**Journal of Multidisciplinary Research and Innovation**
Vol 1 No 4 April 2025
ISSN: XXXX-XXXX (Electronic)
Open Access: https://journals.ai-mrc.com/jmri

# Exploring the Lived Experiences of Organic Farmers in Adapting to Climate Change: A Phenomenological Study

**Ihsan Jaya R**
Universitas Muhammadiyah Makassar, Indonesia
*ihsanjaya@med.unismuh.ac.id*

**Article Info**

***Article history:***
Received 28-02-2025
Revised 27-03-2025
Accepted 17-04-2025

***Keyword:***
Organic Farmers, Climate Change Adaptation, Phenomenology, Emotional Resilience, Community Support, Interpretative Phenomenological Analysis (IPA).

**ABSTRACT**

Climate change is a significant global challenge that affects agricultural practices particularly for smallholder organic farmers who rely on ecological balance for crop production. While much research has focused on technical and economic adaptation strategies, less attention has been paid to the subjective experiences of farmers in responding to climate change. Despite extensive studies on adaptation, the psychosocial dimensions of these responses remain insufficiently explored. This study aims to fill this gap by investigating how organic farmers experience and interpret the impacts of climate change, utilizing Interpretative Phenomenological Analysis (IPA). Through in-depth interviews with 15 organic farmers, the research identified key themes of uncertainty, emotional resilience, and adaptive strategies. The findings reveal that emotional and cognitive responses, alongside community support, play a critical role in farmers' climate adaptation, suggesting that psychosocial factors are as important as technical solutions. This study has important implications for policy-making, as it highlights the need for human-centered climate policies that consider the emotional and social aspects of adaptation. Additionally, the findings suggest that future research should explore these psychosocial factors in greater depth to inform long-term adaptation strategies.



## INTRODUCTION

Climate change has emerged as one of the most pressing global challenges, significantly affecting agricultural sustainability and food security. Among the most vulnerable to these environmental changes are smallholder organic farmers, whose livelihoods depend on traditional and ecologically sensitive farming practices. Unlike conventional farmers who may rely on synthetic fertilizers and advanced irrigation systems, organic farmers depend on natural cycles and ecological balance, making them particularly susceptible to shifts in temperature, precipitation patterns, and extreme weather events (Jamwal dkk., 2024). These climatic disturbances not only threaten crop yields but also disrupt the economic stability and psychological well-being of farming communities.

Beyond its economic impact, climate change profoundly shapes the lived experiences of organic farmers, influencing their daily decision-making, emotional resilience, and adaptation strategies. The transition from predictable agricultural cycles to an increasingly unstable environment forces farmers to develop new approaches to sustain productivity. However, the subjective dimensions of this adaptation—how farmers interpret, cope with, and internalize these challenges—remain largely underexplored in existing literature (Zhang dkk., 2024). Studies on climate adaptation often emphasize technical solutions, such as improved seed varieties or precision agriculture, yet they overlook the human experience behind these adaptive responses. Farmers are not passive victims of climate change; rather, they actively engage in meaning-making processes, drawing from personal, cultural, and collective knowledge to navigate uncertainty.

`

Given the profound personal and communal implications of climate change, a phenomenological exploration is essential to capture the depth of farmers' lived experiences. While quantitative research can measure yield fluctuations and economic losses, it cannot fully articulate the emotions, struggles, and adaptive strategies that define farmers' responses to environmental stressors. Understanding these subjective experiences provides a more holistic perspective on climate adaptation, highlighting not only structural barriers but also the psychosocial resilience embedded within farming communities. By investigating farmers' lived experiences through Interpretative Phenomenological Analysis (IPA), this study seeks to illuminate the nuanced ways in which organic farmers conceptualize and navigate climate-related challenges, thus offering deeper insights into the interplay between environmental change and human agency. This study specifically addresses two key research questions: (1) How do organic farmers experience and interpret the impacts of climate change on their farming practices? and (2) What coping mechanisms and adaptation strategies do they employ in response to climate-induced uncertainties?

The study of subjective experiences in climate adaptation has gained increasing attention in recent years, as researchers recognize the importance of understanding how individuals perceive and respond to environmental challenges. Within the agricultural sector, numerous studies have examined the technical aspects of adaptation, such as the adoption of climate-smart agricultural practices and the economic implications of climate change (Henson dkk., 2024). However, there is a growing realization that these analyses, while valuable, fail to capture the deeply personal and social dimensions that influence farmers' decision-making and resilience. The experiential aspect—how farmers emotionally, cognitively, and socially process climate-induced uncertainty—remains an underexplored yet critical component in the broader discourse on agricultural sustainability.

One of the primary methodological challenges in studying these experiences lies in the limitations of traditional research approaches. Quantitative models and large-scale surveys, while effective in identifying patterns and statistical trends, are often inadequate in uncovering the lived realities of farmers facing climate adversity (Argent dkk., 2019). Structured survey instruments frequently reduce complex emotional and psychological experiences to predefined response categories, which may not fully reflect the depth of farmers' struggles and adaptive strategies. Furthermore, case studies and ethnographic research, although insightful, may lack the structured analytical approach necessary to systematically interpret the meaning-making processes that farmers engage in when confronted with climate-related disruptions.

Given these methodological gaps, phenomenology provides a robust framework for exploring farmers' subjective experiences in ways that other approaches cannot. By prioritizing the meaning and essence of individual lived experiences, phenomenology allows for a deeper engagement with how organic farmers interpret, navigate, and construct resilience in response to climate uncertainty. Through the application of Interpretative Phenomenological Analysis (IPA), this study goes beyond surface-level descriptions and instead delves into the inner world of farmers, uncovering the cognitive, emotional, and behavioral dimensions of their adaptive responses. Addressing these experiential aspects is essential to formulating more inclusive and human-centered climate adaptation strategies that acknowledge not only material and economic vulnerabilities but also the psychosocial resilience embedded within farming communities.

In addressing the challenges posed by climate change, existing research has largely focused on practical adaptation strategies, such as technological innovations, economic incentives, and policy interventions to support sustainable agriculture (Nnaji dkk., 2021). While these solutions offer valuable insights into climate resilience, they predominantly emphasize external factors—such as improved irrigation techniques, soil conservation practices, and climate-resistant crop varieties—without adequately considering the lived experiences of farmers who navigate these challenges on a daily basis. Consequently, the depth of personal and communal struggles in agricultural adaptation remains insufficiently explored.

The prevailing methodological approaches to studying climate adaptation in agriculture often rely on quantitative analyses and large-scale surveys, which are instrumental in identifying general trends but fail to capture the nuanced emotional, cognitive, and social dimensions of farmers'

adaptation processes (Okpala dkk., 2022). While some qualitative studies have attempted to address this gap through ethnographic observations or case studies, they often lack the structured interpretative depth necessary to fully uncover how and why farmers make certain adaptive decisions. The intricate interplay between individual agency, cultural norms, and psychological resilience in agricultural adaptation remains underexplored, creating a substantial gap in the literature.

To bridge this gap, a phenomenological approach is essential, as it enables an exploration of the meaning, perceptions, and emotions underlying organic farmers' adaptation to climate change. By applying Interpretative Phenomenological Analysis (IPA), this study seeks to provide a holistic and in-depth understanding of how organic farmers experience, interpret, and respond to environmental uncertainty. Unlike conventional research methods that focus solely on external adaptation mechanisms, this study prioritizes the voices, narratives, and subjective realities of organic farmers, thereby contributing to a more comprehensive, human-centered perspective on agricultural resilience in the face of climate change.

Several studies have explored the impacts of climate change on agricultural practices, with a focus on adaptation strategies, such as the use of technology and new farming techniques. For example, research by Carnazzo dkk. (2024) investigates agroecological practices in rural communities, while Wei dkk.(2024) examine farmers' emotional responses to the challenges posed by climate variability. These studies have provided valuable insights into the technical and socio-economic dimensions of climate adaptation, but they often overlook the subjective experiences of farmers. The theoretical foundations of this research are grounded in Phenomenology, particularly the work of Heidegger and Husserl, which emphasizes understanding human experiences from a first-person perspective. However, the focus has been predominantly on the material and technical responses to climate change, leaving the emotional, psychological, and social aspects largely unexplored.

This study adopts a phenomenological approach, specifically Interpretative Phenomenological Analysis (IPA), to address this gap and explore the subjective meanings and lived experiences of organic farmers. By focusing on how farmers make sense of their experiences, the study provides a more comprehensive view of the psychosocial dynamics involved in climate adaptation. The chosen approach aligns with the need for an in-depth exploration of how organic farmers interpret climate-induced changes and the coping mechanisms they develop. Unlike previous studies that have focused on external adaptations, this research centers on the individual's perspective and the meaning they attach to their adaptation strategies. This methodology allows for a richer understanding of the emotional and cognitive processes that inform agricultural resilience in the face of climate change.

The article is structured to guide the reader through a comprehensive analysis of the phenomenon. The introduction provides the context and significance of the study, detailing the broader issue of climate change and its impact on organic farming. Following this, the methodological approach outlines the phenomenological framework and the steps taken to collect and analyze data (Kim & Ho, 2021). The subsequent sections delve into the data collection process, which includes in-depth interviews with organic farmers, and the data analysis that identifies key themes and insights from participants' narratives. Finally, the article concludes with a discussion of the findings, offering an interpretation of the results and their implications for agricultural policy and climate adaptation strategies.

## RESEARCH METHODS

### Study Design

This study employed a phenomenological approach to explore the lived experiences of organic farmers in navigating the challenges of climate change. Phenomenology was chosen as it facilitates an in-depth understanding of subjective experiences, allowing for the interpretation of personal narratives that reveal the essence of the phenomenon under investigation. Specifically, Interpretative Phenomenological Analysis (IPA) was utilized, which emphasizes how individuals make sense of their experiences within a particular context (Kunchay dkk., 2024). IPA was deemed

`

appropriate for this study as it provides a structured yet flexible framework for analyzing the cognitive, emotional, and social dimensions of farmers' adaptation strategies in response to climate variability. The study design enabled the extraction of rich, contextualized meanings from the perspectives of organic farmers, capturing both their resilience and vulnerabilities. Given the in-depth nature of IPA and the aim to explore individual experiences in detail, a sample of 15 participants was considered sufficient to achieve thematic saturation while allowing for a nuanced understanding of diverse perspectives. This sample size aligns with similar IPA studies in agricultural settings, where the focus is on quality and depth of data rather than statistical representation.

**Participants**

Participants were selected using purposive sampling, ensuring that individuals with firsthand experience of organic farming and climate adaptation challenges were included. The study focused on smallholder organic farmers who had been practicing organic agriculture for at least five years and had directly experienced the effects of climate change on their agricultural practices. Criteria for inclusion also considered farmers actively engaged in decision-making related to crop selection, soil conservation, and irrigation adjustments. Exclusion criteria involved individuals who had recently transitioned to organic farming (less than two years) or those who primarily relied on external agricultural consultants for decision-making.

A total of 15 organic farmers participated in the study, with ages ranging from 35 to 60 years (mean age: 47). The sample consisted of 10 males and 5 females, representing diverse backgrounds in terms of farm size, crop types, and geographical locations. The demographic diversity ensured a broad representation of perspectives regarding climate adaptation.

**Data Collection**

Data were collected through in-depth semi-structured interviews, allowing participants to share their personal experiences, emotions, and coping strategies (Zetterholm dkk., 2022). The interviews were conducted face-to-face in farm settings to create a comfortable environment where participants could reflect on their lived experiences. Each interview lasted between 45 to 90 minutes and followed an interview guide that included open-ended questions on:

1. The perceived impact of climate change on organic farming practices
2. Emotional responses and coping mechanisms in adapting to climate variability
3. Knowledge-sharing networks and institutional support in climate adaptation

All interviews were audio-recorded with participant consent and later transcribed verbatim for analysis. Additional field observations were conducted to contextualize the narratives, capturing visual and behavioral cues that complemented the verbal accounts. To enhance data richness, follow-up interviews were conducted with five participants for clarification and elaboration.

**Data Analysis**

Data were analyzed using Interpretative Phenomenological Analysis (IPA), following a systematic approach to identifying emergent themes and patterns. The analysis process involved the following steps:

1. Transcription and Initial Reading: Transcripts were reviewed multiple times to familiarize with participants' narratives and identify key experiential expressions.
2. Identification of Meaning Units: Significant statements were coded into meaning units that captured essential aspects of farmers’ experiences.
3. Theme Development: Meaning units were clustered into broader themes reflecting commonalities and variations in climate adaptation experiences.
4. Interpretation and Synthesis: Themes were examined within the context of existing literature, ensuring coherence in understanding the farmers' perspectives.

`

To enhance analytical rigor, triangulation was employed by comparing interview transcripts with field notes and follow-up interviews. NVivo 12 software was used for efficient data organization and coding, although manual cross-referencing ensured contextual accuracy in interpretation.

### Ethical Considerations

Ethical approval was obtained from the Institutional Research Ethics Committee, ensuring compliance with research integrity standards (Van Ooteghem dkk., 2023). Participants provided informed consent before participation, acknowledging their voluntary involvement and the right to withdraw at any stage. Anonymity and confidentiality were maintained by assigning pseudonyms to participants and securing data in password-protected files. The study adhered to the ethical guidelines of the Declaration of Helsinki (2013), ensuring that all data were handled responsibly and used solely for academic purposes.

## RESULTS

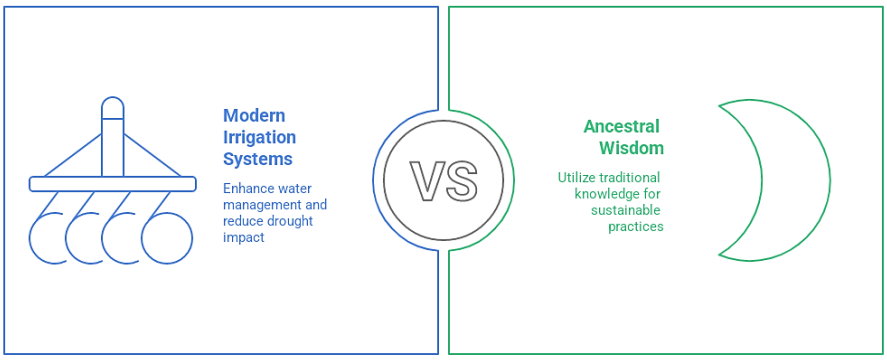
### Navigating the Uncertainty of Climate Change

The farmers' experiences revealed a profound sense of uncertainty and vulnerability due to the unpredictable shifts in climate patterns. Many participants expressed concerns about erratic weather conditions affecting their agricultural yields, often leading to significant economic losses. One participant shared:

"In the past, we could predict when the rains would come, but now, it is unpredictable. Sometimes there is too much rain, flooding our crops, and sometimes there is no rain at all, leaving the soil dry. It feels like we are always gambling with nature." (Farmer A, 45 years old)

This uncertainty has forced many organic farmers to reconsider their traditional farming methods. While some have attempted to integrate modern irrigation systems, others have resorted to ancestral wisdom, relying on lunar cycles or soil observation techniques to anticipate climate changes. The narratives indicated that such adaptation strategies, although innovative, were often insufficient due to the scale of climatic disturbances.

**Which adaptation strategy should farmers prioritize to mitigate climate change impacts?**




### Emotional and Psychological Resilience

Beyond economic challenges, the psychological toll of climate change on organic farmers emerged as a significant theme. Many farmers described feelings of stress, frustration, and powerlessness, particularly when efforts to mitigate climate impacts yielded little success. One farmer recounted:

"We invest months of hard work, and just a few days of extreme weather can destroy everything. It is heartbreaking. Some of us are on the verge of giving up, but we don't have other options. This is our life, our identity." (Farmer B, 52 years old)

Despite these struggles, many farmers displayed remarkable resilience, drawing strength from their communities, religious beliefs, and the shared hardships of fellow farmers. Some found solace in

collective farming practices, wherein communities pooled resources and supported each other in times of crisis.

### Adaptive Strategies for Survival

In response to these challenges, organic farmers developed several adaptation strategies, ranging from adjusting planting schedules to experimenting with drought-resistant crops. Some farmers reported shifting from monoculture to polyculture as a means to minimize risks. As one participant stated:

"I used to plant only one crop per season, but after multiple losses, I diversified my farm. Now I grow multiple vegetables and fruits to ensure at least something survives, even in extreme conditions." (Farmer C, 39 years old)

Additionally, knowledge-sharing networks played a crucial role in adaptation. Informal farmer groups and agricultural extension programs provided valuable information on organic fertilizers, soil conservation techniques, and water management strategies.

### Institutional Support and Policy Gaps

While some farmers acknowledged the support from government programs and NGOs, many expressed dissatisfaction with the lack of consistent policy support tailored to the needs of organic farmers. One farmer explained:

"There are programs to support farmers, but they are mostly for large-scale agriculture. Organic farming has different needs, and we feel left out. We need access to better seeds, organic pesticides, and subsidies for sustainable farming." (Farmer D, 50 years old)

The narratives highlighted a pressing need for policies that address the specific challenges faced by organic farmers, particularly in climate-vulnerable regions.

The findings reveal that organic farmers face not only economic and environmental difficulties but also deep psychological stress due to climate change. However, their resilience, innovation, and community support systems help them adapt to these challenges. Despite individual efforts, systemic policy support remains insufficient, indicating the need for targeted interventions to sustain organic farming in the face of climate uncertainty.

## DISCUSSION

### Summary of Key Findings

This study highlights the profound emotional, psychological, and social dimensions of organic farmers' experiences in adapting to the impacts of climate change. The findings emphasize the centrality of uncertainty, emotional resilience, and adaptive strategies in shaping farmers' responses to climate variability. These insights provide a deeper understanding of how farmers engage with climate challenges, answering the question of how subjective experiences and personal interpretations play a critical role in adaptation processes.

### Contribution to the Research Question

The findings of this research offer significant contributions to the understanding of climate adaptation, particularly by shedding light on the subjective realities of organic farmers. By exploring how farmers emotionally and cognitively respond to unpredictable weather patterns, this study underscores the importance of psychological resilience and community support in fostering adaptive strategies. Unlike technical solutions often discussed in existing literature, this research highlights that effective adaptation goes beyond material interventions—it involves an intricate web of individual and collective responses, grounded in personal experiences and cultural frameworks. Farmers do not merely react to environmental changes; rather, they actively interpret, negotiate, and reshape their strategies based on their lived experiences. This contributes a holistic view of climate adaptation that

integrates emotional, cognitive, and social elements, offering valuable insights into the human aspect of climate resilience.

**Relation to Previous Literature and Theory**

These findings align with existing literature on the emotional and psychological impacts of climate change on farming communities. Previous studies have emphasized the external factors influencing adaptation, such as technological advancements and policy support, but often overlook the subjective dimensions. In contrast, this study contributes to the growing body of research that advocates for a more integrated approach to climate adaptation, one that incorporates farmers' personal experiences and emotional responses (Liverani dkk., 2021). The findings also resonate with phenomenological theories (Heidegger and Husserl) that stress the importance of understanding the lived experiences of individuals as they navigate complex phenomena. Furthermore, the role of community solidarity and collective resilience, as identified in this study, aligns with McCubbin and Patterson's Family Resilience Theory, which suggests that shared support systems and coping mechanisms are crucial in times of adversity. However, while this research supports these theories, it also challenges the prevalent emphasis on external, technical solutions in climate adaptation. Existing models often prioritize technological interventions, such as climate-resilient crops and irrigation systems, but neglect the psychosocial resilience that emerges from the farmers' lived experiences. This study highlights that resilience is not solely a product of external technology but also of community-driven, culturally embedded strategies that offer a more sustainable and context-sensitive path forward.

**Explanation of Implications**

The findings of this study have significant practical implications for both policy and agricultural practice. The emotional and psychological resilience displayed by organic farmers, alongside their strategies for adaptation, highlights the need for comprehensive support systems that go beyond technical assistance. For instance, policy interventions should not only focus on providing climate-resilient seeds or irrigation systems but also invest in mental health support, community-building initiatives, and knowledge-sharing networks that foster collective resilience. Furthermore, understanding the social and cultural dimensions of adaptation can guide the development of more context-sensitive agricultural policies that recognize the diverse ways in which farmers perceive and respond to climate challenges. By considering the lived experiences of farmers, agricultural strategies can be better tailored to the real-world needs of the population, ensuring a more sustainable and holistic approach to climate adaptation.

In a broader social and cultural context, the study underscores how climate adaptation is deeply embedded in individual values, community networks, and cultural practices. These findings challenge the prevailing view that climate adaptation is solely a technical or economic issue, and instead frame it as a complex interplay of personal, cultural, and social factors. The research thus has implications for other regions facing similar climate challenges, particularly those with smallholder farmers or communities engaged in ecologically sensitive agriculture. By recognizing the emotional and collective dimensions of adaptation, this research contributes to a more human-centered understanding of climate resilience that can inform policy, practice, and future research in other parts of the world.

**Limitations of the Study**

While the study provides valuable insights into the lived experiences of organic farmers, there are certain limitations that should be acknowledged. The research focused on a relatively small sample of 15 organic farmers, and while their experiences are rich and varied, the findings may not be fully generalizable to all organic farmers or farming communities (Fu dkk., 2023). Additionally, the study's reliance on self-reported data through interviews means that the results are influenced by the subjective interpretations of participants, which may not always align with the broader agricultural community. Furthermore, the study was conducted in specific geographical regions, and the findings may not apply to areas with different climate conditions, farming practices, or socio-economic factors. Future research should seek to expand the sample size, include farmers from a wider range of

`

locations, and explore the experiences of other farming groups to gain a more comprehensive understanding of climate adaptation.

**Prospective Statement for Future Research**

The insights gained from this study open up several avenues for future research. For example, a comparative study examining the experiences of organic and conventional farmers could further illuminate the unique challenges faced by each group and the distinct coping mechanisms they employ. Additionally, future research could explore the role of external actors, such as governmental organizations, NGOs, and agricultural extension services, in supporting or hindering farmers' adaptation processes. Research could also focus on the longitudinal impacts of climate adaptation strategies to assess their effectiveness over time (Radüntz & Meffert, 2019). Finally, the psychosocial aspects of climate adaptation could be further explored to understand the long-term mental health effects on farmers and the potential for community-based interventions to mitigate stress and enhance resilience. Ultimately, this research has the potential to inform a more integrated and interdisciplinary approach to addressing climate change and its impact on agriculture.

## CONCLUSION

This study explored the subjective experiences of organic farmers in adapting to climate change, addressing the gap in understanding how farmers emotionally, cognitively, and socially process climate-induced challenges. The findings revealed that farmers' adaptation strategies are deeply intertwined with emotional resilience, community support, and individual coping mechanisms, which are often overlooked in conventional climate adaptation research. By focusing on the lived experiences of farmers, this research contributes to a more holistic understanding of climate resilience, emphasizing the importance of psychosocial factors in agricultural adaptation. The findings underscore the urgent need for policymakers to design and implement policies that not only provide technical solutions but also prioritize mental health support, community-building initiatives, and accessible resources for farmers to cope with climate-induced stress.The study not only adds depth to the literature by incorporating the human element of climate adaptation but also highlights the need for policies that integrate both technical and emotional support for farmers. Future research could expand on these findings by including a broader range of farming communities and exploring the role of external support systems in facilitating or hindering adaptation. Ultimately, this research paves the way for a more comprehensive and human-centered approach to climate adaptation in agriculture.

## CONFLICT OF INTEREST

The authors declare that there is no conflict of interest regarding the publication of this paper. No financial support or personal relationships influenced the research process or outcomes.

## REFERENCES

Argent, R., Slevin, P., Bevilacqua, A., Neligan, M., Daly, A., & Caulfield, B. (2019). Wearable sensor-based exercise biofeedback for orthopaedic rehabilitation: A mixed methods user evaluation of a prototype system. *Sensors (Switzerland)*, *19*(2). Scopus. https://doi.org/10.3390/s19020432

Carnazzo, C., Spada, S., Lamacchia, S., Manuri, F., Sanna, A., & Cavatorta, M. P. (2024). Virtual reality in ergonomics by wearable devices: Experiences from the automotive sector. *Journal of Workplace Learning*, *36*(7), 621–635. Scopus. https://doi.org/10.1108/JWL-03-2024-0064

Fu, Y., Li, Q., & Ma, D. (2023). User Experience of a Serious Game for Physical Rehabilitation Using Wearable Motion Capture Technology. *IEEE Access*, *11*, 108407–108417. Scopus. https://doi.org/10.1109/ACCESS.2023.3320947

Henson, C., Rambaldini, B., Freedman, B., Carlson, B., Parter, C., Christie, V., Skinner, J., Meharg, D., Kirwan, M., Ward, K., Speier, S. N., & Gwynne, K. (2024). Wearables for early detection of atrial fibrillation and timely referral for Indigenous people ≥55 years: Mixed-methods protocol. *BMJ Open*, *14*(1). Scopus. https://doi.org/10.1136/bmjopen-2023-077820

Jamwal, M., Kanojia, H., & Dhiman, N. (2024). What motivates users to continually use wearable medical devices? Evidence from a developing nation. *International Journal of Pharmaceutical and Healthcare Marketing*, *18*(1), 47–66. Scopus. https://doi.org/10.1108/IJPHM-11-2022-0097

Kim, T. B., & Ho, C.-T. B. (2021). Validating the moderating role of age in multi-perspective acceptance model of wearable healthcare technology. *Telematics and Informatics*, *61*. Scopus. https://doi.org/10.1016/j.tele.2021.101603

Kunchay, S., Linden-Carmichael, A. N., & Abdullah, S. (2024). Using a Smartwatch App to Understand Young Adult Substance Use: Mixed Methods Feasibility Study. *JMIR Human Factors*, *11*. Scopus. https://doi.org/10.2196/50795

Liverani, M., Ir, P., Wiseman, V., & Perel, P. (2021). User experiences and perceptions of health wearables: An exploratory study in Cambodia. *Global Health Research and Policy*, *6*(1). Scopus. https://doi.org/10.1186/s41256-021-00221-3

Nnaji, C., Awolusi, I., Park, J. W., & Albert, A. (2021). Wearable sensing devices: Towards the development of a personalized system for construction safety and health risk mitigation. *Sensors (Switzerland)*, *21*(3), 1–25. Scopus. https://doi.org/10.3390/s21030682

Okpala, I., Nnaji, C., & Awolusi, I. (2022). Wearable sensing devices acceptance behavior in construction safety and health: Assessing existing models and developing a hybrid conceptual model. *Construction Innovation*, *22*(1), 57–75. Scopus. https://doi.org/10.1108/CI-04-2020-0056

Radüntz, T., & Meffert, B. (2019). User experience of 7 mobile electroencephalography devices: Comparative study. *JMIR mHealth and uHealth*, *7*(9). Scopus. https://doi.org/10.2196/14474

Van Ooteghem, K., Godkin, F. E., Thai, V., Beyer, K. B., Cornish, B. F., Weber, K. S., Bernstein, H., Kheiri, S. O., Swartz, R. H., Tan, B., McIlroy, W. E., & Roberts, A. C. (2023). User-centered design of feedback regarding health-related behaviors derived from wearables: An approach targeting older adults and persons living with neurodegenerative disease. *Digital Health*, *9*. Scopus. https://doi.org/10.1177/20552076231179031

Wei, J. C. J., van den Broek, T. J., van Baardewijk, J. U., van Stokkum, R., Kamstra, R. J. M., Rikken, L., Gijsbertse, K., Uzunbajakava, N. E., & van den Brink, W. J. (2024). Validation and user experience of a dry electrode based Health Patch for heart rate and respiration rate monitoring. *Scientific Reports*, *14*(1). Scopus. https://doi.org/10.1038/s41598-024-73557-8

Zetterholm, M. V., Nilsson, L., & Jokela, P. (2022). Using a Proximity-Detection Technology to Nudge for Physical Distancing in a Swedish Workplace during the COVID-19 Pandemic: Retrospective Case Study. *JMIR Formative Research*, *6*(12). Scopus. https://doi.org/10.2196/39570

Zhang, J., Wang, H., Li, Q., & Luximon, Y. (2024). What Is the Real-Life Experience of Older Adults on Smart Healthcare Technologies? An Exploratory Interview Study. *Gerontology*, *70*(9), 978–990. Scopus. https://doi.org/10.1159/000539539