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Care Robots for Community-Dwelling Older Adults: An Integrative Review

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Objectives: The purpose of this study was to conduct an integrative review of existing research on care robots for community-dwelling older adults and to suggest directions for future research and technology development in this area. **Methods:** We focused on robots, including care robots and socially assistive robots, that help older adults living in the community maintain independence at home. Three electronic academic databases (PubMed, CINAHL, and Cochrane) were searched for eligible research articles. The keywords used included elder*, older adult*, robot* care, care robot*, assist* robot*, service robot*, companion* robot*, socia* robot*, home-based, and community-based, among others. **Results:** A total of 834 research articles were identified, and 40 were ultimately reviewed and analyzed. The studies were categorized into three groups: perceptions and needs related to care robots; cognitive support; and assistance with activities of daily living. **Conclusions:** It is necessary to develop and implement care robots with diverse functions that can provide practical assistance for the independent daily living of older adults. This will require collaboration among government agencies, public institutions, academia, and private health enterprises. In addition, policies must be established to support the purchase and maintenance costs of care robots to ensure continued access for community-dwelling older adults.

Keywords: Robotics, Health Services for the Aged, Frail Elderly, Independent Living, Self-help Devices

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I. Introduction

Population aging is accelerating worldwide, with South Korea experiencing one of the fastest demographic transitions. The country has become a super-aged society in 2025 [1]. The rapid increase in the older population is accompanied by rising demand for care, making care for older adults a major societal challenge across many nations [2]. "Aging in place," or growing old in one's own home, is preferred by approximately 95% of older adults because it offers numerous social and psychological benefits [3]. Therefore, it is essential to provide physical, emotional, and social support that enables older adults to live independently for as long as possible in their familiar environment.

Older adults frequently experience frailty, which is defined as the concurrent loss of multiple capacities, leading to disability, dependence, falls, requests for long-term care admission, and death. Consequently, they require a wide range of assistance to manage daily life [4]. Although family members, including spouses and children, often provide informal caregiving, it is unrealistic to expect them to fully meet the care needs of older adults [4].

To bridge the gap between the level of care required and that which can be provided by informal caregivers, the development and deployment of care and welfare technologies, such as care robots, have been proposed [5,6]. Care robots have shown positive effects not only on older adults but also on both professional and informal caregivers [7].

As the number of older adults caring for other older adults rises, and as family caregiving burdens increase, efforts to develop and disseminate care robots that support physical activities and caregiving tasks are expanding worldwide [1,8,9]. Home service robots for older adults are considered a promising strategy to help them remain independent at home and maintain their quality of life. Research in robotics has explored applications to support "aging in place" since the early 1990s, and several prototypes have been developed and tested. However, despite three decades of research, fully functional robots capable of comprehensively supporting older adults' daily activities at home remain limited in availability and application [10]. One reason is the inherent complexity of the tasks required to effectively assist older adults in home environments [11]. In the era of the Fourth Industrial Revolution, advanced robotic technologies are increasingly applied in healthcare, particularly in older adult care. Care robots are designed to promote independent living by assisting with daily tasks, monitoring health conditions, and supplementing human caregivers in both home- and facility-based settings [1]. Early generations of care robots operated by detecting user actions through sensors and responding accordingly, such as by tracking medication adherence, physical activity, or exercise routines [12-14]. Recent advances in artificial intelligence (AI) and large language models have broadened the scope of AI-integrated care technologies. AI-powered robots are now recognized as promising tools in elder care, providing cognitive support, emotional companionship, and social engagement. These robots have demonstrated positive effects on cognitive function [15] and have delivered emotional and psychological benefits through interactive communication [16,17].

Robots for community-dwelling older adults can be applied in three main domains: supporting daily life and caregivers, monitoring health and behavior, and providing companionship to foster emotional well-being [18]. If appropriately implemented, robotic technologies may help address a wide range of challenges faced by older adults [18]. However, most care robots are still in the research and development stage or undergoing initial trials, and there is currently no consensus on their definition, concept, or classification [1]. Furthermore, most studies have focused on older adults in institutional settings, leaving limited research on the use of care robots among community-dwelling older adults and their families [19].

Despite growing interest, research on care robots remains fragmented across disciplines, robot types, and user needs, particularly for older adults living in the community. Previous studies have largely concentrated on institutional care settings, with relatively few integrative analyses addressing conceptualization, implementation, and evaluation of care robots for home-based environments. Given this gap, an integrative review is warranted to synthesize evidence from diverse studies, provide practical and policy-relevant insights, and better inform future research and technology development. Therefore, the objective of this review was to synthesize existing research on care robots for community-dwelling older adults and to suggest directions for future study and technological advancement.

II. Methods

This study conducted an integrative review of research on home-based care robots. An integrative review synthesizes and critically evaluates existing literature to provide a comprehensive understanding of the current state of knowledge and to identify directions for future research [20].

1. Search Strategies

The focus of this review was on robots, including care robots and socially assistive robots, that support the independent living of community-dwelling older adults. Relevant studies were searched in PubMed, CINAHL, and the Cochrane Library up to June 2025. A broad set of keywords was employed to capture the wide variety of terms used to describe home-based robots for older adults. Search terms were combined using Boolean operators AND and OR. The search strategy included elder* and older adult* for participants; robot* care, care robot*, assist* robot*, service robot*, companion* robot*, social* robot* for intervention or interest; and home-based and community-based for context. To ensure methodological rigor, professional librarians at a university medical library reviewed and validated the search strategies.

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2. Selection of Literature

Duplicates were removed using EndNote 20.1, a reference management software. Two independent researchers then screened and selected studies according to predefined inclusion and exclusion criteria. The inclusion criteria were: (1) empirical quantitative or qualitative studies; (2) focused on care robots or socially assistive robots designed to support the independent living of community-dwelling older adults; and (3) published in English. Exclusion criteria included studies conducted in institutional settings such as nursing homes or long-term care facilities; studies focusing solely on robots designed for caregivers or guardians; studies addressing technologies other than robots (e.g., smart furniture or general assistive technologies); studies involving populations other than older adults; and non-research publications such as conference abstracts, opinion papers, or review articles (e.g., systematic reviews, literature reviews, scoping reviews). The selection process followed two stages: an initial screening of titles and abstracts, followed by a full-text review to confirm eligibility. Discrepancies between the two reviewers were resolved through discussion, and if consensus could not be reached, a third reviewer adjudicated.

Figure 1 summarizes the study selection process. From 1,052 references initially identified, 218 duplicates were excluded. The remaining 834 references underwent title and abstract screening, leading to the exclusion of 654 studies. Full-text reviews were conducted on 180 studies, of which 38 met the inclusion criteria. Two additional articles were identified through hand-searching, bringing the final total to 40 studies. Appendix 1 lists the references included in this review.

3. Data Extraction and Analysis

The 40 studies included in the final analysis were thoroughly reviewed, and a standardized data extraction form was used to record the following information: author(s), year of publication, geographic region, study purpose, the name, type, and function of the robots, characteristics and number of participants, study design, details of the intervention (including method and duration, if applicable), and the key findings.

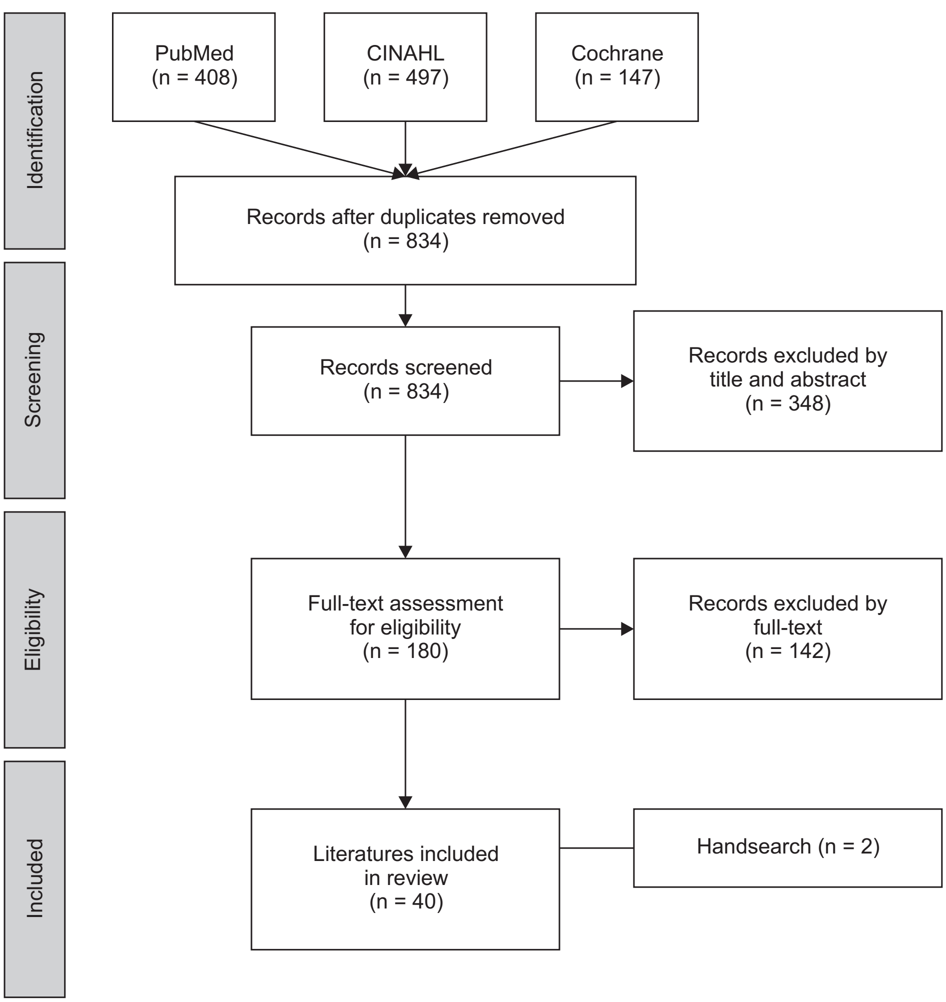

Figure 1. Flow diagram of the literature selection process.

III. Results

We analyzed the 40 selected studies on home-based care robots for community-dwelling older adults and categorized them into three groups: (1) perceptions and needs related to care robots (Table 1), (2) cognitive support functions such as communication and monitoring (Table 2), and (3) assistance with activities of daily living (Table 3). Additional study details and key findings are provided in Supplementary Tables S1–S3.

Studies in the first category, summarized in Table 1, examined older adults' perceptions and preferences regarding care robots. These studies generally found that older adults expressed more positive attitudes toward smaller and animal-like robots (e.g., Paro, MiRo-E) compared to humanoid robots [A02, A05, A07]. Nevertheless, concerns about privacy, cost, and the potential for increased social isolation remained common [A01, A12]. Other studies in this group investigated factors influencing acceptance of care robots. Important determinants included prior experience with technology, perceived usefulness and ease of use, and individual characteristics such as gender and educational background [A07, A09, A14]. A more recent study emphasized the challenges of integrating AI-powered conversational robots (e.g., Furhat with GPT-3.5), highlighting the current limitations of large language models in sustaining coherent and engaging interactions with older adults [A15].

The second category of studies, summarized in Table 2, focused on intervention-based research that assessed the cognitive, emotional, and social benefits of care robots for community-dwelling older adults. Participants in these studies were generally healthy, lived alone, or were diagnosed with mild cognitive impairment or dementia. The interventions typically lasted 3 to 8 weeks and were conducted in home environments or living labs. Most studies used randomized or quasi-experimental designs, often targeting individuals living alone or at risk of cognitive decline. Robots provided structured cognitive training, encouraged self-disclosure, and facilitated emotional engagement [A28, A29, A31]. Outcomes demonstrated reductions in depression, anxiety, and loneliness, as well as improvements in cognitive function and quality of life [A16, A23–A26]. Participants responded favorably, often engaging with robot features such as verbal communication, reminders, music, and games [A21, A27].

The third category of studies, presented in Table 3, addressed robots designed to assist with activities of daily living (ADLs) for community-dwelling older adults. While earlier research relied on hypothetical scenarios or video demonstrations to assess user expectations and acceptance [A32, A36], more recent work increasingly involved in-home or laboratory-based robot use [A35, A40, A41]. These studies often featured larger robots capable of delivering medications, initiating clapping games, reminding users to hydrate, or providing physical support [A34, A38, A40]. Although older adults and caregivers expressed strong expectations for robots that assist with mobility, hygiene, and health monitoring, most current robots were limited to basic functions, such as switching off appliances, dispensing medication, or facilitating simple physical interactions. Nonetheless, participants reported enhanced safety, engagement, and autonomy, particularly in medication management [A40, A41]. These findings suggest that while present-day robots remain limited in functionality and user autonomy [A41], they hold considerable promise for supporting independent living among older adults.

IV. Discussion

This integrative review found that research on caregiving technologies, including care robots designed to support independent living and aging in place for community-dwelling older adults, is actively progressing. The studies included in this review were grouped into three categories. The first category comprised cross-sectional studies that examined older adults' perceptions and needs after viewing photographs or demonstrations of robots. The second category included interventional studies in which robots provided cognitive support through social and communicative functions. In these studies, older adults used robots in their homes for periods ranging from 3 to 8 months, with data collected through surveys, semi-structured interviews, and sensors that recorded activity patterns. The third category encompassed studies on robots that assisted older adults with daily activities in the home.

Overall, participants expressed high expectations for care robots, demonstrated receptiveness, and perceived them as practical and applicable. However, some studies noted differences in attitudes based on user characteristics. For example, older adults with motor impairments reported higher perceived usefulness [A04], while those with lower socioeconomic status expressed lower perceived control and acceptance [A13]. Despite these generally positive expectations, several studies pointed out that no robots currently possess the range of features necessary to fully support older adults with the tasks required for aging in place, and that research in this area remains insufficient [A29, A35]. This indicates

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Table 1. Studies on perceptions and needs regarding care robots among community-dwelling older adults

1st Author (year)	Region	Purpose	Robot (name or type)	Participants and characteristics	Study design
[A01] Boissy (2007)	North America	To examine the needs for teleoperated robots in home telecare	In-home telepresence robot	6 elderly people with disabilities (age: 68–92) living in the community mostly with a spouse or family members in rented or owned housing 6 healthcare professionals involved in geriatric care	Qualitative study
[A02] Wu (2012)	Europe	To explore how older adults perceived robots regarding robot appearance	26 different robot pictures	15 older adults: 7 with mild cognitive impairment, 8 without cognitive impairment Age: 66–89	Qualitative study
[A03] Louie (2014)	North America	To investigate the acceptance and attitudes of older adults toward the human-like expressive SAR	Brian 2.1: a human-like SAR Learns assistive behaviors and personalize interactions based on tasks and user status Supports social interaction and cognitive stimulation (e.g., memory card and finding nearby restaurants)	54 older adults Age: 62–91	Cross-sectional study
[A04] Salatino (2017)	Europe	To describe the results of the tests carried out with the first version of the ENRICHME system focusing on usability, user experience, and social acceptability	Kompaï 2 robot (a socially intelligent robot, height 133 cm, width 46x46 cm): a thermal camera for non-invasive physiological monitoring, a 3D sensor Kinect 2.0 to monitor the user's movements, a facial detection software, a RFID antenna, autonomous navigation software)	4 older adults with MCI Age: 76–80 6 caregivers End users lived in their own homes, one alone and three with their partners	Mixed methods study

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Table 1. Continued

1st Author (year)	Region	Purpose	Robot (name or type)	Participants and characteristics	Study design
[A05] Chu (2019)	Asia	To understand older adults' expectations for robots and to compare their acceptance ratings for two existing robots (intimacy-oriented animal-like robots vs. service-oriented human-like robots)	Paro (more companionship-oriented robot): a white seal robot designed for intimate companionship through comfortable physical contact and reactions Zenbo (more service-oriented robot): a more human-like robot offering simple assistance such as phone calls and online information retrieval	33 community-dwelling healthy older adults Age: 59–82 (mean: 66.3)	Mixed methods study
[A06] Suwa (2020)	Asia and Europe	To clarify potential users' perceptions of the development and social implementation of homecare robots in Japan, Ireland, and Finland	Home-care robots	1,004 older adults, family caregivers, and professional caregivers (411 older adults: 176 in Japan, 128 in Ireland, 107 in Finland, 344 family caregivers, and 522 home-care/health and social care professionals) Age: 65 or older	Cross-sectional study
[A07] Liu (2021)	Asia	To understand how older Chinese adults perceive social robots	18 robots were selected from the Stanford Social Robot Database, which has a collection of social service robots. 14 different types of robots (machine-like vs. humanlike; mechanoid, humanoid, and android) were selected	730 Chinese older adults who lived in nursing homes or in their own homes	Cross-sectional study
[A08] Gasteiger (2021)	Oceania	To explore the usefulness and experiences of older adults using a dailycare robot (Bomy) in their own homes	Bomy (Assistive Dailycare Robot)	6 older adults (community-dwelling, 5 normal cognitions, 1 with mild cognitive impairment) Age: 72–83	Qualitative study

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Table 1. Continued

1st Author (year)	Region	Purpose	Robot (name or type)	Participants and characteristics	Study design
[A09] He (2023)	Asia	To investigate the acceptance of SARs for older adults living in the community and explore its influencing factors	Xiaoyu (SAR) Doll-like shape, round head, blinking eyes; functions: video calling, chatting, escorting, life services, safety monitoring)	207 older adults living in the community; recruited from 4 community aged care centres	Cross-sectional study
[A10] Li (2023)	Europe	To explore older people's attitudes, needs and requirements towards the human-following robot	Human-following robot Gita (Piaggio Fast Forward) Follows humans while carrying up to 18 kg cargo Depth & color sensing to avoid obstacles Works indoors/outdoors, navigates ramps (16%)	17 older adults Age: 61–84 (mean: 75.3) Healthy, living independently or with a partner Recruited across the UK from U3A (University of the Third Age)	Qualitative exploratory study
[A11] Tobis (2023)	Europe	To analyze whether specific aspects of the perceptions about humanoid robots influence attitudes after interacting with the robot To compare the opinions of older people and their professional caregivers on humanoid robots	Humanoid social robot TIAGo Equipped with sensors, cameras, microphone, speaker, and touch tablet Provides news/weather, displays a variety of environmental values (temperature, pressure, humidity), cognitive games, physical exercises, dietary recommendations, reminders, and safety measures	48 community-dwelling older adults, who were participants of day care units Age: 60 or older 53 professional caregivers	Cross-sectional study
[A12] Ide (2024)	Asia and Europe	To develop a universal model explaining the relationship between care robot use and ethical awareness (e.g., privacy, data use) in home care	Home-care robots	1,004 older adults, family caregivers, and professional caregivers (411 older adults: 176 in Japan, 128 in Ireland, 107 in Finland, 344 family caregivers, and 522 home-care/health and social care professionals) Age: 65 or older	Cross-sectional study

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Table 1. Continued

1st Author (year)	Region	Purpose	Robot (name or type)	Participants and characteristics	Study design
[A13] Vagnetti (2024)	Europe	To explore the opinions, perceived needs, and barriers related to social assistive robots and monitoring technologies among older adults, including those with motor impairments and of low socioeconomic status	SAR (NAO, MiRo-E, Pepper, and TurtleBot) and home monitoring technologies	31 older adults (3 groups: low socioeconomic status, motor impairments, healthy controls) Age: 65 or older	Mixed methods study
[A14] Liu (2025)	Asia	To examine the factors influencing elderly individuals' acceptance of AI-powered companion robots, focusing on individual characteristics such as gender, education, and previous experience with technology.	AI-powered companion robot (unnamed) SAR designed for conversation, reminders, and companionship	452 older adults Age: 60 or older	Cross-sectional study
[A15] Irfan (2025)	Europe	To identify the challenges of the integration of LLMs into conversational robots, encompassing both general suggestions and those tailored to companion robots for older adults.	Furhat robot with GPT3.5 (a personalized companion robot)	Study 1: 6 older adults in Sweden Age: 66–86 (mean: 78.3) Study 2: 28 older adults Age: 66–86 (mean: 74.5)	Participatory design workshop Stage 1: Design scenarios Stage 2: Robot interactions Stage 3: Interview

SAR: socially assistive robot.
See Appendix 1 for the reference lists.

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Table 2. Studies on care robots for cognitive support (communication, social support, monitoring, etc.) of community-dwelling older adults

1st Author (year)	Region	Purpose	Robot (name or type)	Participants and characteristics	Study design
[A16] Tanaka (2012)	Asia	To determine whether the communication robot was effective for improving cognitive function in older adults living alone	Experimental robot (28 cm, 680 g): Designed like a 3-year-old boy in appearance, voice, and motion; programmed to show emotional behaviors to build rapport with older adults Control robot: Identical in appearance but lacks speech and nodding functions	34 healthy women older adults living alone: Experimental group (communication robots, 18), Control group (control robots, 16)	Experimental study
[A17] Wu (2014)	Europe	To study robot-acceptance in older adults and the effect of direct experience with a robot over a 1-month period	Kompaï robot Recognize and synthesize voices, navigate in unknown environments, remember appointments, manage shopping lists, play music, and use for video conference system Participants interact with the robot via touch and voice	11 older adults: 5 cognitively intact healthy (CIH), 6 with mild cognitive impairment (MCI) Age: 76–85 (mean: 79.3)	Mixed methods study
[A18] Pripfl (2016)	Europe	To develop a low-cost social service robot (SSR) which is able to reduce the risk of falling, to detect falls and handle emergencies in private homes	HOBBIT: a SAR developed in the study	7 households with older adults Age: mean 79	Mixed methods study
[A19] Bakas (2018)	North America	To test the feasibility of a nurse-led intervention (Telehealth Community Health Assistance Team [T-CHAT]) delivered through a telepresence robot designed to promote chronic disease self-management and healthy independent living among older adults	Telepresence robot Providing two-way video-mediated communication with remote navigation	21 older adults (11 experimental and 10 control) living in independent apartments in a retirement community All could hear, speak, read English; passed hearing screening and scored ≥4/6 on cognitive screener Age: 60 or older (mean: 84.0±5.5)	Quasi-experimental study

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Table 2. Continued

1st Author (year)	Region	Purpose	Robot (name or type)	Participants and characteristics	Study design
[A20] Zsiga (2018)	Europe	To test a companion robot supporting older adults in their home environments	Kompaï robot Provide verbal and touch screen interactions with user Provide cognitive and memory assistance, safety- and health-related functions, information inquiry, communication services, speech recognition/synthesis, entertainment	8 older adults living alone Age: 70 or older (mean: 77.1)	Mixed method study:
[A21] Hudson (2020)	North America	To explore the efficacy of robotic companion pets in alleviating loneliness for older adults	Robotic pet in the form of a cat or a dog Respond to user touch and activate a reciprocal “nuzzling” effect Vocalize in response to the light stimuli Robot dogs bark depending on the setting, and robot cats meow and emit a purring noise	20 self-reported lonely older adults with AARP Medicare Supplement plans insured by United Healthcare who participated in a program with a robotic pet Age: 65 or older (mean: 76)	Mixed methods study: survey and semi-structured interviews
[A22] Khosla (2021)	Australia	To study the engagement and robot experience of older adults with dementia interacting with Betty (a social robot) in the context of home-based care.	Betty (a social robot): baby face like appearance, voice vocalization, face recognition, face registration and tracking, facial expressions, gestures, body motion sensors, dance movements, touch sensors, emotion recognition and speech acoustics recognition	5 older adults with dementia who live with at least one family member Age: 75–85	Mixed methods study
[A23] Mizuno (2021)	Asia	To investigate the effects of information support robots (ISRs) for reducing agitation in older adults with Alzheimer’s disease residing alone in community-dwellings	PaPeRo i (Height 288 mm, width 255 mm, and weight 2 kg) Voice synthesis, an intention-recognition module An interaction system consisting of a light indicator and a head motion	A 70-year-old woman who lived alone in a community-dwelling and was diagnosed with Alzheimer’s two years prior to the study	Case study

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Table 2. Continued

1st Author (year)	Region	Purpose	Robot (name or type)	Participants and characteristics	Study design
[A24] Mizuno (2021)	Asia	To confirm the effects of the ISR on daily activities, especially regarding sleep, of older adults living alone	PaPeRo i	14 women older adults living alone (8 in paid facilities and 6 in their own homes) Age: mean 82.8 ± 4.9	Experimental study
[A25] Park (2021)	Asia	To investigate whether multi-domain cognitive training programs, especially robot-assisted training, on cognitive function and depression in older adults with mild cognitive impairment	Sil-bot (Humanoid robot: Height 1,150 mm, width 520 mm, and weight 25 kg) Recognize user intent, gaze, and emotional expressions and can move based on an autonomous drive system	135 older adults with mild cognitive impairment Age: 60 or older (mean: 75.9±6.1) 45 Robot-assisted cognitive training (RACT) group 45 traditional cognitive training (TCT) group 45 non-intervention (NI) group	Randomized controlled study
[A26] Igarashi (2022)	Asia	To evaluate the effectiveness of self-disclosure by SARs in increasing verbal interaction with community-dwelling older adults.	Papero-I (Equipped with self-disclosure, voice synthesis, and voice recording functions, delivered daily schedule information + 10 self-disclosure speech scripts based on social psychology)	7 community-dwelling older adults: 3 cognitively healthy, 4 with mild cognitive impairment Age: 62–76 (mean: 71.9)	Mixed-methods study
[A27] Lim (2023)	Asia	To investigate whether a social robot intervention is effective in improving cognitive function, depression, loneliness, and quality of life in older adults living alone	Social robot PIO (parrot-shaped robot) Cognitive-emotional programs with older people and those with dementia Displays emotions via LCD eyes; enables structured conversations and movements based on program design	64 people (31 in the experimental group, 33 in the control group) Age: 65 or older	Nonequivalent control group pretest–posttest

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Table 2. Continued

1st Author (year)	Region	Purpose	Robot (name or type)	Participants and characteristics	Study design
[A28] Tan (2024)	Asia	To explore the social well-being and lived experiences of single older adults through companionship with a social robot	LOVOT (social companion robot)	5 single-living older women Age: 60–75	Qualitative study (phenomeno-logical design)
[A29] Tokunaga (2024)	Asia	To examine the intervention effect of cognitive training moderated by robots on healthy older adults	Bono-06 (Dialogue-based home robot) Nodding a head Red, green, and blue full-color LEDs on its cheeks indicate the system's status Prompt photo-integrated questioning sessions in participants' homes. Facilitated verbal interaction	81 community-dwelling older adults with subjective memory complaints Age: 65 or older (mean: Intervention group 73.9±3.8, Control group 74.0±4.1)	Experimental study
[A30] Zhao (2025)	Asia	To assess the acceptability of social robots in delivering home care to older adults across 7 domains: affective attitude, burden, perceived effectiveness, ethicality, intervention coherence, opportunity costs, and self-efficacy	KaKa (Social robot) Size: ~30 cm tall, 20 cm wide, 2 kg; immobile Speaks Cantonese via voice recognition & AI/prerecorded speech Baby-face design; head moves Features: -Plays music, tells stories, provides news & weather; -Reminders (medication, meals, hydration); -Physical activity for healthy lifestyle; -Puzzle games & quizzes tailored to cognitive level	30 community-dwelling older adults in Hong Kong Age: 51–88	Mixed-methods study

SAR: socially assistive robot.
See Appendix 1 for the reference lists.

Table 3. Studies on care robots for assisting activities of daily living among community-dwelling older adults

1st Author (year)	Region	Purpose	Robot (name or type)	Participants and characteristics	Study design
[A31] Pigini (2012)	Europe	To generate user requirements and realistic usage scenarios maximizing the alignment with users' needs, perceptions, feelings and rights	Shadow Robotic System (SRS): personal service robots	188 older adults and family members, caregivers, and geriatric experts Focus groups: 22 older adults Age: 65–90 (mean: 80) Questionnaires: 64 older adults Age: 65–92 (mean: 77)	Mixed methods study: FGI, Survey
[A32] Seelye (2012)	North America	To test the feasibility of use and acceptance of a remotely controlled robot with video-communication capability in independently living, cognitively intact older adults	VGo robot system: including a remote telepresence robot, hand-held local controller, 8-hour battery, charging dock and power cord, and a remote driving controller	8 older adults with independently living and cognitively intact Age: 64–92 (mean: 77.5±8.4)	Experimental study
[A33] Beer (2017)	North America	To understand older adults' first impression of the assistive robot after each demonstration, and identify reasons To determine if older adults' preferences and acceptance for robot assistance for home tasks would change between pre and post demonstration	Personal Robot 2 (PR2): a human-sized commercially available mobile manipulator with an omni-directional wheeled base, two 8 DOF arms/grippers, a telescoping spine, a pan-tilt head carrying two stereo camera pairs and a LED texture projector	12 independently living older adults Age: 68–79 (mean: 72.6)	Mixed methods study: pre and post questionnaires, a semi-structured interview
[A34] Bedaf (2018)	Europe	To capture the experience of living with a robot at home To reflect on the interaction of older adults and caregivers with the robot	Care-O-bot 3: a companion robot to help with everyday life	10 older adults Age: 62–93 (mean: 79.3) 7 informal carers 11 professional caregivers	Mixed methods study
[A35] Garcia-Soler (2018)	Europe	To define the iterative procedure used to identify, select and prioritize user requirements	Multi-role shadow robotic system for independent living (SRS): a wheeled mobile robot with robotic arm Remotely operated to assist frail older adults with daily tasks Aims to support homeostasis, reduce stress vulnerability, and improve health condition	215 frail older adults, primary caregivers, professional caregivers, and health professionals 104 older adults Age: 65–92	Mixed methods study

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Table 3. Continued

1st Author (year)	Region	Purpose	Robot (name or type)	Participants and characteristics	Study design
[A36] Klein (2018)	Europe	To identify ethical issues in the development of a robotic shower system	I-SUPPORT (ICT Supported bath robots) An intelligent robotic shower system	14 older adults (not able to wash themselves, frail) 9 professional caregivers	Qualitative study
[A37] Fitter (2020)	North America	To understand whether robots can help older adults stay active at home	Baxter research robot: a human-sized humanoid robot Eight human–robot exercise games: Mimic, Stretch, Teach, Agility, Strength, Handclap, Roboga, and Flamenco Games	40 older and younger adults (20 older adults, 20 younger adults) 20 older adults Age: 54–70 (mean: 59.6±3.9)	Experimental study
[A38] Fiorini (2021)	Europe	To present the needs of older adults and their caregivers related to the personal mobility needs and the technical requirements for assistive robotics	ASTRO: An assistive smart robotics platform dedicated to mobility and user interaction Performing multiple daily tasks such as walking assistance, communication, and reminders	54 older adults and caregivers 20 older adults: 3 in rehabilitation ward, 4 in nursing home, 13 in senior residence/home Age: mean 78.1±7.9 34 Caregivers: 19 formal caregivers, 15 informal caregivers Age: mean 52.9±15.6	Qualitative study
[A39] Turjamaa (2023)	Europe	To describe older home care clients' experiences of the implementation and use of a robot for medicines management at home	Monitors medicines management and keeps electronic dose records Dispenses medications on schedule (pre-packed 2-week single-dose bags loaded by home care staff Provides spoken/written instructions and sound alerts at medication times	38 older home care clients Age: 73–89 (mean: 78.6) All lived alone in apartments and had received home care for 1–5+ years Robot use for medication management ranged from <3 months to >1 year	Qualitative interview study
[A40] Hjelte (2025)	Europe	To identify the consequences related to ethical values in older people's experiences of using medication-dispensing robots in Swedish home care services	Medication-dispensing robot ($38\times38\times24$ cm^3); curved design fits on tables/desks Alerts users via front display text and prerecorded voice messages at medication time Dispenses medication when user presses a large green button on the front	Older people Age: 67–90 6 lived in the large municipality (130,000–140,000 inhabitants), 9 in the medium-sized municipality (70,000–80,000 inhabitants), 2 in the sparsely populated municipality (4,000 inhabitants)	Qualitative interview study

See Appendix 1 for the reference lists.

the need for developing care robots capable of assisting with diverse activities of daily living for community-dwelling older adults. In particular, individuals who are bedridden or require partial or complete assistance due to geriatric diseases, disabilities, or frailty represent those most in need of such technologies.

The reviewed studies described robots that provided emotional support by interacting with older adults at home and assisting with daily activities, such as drug administration, mail retrieval, beverage preparation, switching lights on and off, and organizing items. Several robots were reported to foster emotional bonding and reduce loneliness, with one study even documenting a preference for the robot over traditional pets [A29]. Other robots contributed to maintaining and improving health through fall prevention, walking assistance, and telemedicine, while also offering cognitive training through games and leisure activities. Although some interventions demonstrated improvements in cognitive function, a recent study involving a dialogue-based robot reported no significant cognitive enhancement. Nonetheless, the study highlighted high feasibility and usability in home settings, underscoring the potential of such technologies for sustained engagement [A30].

Multiple studies emphasized the importance of incorporating the perspectives and needs of older adults in the development and design of robotic technologies. Since robots are unlikely to be adopted unless they address real user needs, care robots should be designed based on systematic research into the demands and perceptions of older adults. Identifying unmet needs requires input not only from older adults but also from caregivers, clinicians, and other stakeholders. Technology development should be prioritized according to urgency and practical importance. For example, devices such as power wheelchairs, assistive communication technologies, and walking aids remain critical tools that older adults can easily integrate into everyday life [7].

Among the reviewed studies, one example involved a care robot system that supported older adults during showering, which received particularly positive user feedback [A37]. This finding illustrates that rather than focusing solely on advanced, complex technologies that may be difficult for users to understand, the development of care robots should prioritize functions that directly support independence in daily living. Overall, these results highlight the importance of aligning care robot development with the practical needs and priorities of older adults. Although current robot functionalities remain relatively simple, the evidence summarized in Table 3 demonstrates clear potential for enhancing independence, provided that ethical concerns and issues of user control are adequately addressed.

Despite growing interest in care robots, longstanding concerns persist regarding technological limitations, financial burdens, ethical issues such as data privacy and workforce replacement, and potential safety risks [A3, A6, A14]. For community-dwelling older adults to benefit from these technologies in daily life, financial support remains critical. Several studies have suggested that subsidizing the purchase and maintenance of care robots may facilitate sustained use. However, many care robot products have been developed primarily for caregiver convenience rather than being tailored to the actual needs and preferences of older adults. Moreover, the high cost of advanced technologies and related services significantly restricts accessibility, particularly for individuals without financial assistance [7]. Although cost and technical barriers remain, none of the reviewed studies reported rejection by users due to negative perceptions or unwillingness, underscoring the generally positive reception of care robots.

Recent technological advancements—especially the integration of large language models into socially assistive robots—offer new opportunities to improve interaction quality [17, A15]. These innovations allow robots to interpret older adults' verbal cues and respond with contextually and emotionally appropriate dialogue, thereby transforming robots from functional tools into potential social companions. Such progress indicates a shift toward more personalized and meaningful human-robot relationships.

To further improve the real-world applicability of care robots, multi-sector collaboration among developers, designers, policymakers, healthcare professionals, and community organizations is essential. Such collaboration can help ensure that care robots are not only technologically feasible but also socially acceptable, clinically relevant, and responsive to the needs of aging populations.

This review also has several limitations. First, a key methodological limitation is the absence of standardized and comprehensive evaluation frameworks for care robots. Although many studies examined usability, safety, and user acceptance, assessments were often fragmented and relied on unvalidated or single-dimensional tools. Second, the included studies varied in design, target populations, and outcome measures, making synthesis difficult and limiting generalizability. Furthermore, only peer-reviewed articles published in English were included, which may have introduced language and publication bias. Future research should therefore prioritize the development of validated, multi-dimensional evaluation models to ensure that care robots meet essential safety and performance standards. Studies should also investigate real-world implementation in community settings, with attention to long-term usability, sustained acceptance, and meaningful interactions with older adults. Additionally, cross-cultural and equity-focused research is needed to explore how social, cultural, and economic contexts influence the adoption and effectiveness of care robots across diverse aging populations.

This integrative review examined research on care robots for community-dwelling older adults, discussed its implications, and identified future directions for development. The active adoption of care robots has the potential to help maintain the quality of life of both older adults and their caregivers. Ultimately, care robots are expected to play a pivotal role in enabling independent living among older adults in their own homes.

Conflict of Interest

Mona Choi and Jung A Kim are members of the Editorial Board of Healthcare Informatics Research. They did not participate in the review or editorial decision for this manuscript. All other authors report no conflicts of interest.

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Supplementary Materials

Supplementary materials can be found via https://doi.org/10.4258/hir.2025.31.4.347.

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