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RESEARCH ARTICLE

Wearable technology in social efforts to improve health and happiness of consumer applications: A Systematic literature review

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ABSTRACT

Wearable technology is quickly changing how people keep track and take care of their health, fitness, and daily tasks. Fitness trackers, health monitoring systems, and smartwatches are becoming essential instruments in modern healthcare since they give instant updates on vital signs, help with early diagnosis of health problems, and make it easier to create personalized treatment programs. The PRISMA methodology enabled the execution of this systematic literature evaluation, while the PICOC framework assisted in formulating research questions. This systematic review was also registered in the INPLASY database (INPLASY2025100053) retrospectively. Publish or Perish software (version 8) and the Scopus API key was used together to make it easier and more consistent to find relevant papers. After finding 674 possible studies in the Scopus database, filtering procedures reduced this number down to 32 papers that were thoroughly examined to see if wearable health technology may improve health and well-being. Wearables have a lot of potential, but just a few studies look at what they can do. Key findings show that wearables may make people more active, but they lose interest over time. This shows how important it is to keep coming up with new technologies, ways to motivate people, and social networks that support them. Stress tracking and sleep monitoring were two features that showed moderate gains in mental health. Sharing data with healthcare practitioners in real time typically led to more proactive care. However, flaws with privacy, data security, and user training are still matters of fears. Overall, compounding wearable data with mHealth services has a lot of potential, as long as fair access, strong data protection, and thorough user education are kept as top desired outcomes.

Keywords: Wearable; Fitness Trackers; Wearable devices; Smartwatches; Health and well-being

1. Introduction

Wearable technology has evolved beyond its initial association with basic fitness tracking to become an integral component of contemporary consumer health, lifestyle, and well-being ecosystems[1]. Advances in sensor technology, artificial intelligence (AI), and data analytics have enabled wearable devices to

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continuously collect, process, and interpret physiological and behavioral data with increasing accuracy and reliability[2]. As a result, consumer-oriented wearables are now positioned as tools not only for monitoring physical health, but also for supporting psychological well-being, social connectivity, and overall quality of life. From a physical health perspective, wearable technologies play a significant role in preventive healthcare and chronic disease management. Devices such as smartwatches, fitness bands, and wearable sensors allow for real time monitoring of vital signs including heart rate, blood pressure, glucose levels, and physical activity patterns[3,4]. Continuous data collection facilitates early detection of health risks, supports personalized treatment planning, and enables healthcare professionals to make timely and informed decisions. Consequently, wearables have demonstrated substantial potential in improving clinical outcomes and supporting long-term health management, particularly for individuals with chronic conditions[5].

Beyond physical health, wearable technologies increasingly address psychological dimensions of well-being, including stress management, emotional regulation, motivation, and cognitive functioning. Features such as biofeedback, mindfulness prompts, sleep monitoring, and AI-driven coaching applications provide users with insights into their mental states and daily habits[6,7]. By offering personalized feedback and goal-setting mechanisms, wearables can encourage positive behavior change, enhance self-efficacy, and support healthier lifestyle choices. Emerging evidence suggests that such functionalities may contribute to improvements in subjective well-being, including reduced stress levels and enhanced life satisfaction[8].

Wearable technologies also contribute to social dimensions of health and happiness, particularly through connectivity, safety, and shared health engagement. Integration with smart home systems, emergency alert functions, fall detection, and location tracking enhances personal safety and independent living, especially among older adults and vulnerable populations[9]. In addition, social features such as activity sharing, gamification, and community-based challenges foster social interaction and collective motivation, reinforcing adherence to healthy behaviors through social comparison and peer support[10,11]. Collectively, these physical, psychological, and social capabilities position wearable technology as a multifaceted consumer application with the potential to enhance overall quality of life. Ongoing technological advancements continue to improve usability, accessibility, and data accuracy, thereby expanding the relevance of wearables across diverse populations and everyday contexts. However, despite their widespread adoption and growing functional sophistication, questions remain regarding the sustained impact of wearable technologies on long-term well-being, happiness, and behavior modification in real-world consumer settings. Addressing these questions requires a systematic and integrative synthesis of existing evidence, which forms the basis for the present systematic literature review.

1.1. Research gap

According to Siepmann and Kowalczuk, there is still lack of research regarding the ways in which the use of wearable electronic devices on a daily basis in general populations might have an effect on the well-being of individuals and the behavior modification that occurs over an extended period of time[12]. On the other hand, this situation is, in spite of the fact that consumer-oriented wearables are readily available in large quantities. According to Duking et al, the majority of the research that is now available focuses on short-term effects[13]. These findings include rapid improvements in the number of steps done or transitory increases in the level of satisfaction that is indicated by the individual experiencing the condition. The challenge of building habits over time, on the other hand, is something that they have very little interest in discussion. However, there is currently a dearth of empirical data about the ways in which these components, either on their own or in combination with one another, could increase mental well-being[14]. This is in spite of the fact that wearables presently provide a wide range of complex capabilities, including, to mention just a few examples, gamification, social connection, and real-time biofeedback. There is currently a lack of clarity on comparative research that investigates if it is possible to determine whether these integrated solutions are preferable to the usage of regular care routine or ordinary wearables. In order to improve patient happiness and also to modify therapy, there is a growing movement toward the integration of wearables with mobile health or digital health platforms. Regardless of this, the circumstance has not changed over time. Considering that the bulk of research on integrated wearables tends to focus on pilot projects or certain demographic groups, there is a significant gap in our understanding of how such techniques function in a variety of real-world settings. Further investigation is necessary to ascertain the optimal circumstances for wearable technology use, how to optimize these devices to enhance psychosocial wellbeing and daily adherence, and how to integrate these devices with broader healthcare systems to yield significant advantages for people leading healthy lives. It is necessary for researchers to carry out more study in order to ascertain these aspects.

2. Different forms of wearable technology

As a result of the remarkable development of wearable technology, a wide range of products that significantly enhance human existence are now readily available to the general consumers. A wide variety of applications for wearable technology are described in the literature. These applications include daily life, fitness, healthcare, and safety activities. It is clear from this that modern technologies have a substantial influence on the general well-being of individuals[15]. Several forms of wearable technology are discussed in this paper, along with the ways in which these technologies can enhance one's quality of life.

2.1. Wearable medical devices

There is ongoing study into healthcare wearables because of their revolutionary potential in patient care and health monitoring. Wearable sensors, smartwatches, and health monitors capture data from a variety of sources, including glucose levels, heart rate, blood pressure, and other vital indications [16,17]. Wearable devices equipped with photoplethysmography (PPG) sensors may accurately and consistently detect heart rate, as demonstrated in research conducted by Kim and Baek[18]. When it comes to managing heart health, this data is priceless. Several studies have demonstrated that electrocardiograms (ECGs) worn by patients can aid in the early detection and management of cardiac problems, including arrhythmias. According to Huhn et al, there are clear benefits to using wearable technology to treat long-term health conditions[19]. By allowing for real-time glucose monitoring, continuous glucose monitors (CGMs) help diabetic patients better manage their blood sugar levels and reduce the risk of problems[20]. Similarly, sleep apnea and chronic obstructive pulmonary disease (COPD) are two respiratory illnesses that have shown promise when treated using wearable medical equipment. According to Guo et al, sensors that track breathing patterns and oxygen saturation levels are commonly used in this field[21]. Wearable equipment that tracks a person's heart rate, respiration rate, and other vitals can encourage healthy lifestyle choices and early disease detection. Studies have demonstrated that wearing a wearable device on a regular basis increases physical activity and improves the quality of sleep, two factors that are critical in preventing diseases like depression, obesity, and hypertension[22,23].

2.2. Wearable fitness and lifestyle devices

Wearable fitness trackers are becoming increasingly popular as more and more people want to improve their health and level of physical activity. Counting steps, distance walked, calories burned, and other pertinent metrics are tracked and recorded by wearable activity trackers such as Garmin and Fitbit devices[24, 25]. By allowing users to establish goals, receive feedback, and share their progress with others, these devices encourage physical activity[26]. A comprehensive analysis and synthesis of data from several research on the topic suggests that wearable activity trackers may lead to moderate but substantial increases in daily physical activity levels. Smartwatches with built-in sleep monitors have quickly become standard issue for anyone looking to upgrade their sleeping routine. Additionally, Kuosmanen et al, observed that keeping track of one's sleep habits and getting feedback on their quality of sleep might improve one's mental and physical health[27]. Additionally, wearable sleep trackers can identify sleep abnormalities, which can prompt users to consult a doctor. Wearables with capabilities like AI-driven personal coaching are quickly becoming indispensable in the realms of health and fitness. Users' dedication to their wellness goals and overall health can be enhanced by these devices, which offer personalized training regimens, food suggestions, and mindfulness activities[28].

2.3. Assistive and safety wearable

These wearables are designed to assist and protect people with disabilities or chronic illnesses, elevating their quality of life by placing safety and assistance at the forefront. The ability to detect falls with wearable devices, such smartwatches, has shown to be quite helpful for the elderly[29]. The use of these devices could significantly reduce response times during emergencies, which could result in the saving of lives[30]. Smart glasses, haptic feedback devices, and hearing aids are examples of assistive wearables that have shown promise in improving the lives of people with disabilities. Smart hearing aids that incorporate artificial intelligence (AI) could automatically adjust the volume based on their environment. Users of these devices will have better auditory experiences with this feature. Intelligent apparel has opened new possibilities for health and security tracking with the advent of conductive materials and sensors. Wearable gadgets can measure and detect body posture, detect falls, and even administer electrical stimulation for therapeutic reasons[31]. When it comes to rehabilitation and ongoing health monitoring, smart clothes can make a big difference.

2.4. Wearable technology for mental and cognitive health

People who wear devices that track physiological stress indicators, like skin conductance and heart rate variability (HRV), report better responses to stressful situations. Wearable tech has the potential to improve mental health by providing immediate feedback on the efficacy of practices like meditation and deep breathing for stress reduction[32]. Wearable equipment that can improve cognitive ability is becoming more popular, with examples including reminder or data overlay equipped smart glasses. Alhejaili and Alomainy indicated that these gadgets have the potential to enhance memory, focus, and time management skills, especially for individuals with cognitive impairments[33]. Also, there is some evidence that using a wearable sleep monitor can improve mental health. Since insufficient sleep is known to increase the likelihood of developing several disorders, these tools can alleviate some of the symptoms of anxiety and depression by enhancing the quality of sleep[34].

2.5. Quality of human life

A person's health, social connections, financial situation, and the surrounding environment are just a few of the many aspects that contribute to their overall quality of life. Quality of life evaluations need to strike a good balance between subjective assessments and objective metrics. It is possible to apply a variety of frameworks and approaches to reflect the complexity of this process. The advancement of quality-of-life research has a substantial influence on healthcare policies, legal frameworks, and social programs aimed at improving the health of varied populations[35]. There are many aspects of a person's life that can have an impact on the quality of their existence. These aspects include their physical health, psychological health, financial stability, environmental conditions, and the relationships they have with other people[36]. The research that has been conducted on the topic has shown that quality of life is a multi-dimensional term that encompasses a myriad of aspects that are influenced by both objective and subjective elements[37]. At first, the concept of quality of life was thought to be complex and multidimensional, encompassing not just social but also psychological and physical factors. Quality of life is as a subjective appraisal of an individual's total well-being that takes into consideration the individual's social, cultural, and personal conditions, as well as the individual's goals, aspirations, and worries[38]. This idea highlights the subjective nature of the concept of quality of life, which is influenced by both individual and cultural ideals[39]. Researchers distinguish between subjective indicators, such as life satisfaction, contentment, and perceived well-being, and objective markers, such as money, employment, education, and health status, when they are analyzing quality of life. Subjective measures include things like life satisfaction, contentment, and perceived well-being. Individuals can gain insights into their own experiences and viewpoints through the use of subjective assessments, whilst objective measurements are routinely utilized in order to compare the quality of life of different populations[40].

A significant number of people are of the opinion that their state of health is directly proportional to the quality of life they experience. Physical and mental health are two factors that have a substantial impact on an individual's overall happiness and sense of well-being. On the other hand, the adoption of good practices and accessibility to healthcare are positively correlated with quality of life[9]. This is the case even though impairments, mental health concerns, and chronic illnesses are negatively as-sociated with quality of life. Work, financial security, and a stable lifestyle all have a substantial impact on the quality of one's life. This link is particularly noticeable in low-income contexts where fundamental criteria are not provided[41]. However, high income levels are positively associated with an improved quality of life than low-income settings. In times of economic stability, individuals have access to re-sources that contribute to their overall well-being. These resources include healthcare, educational opportunities, and recreational pursuits[42, 43]. People who are more content with their lives are those who are actively involved in their community, who have strong connections to their families, and who maintain tight relationships between themselves and others. A sense of belonging and significance can be fostered through the provision of social support, which also works as a tension reducer. The existence of green areas, the level of safety in the neighborhood, and the kind of housing in the area are all environmental elements that have an impact on the quality of life in each area. Unfavorable environmental elements, such as pollution, noise, and excessive population density, have a negative impact on the physical and mental health of individuals, which in turn leads to a decrease in the quality of life that they experience. On the other hand, having access to places that are aesthetically pleasant, secure, and hygienic also contributes to an individual's overall health.

3. Methodology, data and research questions

To systematically address the research questions, this study applies a structured literature review methodology grounded in established academic protocols[44]. As presented in Figure 1, a systematic literature review serves as a comprehensive and methodical technique for identifying, critically assessing, and synthesizing research evidence on a specific topic of interest[45]. The review process is guided by a series of sequential steps, which includes articulating precise research questions, designing an appropriate search strategy, implementing screening procedures, evaluating the methodological quality of the selected studies, extracting relevant data, and synthesizing the results. This systematic review was also registered into INPLASY database (INPLASY2025100053). The protocol was registered retrospectively after completion of the review to enhance transparency and methodological reporting. Adopting this systematic procedure reduces the potential for selection bias, promotes consistency in review outcomes, and facilitates a deeper understanding of the current body of knowledge. Moreover, it enables the identification of underexplored areas, thereby contributing to future research agendas[46]. The subsequent sections of this paper describe each stage of the review in detail, highlighting the strategies employed to ensure methodological robustness and the overall integrity of the findings.

Figure 1. Systematic literature review stages[45, 46]

3.1. Research questions

To structure the development of research questions and ensure methodological rigor in the review process, this study employs the PICOC framework, an established model commonly used in evidence-based research[47]. The framework is composed of five dimensions: the population being studied, the nature of the intervention, a basis for comparison, the outcomes of interest, and the contextual setting. In applying PICOC to the current investigation on wearable technologies in consumer settings, each element plays a critical role in shaping the scope of inquiry. The targeted population refers to individuals from the general public who regularly use advanced wearable devices for health tracking. The intervention involves the engagement with consumer-grade wearables that are integrated with mobile health platforms aimed at improving users physical and emotional health. In contrast, the comparator includes individuals with no access to such technologies or those using basic activity trackers without interactive or motivational features. The outcomes explored include behavioral and psychological variables such as increased physical activity, greater happiness, improved mental well-being, and higher adherence to health-related goals. These effects are situated within the routine activities and leisure environments of users' everyday lives. The application of the PICOC model in this review serves not only to refine the search and selection strategy but also to enhance the objectivity, consistency, and relevance of the review's conclusions[48].

- RQ1 - How does the routine use of wearable health technology influence physical activity levels and self-reported happiness among general consumers in their everyday life?
- RQ2 - How effective are consumer wearables with various features in enhancing mental well-being among general consumers in daily life?
- RQ3 - What impact does integrating consumer wearables with digital health platforms have on consumer satisfaction, compared to standard wearable usage or conventional care, among consumers managing health conditions?

3.2. Search protocol and database selection strategy

This systematic review on "Wearable Technology in Social Efforts to Improve Health and Happiness of Consumer Applications" will based exclusively on the Scopus database. Scopus database provides a comprehensive coverage of peer-reviewed literature, and most journals indexed by Web of Science are also included in Scopus[48, 49]. Employing Publish or Perish software via the Scopus API will streamline and standardize the extraction of relevant studies. The focus on the past five years ensures acceptance in capturing innovative applications of wearable devices that directly influence health and happiness outcomes. Using Publish or Perish software integrated with the Scopus API, the search employed strategically formulated keywords ("Wearable technology", "wearable device", "fitness-tracker", “smartwatch”, "consumer wearable", “physical activity", "fitness level", "step count", "active lifestyle", "digital health", "e-health”, “mobile health", "well-being", “consumer”) to maximize the relevance of retrieved studies[50]. The careful selection of keywords in a systematic literature review is crucial for ensuring that the search process comprehensively captures the breadth and depth of available research while remaining focused on the specific aims of the study. Well-chosen keywords, which included both narrow and broad terms along with synonyms and related concepts, help account for the diversity of language and terminology used in scholarly discourse, thereby reducing the risk of overlooking relevant studies[51].

3.3. Inclusion and exclusion strategy

To find relevant studies, a methodical screening procedure was used. Initially, the titles and abstracts of the articles were evaluated to see if they would be relevant to the research issue. Inclusion and exclusion criteria likewise shape the selection and interpretation of data. Eligible studies must directly address the role of wearable technology in relevance to consumer applications, be published within the last five years, and meet basic methodological standards for empirical work. Articles lacking a clear link to wearable technology in everyday personal life contexts, published outside the specified timeframe, or not written in English will be excluded. Additionally, purely technical prototyping studies, conference abstracts, editorials, and other non-empirical publications will not be considered unless they provide substantial qualitative or quantitative insights pertinent to the research questions. This dual focus on targeted research questions and well-defined inclusion and exclusion criteria will ensure a systematic, replicable, and methodologically sound approach to synthesizing existing literature in this rapidly evolving field[46,52].

3.4. Data extraction and analysis

The process of screening scientific literature in the current investigation was adopted using the PRISMA statement, a widely regarded and comprehensive framework for performing meta-analyses and directed inclusion and exclusion process in systemic reviews[48,53]. The data extraction and analysis procedure has been guided by the core research questions established for this review.

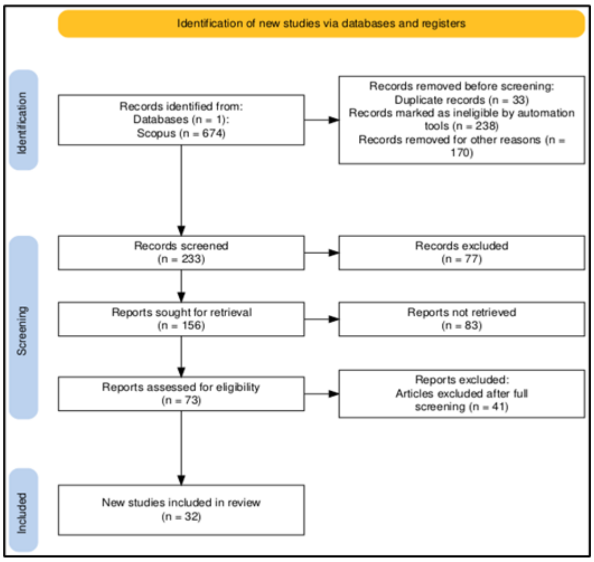

Figure 2. flow diagram of selected studies[53]

As depicted in figure 2, during the initial identification phase, a total of 674 potential studies were retrieved from the Scopus database. Prior to screening, 33 duplicate records were removed, while 238 were automatically flagged as ineligible, and 170 were excluded for various other reasons. This refinement process resulted in 233 records advancing to the screening stage. Of these, 77 were eliminated upon closer inspection of the title and abstract, leaving 156 records to be sought for retrieval. However, 83 of these records could not be obtained, reducing the pool to 73 documents for full-text assessment. During the eligibility evaluation, 41 articles were excluded, primarily on the grounds that they did not adequately fulfil the inclusion criteria relating to wearable technology applications, social or community-based interventions, health or happiness outcomes, or empirical rigor. Studies that were irrelevant, previously published in languages other than English, or lacked sufficient methodological transparency were also removed at this stage. Ultimately, 32 articles met the threshold for inclusion, providing the most pertinent, methodological, and up to date insights into how wearable devices can be leveraged within social contexts to enhance health and well-being. This final set of articles was therefore deemed suitable for in-depth qualitative and quantitative synthesis. By systematically tracking the selection process at each phase - identification, screening, and eligibility, the review adhered to established methodological best practices. The transparent application of inclusion and exclusion criteria serves not only to strengthen the integrity of the findings but also to facilitate replicability and comparability in future research.

4. Findings

4.1. RQ1 - Influence of wearable health technology on physical activity and happiness

Many of the reviewed studies consistently identified that routine, day-to-day use of wearable devices, such as fitness trackers and smartwatches, which has a positive impact on physical activity levels among general consumers[7]. In several large-scale cross-sectional investigations, participants exhibited an increase of approximately 15–30% in daily step counts or active minutes after adopting wearables, especially when the devices offered real-time feedback on metrics like steps taken, distance covered, and calories burned[36, 54]. Such feedback mechanisms appear to enhance self-efficacy, prompting individuals to set incremental goals and track progress over time. Additionally, the psychological boost derived from “closing activity rings” or “achieving step goals” was frequently reported to elevate mood and self-reported happiness[12]. Notably, these beneficial outcomes were often amplified in contexts where wearables were integrated into social networks - for instance, through group fitness challenges or peer comparisons, thereby reinforcing motivation through shared accountability, competition, or support[38]. However, longitudinal data highlighted a gradual decline in adherence once the initial novelty wore off, suggesting that strategies such as periodic device updates, behavior change incentives, and social reinforcement may be critical to sustaining long-term engagement and preserving gains in both physical activity and subjective well-being[30,55].

4.2. RQ2 - Effectiveness of wearables in enhancing mental well-being

Studies investigating mental health outcomes noted that wearables with features like stress tracking, sleep pattern monitoring, and mindfulness reminders led to moderate improvements in stress management and emotional regulation[32,56]. Several studies observed that real-time stress alerts prompted users to practice relaxation techniques, thereby reducing anxiety levels[8, 57]. Additionally, wearables offering gamified challenges or community-based “mindful breaks” fostered user engagement, strengthening adherence over time. Despite these encouraging findings, researchers cautioned that enhancements in mental well-being are often contingent on user readiness to follow device-generated recommendations, highlighting the importance of personalized approaches[31,33].

4.3. RQ3 - Integrating consumer wearables with digital health platforms

Studies examining the integration of consumer wearables with apps or eHealth and digital health platforms consistently report higher levels of consumer satisfaction[58]. In particular, individuals managing chronic conditions including hypertension, diabetes, and cardiovascular diseases often experience greater security when healthcare providers can access wearable-generated data in real time, enabling earlier detection of anomalies and more proactive treatment adjustments[16]. Similarly, research indicates that users receiving integrated eHealth monitoring tend to adhere more consistently to recommended activities, medication routines, and dietary guidelines, in part due to immediate feedback and the availability of remote consultations[29]. By nurturing a sense of partnership in disease management, such interconnected ecosystems bolster user confidence and long-term engagement[40]. Nevertheless, various challenges accompany these improvements, including privacy concerns, data security risks, user acceptance and the learning curve associated with coordinating multiple digital tools[59, 60]. Additional obstacles, such as limited broadband access in underserved or rural communities, may further constrain the adoption of health-enabled wearables. Despite these issues, the prevailing consensus among the reviewed literature is that effective integration of wearable data with mHealth services significantly enhances consumer experience and clinical outcomes, provided that data protection, user training, and reasonable infrastructure are conscientiously addressed. In tandem with these developments, Human Activity Recognition (HAR) leveraging wearable sensors and smartphone data to track Activities of Daily Living (ADLs), presents a promising avenue for early detection of health problems through behavioral pattern analysis[61]. HAR has demonstrated considerable potential for remote patient monitoring, eldercare, and rehabilitation, aligning closely with the expanding role of wearable technology in contemporary healthcare and strengthening the overall impact of wearable solutions in efforts to improve health and happiness of consumers.

5. Future research

Future studies into wearable and AI-integrated technologies should adhere to four prioritized trajectories. Longitudinal and randomized designs are essential to elucidate habit formation, sustained engagement, and the long-term effects on well-being, extending beyond short-term benefits. Secondly, a heightened focus on inclusive and equity-centered research is crucial, as current evidence predominantly represents technologically privileged populations and neglects the obstacles encountered by marginalized communities. Third, interdisciplinary methodologies that incorporate behavioral science, ethics, and human-centered design are essential for a comprehensive understanding of psychological effects, including stress and dependency. Ultimately, research must investigate the responsible integration of systems, ensuring that wearable data augment healthcare and public health decision-making without imposing additional burdens or undermining trust.

6. Risks, ethical concerns, and unintended consequences of wearable and ai-enabled technologies

While technologies driven by artificial intelligence and wearables exhibit significant potential to improve health and well-being, the study highlights accompanying risks that require thorough examination. The continuous accumulation of biometric data raises significant concerns regarding data ownership, informed consent, surveillance, and the use of secondary data. This is especially true when users are unaware of the storage, sharing, or monetization of their data, thereby increasing the likelihood of discrimination by employers or insurers. Algorithmic bias intensifies these issues, as artificial intelligence models trained on unrepresentative datasets may produce inaccurate or unjust health feedback, disproportionately impacting marginalized populations. Evidence indicates psychological and behavioral detriments; persistent self-tracking may induce anxiety, compulsive monitoring, social comparison, or an undue dependence on automated feedback, potentially postponing the intervention of a qualified medical professional. Furthermore, unequal access to wearable technologies contributes to the worsening of digital health disparities. This is because individuals who have limited financial resources, digital literacy, or infrastructure are excluded from the potential benefits of these technologies. In conclusion, an excessive reliance on automated monitoring poses a risk of dehumanizing care by shifting responsibility away from relational and empathic healthcare interactions and toward algorithmic oversight. This in turn prioritizes efficiency over patient-centered values if it is not governed in an appropriate manner.

7. Conclusions: Mapping research questions, findings, limitations, and recommendations

The field of wearable technology has recently grown in prominence as a powerful tool for improving human well-being. Medical services, physical health, mental health, safety, and general lifestyle improvement are just a few of the areas that this study cites as having numerous advantages offered by wearable gadgets. Wearables improve health care by allowing for early detection of problems and better management of chronic conditions, leading to longer life expectancy and better quality of life overall. When it comes to fitness, these devices promote healthy lifestyle choices and workout routines, which are good for both the body and the mind. People's mental health benefits from wearable gear since it improves their ability to manage stress, sleep better, and think more clearly. Lifesaving wearable safety devices, such as fall detectors and assistive technologies, empower individuals at risk to live independently and with greater peace of mind. By providing adaptable, personalized solutions that can be effortlessly incorporated into everyday life, wearable technology has the potential to completely transform healthcare. The quality of life for individuals will be greatly enhanced because of this. However, before wearable gear can become a regular part of people's lives, concerns including data protection, user compliance, and accessibility need to be resolved. To ensure its efficacy and equity as its use rises, wearable technology relies on continual study and development. Continued study into wearable technology, with a focus on varied demographics and underrepresented groups, might have far-reaching effects on people's quality of life.

In this systematic literature review, we investigated the ways in which wearable and artificial intelligence-enabled technologies impact consumers' levels of satisfaction, mental well-being, and physical activity in their day-to-day lives. In response to the first research question, the findings indicate that regular use of wearables is associated with moderate improvements in physical activity and short-term increases in self-reported happiness. This is especially true when feedback and social features are present; however, adherence typically decreases over the course of time. In relation to second research question, wearables that incorporate features such as stress tracking, sleep monitoring, and mindfulness show some benefits for mental well-being; however, these benefits are contingent upon the user's engagement and the ability to personalize the experience. In relation to third research question, the integration of wearables with digital health platforms improves customer satisfaction and enables proactive care, particularly for the management of chronic conditions. However, this integration also presents challenges in terms of privacy, usability, and infrastructure.

Notwithstanding these insights, the review is constrained by the prevalence of limited studies, dependence on self-reported outcomes, and insufficient representation of diverse populations. Moreover, causal inference is limited by the lack of randomized and longitudinal studies. Future research should emphasize long-term evaluation, ethically-informed frameworks, and inclusive methodologies based on these findings. Results from this study should guide the development of more inclusive research frameworks, as well as more rigorous and long-term evaluations of methods. Simultaneously, there needs to be a bigger push for users' education, accountable governance, and openness in AI-driven systems. Ultimately, the success of wearable technologies in improving health and wellness will depend on how users engage with them over time, how they are integrated into human-centered care models, and how strong the ethical protections are.

8. Theoretical, practical, and methodological contributions

8.1. Theoretical contributions

This systematic literature review enhances theoretical understanding by integrating disparate evidence regarding the impact of consumer-grade wearable and AI-enabled technologies on physical activity, mental well-being, and perceived happiness in daily contexts. Current literature frequently analyzes these outcomes in isolation or within brief intervention contexts. This research synthesizes insights from health behavior, human–computer interaction, and digital well-being research, thereby advancing a comprehensive understanding of wearable technology as a socio-technical system rather than solely a measurement instrument. Although numerous studies indicate initial increases in activity levels and motivation, continued engagement seems dependent on psychological factors like self-efficacy, perceived utility, and social reinforcement. This insight enhances established behavior-change theories by illustrating how continuous feedback, gamification, and social comparison mechanisms integrated into wearables can both facilitate and hinder long-term well-being outcomes. Additionally, by integrating evidence on AI-driven personalization and real-time health feedback, the review enhances theoretical discourse on consumer agency, autonomy, and digital dependence within technology-mediated health contexts.

8.2. Practical contributions

This systematic literature review offers practical insights for various stakeholders, including healthcare providers, technology designers, policymakers, and end users. The findings highlight the importance for practitioners and healthcare organizations of incorporating wearable data with digital health platforms to enhance proactive care, chronic disease management, and patient engagement. Nevertheless, the review underscores that advantages are not inherent; efficacy relies on user education, trust, and contextual appropriateness. The study emphasizes that technology developers must progress beyond mere feature proliferation to focus on sustainable engagement design. The reported decrease in long-term usage across studies indicates that forthcoming wearable solutions should emphasize adaptive personalization, transparent data practices, and inclusive design to cater to diverse populations, including older adults and marginalized groups. Policymakers may utilize this research to guide regulatory frameworks that harmonize innovation with ethical protections, especially concerning data privacy, algorithmic transparency, and equitable access to digital health technologies.

8.3. Methodological contributions

In terms of methodology, this research makes a significant contribution by demonstrating a method that is both rigorous and transparent in its approach to synthesizing evidence in a field that is rapidly evolving. Not only does the review improve its reproducibility, but it also improves its relevance by combining the PRISMA guidelines with the PICOC framework and restricting the analysis to recent empirical studies of a high quality. The structured comparison of interventions that only involve wearables versus integrated digital health ecosystems provides a more transparent basis for evaluating the relative effectiveness of the interventions. This comparison was done in order to fill a gap that was present in the narrative reviews that came before it. In addition to this, the study identifies recurrent methodological limitations in the research that has been conducted in the past. The short duration of the studies, the reliance on self-reported outcomes, and the limited demographic diversity are all examples of these limitations. This research is being conducted with the intention of providing a prioritized agenda for future empirical research by mapping these gaps in a clear and concise manner. The necessity of longitudinal designs, mixed-method approaches, and a more robust theoretical foundation are all included in this agenda. By doing so, it not only contributes knowledge that has been synthesized, but it also contributes a methodological roadmap for advancing research on technologies that are enabled by artificial intelligence and wearables in the context of health and well-being.

9. Research implications

In the arenas of health of public, healthcare, technology design, and human-computer interaction, this study demonstrates how wearable technologies significantly enhance human quality of life. This study highlights a major gap in our understanding of the relationship between some wearable technology and improved human health, the absence of meta-analyses that establish a causal relationship. Researchers in the future can fill this information gap by studying the effects on people's well-being in conjunction with professionals in the fields of medicine, engineering, data science, and sociology. This could help them take on difficult problems and find innovative answers. As wearable technology becomes more integrated into our daily lives, it is crucial to investigate the ethical concerns related to continuous health monitoring, data privacy, and the potential advantages of monitoring to improve the quality of human existence. To maximize the advantages of wearable technology while protecting people's rights, this study can point the way toward the implementation of such regulations and procedures.

Author contributions

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Conflict of interest

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