

AI Assisted Health Monitoring and Digital Inclusion for Emotional Security Among Older Adults

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ABSTRACT

The growing population of older adults has increased the need for accessible and sustainable healthcare support, particularly through digital technologies that enable continuous health monitoring. Recent developments in artificial intelligence have expanded the use of AI assisted health monitoring systems, including wearable devices and remote health applications, to support daily healthcare management among older adults. Beyond clinical functions, these technologies may also contribute to emotional well-being by strengthening feelings of safety and supporting digital inclusion. However, limited qualitative research has examined how older adults experience AI assisted health monitoring in relation to emotional security and access to digital healthcare. This study investigates the role of AI assisted health monitoring in supporting digital inclusion and emotional security among older adults. A qualitative descriptive approach was employed using semi structured interviews with older adult participants who had experience using digital health monitoring technologies. The collected data were analyzed through thematic analysis to identify recurring experiences and perspectives. The findings indicate that AI assisted health monitoring contributes to a stronger sense of emotional security by helping older adults monitor health conditions more consistently and reducing uncertainty regarding daily health management. Family assistance also plays an important role in supporting digital inclusion, while technology related barriers remain a challenge for some participants. These findings highlight the importance of designing human centered AI healthcare systems that are accessible and emotionally supportive for aging populations. The study contributes to discussions on healthy aging, digital inclusion, and empathetic healthcare innovation within AI based healthcare environments.

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1. INTRODUCTION

Population aging has become a significant global health concern as the number of older adults continues to increase across many countries. According to World Health Organization, healthy aging requires not only medical care but also supportive environments that allow older adults to maintain wellbeing, independence, and quality of life. As aging populations grow, healthcare systems face increasing pressure to provide

continuous and accessible care, particularly for older adults who often experience chronic health conditions, reduced mobility, and greater vulnerability to health related uncertainty [1]. These conditions create an urgent need for healthcare solutions that are not only clinically effective but also responsive to the emotional and social needs of older adults. In this context, technology based healthcare has become increasingly relevant as part of sustainable efforts to support aging populations [2]. The integration of artificial intelligence into healthcare has accelerated the development of AI assisted health monitoring technologies, including wearable devices, smart health applications, and remote monitoring systems. These technologies are designed to support routine health management by tracking health indicators, delivering alerts, and enabling timely access to health information [3]. For older adults, AI assisted health monitoring offers practical advantages by reducing dependence on frequent in person consultations and supporting more continuous observation of daily health conditions [4, 5]. Beyond efficiency and medical monitoring, AI technologies also carry broader potential to improve wellbeing through more responsive and personalized healthcare experiences. This aligns with the growing emphasis on human centered healthcare innovation, where technology is expected to support patients not only functionally but also emotionally. In many healthcare settings, the integration of AI based monitoring has also created opportunities for more adaptive and continuous healthcare support, allowing older adults to receive health related information in a more timely manner while maintaining greater independence in managing everyday health concerns within their own living environments [6].

The discussion surrounding AI in healthcare increasingly highlights the importance of digital inclusion, particularly for vulnerable groups such as older adults. Digital inclusion refers to equitable access to digital tools, meaningful participation in digital environments, and the ability to benefit from digital innovation regardless of age or social background. Although digital healthcare technologies continue to expand, older adults often encounter barriers related to limited digital literacy, reduced confidence in using technology, accessibility challenges, and dependence on family assistance [7, 8]. These barriers may affect how older adults engage with AI based healthcare systems and influence whether such technologies can genuinely improve their daily lives. Ensuring digital inclusion therefore becomes essential for making AI driven healthcare accessible and beneficial across aging communities. In addition to access and usability, emotional security represents another important dimension in healthcare for older adults. Emotional security in this context relates to feelings of safety, reassurance, confidence, and reduced anxiety regarding personal health conditions and access to care [9, 10]. Older adults may experience uncertainty related to health changes, chronic disease management, or emergency concerns, making emotional reassurance an important part of overall wellbeing. AI assisted health monitoring may contribute to emotional security by helping individuals monitor health conditions more consistently and by providing a sense of ongoing support. At the same time, technology that feels difficult to use or inaccessible may create additional anxiety, indicating that emotional wellbeing and digital inclusion are closely connected in AI mediated healthcare [11].

This topic is also strongly connected with the United Nations Sustainable Development Goals, particularly SDG 3 on Good Health and Well Being and SDG 10 on Reduced Inequalities. AI assisted health monitoring has the potential to strengthen preventive healthcare and support healthier aging through more accessible monitoring systems, which directly contributes to SDG 3. At the same time, improving digital inclusion for older adults supports SDG 10 by reducing age based inequalities in access to healthcare technology and ensuring broader participation in digital health services. From this perspective, AI based healthcare innovation [12] should not only improve clinical outcomes but also promote equitable and inclusive healthcare systems that respond to the realities of aging populations [13, 14]. The relevance of this issue continues to grow as healthcare institutions and communities increasingly adopt digital transformation strategies, making it essential to ensure that technological progress in healthcare remains accessible to older adults and contributes meaningfully to long term wellbeing, dignity, and social participation in later life.

Previous studies have widely discussed AI based health monitoring, healthy aging, and the use of digital healthcare technologies among older adults. However, much of the existing research focuses on technical performance, adoption rates, or clinical effectiveness. Limited qualitative attention has been given to how older adults personally experience AI assisted health monitoring in relation to emotional security and digital inclusion [15]. The perspectives of older adults remain important because their everyday experiences provide deeper insight into how AI based healthcare technologies are interpreted, accepted, and integrated into routine life. Based on this gap, the present study investigates AI assisted health monitoring and digital inclusion for emotional security among older adults. This study aims to examine how older adults experience AI assisted health monitoring in daily healthcare practices, how digital inclusion influences technology use, and how these

experiences contribute to emotional security. The findings are expected to contribute to the development of more human centered and inclusive AI healthcare systems while supporting ongoing discussions on healthy aging and sustainable digital healthcare innovation [16, 17].

2. LITERATURE REVIEW

2.1. Aging Population and Healthcare Technology

The global increase in the aging population has intensified the need for accessible and adaptive healthcare solutions that can support older adults in maintaining their physical well-being and daily independence [18]. Aging is commonly associated with changes in physical condition, increased health monitoring needs, and greater dependence on support systems. In response to these challenges, healthcare technology has increasingly become an important instrument for supporting healthy aging and improving quality of life. Among emerging digital health technologies [19], wearable devices such as smartwatches have gained significant attention due to their portability and real time monitoring capabilities. These devices can track physiological indicators including heart rate, sleep patterns, activity levels, and emergency incidents such as falls [20]. For older adults, such technologies offer practical assistance by providing continuous health information and supporting timely awareness of physical conditions. As wearable healthcare technologies become more integrated into everyday life, their role extends beyond clinical monitoring toward enabling independent living and improving confidence in personal health management [21].

2.2. AI Assisted Smartwatch Technologies for Older Adults

The development of artificial intelligence has expanded the capabilities of wearable health devices beyond traditional tracking functions. Smartwatches equipped with AI assisted systems are able to process health related data continuously [22], identify unusual patterns, and provide recommendations or alerts based on users' daily activities and physiological conditions. These capabilities support more personalized health monitoring and can assist older adults in recognizing health changes more quickly [23]. For older adults, smartwatch based monitoring can also contribute to a greater sense of safety and autonomy. Features such as fall detection, irregular heart rhythm notifications, medication reminders, and activity recommendations may support routine health management while reducing uncertainty in everyday activities. Although these technologies continue to evolve, the practical experiences of older adults in engaging with AI assisted smartwatch systems remain varied, particularly in relation to accessibility, confidence, and ease of use. Therefore, understanding how older adults interact with these technologies is important in evaluating their broader social and emotional impact.

2.3. Digital Inclusion Among Older Adults

Digital inclusion refers to individuals' ability to access, understand, and meaningfully engage with digital technologies. For older adults, digital inclusion involves not only having access to digital devices but also possessing the confidence and opportunity to use them effectively in daily life. As healthcare increasingly adopts digital systems, the ability of older adults to participate in technology based services becomes an important aspect of social participation and independence. The use of smartwatches may support digital inclusion by encouraging older adults to interact with wearable technologies in ways that are directly relevant to their personal wellbeing. When technology is perceived as useful and manageable, older adults may feel more confident in engaging with broader digital environments. However, barriers such as unfamiliarity with digital interfaces, fear of making mistakes, and limited prior experience may affect adoption. These conditions suggest that digital inclusion among older adults should be understood not only from access to technology but also from lived experiences in using it.

2.4. Emotional Security and Technology in Later Life

Emotional security among older adults refers to feelings of safety, reassurance, confidence, and psychological comfort in everyday life. In later adulthood, emotional wellbeing may be influenced by health uncertainty, changing physical conditions, and concerns related to independence. Technologies that provide timely information and practical support may contribute positively to emotional security by helping older adults feel more aware and prepared in managing their health. AI assisted smartwatch technologies may strengthen emotional security through continuous monitoring and automated alerts that provide reassurance during daily activities. When older adults feel supported by accessible health information, they may experience greater confidence and reduced anxiety regarding their physical condition. At the same time, emotional responses toward

technology may differ depending on how individuals perceive trust, usability, and personal control. For this reason, emotional security becomes an important dimension in understanding the broader impact of wearable health technologies among older adults.

2.5. Previous Studies and Research Gap

Previous studies have highlighted the growing role of wearable healthcare technologies in supporting health monitoring and healthy aging. Several studies reported that wearable devices improve awareness of personal health conditions and encourage more proactive health management among older adults. Other studies also found that wearable technologies may support autonomy and strengthen engagement with digital healthcare services. However, existing literature has primarily emphasized usability, clinical monitoring, and technology adoption. Limited attention has been given to how older adults personally experience AI assisted smartwatch monitoring in their daily lives, particularly in relation to emotional security and digital inclusion. In addition, qualitative studies that explore older adults' lived experiences with wearable AI technologies remain relatively limited.

Therefore, this study addresses this gap by exploring how older adults experience AI assisted health monitoring through smartwatch technologies and how these experiences contribute to digital inclusion and emotional security. A qualitative phenomenological approach is used to capture participants' lived experiences and personal meanings related to wearable healthcare technology.

Table 1. Literature Review on Wearable Health Technology and Older Adults

Authors	Focus of Study	Method	Main Findings	Research Gap
[24]	Older adults' experiences using wearable devices for long term health monitoring	Qualitative systematic review and meta synthesis	Wearables supported health awareness and independent living, but user experiences varied depending on usability and comfort	Emotional security and smartwatch specific AI functions were not examined
[25]	Electronic wearable device use for physical activity among older adults	Qualitative study with semi structured interviews	Wearable devices encouraged physical activity and self monitoring	Focused on physical activity rather than emotional wellbeing or digital inclusion
[26]	Wearable activity monitor use and non use among adults aged 60 and above	Qualitative focus groups	Older adults valued tracking benefits but reported barriers related to usability and motivation	Limited discussion of emotional reassurance and AI assisted health monitoring
[27]	Experiences of community dwelling older adults using wearable monitoring devices with health-care support	Qualitative descriptive study	Wearable monitoring improved confidence and supported care communication	Digital inclusion through smartwatch interaction was not deeply explored
[28]	Older adults' willingness to adopt smart wearable devices	Quantitative study using UTAUT2 and Technology Readiness Index	Perceived usefulness and readiness influenced adoption intention	Did not capture lived experiences or emotional security
[29]	Older adults' perceptions of IoT privacy and health monitoring systems	Survey and semi structured interviews	Older adults appreciated health monitoring but expressed concerns about trust and privacy	Emotional security related to smartwatch based daily monitoring remains underexplored

Based on Table 1 the previous studies have demonstrated that wearable health technologies can sup-

port health monitoring, promote self awareness, and encourage independence among older adults. Qualitative research has also shown that older adults generally recognize the practical benefits of wearable devices, particularly for monitoring daily activities and maintaining personal health awareness. However, prior studies have mainly focused on usability, physical activity monitoring, and adoption intention. Limited research has specifically explored how older adults experience AI assisted smartwatch based health monitoring in relation to digital inclusion and emotional security. While recent studies have discussed wearable monitoring and older adults' trust in digital healthcare systems, the emotional meaning attached to continuous smartwatch monitoring in everyday life remains insufficiently examined.

Therefore, this study addresses the existing gap by exploring older adults' lived experiences with AI assisted health monitoring through smartwatch technologies and examining how these experiences contribute to digital inclusion and emotional security in later life.

3. METHODOLOGY

This study employed a qualitative phenomenological approach to explore older adults' lived experiences with AI assisted health monitoring through smartwatch technologies. A phenomenological design was selected because the study focuses on understanding how older adults personally interpret and experience wearable health technologies in their daily lives, particularly in relation to digital inclusion and emotional security. This approach enables researchers to capture participants' perspectives in depth, including how they perceive the usefulness of smartwatch based health monitoring, the challenges they encounter, and the emotional meaning they associate with continuous monitoring technologies. By focusing on lived experiences, the study aims to provide a richer understanding of how AI assisted wearable technology supports older adults beyond technical and functional aspects.

3.1. Research Framework

The conceptual framework of this study was developed based on previous literature on wearable healthcare technology, technology acceptance, and emotional wellbeing among older adults. This framework is intended to support the analysis of how AI assisted smartwatch technologies are experienced by older adults in everyday life. The study focuses on smartwatch based health monitoring features such as heart rate monitoring, sleep tracking, fall detection, and reminder notifications, while also considering older adults' perceptions toward the usefulness and accessibility of these technologies. In addition, the framework considers how supportive service features and user interaction may influence emotional wellbeing and strengthen older adults' confidence in using digital health technology.

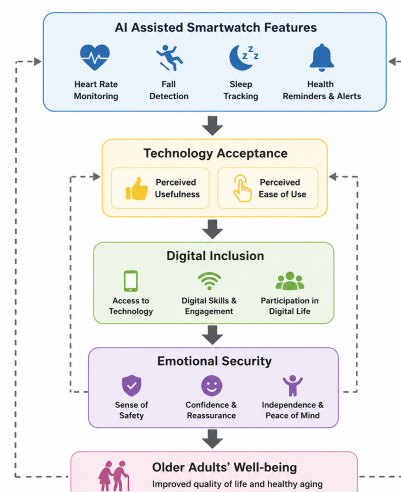


Figure 1. Framework of AI Assisted Smartwatch Use and Emotional Security

Figure 1 illustrates that smart health technology becomes the starting point of older adults' interaction with AI assisted smartwatch devices. Technology acceptance is shaped by perceived ease of use and perceived

usefulness, which influence whether older adults feel comfortable integrating smartwatch based health monitoring into daily life. The service optimization mechanism shown in the framework further strengthens user engagement through emotional linking and adaptive support.

3.2. Context of Smartwatch Technologies

Smartwatch technology was selected as the context of this study because wearable devices are increasingly used to support independent health monitoring among older adults. These devices offer real time health information and AI assisted alerts that may assist users in monitoring their physical condition more consistently. Several commercially available smartwatch devices include health monitoring features relevant to older adults. The comparison presented in Table 2 provides examples of commonly used smartwatch technologies and summarizes the main monitoring functions that support older adults' health awareness and daily wellbeing.

As older adults continue interacting with smartwatch technology, the framework suggests that emotional durability may gradually develop through increased confidence, reassurance, and familiarity with digital health monitoring. This process may support mind interaction, encourage self actualization, and strengthen older adults' sense of independence in daily activities. Overall, the framework serves as the conceptual foundation for understanding how AI assisted smartwatch technology may support both digital participation and emotional wellbeing among older adults, and it guides the data collection and thematic analysis conducted in this study.

Table 2. Smartwatch Features Relevant to Older Adults

Smartwatch	Health Monitoring Features	AI Assisted Functions	Relevance for Older Adults
Apple Watch	Heart rate, sleep, fall detection, ECG	Irregular rhythm alerts and emergency detection	Supports safety and quick response
Samsung Galaxy Watch	Sleep, activity, ECG	Wellness recommendations and reminders	Supports daily health awareness
Fitbit Sense	Stress monitoring, heart rhythm, skin temperature	Predictive wellness insights	Supports emotional and physical awareness

Table 2 shows that smartwatch technologies commonly include both monitoring and AI assisted functions that are relevant to older adults. Features such as heart rate tracking, sleep monitoring, and emergency detection provide practical health support, while AI based alerts and recommendations may help users respond more effectively to health related conditions. These examples help establish the technological context of this study and support the discussion of participants' experiences in relation to wearable health monitoring.

3.3. Data Collection and Analysis

Participants in this study consisted of older adults aged 60 years and above who had prior experience using smartwatch devices equipped with health monitoring features. Purposive sampling was used to select participants who were able to provide relevant insights regarding wearable technology use in daily life. The selection focused on individuals with direct experience using smartwatch based health monitoring and who were willing to share their perspectives related to digital engagement and emotional wellbeing. A sample size of approximately 10 to 15 participants was considered appropriate for phenomenological inquiry, allowing in depth exploration while maintaining manageable thematic interpretation.

Data were collected through semi structured individual interviews. This method was selected because it allows participants to describe personal experiences openly while giving flexibility for follow up questions related to smartwatch use and emotional responses. The interview questions explored participants' experiences with smartwatch based health monitoring, their understanding of device features, perceived ease of use, and whether smartwatch technology influenced their sense of safety, confidence, and independence in everyday activities. Each interview was conducted individually and documented through audio recording with participants' consent before being transcribed for analysis.

The interview data were analyzed using thematic analysis. The analysis began with repeated reading of interview transcripts to identify meaningful statements and recurring patterns related to wearable technology use. Initial codes were then assigned to relevant statements and grouped into broader categories based on similarities in participants' experiences. From these categories, major themes were developed to explain how older adults experience AI assisted smartwatch monitoring and how those experiences relate to digital inclusion

and emotional security. This process enabled the study to capture both practical interactions with wearable technology and the emotional meanings participants associate with health monitoring in daily life.

4. RESULT AND DISCUSSION

4.1. Participant Overview

This study involved twelve older adult participants who were selected based on their prior experience using AI-assisted smartwatches for healthcare monitoring. The participants represented individuals aged between 60 and 74 years who had regularly interacted with wearable devices in their daily routines. The interviews were conducted using a semi-structured approach to explore participants' perceptions of smartwatch use, their experiences with AI-assisted healthcare features, and the emotional impact of these devices in everyday life. The interview discussions focused on several commonly used smartwatch functions, including heart rate monitoring, sleep tracking, medication reminders, and emergency alert systems. In addition to exploring the practical usefulness of these functions, the interviews also examined whether participants experienced emotional reassurance, confidence, or any challenges while interacting with wearable healthcare technology.

Although participants reported different levels of digital familiarity, all participants had direct experience with at least one smartwatch healthcare feature. This variation was valuable because it provided a broader understanding of how AI-assisted smartwatch technology is perceived among older adults with different routines and usage habits. The participant characteristics are summarized in Table 3.

Table 3. Participant Characteristics

Participant code	Age range	Experience using smartwatch	Most frequently used feature
P1	60–64	8 months	Heart rate monitoring
P2	65–69	1 year	Medication reminder
P3	70–74	6 months	Sleep tracking
P4	60–64	1 year	Heart rate monitoring
P5	65–69	9 months	Emergency alert
P6	70–74	7 months	Medication reminder
P7	60–64	1 year	Sleep tracking
P8	65–69	8 months	Heart rate monitoring
P9	70–74	6 months	Emergency alert
P10	60–64	1 year	Sleep tracking
P11	65–69	7 months	Medication reminder
P12	70–74	10 months	Heart rate monitoring

Table 3 shows that participants had varied durations of smartwatch use and different preferences regarding healthcare monitoring features. Despite these differences, all participants reported regular interaction with smartwatch functions, indicating that wearable healthcare technology had become part of their daily routines. This recurring use also provided a meaningful foundation for identifying patterns related to usefulness, emotional response, and long-term engagement.

4.2. Perceived Benefits of AI-Assisted Smartwatches

A dominant finding from the interviews was that participants generally viewed AI-assisted smartwatches as beneficial for supporting healthcare management. Most participants described the smartwatch as a practical tool that helped them monitor their physical condition more independently. Real-time health monitoring was repeatedly mentioned as one of the most useful features because participants could immediately access personal health information without needing additional devices or assistance.

Several participants explained that checking heart rate through the smartwatch had become part of their everyday habits. Rather than using the feature only occasionally, participants described frequent and repeated interaction throughout the day.

“I check my heart rate every morning. It helps me feel calmer because I can see everything directly.” (P3)

For some participants, medication reminders were also particularly valuable. These reminders helped maintain regular treatment routines and reduced the possibility of forgetting medication schedules.

“Sometimes I forget my medicine, so the reminder helps me remember without asking my family.” (P6)

The findings suggest that the smartwatch was not perceived merely as a digital accessory but as an active healthcare support tool. Participants emphasized that wearable monitoring improved awareness of physical condition and encouraged them to take a more active role in managing their health. This practical usefulness appeared to strengthen confidence in using the smartwatch consistently. In this context, usefulness became the first indicator of successful smartwatch adoption. Participants were more willing to continue using the device when they experienced immediate and practical benefits in daily life.

4.3. Emotional Reassurance and Daily Confidence

Beyond practical healthcare monitoring, emotional reassurance emerged as one of the strongest themes in the interviews. Participants frequently connected smartwatch use with feelings of safety and emotional comfort. This finding was especially visible among participants who relied on fall detection or emergency alert functions. Several participants described feeling safer during daily activities because the smartwatch could monitor their condition continuously and provide emergency assistance if necessary.

“When I go outside alone, I feel safer because if something happens, the watch can alert someone.” (P5)

This perception was important because many participants linked smartwatch use with increased personal confidence. Participants explained that having access to wearable monitoring reduced uncertainty and helped them feel more prepared while completing routine activities.

“I feel more comfortable walking outside because I know my condition can be checked any-time.” (P9)

These responses indicate that smartwatch use supported emotional wellbeing by reducing anxiety related to health uncertainty. The emotional reassurance provided by wearable monitoring encouraged participants to remain active and maintain daily independence. From an emotional durability perspective, this finding is significant because participants were not only using the smartwatch for technical monitoring but also associating it with comfort and safety. Repeated positive emotional experiences appeared to strengthen attachment to the device over time.

4.4. Challenges and Barriers During Use

Although the interview findings were largely positive, participants also reported several challenges while using AI-assisted smartwatches. These barriers mainly related to interface readability and initial adjustment to wearable technology. Some participants explained that notification text was occasionally difficult to read, especially during the early stages of use.

“Sometimes the writing is too small, and I need more time to understand the notification.” (P8)

Others mentioned that certain smartwatch settings required assistance during the first use, particularly when configuring notifications or navigating less familiar menu options. Despite these challenges, participants generally described the barriers as manageable [30]. Several participants explained that regular use improved familiarity with the device and reduced confusion over time.

This suggests that usability challenges were present but did not significantly reduce long-term engagement. Instead, participants gradually adapted to the smartwatch and became more confident through repeated interaction. This adaptation process is important because it demonstrates that acceptance among older adults may strengthen over time when wearable devices continue providing clear benefits.

Overall, while accessibility barriers were still present, they did not outweigh the practical and emotional benefits reported by participants. This balance indicates that AI-assisted smartwatches remain positively accepted when usability concerns are accompanied by meaningful health support and consistent daily value.

4.5. Summary of Interview Themes

To summarize the interview findings, several recurring themes were identified across participant responses. These themes illustrate how practical healthcare support and emotional experience interacted throughout daily smartwatch use.

Table 4. Summary of Interview Findings

Theme	Participant responses	Interpretation
Health awareness	Participants regularly monitored health indicators	Smartwatch supports independent monitoring
Emotional reassurance	Participants reported feeling safer	Increases comfort and confidence
Daily independence	Reminders supported self-management	Encourages autonomy
Usability barriers	Small text and setup challenges	Accessibility remains important
Continued engagement	Participants kept using smartwatch regularly	Indicates positive acceptance

Table 4 highlights that emotional reassurance and health awareness were the most consistently repeated findings. Participants often described the smartwatch as both practically useful and emotionally supportive. While usability challenges remained present, the overall responses indicate a positive level of acceptance and sustained engagement.

4.6. Discussion

The findings of this study indicate that AI-assisted smartwatches were generally perceived positively by older adults and were considered meaningful in supporting both healthcare management and emotional wellbeing. Participants consistently described benefits related to health monitoring, medication management, and real-time access to personal health information. A particularly important finding was the relationship between smartwatch use and emotional reassurance. Participants frequently associated wearable monitoring with increased safety and confidence, especially during independent activities. This demonstrates that smartwatch adoption among older adults involves not only practical healthcare value but also emotional trust and psychological comfort.

Another important result relates to continued engagement. Despite reporting minor usability barriers, participants maintained regular smartwatch use because the perceived benefits remained meaningful in daily routines. This supports the idea that emotional durability is strengthened when wearable healthcare technology continues to provide practical usefulness and positive emotional experience over time. Overall, the study suggests that AI-assisted smartwatch technology may play an important role in supporting independent living among older adults. By combining healthcare monitoring with emotional reassurance and adaptive support, smartwatches may contribute to stronger confidence, greater comfort, and sustained long-term engagement in everyday healthcare activities.

5. MANAGERIAL IMPLICATIONS

The findings of this study provide several managerial implications for healthcare technology developers, wearable device manufacturers, and service providers targeting older adult users. First, the results indicate that practical healthcare functionality alone is not sufficient to ensure long-term smartwatch adoption among older adults. Participants consistently emphasized the importance of emotional reassurance and ease of interaction alongside health monitoring features. This suggests that organizations developing AI-assisted smartwatches should prioritize user-centered design by ensuring readable interfaces, simplified navigation, and personalized features that match the physical and emotional needs of older adults. Integrating accessible design with adaptive AI monitoring may improve both usability and long-term engagement.

Second, the findings highlight the strategic importance of emotional durability in wearable healthcare innovation. Participants viewed smartwatches not only as monitoring devices but also as supportive companions that contributed to feelings of safety and confidence in daily life. For healthcare service providers and digital health companies, this suggests that wearable technologies should be positioned as tools that support independent living while strengthening emotional wellbeing. Features such as personalized reminders, emergency alerts, and continuous health tracking may increase user trust and encourage sustainable adoption. As the

aging population continues to grow, organizations that successfully combine technological performance with emotional support may create stronger long-term value in digital healthcare services.

6. CONCLUSION

This study explored how AI-assisted smartwatches support emotional durability among older adults through qualitative interviews with participants who regularly used wearable healthcare devices. The findings demonstrate that smartwatches were generally perceived as beneficial in supporting daily healthcare management, particularly through features such as heart rate monitoring, medication reminders, sleep tracking, and emergency alerts. Participants reported that these features improved awareness of their health conditions and helped them manage everyday healthcare activities more independently.

Beyond practical healthcare monitoring, emotional reassurance emerged as one of the most significant findings. Participants frequently associated smartwatch use with increased feelings of safety, confidence, and emotional comfort, especially during independent daily activities. While several usability barriers were identified, such as small notification text and adjustment during initial use, these challenges did not prevent continued engagement. Over time, participants adapted to the smartwatch and developed greater familiarity with the technology. This suggests that emotional durability is strengthened when wearable devices provide consistent healthcare support while also creating positive emotional experiences.

Overall, this study concludes that AI-assisted smartwatches have meaningful potential to support both healthcare management and emotional wellbeing among older adults. The combination of practical monitoring features, emotional reassurance, and adaptive interaction contributes to stronger trust and sustained engagement in daily life. These findings indicate that future wearable healthcare innovation should continue prioritizing accessibility, personalization, and emotional support in order to create technologies that remain relevant and valuable for older adult users over time.

7. DECLARATIONS

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7.2. Author Contributions

Conceptualization: DI; Methodology: MM; Software: CD; Validation: DI and MM; Formal Analysis: SA, CD and MD; Investigation: DI; Resources: MM; Data Curation: MM; Writing Original Draft Preparation: CD, SA and MD; Writing Review & Editing: CD and SA; Visualization: MM; All authors, DI, MM, CD, SA and MD, have read and agreed to the published version of the manuscript.

7.3. Data Availability Statement

The data presented in this study are available on request from the corresponding author.

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7.5. Declaration of Conflicting Interest

The authors declare that they have no conflicts of interest, known competing financial interests, or personal relationships that could have influenced the work reported in this paper.

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