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Family-Involved and Telenursing-Supported Self-Management for Older Adults with Hypertension in Low- and Middle-Income Countries: A Rapid Scoping Review

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Abstract

Background: Hypertension is common and poorly controlled among older adults in low- and middle-income countries (LMICs), where families provide much of the daily care and digital health services are expanding. Family-involved and telenursing-supported self-management have each been studied, but their evidence has not been mapped together for older adults in LMICs.

Purpose: To map family-involved and telenursing or digital self-management interventions for older adults with hypertension in LMICs, including intervention components, outcomes, populations, and evidence gaps.

Methods: We conducted a rapid scoping review guided by the Joanna Briggs Institute approach and reported according to PRISMA-ScR. Consensus, a semantic search engine for academic literature, was searched with four queries on 30 October 2026 and supplemented by web searches. One reviewer screened 38 unique records on title and abstract. Study characteristics, intervention components, and outcomes were charted from abstracts and available source pages.

Results: Ten studies published between 2015 and 2026 were included: seven family-involved interventions and three telenursing or digital interventions, conducted in Indonesia, Iran, Thailand, and Jordan. Four studies were randomized and six were quasi-experimental. Blood pressure was the most frequent outcome (eight studies), followed by self-management or self-care (five) and quality of life (three). No study combined family involvement with a telenursing or digital component. Caregiver-level outcomes were not reported in the retrieved abstracts, and follow-up did not exceed three months where it was reported.

Conclusions: The evidence is small, limited to short follow-up, and methodologically uneven. Family-involved and digital approaches have developed in parallel. Trials that integrate family roles with telenursing, measure caregiver and implementation outcomes, and follow participants for longer are needed, and a full multi-database review should confirm these findings.

Keywords: older adults; hypertension; self-management; family; telenursing; low- and middle-income countries; scoping review

Introduction

Hypertension is common in later life and hard to control in many low- and middle-income countries (LMICs). A recent scoping review described older adults as the age group with the highest burden of

hypertension (Isnaini et al., 2025). Estimates summarized by Li et al. (2020) suggest that about 37% of people with hypertension in LMICs are diagnosed, 29% are treated, and 8% reach blood pressure control, against 67%, 55%, and 28% in high-income countries. Those figures predate most of the studies reviewed here and indicate the size of the care gap rather than current prevalence.

Nurses can act on self-management in the community. In older adults, however, blood pressure control is limited by clinical complexity, limited health literacy, and difficulty adhering to treatment. A systematic review of self-care interventions in this age group, mostly from Asia, concluded that multicomponent programs combining home blood pressure monitoring, nurse-led support, and family involvement appeared to work best in community and primary care (Zulfitri et al., 2026).

Two bodies of work bear on this question. The first treats the family as a partner in care. A meta-analysis of 19 studies in adults with hypertension reported pooled reductions of 7.74 mmHg in systolic and 3.74 mmHg in diastolic blood pressure with family-based interventions, with high heterogeneity for systolic pressure (I^2 = 95%), and none of the included studies came from a low-income country (Kebebew et al., 2026). A scoping review of family-centered education for older adults identified 11 articles, searched to 2022, and reported lower blood pressure and greater self-efficacy (Isnaini et al., 2025).

The second body of work uses telenursing and digital tools. A scoping review of seven studies, searched to May 2023, mapped what telenursing contributes to cardiovascular risk management in older adults with hypertension (Dias et al., 2024). A scoping review of telehealth for hypertension in primary care found that telemonitoring was the most common approach, followed by teleconsultation (Idris et al., 2024).

Each of these syntheses addresses one strand, and none restricts itself to older adults in LMICs while covering both. The review that came closest asked an effectiveness question about blood pressure and, judging from its abstract, did not map family roles, delivery modes, or outcomes across settings (Zulfitri et al., 2026). It is therefore unclear what has been tested for older adults who depend on relatives for daily care, in health systems where digital services are expanding at an uneven pace. This review maps family-involved and telenursing or digital self-management interventions for older adults with hypertension in LMICs. It asks (1) which interventions have been tested and how they were delivered, (2) which outcomes were measured, (3) which populations and settings are represented, and (4) where the evidence gaps lie, including whether family involvement and digital delivery have been combined.

Materials and Methods

Design

We conducted a rapid scoping review using the Joanna Briggs Institute (JBI) methodological guidance (Peters et al., 2020) and reported it according to the PRISMA extension for scoping reviews (Tricco et al., 2018). We chose a rapid approach to map the field in a short time and describe the resulting simplifications under Limitations. We did not register the protocol in advance.

Eligibility criteria

Eligibility followed the Population, Concept, and Context (PCC) framework (Table 1). We defined LMICs according to the World Bank classification (World Bank, 2026). An older adult was a person aged 60 years or more, or a person described as older or elderly by the study authors when the reported age range did not include people younger than 60.

Table 1. *Eligibility criteria based on the PCC framework*

Element	Criteria
Population	Older adults with diagnosed hypertension. Excluded: general adult samples, samples that included people younger than 60, and people at risk of hypertension without a diagnosis.
Concept	Interventions to support self-management, self-care, or related education for hypertension that (a) involved family members or caregivers as participants or active partners, or (b) were delivered through telenursing, mobile health, or other digital means. Any outcome was eligible.
Context	Any setting in an LMIC, including community, primary care, home, and hospital outpatient settings.
Study type	Primary studies reporting intervention results (randomized or quasi-experimental). Excluded: reviews, protocols, cross-sectional or other non-intervention studies.
Language and date	English-language queries; no date limit.

Note. PCC = Population, Concept, Context; LMIC = low- and middle-income country.

Information sources and search

We searched Consensus, a semantic search engine that draws on Semantic Scholar, OpenAlex, and PubMed, with four queries on 30 October 2026 (Table 2). Each query returned up to 10 records. On the same date we ran four supplementary web searches combining the same concepts and scanned their results for primary intervention studies. We did not search reference lists of included studies.

Table 2. *Search strategy*

Source	Query	Records
Consensus	family-involved self-management intervention older adults hypertension blood pressure randomized trial	10
Consensus	family caregiver support medication adherence elderly hypertension intervention low- and middle-income countries	10
Consensus	telenursing or mHealth self-management older adults hypertension community Indonesia	10
Consensus	family empowerment or family-centered nursing intervention elderly hypertension quasi-experimental blood pressure Indonesia Iran Egypt	10
Web search	Four queries combining digital health, telehealth, family support, medication adherence, self-management, low- and middle-income countries, and Indonesia with hypertension in older adults	1 additional record

Note. Two queries named specific countries, which may over-represent those settings.

Study selection

One reviewer screened titles and abstracts against the criteria in Table 1. We did not retrieve full texts. If an abstract left age or country unclear for a study that otherwise met the criteria, we consulted the publisher page when one was available. Records that stayed unclear were set aside and are listed in the Appendix.

Data charting and synthesis

We charted country, design, sample size, population, intervention components, the role of the family, digital or telenursing components, duration and follow-up, outcomes, and the main findings as reported. Results are presented as counts and a narrative synthesis. We did not pool effects or appraise study quality, in line with scoping review guidance (Peters et al., 2020).

Ethical consideration

This review used only published literature, and ethical approval was not required.

Results

Study selection

Consensus returned 40 records across four queries, and web searches added one, giving 41 records. After three duplicates were removed, 38 records were screened (Figure 1). We excluded 23: eight reviews, two protocols, six studies without an intervention, and seven whose population did not meet the criteria. Of the remaining 15 records, ten were charted. Five could not be classified from the abstract because age was not stated (Sakinah et al., 2020; Widyastuti et al., 2025; Hermawan et al., 2024; Zeng et al., 2024) or country was not stated (Luthfa et al., 2024), and they were not charted.

Two exclusions came close to the review question. Risnah et al. (2026) combined nurse-led virtual coaching with family caregivers but enrolled adults aged 30 to 65 years. Ghozali et al. (2025) tested mHealth education in patients described as elderly, but the reported ages began at 46 years.

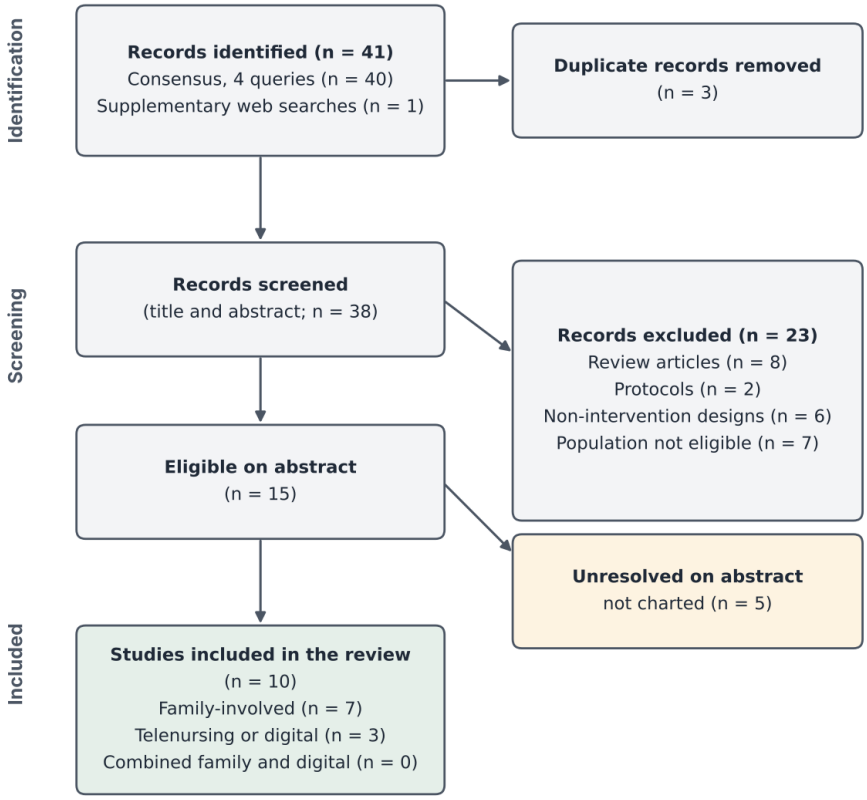


Figure 1. *Flow of records through the review*

Characteristics of included studies

The ten studies were published between 2015 and 2026, six of them in 2025 (Table 3). Five were conducted in Indonesia, three in Iran, and one each in Thailand and Jordan; for one Indonesian study (Safitri et al., 2025) the country was inferred from the publication venue and needs confirmation. None came from a low-income country. Four studies were randomized and six were quasi-experimental, one of which had no control group (Yuda et al., 2024). Sample sizes ranged from 42 to 120 participants in eight studies. One study enrolled 141 older person and caregiver dyads (Kamaryati et al., 2025), and one did not report sample size in the retrieved

text (Yuda et al., 2025). Three of the four randomized studies reported trial registration (Noorollahi et al., 2025; Alsaqer et al., 2022; Mohammadzadeh et al., 2026). Table 3

Family-involved interventions

Seven studies involved family members, and the family took three forms. In family education or empowerment programs, relatives received structured education or a module and then supported the older person at home (Keshvari et al., 2015; Yuda et al., 2024; Yuda et al., 2025; Suprayitno et al., 2025). The Yuda studies lasted one month. In dyadic programs, older adults and caregivers were trained together over 8 to 12 weeks (Kamaryati et al., 2025; Safitri et al., 2025). One nurse-led model added self-help groups and at least two home visits to individual and family education sessions (Noorollahi et al., 2025).

All seven reported a favorable change in at least one outcome. In the trial by Noorollahi et al. (2025), self-management scores and blood pressure were better in the intervention group than in the control group immediately after the program and at three months. Kamaryati et al. (2025) reported greater improvement in knowledge, self-management behavior, blood pressure, and health-related quality of life than in the control group. Safitri et al. (2025) reported falls of 20.86 mmHg in systolic and 10.19 mmHg in diastolic pressure in the intervention group, with 66.7% reaching control compared with 23.8% in the control group. In the study by Keshvari et al. (2015), blood pressure changed significantly in both groups, whereas empowerment scores rose only in the intervention group. The Yuda studies and Suprayitno et al. (2025) reported changes in blood pressure, quality of life, and daily living activities, in part through within-group tests.

Telenursing and digital interventions

Three studies used telenursing or digital delivery, and none involved family members in the abstracts retrieved. Moolsart & Kritpolviman (2025) linked a smartphone application to a smartwatch that recorded blood pressure, steps, and sleep, with telenursing by video call; mean arterial pressure was lower in the intervention group, but hypertension-controlling behavior did not differ between groups. Alsaqer et al. (2022) compared public health nursing plus mobile applications, applications alone, and standard care in a three-arm trial; systolic pressure and self-care improved more in the intervention group, but diastolic pressure did not differ. Mohammadzadeh et al. (2026) compared group training, telenursing, and control, and both intervention groups showed lower blood pressure and better medication and dietary adherence at the later assessments.

Outcomes measured

Blood pressure was the most common outcome (Table 4), measured as systolic, diastolic, or mean arterial pressure in eight studies. Self-management, self-care, or hypertension-controlling behavior was measured in five studies, quality of life in three, knowledge or empowerment in two, and medication and dietary adherence, daily living activities, and satisfaction in one study each. No study reported caregiver-level outcomes such as burden, self-efficacy, or quality of life in the retrieved abstracts, and none reported cost or implementation outcomes beyond satisfaction. Follow-up, where reported, did not exceed three months.

Table 4. *Outcome domains by intervention modality (number of studies)*

Outcome domain	Family-involved (n = 7)	Telenursing or digital (n = 3)	Combined (n = 0)
Blood pressure (SBP, DBP, or MAP)	5	3	0
Self-management, self-care, or behavior	3	2	0
Quality of life	2	1	0
Knowledge or empowerment	2	0	0
Medication or dietary adherence	0	1	0
Daily living activities	1	0	0
Satisfaction	0	1	0
Caregiver-level outcomes	0	0	0
Cost or implementation outcomes	0	0	0

Note. Studies could report more than one outcome. SBP = systolic blood pressure; DBP = diastolic blood pressure; MAP = mean arterial pressure. Counts are based on abstracts and available source pages.

Evidence gaps

We found four gaps. First, no study combined family involvement with a telenursing or digital component in older adults. Second, caregiver outcomes were not reported. Third, follow-up was short, and designs were weak in places: six of ten studies were quasi-experimental and one had no control group. Fourth, the evidence comes from four middle-income countries. The two reports by Yuda and colleagues share authors, eligibility criteria, and a one-month intervention, so they may draw on the same participants; we charted them separately and flag the overlap.

Discussion

In this rapid scoping review, ten studies from Indonesia, Iran, Thailand, and Jordan evaluated family-involved or telenursing and digital self-management for older adults with hypertension. Family involvement was the dominant approach, and no study combined it with a telenursing or digital component. Blood pressure was the usual outcome, caregiver outcomes were absent from the retrieved data, and follow-up did not exceed three months where reported. Family involvement and digital delivery appear to have been studied in separate lines of work.

The family-involved studies point in the same direction as earlier syntheses. Kebebew et al. (2026) pooled 19 studies in adults and reported lower blood pressure with family-based interventions, and Isnaini et al. (2025) reported lower blood pressure and greater self-efficacy in a scoping review of family-centered education for older adults. Our set adds recent trials from Indonesia and Iran, but it also shows how thin the evidence is for older adults: one-month programs, small samples, and in several studies only within-group tests. The direction of results is promising and should not be read as established. That all included studies came from middle-income countries also echoes the observation by Kebebew et al. (2026) that evidence from low-income countries is missing.

The three telenursing or digital studies used different models: a smartwatch-linked application with video-call telenursing in Thailand (Moolsart & Kritpolviman, 2025), nurse-led public health interventions combined with mobile applications in Jordan (Alsaqer et al., 2022), and telenursing compared with group training in Iran (Mohammadzadeh et al., 2026). This variety is consistent with the telemonitoring and teleconsultation focus described for primary care (Idris et al., 2024) and with the small telenursing evidence base mapped by Dias et al. (2024). In none of the three did the abstracts describe a family member as a participant or partner. One plausible reading, which these data cannot test, is that older adults who struggle with devices rely on relatives to use them, so leaving the family out may limit uptake. The near-miss studies show where the combination is being tried: Risnah et al. (2026) paired nurse-led virtual coaching with family caregivers, but in adults aged 30 to 65.

Measurement was heterogeneous. Blood pressure was reported as systolic, diastolic, or mean arterial pressure; self-management was captured with the Stanford Chronic Disease Self-

Management Questionnaire in one trial (Noorollahi et al., 2025) and with other behavior questionnaires elsewhere; and quality of life was measured with different instruments. Only three of the four randomized studies reported trial registration in the retrieved text. Together with the possible participant overlap between the two Yuda reports, these features limit how far the studies can be compared.

Implications for practice and research

These findings do not justify wide implementation of any single model. They do support piloting family education and simple remote contact by community nurses within existing primary care programs, with outcomes tracked beyond three months. This is a recommendation drawn from a small and uneven evidence base, not a finding of the review. For research, trials that compare family-only, digital-only, and combined delivery would show whether the combination adds benefit. They should report caregiver outcomes such as burden, self-efficacy, and quality of life, include implementation measures, extend follow-up to six months or longer, and be registered and reported according to trial guidance. A full review across bibliographic databases with dual screening should confirm the gaps described here.

Limitations

This review has several limits. First, it is a rapid review. Searches ran in one semantic search engine that returned ten records per query, supplemented by a few web searches, rather than in MEDLINE, CINAHL, and Scopus, so relevant studies were missed; a further potentially eligible telenursing study of older adults in Indonesia surfaced incidentally during reference checking and was not charted. Second, two of four queries named specific countries, which may over-represent Indonesia and Iran. Third, one reviewer screened abstracts and we did not retrieve full texts, so details such as age thresholds, theoretical frameworks, and intervention fidelity could not be charted, and five records remained unresolved. Fourth, the protocol was not registered, queries were in English, and income classification was not re-verified for the year in which each study was conducted (World Bank, 2026). Fifth, no critical appraisal was performed, in line with scoping review guidance (Peters et al., 2020), so the

direction of results says nothing about their reliability. Finally, searching, screening, and drafting were supported by generative artificial intelligence, as disclosed below.

Conclusions

Evidence on family-involved and telenursing or digital self-management for older adults with hypertension in LMICs is small, limited to short follow-up, and methodologically uneven. Family-involved programs dominate, digital programs have developed separately, and no study in this review combined them or measured caregiver outcomes. Community nurses can pilot family education with simple remote support, but the case for scaling any model depends on better trials: combined and comparative designs, caregiver and implementation outcomes, and longer follow-up. A full multi-database review is warranted.

Declaration of Interest

The authors declare no conflict of interest.

Declaration of Generative AI Use

Claude (Anthropic) was used to support literature searching, record screening, data charting, and drafting. The authors reviewed the output and take full responsibility for the content of this article.

Data Availability

All data were drawn from published sources listed in the References. The search queries are given in Table 2, and the screening log is available from the corresponding author on request.

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Table 3. *Characteristics of included studies*

Study	Country	Design and sample	Intervention	Duration and follow-up	Outcomes	Main findings as reported
Keshvari et al. (2015)	Iran	Randomized clinical trial (cluster sampling); n = 62; age ≥ 60	Family-centered empowerment model in four steps; control: usual care plus one training session	Post-test at 1 week; follow-up at 1.5 months	Blood pressure; empowerment dimensions	Blood pressure changed significantly in both groups; empowerment scores higher in the intervention group
Yuda et al. (2024)	Indonesia	Quasi-experimental, single group pre-post; n = 56; age 60 to 90	Family empowerment; families cared for the older person for one month	1 month	Quality of life (OPQOL-Brief)	Quality of life differed before and after (Wilcoxon Z = −4.889, p < .001)
Yuda et al. (2025)	Indonesia	Quasi-experimental, two groups pre-post; n not reported in retrieved text; age 60 to 90	Structured family empowerment module; families provided care for one month	1 month	SBP, DBP	SBP and DBP decreased after the intervention (Wilcoxon, p < .001)
Suprayitno et al. (2025)	Indonesia	Quasi-experimental, non-equivalent control group; n = 64	Family-centered nursing-based health education at a community health center	Not reported in retrieved text	Daily living activities (Barthel Index)	Scores differed within and between groups (p < .001)
Kamaryati et al. (2025)	Indonesia (Bali)	Quasi-experimental; 141 dyads (70 intervention, 71 control); uncontrolled hypertension	Self and Family Management Support Program plus usual care	12 weeks; measured at 0, 4, 8, and 12 weeks	Knowledge, self-management behavior, SBP, DBP, health-related quality of life	All outcomes improved more in the intervention group than in the control group
Safitri et al. (2025)	Indonesia[a]	Quasi-experimental, pretest-posttest control group; n = 42 (21 per group)	Family-based self-management model	8 weeks	Self-management score, SBP, DBP, blood pressure control	Self-management 52.38 to 73.71; SBP −20.86 and DBP −10.19 mmHg; control 66.7% vs 23.8% (p = .005)
Noorollahi et al. (2025)	Iran	Randomized controlled trial; n = 76; age 60 to 74	Family health nurse model: four individual and family education sessions, three self-help group sessions, at least two home visits, and follow-up	Immediately after and at 3 months	Self-management (Stanford questionnaire), SBP, DBP	Higher self-management and lower blood pressure in the intervention group at both time points (p < .001)

Moolsart & Kritpolviman (2025)	Thailand	Quasi-experimental; n = 91 (46 intervention, 45 comparison); uncontrolled hypertension	Smartphone application linked to a smartwatch (blood pressure, steps, sleep) with telenursing by video call	Not reported in retrieved text	Hypertension-controlling behavior; MAP; satisfaction	MAP lower in the intervention group; behavior did not differ between groups; high satisfaction
Alsaqer et al. (2022)	Jordan	Randomized controlled trial, three arms; n = 120 (40 per arm)	Public health nursing plus mobile applications; applications alone; standard care	3 months	SBP, DBP, self-care, quality of life	SBP and self-care improved more in the intervention group; DBP did not differ
Mohammadzadeh et al. (2026)	Iran	Randomized controlled trial, three arms; n = 90; mean age 65.2	Group training; telenursing; control	Three assessment points; duration not reported in retrieved text	Medication and dietary adherence (Hill-Bone scale), SBP, DBP	SBP, DBP, and adherence improved in both intervention groups at the second and third assessments

Note. [a] Country inferred from the publication venue; to be confirmed. SBP = systolic blood pressure; DBP = diastolic blood pressure; MAP = mean arterial pressure. Findings are reported as stated in abstracts and source pages and were not appraised.