022). Adherence to hydroxyurea, health-related quality of life domains and attitudes towards a smartphone app among Irish adolescents and young adults with sickle cell disease. *Irish Journal of Medical Science*, 191(2), 809–816. Scopus. <https://doi.org/10.1007/s11845-021-02588-1>
- Gaspar, F., Lutters, M., Beeler, P. E., Lang, P. O., Burnand, B., Rinaldi, F., Lovis, C., Csajka, C., & LE POGAM, M. A. (2022). Automatic Detection of Adverse Drug Events in Geriatric Care: Study Proposal. *JMIR Research Protocols*, 11(11). Scopus. <https://doi.org/10.2196/40456>
- Goulding, E. H., Dopke, C. A., Michaels, T., Martin, C. R., Khiani, M. A., Garborg, C., Karr, C., & Begale, M. (2021). A Smartphone-Based Self-management Intervention for Individuals with Bipolar Disorder (LiveWell): Protocol Development for an Expert System to Provide Adaptive User Feedback. *JMIR Formative Research*, 5(12). Scopus. <https://doi.org/10.2196/32932>
- Hashiguchi, Y., Muro, K., Saito, Y., Ito, Y., Ajioka, Y., Hamaguchi, T., Hasegawa, K., Hotta, K., Ishida, H., Ishiguro, M., Ishihara, S., Kanemitsu, Y., Kinugasa, Y., Murofushi, K., Eguchi Nakajima, T. E., Oka, S., Tanaka, T., Taniguchi, H., Tsuji, A., ... Sugihara, K. (2020). Japanese Society for Cancer of the Colon and Rectum (JSCCR) guidelines 2019 for the treatment of colorectal cancer. *International Journal of Clinical Oncology*, 25(1), 1–42. Scopus. <https://doi.org/10.1007/s10147-019-01485-z>
- Li, L., Zhang, W., Hu, Y., Tong, X., Zheng, S., Juntao, J., Kong, Y., Ren, L., Wei, Q., Mei, H., Hu, C., Tao, C., Yang, R., Wang, J., Yu, Y., Guo, Y., Wu, X., Xu, Z., Zeng, L., ... Liu, Z. (2020). Effect of Convalescent Plasma Therapy on Time to Clinical Improvement in Patients with Severe and Life-threatening COVID-19: A Randomized Clinical Trial. *JAMA*, 324(5), 460–470. Scopus. <https://doi.org/10.1001/jama.2020.10044>
- Li, Y., Gong, Y., Zheng, B., Fan, F., Yi, T., Zheng, Y., He, P., Fang, J., Jia, J., Zhu, Q., Jiang, J., & Huo, Y. (2022). Effects on Adherence to a Mobile App-Based Self-management Digital

- Therapeutics Among Patients With Coronary Heart Disease: Pilot Randomized Controlled Trial. *JMIR mHealth and uHealth*, 10(2). Scopus. <https://doi.org/10.2196/32251>
- Lyon, A. R., Fernández, T., Couch, L. S., Asteggiano, R., Aznar, M. C., Bergler-Klei, J., Boriani, G., Cardinale, D., Córdoba-Masculano, R., Cosyns, B., Cutter, D. J., de Azambuja, E., De Boer, R. A., Dent, S. F., Farmakis, D., Gevaert, S. A., Gorog, D. A., Herrmann, J., Lenihan, D., ... Smyth, Y. (2022). 2022 ESC Guidelines on cardio-oncology developed in collaboration with the European Hematology Association (EHA), the European Society for Therapeutic Radiology and Oncology (ESTRO) and the International Cardio-Oncology Society (IC-OS). *European Heart Journal*, 43(41), 4229–4361. Scopus. <https://doi.org/10.1093/eurheartj/ehac244>
- Mammen, J. R., Java, J. J., Halterman, J., Berliant, M. N., Crowley, A., Frey, S. M., Reznik, M., Feldman, J. M., Schoonmaker, J. D., & Arcoleo, K. (2021). Development and preliminary results of an Electronic Medical Record (EMR)-integrated smartphone telemedicine program to deliver asthma care remotely. *Journal of Telemedicine and Telecare*, 27(4), 217–230. Scopus. <https://doi.org/10.1177/1357633X19870025>
- Morales-Pillado, C., Fernandez-Castilla, B., Sánchez-Gutiérrez, T., Gonzalez-Fraile, E., Barbeito Resa, S., & Calvo Calvo, A. (2023). Efficacy of technology-based interventions in psychosis: A systematic review and network meta-analysis. *Psychological Medicine*, 53(13), 6304–6315. Scopus. <https://doi.org/10.1017/S0033291722003610>
- Mukhlis, L. (2025a). A Phenomenological Study of Personal Spiritual Experiences in Navigating Religious Pluralism within Interfaith Communities. *Irfana: Journal of Religious Studies*, 1(6), 212–220.
- Mukhlis, L. (2025b). Spiritual Grounds for Economic Growth: A Qualitative Exploration of Rural Indonesian Women's Transformative Journeys Through Mosque-Led Empowerment Programs. *Servina: Jurnal Pengabdian Kepada Masyarakat*, 1(8), 289–298.
- Mukhlis, L., & Abdullah, M. N. (2025). *Hukum Keluarga Islam di Indonesia* (1st ed.). Mukhlisina Revolution Center.
- Mukhlis, L., Arifin, T., Ridwan, A. H., & Zulbaidah. (2024). Integrating Artificial Intelligence and Maqāṣid al-Syarī'ah: Revolutionizing Indonesia's Sharia Online Trading System. *Computer Fraud and Security*, 2024(11), 301–309. <https://doi.org/10.52710/cfs.238>
- Mukhlis, L., Arifin, T., Ridwan, A. H., & Zulbaidah. (2025). Reorientation of Sharia Stock Regulations: Integrating Taṣarrufāt al-Rasūl and Maqāṣid al-Sharī'ah for Justice and Sustainability. *Journal of Information Systems Engineering and Management*, 10(10s), 58–66. <https://doi.org/10.52783/jisem.v10i10s.1341>
- Mukhlis, L., Arifin, T., Ridwan, A. H., Zulbaidah, Rosadi, A., & Solehudin, E. (2025). Reformulation of Islamic Stock Law: The Application of Taṣarrufāt al-Rasūl and Maqāṣid al-Syarī'ah to Develop a Dynamic and Sustainable Islamic Capital Market in Indonesia. *Journal of Posthumanism*, 5(3), 1–13. <https://doi.org/10.63332/joph.v5i3.913>
- Mukhlis, L., Janwari, Y., & Syafe'i, R. (2023). INDONESIA STOCK EXCHANGE: THEORETICAL AND PHILOSOPHICAL ANALYSIS OF MUDHARABAH AND MUSYARAKAH CONTRACTS. *Yurisprudencia: Jurnal Hukum Ekonomi*, 9(2), 243–264. <https://doi.org/10.24952/yurisprudencia.v9i2.8466>
- Mukhlis, L., Maryam, S., & Sormin, S. A. (2023). Model Pembelajaran Living History Berbasis PjBL Untuk Meningkatkan Keterampilan Histografi Mahasiswa. *Jurnal Educatio FKIP UNMA*, 9(4), 1800–1809. <https://doi.org/10.31949/educatio.v9i4.5595>
- Mukhlis, L., & Saidah, Y. (2025). Dynamics of Nature-Based learning in Developing Children's Motoric Skills: Teacher and Parent Perspectives. *HUMANISMA: Journal of Gender Studies*, 9(1), 64–79. <http://dx.doi.org/10.30983/humanisme.v4i2.9366>

- Mukhlis, L., Suradi, Janwari, Y., & Syafe'i, R. (2023). Sosialisasi Saham Syariah sebagai Instrumen Pengembangan Ekonomi Masyarakat di Badan Kontak Majelis Taklim (BKMT) Kabupaten Mandailing Natal. *Jurnal Pengabdian Multidisiplin*, 3(2), 2–9. <https://doi.org/10.51214/japamul.v3i2.604>
- Murali, K. M., & Lonergan, M. (2020). Breaking the adherence barriers: Strategies to improve treatment adherence in dialysis patients. *Seminars in Dialysis*, 33(6), 475–485. Scopus. <https://doi.org/10.1111/sdi.12925>
- Murphy, J., McSharry, J., Hynes, L., & Molloy, G. J. (2021). A smartphone app to support adherence to inhaled corticosteroids in young adults with asthma: Multi-methods feasibility study. *JMIR Formative Research*, 5(9). Scopus. <https://doi.org/10.2196/28784>
- Ortiz Arduán, A., Portolés-Pérez, J., Pino-Pino, M. D., Barea, J., López, M., De Sequera, P., Quiroga Gili, B., Echarri, R., Prieto-Velasco, M., Díaz, R., Gómez Marqués, G., Sánchez Pérez, P., Torregrosa, V., & Rodríguez-Portillo, M. (2023). Clinical Characteristics and Management of Patients with Secondary Hyperparathyroidism Undergoing Hemodialysis: A Feasibility Analysis of Electronic Health Records Using Natural Language Processing. *Kidney Diseases*, 9(3), 187–196. Scopus. <https://doi.org/10.1159/000528784>
- Palma, D. A., Olson, R., Harrow, S., Gaede, S., Louie, A. V., Haasbeek, C., Mulroy, L., Lock, M., Rodrigues, G. B., Yaremko, B. P., Schellenberg, D., Ahmad, B., Senthil, S., Swaminath, A., Kopek, N., Liu, M., Moore, K., Currie, S., Schlijper, R., ... Senan, S. (2020). Stereotactic ablative radiotherapy for the comprehensive treatment of oligometastatic cancers: Long-term results of the SABR-COMET Phase II randomized trial. *Journal of Clinical Oncology*, 38(25), 2830–2838. Scopus. <https://doi.org/10.1200/JCO.20.00818>
- Rasschaert, M., Vulsteke, C., de Keersmaeker, S., Vandeborne, K., Dias, S., Verschaeve, V., Vuylsteke, P., Brussel, I. V., Ravelingien, J., Dam, P. V., Segelov, E., & Peeters, M. (2021). AMTRA: a multicentered experience of a web-based monitoring and tailored toxicity management system for cancer patients. *Supportive Care in Cancer*, 29(2), 859–867. Scopus. <https://doi.org/10.1007/s00520-020-05550-6>
- Sartor, O., De Bono, J., Chi, K. N., Fizazi, K., Herrmann, K., Rahbar, K., Tagawa, S. T., Nordquist, L. T., Vaishampayan, N., El-Haddad, G., Park, C. H., Beer, T. M., Armour, A., Perez-Contreras, W. J., de Silvio, M., Kpamegan, E., Gericke, G., Messmann, R. A., Morris, M. J., & Krause, B. J. (2021). Lutetium-177-PSMA-617 for metastatic castration-resistant prostate cancer. *New England Journal of Medicine*, 385(12), 1091–1103. Scopus. <https://doi.org/10.1056/NEJMoa2107322>
- Schwartz, J., & Ballard, D. H. (2022). Feasibility of Customized Pillboxes to Enhance Medication Adherence: A Randomized Controlled Trial. *Archives of Physical Medicine and Rehabilitation*, 103(12), 2288–2295. Scopus. <https://doi.org/10.1016/j.apmr.2022.03.018>
- Singal, A. G., Llovet, J. M., Yarrow, M., Mehta, N., Heimbach, J. K., Dawson, L. A., Jou, J. H., Kulik, L. M., Agopian, V. G., Marrero, J. A., Mendiratta-Lala, M., Brown, D. B., Rilling, W. S., Goyal, L., Wei, A. C., & Taddei, T. H. (2023). AASLD Practice Guidance on prevention, diagnosis, and treatment of hepatocellular carcinoma. *Hepatology*, 78(6), 1922–1965. Scopus. <https://doi.org/10.1097/HEP.0000000000000466>
- Still, C. H., Margevicius, S. P., Harwell, C., Huang, M.-C., Martin, L., Dang, P. B., & Wright, J. T. (2020). A community and technology-based approach for hypertension self-management (Coachman) to improve blood pressure control in african americans: Results from a pilot study. *Patient Preference and Adherence*, 14, 2301–2313. Scopus. <https://doi.org/10.2147/PPA.S283086>
- Still, C. H., Margevicius, S. P., Wright, J. T., Ruksakulpiwat, S., & Moore, S. M. (2021). A Pilot Study Evaluating the Effects of a Technology-Based and Positive Psychological Training

- Intervention on Blood Pressure in African Americans With Hypertension. *Journal of Primary Care and Community Health*, 12. Scopus. <https://doi.org/10.1177/21501327211056186>
- Stockman, J. K., Anderson, K. M., DeSoto, A. F., Campbell, D. M., Tsuyuki, K., & Horvath, K. J. (2023). A Trauma-Informed HIV Intervention (LinkPositively) to Improve HIV Care Among Black Women Affected by Interpersonal Violence: Protocol for a Pilot Randomized Controlled Trial. *JMIR Research Protocols*, 12. Scopus. <https://doi.org/10.2196/46325>
- Toscos, T., Coupe, A., Wagner, S., Ahmed, R., Roebuck, A., Flanagan, M., Drouin, M., & Mirro, M. (2020). Engaging Patients in Atrial Fibrillation Management via Digital Health Technology: The Impact of Tailored Messaging. *Journal of Innovations in Cardiac Rhythm Management*, 11(8), 4209–4217. Scopus. <https://doi.org/10.19102/ICRM.2020.110802>
- Wang, M., Munoz, J., Goy, A., Locke, F. L., Jacobson, C. A., Hill, B. T., Timmerman, J. M., Holmes, H., Jaglowski, S., Flinn, I. W., McSweeney, P. A., Miklos, D. B., Pagel, J. M., Kersten, M.-J., Milpied, N., Fung, H., Topp, M. S., Houot, R., Beitinjaneh, A., ... Reagan, P. M. (2020). KTE-X19 CAR T-Cell therapy in relapsed or refractory mantle-cell lymphoma. *New England Journal of Medicine*, 382(14), 1331–1342. Scopus. <https://doi.org/10.1056/NEJMoa1914347>