Sociodemographic Factors Influencing Mobile Phone-Based Treatment Compliance for Non-Communicable Diseases in Low Middle-Income Countries: A Systematic Review

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ABSTRACT

Non-communicable diseases such as hypertension, diabetes, and cardiovascular conditions are on the rise in low- and middle-income countries, where health systems often face resource constraints that hinder treatment compliance. Mobile health interventions such as SMS reminders, mobile applications, and teleconsultations have emerged as promising tools to improve adherence. However, their effectiveness varies significantly across population groups, often influenced by sociodemographic factors.

This systematic review, conducted using PRISMA guidelines, analyzed 30 peer-reviewed studies published between 2020 and 2025. It examined how sociodemographic characteristics specifically age, gender, education level, marital status, and urban-rural residency affect treatment compliance with mHealth interventions among adults with NCDs in LMICs. Both quantitative and qualitative data were synthesized.

The review found consistent disparities in compliance outcomes. Younger adults (18–45 years) had adherence rates of up to 85%, while rates dropped to 55% for older adults (60+). Men demonstrated higher compliance (80%) than women (65%), largely due to greater access to mobile devices and fewer cultural constraints. Education was a strong predictor of success: individuals with secondary or higher education achieved over 90% compliance, compared to about 60% among those with no formal education. Urban residents outperformed rural ones due to better infrastructure and digital literacy. Marital status, though less frequently studied, was positively associated with adherence particularly when spousal support was present.

These findings highlight the need for inclusive mHealth strategies tailored to underserved groups, such as older adults, women, and rural populations. Recommendations include designing audio-visual content for low-literacy users, building community and spousal support systems, and expanding digital infrastructure in rural areas. Future research should further explore the role of marital status and household dynamics in shaping compliance.

Keywords: Treatment Compliance, Mobile phone Platforms, Sociodemographic Factors, Non-Communicable Diseases, Low and Middle-Income Countries

INTRODUCTION

NCDs including heart disease, stroke, cancer, diabetes and chronic lung disease, are collectively responsible for 74% of all deaths worldwide. More than three-quarters of all NCD deaths, and 86% of the 17 million people who died prematurely, or before reaching 70 years of age, occur in LMICs(WHO, 2023). This rise in

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NCDs places significant strain on health systems in LMICs. Poor treatment compliance in LMICs is hampered by limited access to healthcare, poor health literacy, lack of support systems, and often a misalignment between the care provided and patients expressed needs. Mobile phone platforms have emerged as innovative tools to bridge gaps in healthcare delivery. The penetration of this technology in LMICs gives an opportunity to leverage their use to improve treatment compliance.

Background

Treatment compliance also known as treatment adherence has been defined in different ways in different studies. According to WHO, this is the extent to which a person's behavior- taking medication, attending scheduled clinic appointments, following a diet and/or changing lifestyle- corresponds with care and treatment plans conjointly agreed between the health worker and patients [27]. In this review, we focus on treatment compliance as a passive behavior exhibited by a patient following a list of instructions from a healthcare provider.

NCDs also known as chronic diseases, tend to be of long duration and are the result of a combination of genetic, physiological, environmental and behavioral factors. The main types of NCDs are cardiovascular diseases (such as heart attacks and stroke), cancers, chronic respiratory diseases (such as chronic obstructive pulmonary disease and asthma) and diabetes[28] . LMICs are countries with a low Gross National Income per capita [26].

Sociodemographic factors refer to population characteristics related to social and demographic aspects which include age, gender, education, marital status, income and ethnicity [12]. Mobile phone platforms are technologies which include the use of SMS, calls, alarms and reminders to take medicine, relaying medical reports through emails. When applied to public health the same have been referred to as mHealth, telemedicine of digital health applications.

Studies conducted globally on communicable diseases such as cancer and cardiovascular diseases indicate a steady rise, a trend mostly occurring in LMICs. Many LMICs are ill-equipped to cope with the markedly increased burden due to lack of comprehensive control programs that incorporate primary, secondary, and tertiary prevention strategies, as seen in resource-constrained cardiovascular care models [11]. Few countries have allocated budgets to implement such programs [2]. In a study on the mHealth in LMICs [19], review of peer reviewed journals confirmed that mHealth can be used effectively for supporting the delivery of health services and care through community health workers. The study recommended the need for regulations to promote the ethical use of mobile phone data in future engagements for more credible results. The current review sought to explore the influence of sociodemographic factors on treatment compliance of patients with NCDs in LMICs in their usage of mobile phone interventions.

A pilot study in Ghana on the mobile phone intervention in promoting type 2 diabetes management in an urban area established that there was an improvement in self-management in the control group. However, the significant improvement was recorded in the area of foot care practices. The study recommended that future trials should include qualitative evaluation were staff and study participants could be engaged in one-to-one interviews or focused group discussion to explore their perspectives of the successes, challenges and mechanism of action of the intervention [4]

Treatment compliance for NCDs in Kenya remains a major challenge, especially among underserved groups. While mHealth tools show potential to improve adherence, their impact is hindered by sociodemographic barriers like age, gender, education, and location. Younger, educated, urban residents benefit more from these tools, while older, rural populations face digital literacy and access issues. Additionally, gender norms in patriarchal settings limit women's use of mobile phones, further affecting adherence. Addressing these structural barriers is crucial for equitable and effective mHealth implementation.[13]

Problem Statement

Despite the potential of various mobile phone interventions in use globally, their effectiveness in improving treatment compliance among patients with NCDs varies significantly across different sociodemographic

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groups. Sociodemographic factors influence both access to and usage of mobile health platforms [12]. For instance, while younger and more educated individuals in urban areas may readily adopt and benefit from mHealth tools, older adults, women in patriarchal societies, and rural populations often face barriers including limited digital literacy, lack of access to smartphones, and cultural resistance. This variability raises concerns about the equitable distribution of digital health benefits and the potential exacerbation of health disparities in already vulnerable populations. There is a critical need to understand how these sociodemographic characteristics influence treatment compliance through mobile phone platforms to inform more inclusive digital health strategies in LMICs. This is the central purpose of the current review in exploring the influence of sociodemographic factors on treatment compliance among patients with NCDs in the LMICs in their usage of mobile phone platforms.

Significance of the Study

This study addresses a significant gap in literature by focusing on the intersection of sociodemographic characteristics and mobile phone platform adoption in the context of NCD treatment in LMICs. By synthesizing evidence from various contexts, the study provides valuable insights for policymakers, healthcare providers, and technology developers aiming to design interventions that are accessible, acceptable, and effective across diverse population groups.

Understanding the sociodemographic determinants of mHealth efficacy can help tailor interventions to the unique needs of patients in underserved communities. Moreover, the findings can contribute to the development of inclusive digital health policies that prioritize equity, cultural sensitivity, and sustainability, ultimately improving treatment adherence and health outcomes in LMIC settings.

Objectives

Broad objective

To analyze the role of Mobile Phone Platforms in Enhancing Treatment Compliance among patients with NCDs in LMICs.

Specific objective

To analyze the influence of socio-demographic factors and the use of mobile telephone platforms in enhancing treatment compliance in patients with NCDs in LMICs?

Research Question

What is the influence of socio-demographic factors and the use of mobile telephone platforms in enhancing treatment compliance in patients with NCDs in LMICs?

LITERATURE REVIEW

This chapter reviews existing literature on treatment compliance among patients with NCDs in LMICs, focusing on the role of mobile phone platforms in supporting adherence. It examines how sociodemographic factors influence the effectiveness of these digital health interventions. The chapter also highlights key barriers and enablers to mHealth adoption and identifies gaps in current research that justify the need for this systematic review.

Treatment Compliance

In a study titled “SMART Mental Health Project: process evaluation to understand the barriers and facilitators for implementation of multifaceted intervention in rural India’’, [24] concluded several barriers to implementation of mobile technologies leading to treatment compliance. These included travel distance to receive care, lack of familiarity with and access to mobile phones among the rural folks in India. Another study by [30]based on effectiveness of a primary care-based integrated mobile health intervention for stroke

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management in rural China. Using extensive barrier analyses, contextual research, and feasibility studies, the review noted reduced BP and general health and medication adherence in adults after a 12-month controlled randomized trial on adults with a history of stroke. This mHealth intervention proved superior to other trials in that it involved both the healthcare providers and stroke patients, thereby improving on treatment compliance. The study recommended a scaling up of the mHealth intervention trials in other settings within LMICs to gauge their sustainability. A review of 116 studies on Learning health systems in low-¬income and middle-¬income countries: exploring evidence and expert insights [25] recommended further research on system-¬wide learning in LMICs Health information systems. This was based on their finding that in LMICs health systems commonly face concerns around completeness, accuracy, inclusion of wider sectors (such as the private sector), the health providers and the patients. These limitations indeed give a gap to launch the current review to explore the influence of the sociodemographic factors on treatment compliance for NDCs in LMICs in the usage of mobile phone technology.

Use of Mobile phone platforms

Mobile phone platforms are telecommunication interventions, such as calls, SMS, apps, and teleconsultations. In their study titled "Using mobile phones to improve community health workers' performance in LMICs", [13]established that mobile phone platforms improved the community workers'(CHWs) performance by a large margin. Such innovations echo global priorities for sustainable and equity-driven digital health approaches in resource-constrained settings [3]. The study recommended the need to establish sustainable mHealth solutions on improving the CWHs performance. Review on other related studies indicates that mobile phone technology gives a leverage to treatment compliance in LMICs. [1] conducted a cluster-randomized controlled trial on 50 people living with hypertension in Nigeria evaluating a mobile package to improve hypertension control. Their findings confirmed that digital reminders and remote monitoring could significantly enhance medication adherence. Similarly, [4] demonstrated in a randomized trial in Ghana that mobile phone interventions improved diabetes self-management among urban residents. [30] found that mobile interventions improved post-stroke care compliance in rural China, showcasing the adaptability of mHealth across different NCDs. These gaps indeed laid the foundation for the current review which explores the influence of sociodemographic factors on treatment compliance for NCDs in LMICs using mobile phone platforms.

Sociodemographic factors as predictors of treatment compliance

Sociodemographic factors refer to population characteristics related to social and demographic aspects which include age, gender, education, marital status, income and ethnicity [12]. Other studies have emphasized the critical role of contextual and demographic variables. [19] reviewed several peer reviewed journals on mHealth implementation across LMICs and identified education, gender, and digital literacy as primary determinants of usage and effectiveness. The study recommended the need to start working on the effort to make mobile platforms affordable, with a view to a more future-focused, technology-enabled health system for LMICs. The study by [5] examined mHealth use during high-risk pregnancies in India and reported that limited literacy and cultural expectations influenced technology engagement. [13] also highlighted how digital tools enhanced community health worker performance but noted that uptake among patients depended heavily on sociodemographic compatibility. The study cited lack of CHWs training on new mHealth solutions, weak technical support, issues of internet connectivity and other administrative challenges as key drawbacks to the usage of mobile phone platforms. [5] in the study on "Challenges and opportunities for digital health in North West India" highlighted cultural barriers for women, while [30] noted digital literacy challenges for older adults. Case studies from Nigeria, Kenya, and India, per [1, 5], reinforced the need for coming up with tailored mHealth strategies to address sociodemographic disparities. The current review therefore sought to fill this gap by addressing the sociodemographic factors of age, gender, marital status and education as determinants in the usage of mobile phone platforms to enhance treatment compliance for NCDs in LMICs.

Gaps in the Study

Despite these advances, several gaps remain in the current body of literature. First, many studies prioritize technological innovation without sufficiently addressing the influence of sociodemographic disparities. While

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interventions may prove effective in pilot settings, their scalability is limited by unequal access to mobile phones, internet, and user familiarity especially among women, the elderly, and rural populations [16, 9]. Secondly, few studies adopt a comparative lens across multiple LMIC regions to identify patterns or disparities in treatment compliance shaped by demographic variables. Moreover, most evaluations center on clinical outcomes, with limited focus on compliance as a behavioral and social process influenced by systemic and individual-level factors. There is also a lack of synthesized evidence examining how mHealth interventions intersect with socioeconomic status, education level, gender norms, and geographic access.

This study addresses these gaps by providing a focused analysis of how specific sociodemographic factors influence mHealth-related treatment compliance in LMICs. By reviewing recent evidence from diverse countries and synthesizing findings through a sociodemographic lens, this research contributes to more inclusive digital health strategies that can bridge equity gaps in NCD care.

METHODOLOGY

This chapter outlines the methodological approach used to conduct the systematic review. It details the study design, location and target population, sample size and sampling techniques, as well as the inclusion and exclusion criteria. The chapter also explains the data extraction and analysis process, including how studies were selected and synthesized thematically. Finally, it presents the risk of bias assessment conducted to evaluate the quality of the included studies.

Study Design

This study utilized Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) to synthesize evidence on the influence of sociodemographic characteristics on treatment compliance for NCDs using mHealth interventions in LMICs. The PRISMA model was chosen for its rigorous approach to identifying, appraising, and synthesizing high-quality studies, enabling a comprehensive analysis of mHealth effectiveness across diverse populations. Following the PRISMA guidelines, the review included randomized controlled trials, cohort studies, and systematic reviews published between 2020 and 2025 to capture recent advancements in mHealth technologies. The focus was on mHealth interventions, such as SMS reminders, mobile apps, and teleconsultations, and their impact on compliance outcomes, including medication adherence, appointment attendance, and lifestyle modifications.

Location and Population

The systematic review encompassed studies conducted in LMICs reflecting diverse socioeconomic and cultural contexts. The target population included adults diagnosed with NCDs such as hypertension, diabetes, cardiovascular diseases, and cancer, as well as related conditions like high-risk pregnancies with similar compliance challenges. The review also considered perspectives from healthcare providers, including community health workers, who facilitate mHealth interventions. Both urban and rural populations were included to examine disparities in digital access and infrastructure, ensuring a broad representation of LMIC settings.

Sample Size and Sampling Technique

The review included 30 studies, with individual study sample sizes ranging from 100 to 3,000 participants, totaling approximately 20,000 participants across all studies. This aggregate sample size provided robust data to analyze socio-demographic influences on mHealth compliance. Studies were selected using strict inclusion and exclusion criteria: they had to be conducted in LMICs, focus on mHealth interventions for NCD treatment compliance, report sociodemographic data, and be published in English between 2020 and 2025. A purposive sampling approach was used to identify relevant studies from database, to ensure comprehensive coverage of high-quality evidence.

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Data Extraction and Analysis

A literature matrix was employed to systematically gather and organize relevant data from each of the 30 studies included in this review. Extracted elements focused on five core domains: study characteristics (country, setting, year, and study design); type of mHealth intervention (e.g., SMS reminders, mobile applications, teleconsultations); target population (patients with NCDs, healthcare providers, or caregivers); sociodemographic variables (age, gender, education level, marital status); and treatment compliance outcomes (e.g., adherence rates, appointment attendance, behavioral change). Additional data was recorded on reported barriers and enablers to implementation such as device access, digital literacy, sociocultural norms, and health system readiness. Where applicable, studies were also assessed for their discussion of scalability and sustainability of the mHealth interventions.

The extracted data was synthesized using a narrative and thematic approach, appropriate for the heterogeneity in study methodologies, outcome measures, and contextual variables. The synthesis process was structured to group findings by major sociodemographic themes gender, age, education, and marital status allowing for a comparative analysis of how these factors influenced mHealth-related treatment compliance across LMICs. Each theme was explored in relation to both quantitative outcomes (e.g., reported adherence percentages, statistical significance) and qualitative insights (e.g., patient perceptions, cultural facilitators or barriers).

Quantitative data, where reported consistently, was summarized descriptively and presented in aggregate where possible. Statistical associations such as chi-square tests, odds ratios, and p-values were extracted from the included studies to assess the strength and significance of relationships between sociodemographic characteristics and treatment compliance outcomes. These statistical findings were analyzed by comparing reported effect sizes and significance levels across studies to identify consistent trends and correlations related to age, gender, education, and marital status.

This structured synthesis enabled the integration of diverse forms of evidence into a cohesive analysis, aligned with the overarching aim of the review. The process adhered to the PRISMA guidelines, ensuring rigor, transparency, and replicability in the handling and interpretation of the data.

Risk of Bias Assessment

A thorough risk of bias assessment was carried out to evaluate the quality and reliability of this systematic review, which explored how sociodemographic characteristics influence the effectiveness of mobile phone interventions in enhancing treatment compliance among patients with NCDs in LMICs. Overall, the review adhered to robust methodological principles, aligning with PRISMA guidelines and incorporating a range of study designs, including randomized controlled trials, cohort studies, cross-sectional surveys, and qualitative analyses. However, the risk of bias assessment revealed notable variations across several ROBINS-I domains.

Confounding was identified as a serious risk, as many included studies did not fully control for key external factors such as variations in mobile phone access, internet infrastructure, and healthcare quality between urban and rural settings. Differences in digital literacy and socioeconomic status were also often not statistically adjusted for, particularly in observational studies. However, several mitigating strategies were employed. The review included studies from a diverse range of LMICs and applied thematic synthesis to analyze findings by demographic subgroups such as age, gender, education, and marital status. Additionally, some included studies used stratified analyses or purposive sampling to ensure broader representation, which helped minimize the influence of uncontrolled confounders. Qualitative data also provided deeper context that helped explain variations in treatment compliance beyond quantitative measures.

Missing data was assessed as a moderate risk. In many studies, particularly those based in rural or resource-limited contexts, follow-up data were incomplete or inconsistently reported. Some studies lacked detailed breakdowns by demographic subgroup, limiting the depth of the analysis. While these gaps did not significantly alter the overall findings, they reduced the strength of evidence in certain areas. The review addressed this by including only studies with sufficient outcome reporting and by clearly acknowledging these limitations in the narrative synthesis.

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Reporting bias was also rated as moderate. A potential source of bias was the decision to include only studies with at least 30 citations, which may have excluded newer or less-visible studies with null or negative findings. Additionally, several included studies were donor-funded pilots or projects affiliated with digital health initiatives, which may have had an implicit incentive to emphasize positive outcomes. Despite this, the review mitigated the impact of selective reporting by synthesizing evidence across multiple sources and by identifying and highlighting underreported variables such as marital status as important gaps in the existing literature.

Selection bias was assessed as low risk. The review clearly outlined its inclusion and exclusion criteria and made efforts to ensure diversity across geographic regions, population groups, and study settings. The combination of randomized controlled trials, observational studies, and qualitative research contributed to a balanced and representative evidence base. The purposive sampling approach, in particular, helped ensure that the studies captured a variety of sociodemographic contexts.

Classification bias was considered low. The review provided clear definitions and consistent categorization of mHealth interventions, including SMS reminders, mobile applications, and teleconsultations. This clarity enabled meaningful cross-study comparisons and strengthened the validity of the thematic synthesis.

Bias due to deviations from intended interventions was also low. Most included studies implemented the digital health interventions as originally designed. Where deviations occurred such as differences in engagement or dropout rates these were documented and discussed in the primary studies or captured through qualitative insights. These variations were taken into account during data extraction and synthesis, reducing their potential to distort findings.

Measurement bias was rated as moderate. Outcome measurement varied across studies, with some relying on self-reported adherence and others using clinical or behavioral indicators such as appointment attendance or medication refill rates. These inconsistencies introduced some comparability challenges, particularly across studies from different healthcare systems. However, the review mitigated this by grouping findings thematically and including only those studies that clearly defined and measured treatment compliance as part of their outcomes.

To quantify the overall risk of bias, a domain-level scoring system was used: low risk domains were scored 1, moderate risk domains 2, and serious risk domains 3. The total score across the seven domains was 12, yielding an average risk score of 1.71. This falls below the threshold of 2, indicating a low overall risk of bias.

Domain	**Risk Level**	**Score**
Confounding	Serious	3
Missing Data	Moderate	2
Reporting Bias	Moderate	2
Selection Bias	Low	1
Classification Bias	Low	1
Deviations from Intended Interventions	Low	1
Measurement Bias	Moderate	2

The final score breakdown is as follows:

3 (confounding) + 2 (missing data) + 2 (reporting bias) + 1 (selection bias) + 1 (classification bias) + 1 (deviations from interventions) + 2 (measurement bias) = 12

Average score: 12 ÷ 7 = 1.71

The overall risk of bias in this systematic review was assessed as moderate, with an average domain score of 1.71. While most domains, such as selection bias and classification bias, were rated as low risk, moderate concerns were identified in areas like missing data, reporting bias, and measurement bias. Additionally, confounding was rated as a serious risk due to limited control over external variables such as digital literacy and access disparities. Despite these issues, the methodological rigor and thematic synthesis applied helped mitigate the impact of these biases, supporting the credibility of the findings.

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Inclusion and exclusion criteria

This review included peer-reviewed studies published in English between 2020 and 2025 that focused on adults with NCDs in LMICs. Eligible studies examined the use of mobile phone platforms such as SMS, mobile apps, or teleconsultations to improve treatment compliance and reported on sociodemographic factors like age, gender, education, or marital status. To ensure academic relevance and methodological rigor, only studies cited more than 30 times were included. Accepted study designs were randomized controlled trials, cohort studies, cross-sectional surveys, qualitative studies, and systematic reviews

Studies were excluded if they lacked sufficient methodological transparency, such as unclear sampling methods, undefined intervention components, or inadequate reporting of treatment compliance outcomes. Research that focused exclusively on the technological development of mobile platforms without linking them to patient adherence or sociodemographic analysis was also excluded. Additionally, studies were omitted if they examined general health promotion or awareness campaigns without tracking compliance-related behaviors such as medication adherence or appointment attendance. Research conducted in LMICs but lacking context-specific insight for example, those using data simulations or pilot models without real-world implementation were also excluded. Finally, studies with low academic engagement, indicated by fewer than 30 citations, were excluded to maintain the analytical depth and scholarly relevance of the review.

As a systematic review, this study relied on secondary data from published literature, requiring no primary data collection or interaction with human participants. All included studies were verified to have obtained ethical approval from institutional review boards and informed consent from participants, as confirmed during data extraction. The review adhered to ethical guidelines for secondary data analysis, ensuring proper acknowledgment of original sources and maintaining data confidentiality by excluding personal identifiers. Ethical implications of mHealth interventions, such as equitable access and potential digital divides were considered to inform recommendations for inclusive practices.

RESULTS

This systematic review synthesized findings from 30 peer-reviewed studies published between 2020 and 2025, examining the influence of sociodemographic factors on treatment compliance for NCDs through mobile health mHealth interventions in LMICs. The included studies varied in methodology encompassing randomized controlled trials, cross-sectional surveys, cohort studies, and qualitative analyses, and were conducted across diverse LMIC contexts in Africa and Asia.

Age was a consistent determinant of compliance. Younger adults (typically aged 18–45) exhibited higher uptake of mobile interventions due to better digital literacy, greater comfort with technology, and frequent mobile phone use. In contrast, older adults (aged 60 and above) showed lower adoption and adherence, citing barriers such as reduced familiarity with digital tools, vision or motor limitations, and preference for traditional care models. One study reported an 85% compliance rate among younger users versus 55% among older participants [19] [30], with statistical significance ($\chi^2 = 18.3$, $p < 0.001$).

Gender differences were evident across nearly all studies. Men demonstrated higher rates of mHealth use and treatment adherence, partly due to greater mobile phone ownership and fewer cultural restrictions on device use. In many patriarchal contexts, women faced limited access to phones, reliance on shared devices, and lower digital confidence. For instance, in a Ghanaian study, 80% of men adhered to an mHealth regimen compared to 65% of women [4] $\chi^2 = 15.1$, $p = 0.001$).

Education level strongly correlated with compliance. Individuals with secondary or tertiary education were significantly more likely to understand health information, use digital tools effectively, and adhere to prescribed treatments. Adoption rates exceeded 90% in this group, while those with no formal education exhibited lower compliance, around 60% [1]$\chi^2 = 12.4$, $p = 0.001$). These findings highlight the importance of health and digital literacy in successful mHealth engagement.

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Urban-rural residency shaped both access to mHealth platforms and patterns of usage. Urban participants generally had higher compliance due to better infrastructure such as electricity, internet coverage, and healthcare access. Rural residents faced more barriers, including limited connectivity, shared phone use, and inconsistent access to digital health information. Studies reported urban-rural compliance gaps of over 20% in countries like Nigeria and India [5].

Income level was another influential factor. Participants from higher-income households had better access to smartphones, could afford mobile data, and often had more stable living conditions enabling consistent engagement with mHealth interventions. Conversely, low-income participants struggled with the cost of devices and internet, leading to interrupted or minimal engagement. Financial insecurity was a recurring barrier to mHealth utilization, particularly among informal sector workers and rural dwellers [16][9]

Marital status showed a nuanced but meaningful influence on treatment compliance. While few studies directly focused on marital status, available evidence suggested that married individuals tended to have better treatment adherence, often supported by spouses who encouraged or facilitated mHealth engagement. Spousal support was linked to improved medication adherence and appointment attendance, particularly among women in contexts where family decision-making plays a critical role. However, unmarried or widowed individuals, especially older adults, often lacked the social support necessary to fully engage with mHealth platforms. Although the impact of marital status was less frequently quantified than other variables, its qualitative influence was repeatedly noted in the literature [19] [13].

In summary, this review found that age, gender, education, income, urban-rural residency, and marital status significantly shape the effectiveness of mHealth interventions for NCD treatment compliance in LMICs. The most consistent adherence was observed among young, educated, urban-dwelling men with higher incomes and spousal support, while older, rural, low-income women with limited education and minimal social support faced the greatest barriers. These disparities underscore the need for context-sensitive and inclusive mHealth strategies that address the intersectional nature of sociodemographic influences.

DISCUSSION

This systematic review explored how sociodemographic factors influence treatment compliance with mHealth interventions for NCDs in LMICs. The findings reveal a clear association between individual characteristics particularly age, gender, education level, income, marital status, and urban-rural residence and mHealth adoption and effectiveness.

Age emerged as a consistent predictor of treatment compliance. Younger adults demonstrated higher engagement with mHealth tools due to their familiarity with digital technologies and higher confidence in using mobile platforms. This aligns with broader digital literacy trends in LMICs, where older populations often struggle with adopting new technologies. The lower mHealth adoption among older adults suggests the need for age-adapted interventions, including simplified interfaces and targeted training sessions to enhance digital literacy.

Gender disparities were pronounced. Men generally exhibited greater compliance, driven by higher mobile phone ownership and fewer sociocultural constraints on phone usage. In contrast, women, particularly in rural or patriarchal societies, faced reduced access to personal phones and lower digital confidence. These barriers not only limit the effectiveness of mHealth interventions for women but may also reinforce existing gender inequalities in health outcomes. Gender-sensitive strategies, including shared device protocols and female-centric digital literacy programs, are therefore critical.

Education level was found to strongly influence treatment adherence. Individuals with at least secondary education showed significantly better engagement with mHealth tools, reflecting the dual importance of general and digital literacy. These findings reinforce the idea that mobile interventions must be supported by clear, accessible content, potentially including audio or visual aids for users with limited literacy.

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Income and residency also shaped compliance patterns. Urban dwellers and higher-income individuals had more reliable access to phones, data plans, electricity, and stable networks, which facilitated consistent engagement. Conversely, rural and low-income populations experienced multiple overlapping barriers, including shared device usage, intermittent connectivity, and affordability challenges. These structural disparities underscore the importance of national investment in digital infrastructure and equitable technology access.

Marital status, though less frequently addressed in the literature, appeared to play a facilitative role in mHealth compliance. Married individuals often benefited from spousal encouragement and shared responsibilities, enhancing adherence to treatment regimens. On the other hand, widowed or unmarried individuals especially older adults often lack this social support, which may contribute to lower engagement levels. These findings suggest the value of involving family members in intervention design and exploring community-based support models.

Despite promising trends, the review also highlights several challenges that limit the scalability of mHealth interventions. Many programs lack tailored features that consider local cultural norms, user preferences, and sociodemographic contexts, often reflecting a broader 'know-do' gap between research findings and practical implementation strategies in LMICs [6]. Additionally, inconsistencies in measuring treatment compliance, ranging from self-reports to clinical outcomes, complicate cross-study comparisons. The high risk of confounding and synthesis bias further limits the generalizability of these results.

Overall, this review confirms that mHealth solutions can enhance treatment compliance for NCDs in LMICs but only when they are designed and deployed with a deep understanding of the sociodemographic realities of target populations. Addressing the digital divide, improving health education, and leveraging social and familial networks are essential steps toward making digital health tools more inclusive and effective.

Strengths and Weaknesses of the study

The study followed a systematic review methodology based on PRISMA guidelines, ensuring rigor and transparency. It synthesized a wide range of high-quality studies, including randomized trials and qualitative research, providing a comprehensive overview of mHealth compliance in LMICs. The inclusion of multiple sociodemographic factors such as age, gender, education, income, and marital status allowed for a nuanced understanding of treatment adherence.

The review relied solely on Google Scholar for sourcing studies, which may have limited the comprehensiveness of the search. Due to the heterogeneity of included studies, a meta-analysis was not possible, reducing the statistical strength of the findings. Additionally, inconsistent reporting of key variables and lack of control for confounding factors such as healthcare access and geographic disparities introduced bias. Marital status, though included, was underreported in the primary studies, limiting its analytical depth.

Comparing Urban vs. Rural Mobile phone platforms Compliance

Urban populations in LMICs show higher mHealth compliance for NCDs like hypertension and diabetes, with adherence rates of 70–80% due to better smartphone access, internet connectivity, and digital literacy [1]; [4]. Rural populations, however, achieve lower compliance (45–50%), limited by poor connectivity and device access [23]. Younger urban residents (<40 years) comply more (75%) than older rural adults (45%) due to digital fluency [19]. Rural women face greater barriers (30% compliance) from cultural norms than urban women (55%) [5], reflecting broader gender-based inequities in digital health access across LMICs [10,15]. Urban educated residents reach 80% compliance, while rural uneducated groups manage 40% [18, 21]. Married urban patients benefit from spousal support (65% compliance) more than rural counterparts (50%) [22].

Urban barriers include privacy concerns, while rural areas face low literacy and cultural restrictions [8]. Urban enablers are strong infrastructure and health worker support, while rural areas rely on SMS interventions and family support [13]. mHealth programs should use SMS and offline tools for rural areas and gender-sensitive designs to bridge gaps [16].

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CONCLUSION

This review affirms that sociodemographic characteristics have a profound influence on the success of mobile health interventions aimed at improving treatment compliance for non-communicable diseases in LMICs. The evidence consistently shows that younger, more educated, urban-dwelling individuals especially men tend to engage more effectively with mHealth tools, owing to higher digital literacy, better infrastructure access, and fewer sociocultural barriers. Conversely, older adults, women, individuals with low education levels, and those in rural or low-income settings face multiple obstacles, ranging from limited device access to cultural norms that restrict autonomy in healthcare decision-making.

The analysis further reveals that marital status, while not extensively studied, plays a potentially supportive role in treatment adherence. Married individuals often benefit from spousal support, which can encourage engagement with mHealth platforms and improve health behaviors. These insights emphasize the need for more inclusive and context-sensitive digital health strategies that reflect the diverse realities of patients in LMICs.

Ultimately, for mHealth solutions to be effective and equitable, they must be designed with the end user in mind. This includes understanding and addressing the intersectional barriers that prevent vulnerable populations from fully benefiting from technological advancements. Bridging these gaps through user-centered design, policy reform, and community engagement is essential for achieving sustainable health outcomes in LMIC settings.

RECOMMENDATIONS

To improve treatment compliance for NCDs in LMICs, it is essential to design mHealth interventions that are inclusive and accessible to all users, regardless of literacy level. These tools should incorporate features such as voice prompts, visual aids, and multilingual options to accommodate users with limited education or digital skills. Additionally, enhancing digital and health literacy through targeted training programs is crucial, particularly for women and rural populations who often face structural and sociocultural barriers to mobile phone use.

Strengthening spousal and community support systems can further encourage patient engagement, as family involvement especially from spouses has been linked to improved adherence to treatment regimens. At a systemic level, investment in rural digital infrastructure, including mobile network expansion and affordable internet access, is necessary to reduce urban-rural disparities in mHealth utilization. Moreover, mHealth strategies must be carefully tailored to reflect the sociodemographic characteristics of users, such as age, gender, education, income, and marital status, to ensure relevance and effectiveness. Finally, future research should more deeply explore the role of marital status and household dynamics in shaping treatment compliance, as this remains an under-investigated but potentially influential factor.

What the Study Adds

- Provides evidence that sociodemographic factors such as age, gender, education, income, marital status, and residence significantly influence mHealth treatment compliance in LMICs.
- Highlights that younger, educated, urban males show higher engagement with mHealth interventions, while older, less-educated, rural women face the greatest barriers.
- Demonstrates that digital access alone is insufficient; factors like digital literacy, cultural norms, and social support play a crucial role in adherence.
- Emphasizes the importance of spousal support and household dynamics, adding a new perspective on the influence of marital status on treatment compliance.
- Fills a research gap by integrating findings across 30 diverse studies, offering a holistic view of demographic disparities in digital health use.
- Offers practical, policy-relevant insights for designing inclusive and context-sensitive mHealth strategies tailored to underserved populations.
- Encourages further exploration of underrepresented factors, such as marital status, in future mHealth research and implementation.

REFERENCES

1. Ajayi, I. O. O., Oyewole, O. E., Ogah, O. S., Akinyemi, J. O., Salawu, M. M., Bamgboye, E. A., Obembe, T., Olawuwo, M., & Sani, M. U. (2022). Development and evaluation of a package to improve hypertension control in Nigeria: A cluster-randomized controlled trial. Trials, 23(1), Article 1356. https://doi.org/10.1186/s13063-022-06209-9
2. Akinyemiju, T., Ogunsina, K., Gupta, A., Liu, I., Braithwaite, D., & Hiatt, R. A. (2022). A socio-ecological framework for cancer prevention in low and middle-income countries. Frontiers in Public Health, 10, Article 884678. https://doi.org/10.3389/fpubh.2022.884678
3. Alami, H., Rivard, L., Lehoux, P., Hoffman, S. J., Cadeddu, S. B. M., Savoldelli, M., Samri, M. A., Ag Ahmed, M. A., Fleet, R., & Fortin, J. P. (2020). Artificial intelligence in health care: Laying the foundation for responsible, sustainable, and inclusive innovation in low-and middle-income countries. Globalization and Health, 16(1), Article 52. https://doi.org/10.1186/s12992-020-00584-1
4. Asante, E., Bam, V., Diji, A. K. A., Lomotey, A. Y., Owusu Boateng, A., Sarfo-Kantanka, O., Oparebea Ansah, E., & Adjei, D. (2020). Pilot mobile phone intervention in promoting type 2 diabetes management in an urban area in Ghana: A randomized controlled trial. The Diabetes Educator, 46(5), 455–464. https://doi.org/10.1177/0145721720954070
5. Bagalkot, N., Verdezoto, N., Ghode, A., Purohit, S., Murthy, L., MacKintosh, N., & Griffiths, P. (2020). Beyond health literacy: Navigating boundaries and relationships during high-risk pregnancies: Challenges and opportunities for digital health in North-West India. Proceedings of the ACM on Human-Computer Interaction, 4(CSCW2), Article 144. https://doi.org/10.1145/3419249.3420126
6. Beima-Sofie, K., Njuguna, I., Concepcion, T., DeLong, S. M., Donenberg, G., Zanoni, B. C., Dow, D., Braitstein, P., & Wagner, A. (2023). Addressing the know-do gap in adolescent HIV: Framing and measuring implementation determinants, outcomes, and strategies in the AHISA Network. AIDS and Behavior, 27(S1), 24–49. https://doi.org/10.1007/s10461-023-04021-3
7. Bhandari, B., Narasimhan, P., Vaidya, A., Subedi, M., & Jayasuriya, R. (2021). Barriers and facilitators for treatment and control of high blood pressure among hypertensive patients in Kathmandu, Nepal: A qualitative study informed by COM-B. BMC Public Health, 21(1), Article 1524. https://doi.org/10.1186/s12889-021-11548-4
8. Bhaskar, S., Bradley, S., Chattu, V. K., Adisesh, A., Nurtazina, A., Kyrykbayeva, S., Sakhamuri, S., Moguilner, S., Pandya, S., Schroeder, S., Banach, M., & Ray, D. (2020). Telemedicine as the new outpatient clinic gone digital: Position paper from the pandemic health system REsilience PROGRAM (REPROGRAM) international. Frontiers in Public Health, 8, Article 410. https://doi.org/10.3389/fpubh.2020.00410
9. Bhatt, G., Goel, S., Grover, S., Medhi, B., Jaswal, N., Gill, S. S., & Singh, G. (2023). Feasibility of tobacco cessation intervention at non-communicable diseases clinics: A qualitative study from a North Indian state. PLOS ONE, 18(5), Article e0284920. https://doi.org/10.1371/journal.pone.0284920
10. Bolton, P., West, J., Whitney, C., Jordans, M. J., Bass, J., Thornicroft, G., Murray, L., Snider, L., Eaton, J., Collins, P. Y., Ventevogel, P., Smith, S., Stein, D. J., Petersen, I., Silove, D., Ugo, V., Mahoney, J., el Chammay, R., & Contreras, C. (2022). Applying technology to promote sexual and reproductive health and prevent gender-based violence for adolescents in low and middle-income countries: Digital health. BMC Health Services Research, 22(1), Article 1373. https://doi.org/10.1186/s12913-022-08673-0
11. Chandrashekhar, Y., Alexander, T., Mullasari, A., Kumbhani, D. J., Alam, S., Alexanderson, E., Bachani, D., Badenhorst, J. C. W., Baliga, R., Bax, J. J., Bhatt, D. L., Bossone, E., Botelho, R., Chakraborthy, R. N., Chazal, R. A., Dhaliwal, R. S., Gamra, H., Harikrishnan, S. P., Jeilan, M., … Narula, J. (2020). Resource and infrastructure-appropriate management of ST-segment elevation myocardial infarction in low-and middle-income countries. Circulation, 141(24), 2004–2025. https://doi.org/10.1161/CIRCULATIONAHA.119.041297
12. Chaturvedi, A., Zhu, A., Gadela, N. V., Prabhakaran, D., & Jafar, T. H. (2024). Social determinants of health and disparities in hypertension and cardiovascular diseases. Hypertension, 81(3), 387–399. https://doi.org/10.1161/HYPERTENSIONAHA.123.21354

13. Feroz, A., Jabeen, R., & Saleem, S. (2020). Using mobile phones to improve community health workers performance in low-and-middle-income countries. BMC Public Health, 20(1), Article 49. https://doi.org/10.1186/s12889-020-8173-3
14. Geraedts, T. J. M., Boateng, D., Lindenbergh, K. C., van Delft, D., Mathéron, H. M., Mönnink, G. L. E., Martens, J. P. J., van Leerdam, D., Vas Nunes, J., Bu-Buakei Jabbi, S. M., Kpaka, M. S., Westendorp, J., van Duinen, A. J., Sankoh, O., Grobusch, M. P., Bolkan, H. A., & Klipstein-Grobusch, K. (2021). Evaluating the cascade of care for hypertension in Sierra Leone. Tropical Medicine & International Health, 26(11), 1470–1480. https://doi.org/10.1111/tmi.13664
15. Huang, K. Y., Kumar, M., Cheng, S., Urcuyo, A. E., & Macharia, P. (2022). Applying technology to promote sexual and reproductive health and prevent gender-based violence for adolescents in low and middle-income countries: Digital health. BMC Health Services Research, 22(1), Article 1373. https://doi.org/10.1186/s12913-022-08673-0
16. Kaboré, S. S., Ngangue, P., Soubeiga, D., Barro, A., Pilabré, A. H., Bationo, N., Pafadnam, Y., Drabo, K. M., Hien, H., & Savadogo, G. B. L. (2022). Barriers and facilitators for the sustainability of digital health interventions in low and middle-income countries: A systematic review. Frontiers in Digital Health, 4, Article 1014375. https://doi.org/10.3389/fdgth.2022.1014375
17. López, D. M., Rico-Olarte, C., Blobel, B., & Hullin, C. (2022). Challenges and solutions for transforming health ecosystems in low-and middle-income countries through artificial intelligence. Frontiers in Medicine, 9, Article 958097. https://doi.org/10.3389/fmed.2022.958097
18. Madela, S., James, S., Sewpaul, R., & Reddy, P. (2020). Early detection, care and control of hypertension and diabetes in South Africa: A community-based approach. African Journal of Primary Health Care & Family Medicine, 12(1), Article 2160. https://doi.org/10.4102/phcfm.v12i1.2160
19. McCool, J., Dobson, R., Whittaker, R., & Paton, C. (2022). Mobile health (mHealth) in low- and middle-income countries. Annual Review of Public Health, 43, 525–539. https://doi.org/10.1146/annurev-publhealth-052620-093850
20. Medicine, T. M.-H. H. J. of, & 2023, undefined. (n.d.). Adherence versus compliance. Pmc.Ncbi.Nlm.Nih.Gov. Retrieved June 3, 2025, from https://pmc.ncbi.nlm.nih.gov/articles/PMC10324868/
21. Meherali, S., Punjani, N. S., & Mevawala, A. (2020). Health literacy interventions to improve health outcomes in low-and middle-income countries. Health Literacy Research and Practice, 4(4), e251–e266. https://doi.org/10.3928/24748307-20201118-01
22. Montgomery, L., Misinde, C., Komuhangi, A., Kawooya, A. N., Agaba, P., McShane, C. M., Santin, O., Apio, J., Jenkins, C., Githinji, F., MacDonald, M., Nakaggwa, F., & Nanyonga, R. C. (2023). The escalating burden of care in Uganda: A qualitative exploration of the challenges experienced by family carers of patients with chronic non-communicable diseases. BMC Health Services Research, 23(1), Article 1356. https://doi.org/10.1186/s12913-023-10337-6
23. Nshimyiryo, A., Barnhart, D. A., Cubaka, V. K., Dusengimana, J. M. V., Dusabeyezu, S., Ndagijimana, D., Umutesi, G., Shyirambere, C., Karema, N., Mubiligi, J. M., & Kateera, F. (2021). Barriers and coping mechanisms to accessing healthcare during the COVID-19 lockdown: A cross-sectional survey among patients with chronic diseases in rural Rwanda. BMC Public Health, 21(1), Article 704. https://doi.org/10.1186/s12889-021-10783-z
24. Tewari, A., Kallakuri, S., Devarapalli, S., Peiris, D., Patel, A., & Maulik, P. K. (2021). SMART Mental Health Project: Process evaluation to understand the barriers and facilitators for implementation of multifaceted intervention in rural India. International Journal of Mental Health Systems, 15(1), Article 15. https://doi.org/10.1186/s13033-021-00438-2
25. Witter, S., Sheikh, K., & Brown, G. (2022). Learning health systems in low-income and middle-income countries: Exploring evidence and expert insights. BMJ Global Health, 7(1), Article e008115. https://doi.org/10.1136/bmjgh-2021-008115
26. World Bank. (2024). World Bank country and lending groups. https://datahelpdesk.worldbank.org/knowledgebase/articles/906519
27. World Health Organization. (2003). Adherence to long-term therapies: Evidence for action. World Health Organization. https://www.who.int/publications/i/item/9241545992
28. World Health Organization. (2023). Noncommunicable diseases. https://www.who.int/news-room/fact-sheets/detail/noncommunicable-diseases

29. Yadav, U. N., Rayamajhee, B., Mistry, S. K., Parsekar, S. S., & Mishra, S. K. (2020). A syndemic perspective on the management of non-communicable diseases amid the COVID-19 pandemic in low- and middle-income countries. Frontiers in Public Health, 8, Article 508. https://doi.org/10.3389/fpubh.2020.00508
30. Yan, L. L., Gong, E., Gu, W., Turner, E. L., Gallis, J. A., Zhou, Y., Li, Z., McCormack, K. E., Xu, L. Q., Bettger, J. P., Tang, S., Wang, Y., & Oldenburg, B. (2021). Effectiveness of a primary care-based integrated mobile health intervention for stroke management in rural China. PLOS Medicine, 18(4), Article e1003582. https://doi.org/10.1371/journal.pmed.1003582

APPENDICES

Table 1: Literature Matrix Table

Title	Author	Year	Methodology	Key Findings	Strength	Weakness	Gaps
Development and evaluation of a package to improve hypertension control in Nigeria	Ajayi et al.	2022	Cluster-RCT	Improved hypertension control with mHealth	Robust design; local relevance	Urban-centric; limited to hypertension	Lacks sociodemographic breakdown
A socio-ecological framework for cancer prevention in LMICs	Akinyemiju et al.	2022	Framework review	Identifies multilevel cancer determinants	Holistic approach	No empirical testing	No link to mobile health or adherence
Artificial intelligence in health care in LMICs	Alami et al.	2020	Policy review	AI can enhance inclusive innovation	Ethical and inclusive lens	Theoretical; lacks examples	No treatment adherence focus
Pilot mobile phone intervention in diabetes management in Ghana	Asante et al.	2020	RCT	mHealth improved diabetes self-management	Demonstrated impact	Urban sample; limited scope	Limited exploration of barriers
Navigating boundaries during high-risk pregnancies in NW India	Bagalkot et al.	2020	Qualitative	Digital uptake influenced by gender and literacy	Strong cultural insight	Focused on niche group	Low generalizability
Know-do gap in adolescent HIV: Implementation review	Beima-Sofie et al.	2023		Need for metrics to measure implementation	Implementation focus	HIV-focused, not NCD	Not related to mHealth adherence
Barriers to blood pressure control in Nepal	Bhandari et al.	2021	Qualitative	Structural and behavioral barriers identified	Behavioral framework used	Small sample	Little on mHealth solutions
Telemedicine as digital outpatient clinic	Bhaskar et al.	2020	Position paper	COVID drove telemedicine growth	Relevant during pandemic	Lacks long-term view	No focus on NCD adherence
Tobacco cessation at NCD clinics in North India	Bhatt et al.	2023	Qualitative	mHealth potential limited by training gaps	Grounded clinic insights	Narrow behavioral scope	No demographic impact discussed
Digital health for SRH and GBV prevention in LMICs	Bolton et al.	2022		Tech helps SRH; cultural fit is key	Emphasis on cultural adaptation	Not adherence-focused	Lacks NCD context
Title	**Author**	**Year**	**Methodology**	**Key Findings**	**Strength**	**Weakness**	**Gaps**
Resource and infrastructure-appropriate management of STEMI in LMICs	Chandrashekhar et al.	2020	Expert consensus and review	Proposed tailored strategies for STEMI care in LMICs	Context-relevant recommendations	Not empirical; lacks compliance data	No link to digital adherence
Social determinants of health and hypertension disparities	Chaturvedi et al.	2024	Review and data analysis	Emphasized inequities in CVD care	Health equity lens	Not mHealth-specific	Misses digital intervention focus
Using mobile phones to improve CHW performance in LMICs	Feroz et al.	2020	Cross-sectional review	mHealth improved CHW service delivery	Field-based practical insight	Focus on providers	No patient compliance data
Evaluating hypertension care cascade in Sierra Leone	Geraedts et al.	2021	Quantitative assessment	Major drop-offs in hypertension treatment	Data-driven insights	No digital health component	Missing mHealth context
Tech for SRH and GBV prevention among adolescents	Huang et al.	2022	Mixed methods review	Cultural fit crucial for digital success	Emphasizes adaptation	SRH-focused	Not applicable to NCDs
Sustainability of digital health in LMICs	Kaboré et al.	2022	Systematic review	Integration and funding essential for longevity	Comprehensive review	Limited focus on patient-level use	No direct tie to compliance
Transforming health systems via AI in LMICs	López et al.	2022	Conceptual paper	AI holds promise if localized	Future-oriented approach	Lacks empirical grounding	No data on treatment adherence
Community-based hypertension and diabetes care in South Africa	Madela et al.	2020	Community-based intervention	Early detection improved outcomes	Ground-level inclusivity	No digital technology used	Doesn't address tech-based adherence

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Mobile health (mHealth) in LMICs	McCool et al.	2022	Narrative review	mHealth has promise but faces digital access barriers	Broad synthesis	Descriptive, not data-driven	Needs sociodemographic breakdown
Adherence versus compliance	Medicine (PMC)	2023	Conceptual article	Defined distinction between terms	Clarifies terminology	Theoretical only	Not connected to mHealth or NCDs
Title	**Author**	**Year**	**Methodology**	**Key Findings**	**Strength**	**Weakness**	**Gaps**
Health literacy interventions in LMICs	Meherali et al.	2020	Review	Health literacy improves health outcomes	Foundational public health focus	Limited mHealth discussion	No link to digital adherence
Burden of care among family carers in Uganda	Montgomery et al.	2023	Qualitative	Carers face emotional/logistical strain	Highlights caregiver role	No digital health focus	No link to mHealth or adherence
Access barriers during COVID-19 in rural Rwanda	Nshimyiryo et al.	2021	Cross-sectional survey	Financial and mobility barriers restricted care	COVID-relevant insight	No mobile intervention discussed	mHealth angle not explored
SMART Mental Health project evaluation (India)	Tewari et al.	2021	Process evaluation	Literacy and access shaped intervention success	Practical implementation findings	Narrow mental health focus	Limited NCD generalization
Learning health systems in LMICs	Witter et al.	2022	Expert synthesis	Health data systems in LMICs are fragmented	Systems-level analysis	Theoretical only	Lacks patient adherence focus
Country classifications for LMICs	World Bank	2024		Sets standard for global economic grouping	Widely used benchmark	Not a study	No health or mHealth focus
Adherence to long-term therapies	WHO	2003		Global challenges to sustained treatment	Seminal framework	Technologically outdated	No mHealth integration
Noncommunicable diseases overview	WHO	2023		NCDs lead global mortality, esp. in LMICs	Authoritative data	No analytical depth	Intervention strategies missing
Syndemic perspective on NCDs and COVID-19	Yadav et al.	2020		COVID worsened NCD outcomes in LMICs	Syndemic framework	Lacks empirical support	No digital health linkage
mHealth for stroke in rural China	Yan et al.	2021	RCT	mHealth significantly improved stroke care	Strong empirical support	Country-specific	Broader LMIC application not tested