A typology of online care platforms for community-dwelling older adults in the Netherlands: A scoping review

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S. Willard, E. van Rossum, M. Spreeuwenberg, L. de Witte. A typology of online care platforms for community-dwelling older adults in the Netherlands: A scoping review. Gerontechnology 2019;18(2):122-141; https://doi.org/10.4017/gt.2019.18.3.001.00 **Background** Due to demographic transitions and budget restraints, it is now necessary to search for comprehensive new strategies, in order to constitute a sustainable healthcare system. Recently, various online care platforms for community-dwelling older adults were introduced in several European countries. These platforms have aimed at solidifying social cohesion in the community, so as to support the older adults in coordinating or managing their care and to enhance the self-reliance of these older adults. Consequently, these platforms might contribute to a more sustainable healthcare system. The main research question of this study was twofold: Which online care platforms for older adults are available in the Netherlands and what are their characteristics? **Methods** The researchers have performed a scoping review of the online care platforms in the Netherlands, according to the six steps of Arksey & O'Malley (2005), which were as follows: (1) Identifying the research question; (2) Identifying any relevant studies; (3) Selecting the studies; (4) Charting the data; (5) Collating, summarising and reporting on the results; together with (6) consultations with the relevant stakeholders. The study searched for evidence in online scientific databases (Phase 1) and on the Internet (Phase 2). The relevant studies that were published between February 2012 and October 2017 were included. **Results** The review resulted in an overview of 21 care platforms, for which 3 types were identified: (1) Community Care Platforms; (2) Care Network Platforms; and (3) System Integrator Platforms. **Conclusion** This typology of platforms can guide users – for instance, older adults, care professionals, informal caregivers and municipalities, in choosing a suitable care platform, i.e. the typology gives users insight into the functionalities, goals and target groups which allows them to choose a platform that matches their needs. As far as the authors know, no studies have previously reported on the effects of the online care platforms for older adults in the Netherlands, so further research is required on their impacts and on their benefits.

Keywords: older adults, community-dwelling, online platform, ICT

INTRODUCTION

Due to an ageing of the European population, transitions in long-term care have been implemented in which governments have promoted deinstitutionalisation, by emphasising individuals own responsibilities and by activating citizens to help each other (Bankauskaite, Dubois, & Saltman, 2007; Companje, 2013; Foster & Walker, 2015; Newman & Tonkens, 2011; Van der Schoot, 2014). These transitions have major consequences for the positions and the roles of community-dwelling older adults. Care responsibilities are shifting from the health care system, to the older adults themselves, and their social networks. Self-management competencies are highly valued and these older adults are encouraged to live independently in their own place for as long as possible, i.e. they are encouraged to

Table 1. Description of the platform characteristics

Platform characteristics and their description

The name of the online platform.

The name of the platform's owner or administrator (e.g. company name).

Goal of the platform.

Target group: the people for whom the online platform is (initially) intended.

End users: the people who actually use the online platform (this may include other people than the targeted group).

Information*: functionalities that provide information to the user (one-way).

Communication*: functionalities that enable the exchange of information between two or more users (two-way).

Commercial services*: functionalities in which entrepreneurs or companies offer their product(s) with the objective of making a profit.

Community care*: Functionalities that aim to improve social cohesion on a neighbourhood level, or that aim to improve the wellbeing ("happiness") and the comfort of the users.

Health care services*: functionalities that aim to support the users in their health (care).

Monitoring*: functionalities that enable users, or people in their network, to notice changes in their personal environment or physical wellbeing.

Recreation: functionalities that enable users to amuse or entertain themselves.

Focus of the platform: whether the platform is more community oriented, health care oriented, focussed on supporting care-networks, or on a combination of the preceding.

Personalisation: whether the user has the possibility to customise the platform to their own preferences.

Status: the development stage of the platform and its lifespan.

Distribution/range: geographical area in which the platform is most used, number of users, etc.

Costs: costs for the purchase and the maintenance of the platforms' software and the expenses for the end user.

Hardware/software: whether the online platform is accessible via an application, a website or by special hardware.

Privacy: information about the availability of a privacy statement or policy.

Evaluation: the extent to which (the effects of) the online platform has been evaluated.

* = platform functionality, which was taken into account during the selection procedures

dwelling older adults. These online platforms for older adults have various objectives: a) to solidify social cohesion in the community; b) to support older adults in coordinating or managing their own care; and c) to enhance the self-reliance of these older adults. Consequently, these online platforms might possibly contribute to a more sustainable healthcare system (Robben et al., 2013; Vedel, Akhlaghpour, Vaghefi, Bergman, & Lapointe, 2013; Willard et al., 2018). However, there has been little research conducted on the availability of online platforms for older adults and their characteristics, functionalities, usability and effects, in order to guide older adults in choosing a suitable platform. There is a large number of platforms in the Netherlands and

'age-in-place' (Cramm, Twisk, & Nieboer, 2014; Van Hees, 2017).

In this more 'participatory society', it is now necessary to search for comprehensive new and smart strategies, in order to constitute a sustainable and affordable health care system. Technology can support these strategies. A technological solution, whereof many were recently introduced in several European countries (e.g. Germany (Boll & Brune, 2016), England (GrandCare, 2016), Belgium (CareLivingLabs, 2018) and the Netherlands (Krijgsman, Eertink, Leeuw, & Zondervan, 2012; Makai et al., 2014a; Makai et al., 2014b; De Jong, 2015)) are online care platforms for community-

the majority of them suggest that they aim to support community dwelling older adults. As they all communicate about this objective in the same way the misconception arises that they also work in the same way. That however, is not the case: their actual aims and functionalities vary. The authors believe that knowledge about the Dutch 'case' is relevant for the end-users, start-ups, additional research groups and the policy makers, in other countries as well.

The main research question of this study was twofold: Which online care platforms for older adults are available in the Netherlands and what are their characteristics?
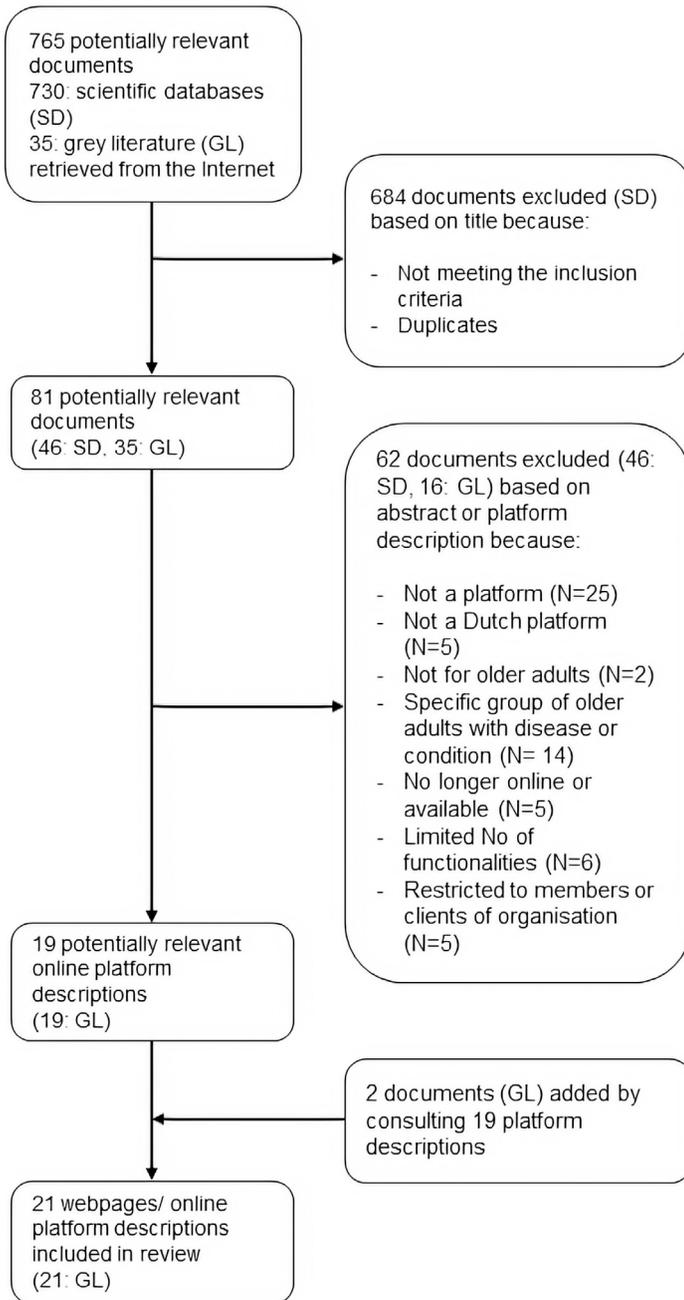
765 potentially relevant documents
730: scientific databases (SD)
35: grey literature (GL) retrieved from the Internet

684 documents excluded (SD) based on title because:

- Not meeting the inclusion criteria
- Duplicates

81 potentially relevant documents
(46: SD, 35: GL)

62 documents excluded (46: SD, 16: GL) based on abstract or platform description because:

- Not a platform (N=25)
- Not a Dutch platform (N=5)
- Not for older adults (N=2)
- Specific group of older adults with disease or condition (N= 14)
- No longer online or available (N=5)
- Limited No of functionalities (N=6)
- Restricted to members or clients of organisation (N=5)

19 potentially relevant online platform descriptions
(19: GL)

2 documents (GL) added by consulting 19 platform descriptions

21 webpages/ online platform descriptions included in review
(21: GL)

Figure 1. Flowchart of the Selection Process

METHODS

A scoping review (Arksey & O'Malley, 2005; Colquhoun, Levac, & O'Brien, 2010; Grant & Booth, 2009) was conducted, in order to summarise 'the state of the science' regarding the online care platforms for older adults in the Netherlands and to provide an overview of these platforms. Scoping reviews are "specifically designed to identify gaps in the evidence base (…) and they may also summarise and dissemi-

nate research findings" (Arksey & O'Malley, 2005, p. 21). This scoping review was performed according to the six steps of Arksey & O'Malley (2005), which were as follows: identifying the research question; identifying the relevant studies; selecting the studies; charting the data; collating, summarising and reporting on the results; together with consultations with the relevant stakeholders.

Identifying the research question

This research focused on answering two research questions: (1) Which online care platforms for older adults are available in the Netherlands? and (2) What are their characteristics?

Identifying the relevant studies

In this review, different sources were consulted when searching for the researched evidence: that is, online scientific databases for the scientific literature (Phase 1) and on the Internet for the 'grey-literature' (Phase 2).

Phase 1 – Database searches
First of all, a review of the scientific literature in the databases of PubMed and PsycINFO was conducted. In order to identify the study's population and to demarcate the geographical area, the MESH terms "aged" and "aged 80 and over" were combined with the term "Netherlands". So as to keep the scope for the research as wide as possible, the online care platforms were specified, by using broad terms such as "ICT-platform", "online platform", "eHealth platform", "eCommunity", "online health", "web based platform", "services platform", "web based health", "web based social networking", "online care communities", "online social health", "healthcare platform", "care platform", "self-management tools" and these related MESH terms were combined with OR. The searches for the study's population and the interventions were, consequently, combined with AND – and they were restricted to approximately a 5 year period (February 2012 - October 2017). The searches were restricted to

Table 2. Characteristics of the Online Care Platforms

No.	Platform	Goal	End users
CATEGORY 1 COMMUNITY CARE		
1	Community Welfare	To enhance social cohesion on a neighbourhood level.	Local residents, people in need of care, volunteers, social workers, entrepreneurs and communities.
2	Trivici Welfare Portal *According to the example of the 'Burum Portal'*	To enhance social cohesion on a neighbourhood level.	Local residents, healthcare and welfare organisations, housing corporations and local municipalities.
3	Son and Breugel Connects	To enhance the welfare of the community through connecting local residents and through mobilisation.	Local residents, networks and entrepreneurs.
4	Sevagram Connect	To enhance mutual (informal) care by 'connecting' (health) care demands and informal caregivers.	Local residents, healthcare providers, Sevagram's clients, informal caregivers and entrepreneurs.
5	My Neighbourhood	To offer an adequate and an accessible interactive communication channel for a community (i.e. to integrate services and information).	Local residents, entrepreneurs, health and welfare organisations, municipalities
6	Community Connect	To connect local residents by bringing together (health) care demands with (informal) services.	Local residents, resident-organisations, non-profit organisations, local initiatives and municipalities.
7	Region Online	To support local communities in creating a better and a more social living environment.	Local residents, entrepreneurs, non-profit organisations and municipalities.
8	Wiki Community	To enhance self-management competencies of the local residents and to facilitate these residents to age-in-place.	Local residents, informal caregivers, healthcare organisations and volunteers.
9	WeHelpen	To encourage and facilitate community-dwellers in helping each other.	People who help someone or receive help (e.g. informal caregivers, volunteers and people in need of care).
CATEGORY 2 SYSTEM INTEGRATOR		
10	Cubigo	To support vulnerable community-dwelling people in their independence and their health, by stimulating self-care and providing reliable information, products and services.	Older adults, informal caregivers volunteers, municipalities, service providers, healthcare and welfare organisations.

a 5 year period as the goal was to provide a recent overview of the Dutch field of Online Care Platforms. All of this resulted in the final search. The references in the articles were checked for other relevant platforms.

Phase 2 – Searching on the internet
In the second phase, the researchers extensively searched on the Internet (via Google and Google Scholar) for reports, web pages, or online descriptions, about the online care platforms. While searching for this grey-literature, the same terms that were used during the search in the PubMed and PsycINFO databases were employed. The references in the documents were again checked for other relevant platforms. In this second phase,

3 researchers worked together in reviewing and assessing the online platforms, i.e. they all independently searched for information on the online platforms and they convened on a regular basis, in order to align their findings on the terminologies, the categories and the characterisations of the data. These researchers applied 'inductive reasoning', moving from specific observations, to broader generalisations (Bryman, 2016).

Selecting the studies
A report on an online platform, whether it was a scientific article or not, was suitable for inclusion, if it met the following inclusion criteria. The online platform: (1) had to have at least two functionalities, e.g. information on

Table 2. Characteristics of the Online Care Platforms (cont.)

No.	Platform	Goal	End users
		CATEGORY 3 CARE NETWORKS	
11	Caren	To facilitate and support people in the need of care and at coordinating and arranging their own (health) care	People in need of (health) care, informal caregivers, volunteers, healthcare professionals, social workers.
12	HelloCare	To attune their (health) care with family members, acquaintances, friends and home care and to facilitate collaboration.	People who live at home and who are in the need of (health) care. Informal caregivers and healthcare professionals.
13	Companion	To facilitate older adults to age-in-place.	Older adults, their informal caregivers and healthcare professionals and social workers.
14	Quli	To enhance self-management competencies of frail individuals.	People in need of (health) care, informal caregivers, family, friends, healthcare professionals, healthcare organisations and municipalities.
15	ShareCare	To support informal caregivers who wish to coordinate their collaborations and (health) care with a person they care for.	People in need of (health) care, informal caregivers, family, friends, volunteers, healthcare professionals, social workers, healthcare organisations.
16	Fello	To activate and support the social networks of people who are in need of care.	People in need of (health) care, informal caregivers, family.
17	FamilyNet	To support informal caregivers and healthcare professionals who wish to coordinate their collaborations and (health) care.	People in need of (health) care, informal caregivers, healthcare professionals and organisations.
18	Caregivers Plan	To facilitate older adults to age-in-place by bringing all of the caregivers together in one online environment.	Older adults, informal caregivers, volunteers, friends, healthcare professionals and healthcare organisations.
19	MiBida	To improve the collaboration and the communications among informal caregivers and thereby contributing to the quality of life of those people in the need of care.	People in need of (health) care, informal caregivers, family, friends, healthcare professionals and home care.
20	BetterApp	To support individuals in actively working on their (health) goals in a collaboration with informal caregivers and healthcare professionals.	Vulnerable individuals, informal caregivers and healthcare professionals.
21	Netty	To improve the collaboration and the communications among informal caregivers and healthcare professionals, thereby contributing to the quality of life of people who are in need of care.	Informal caregivers, healthcare professionals, family, friends. People in need of care who themselves do not use the platform.

community activities and a tool to communicate with a caregiver (a video calling service); (2) had to be easily accessible for older adults and be available for everyone who wanted to subscribe; (3) had to be aimed at improving (health) care and/or wellbeing; (4) had to be interactive; and (5) had to be available and currently in use in the Netherlands. Researched documents were excluded if the online platform: (1) was intended for older adults, suffering from specific conditions or diseases (e.g. diabetes, heart disease, dementia, and so forth); and (2) was merely intended for older adults living in a nursing home or in a care facility (i.e. for certain clients or members only).

Charting the data, summarising, and reporting on the findings

Each included online platform was described according to a set of 20 characteristics (*Table 1*), such as the platform's goal, its target group, its end users and its functionalities. As described in Phase 2, these characteristics were determined by using an inductive approach, for instance, the characteristics were extracted from and observed in the collected data about online platforms. The 3 researchers from Phase 2 independently described each platform. These descriptions were then compared; any discrepancies were solved by discussing the most appropriate and suitable description.

Table 3. Functionalities of the Online Care Platforms

No.	Information	Communication	Commercialism	Community care	Healthcare	Monitoring	Recreation
1	a. Local news b. Local yellow pages c. Local calendar d. Profiles of local residents e. Weekly newsletter	a. My neighbourhood b. Messages	a. Information on local entrepreneurs b. Local products	a. Social marketplace	a. Personal healthcare file	- No information was available about this characteristic	a. Blog
2	a. Local news b. Local calendar c. Local yellow pages d. Local newspaper e. Weather f. My network	a. Video calling (e-consult) b. E-mail	a. Local taxi service	a. Social marketplace	a. Website: My Health b. Health care questions	a. Blood pressure b. Medicines	a. Book exchange b. Photo archive c. Twitter d. Audio books e. Internet
3	a. My profile b. My network c. Local news d. Local yellow pages	a. My networks b. My activities c. Local calendar	a. My services (e.g. local products, shops etc.)	a. My bulletin board (local classifieds and forums)	a. Social marketplace	-	a. My social media b. Local TV channel (live-stream)
4	a. Local news b. Local calendar c. Library of knowledge	a. Knowledge centre ('ask questions about anything')	a. Social deals (information on local offers) b. Commercial marketplace	a. Social marketplace	-	-	-
5	a. Local calendar b. Local news c. External information (e.g. information from the municipality) d. Local yellow pages	a. Forum for neighbourhood improvements b. Email c. Video calling service (Skype)	a. Bulletin board b. Local services c. Professional help (health and welfare services)	a. Social marketplace b. Social yellow pages	a. Health calendar (private online setting to correspond about health related matters, e.g. appointments)	-	a. Local stories b. Local photo and video album
6	a. Local yellow pages	a. Local calendar b. Local online community (Facebook and Twitter) c. Local forum and messages	a. Commercial marketplace	a. Social marketplace	-	-	-

Table 3. Functionalities of the Online Care Platforms (cont.)

No.	Information	Communication	Commercialism	Community care	Healthcare	Monitoring	Recreation
7	a. My profile b. Networks c. Local yellow pages (google maps) d. Local news (stories, blogs)	a. Local calendar b. Forum for neighbourhood improvements c. Collaboration platform (on local initiatives and projects)	a. Social Marketplace	-	-	7	a. My profile b. Networks c. Local yellow pages (google maps) d. Local news (stories, blogs)
8	a. Contacts b. Profile c. Personal files d. Local calendar c. Local yellow pages d. Social yellow pages e. News f. Weather g. Public transportation services	a. Video calling service b. Personal calendar c. Messages d. Email	a. Grocery service b. Local taxi service c. Meal service	a. Social marketplace b. Neighbourhood Watch c. WeHelpen (integration with online platform no. 9)	-	a. Video sitter	a. Games b. Audiobooks c. TV d. Photo album e. Facebook f. Radio g. Wikipedia h. Stories i. Personal diary
9	a. My profile	a. Calendar b. Messages c. Contacts	-	a. Care needs (of the user and of other members) b. Help offers c. Help networks d. Recommendations (of others for the user)	-	-	-
			CATEGORY 2 SYSTEM INTEGRATOR				
10	a. My neighbourhood (local news, calendar and local forum) b. Weather c. Contacts d. Notes e. Disease specific information (depending notebook on the provider)	a. Messages b. Video calling service c. Forum d. Calendar (to share) e. Communication notebook f. Link to social media	a. Comfort and care services (meal service, online grocery shopping, etc.). b. Custom functionality (e.g. by community care organisations)	a. Social marketplace	a. Personal health record data b. Medication schedule c. Medication reminder d. My health measurements e. Panic button	a. LiveSafe (GPS tracker)	a. Radio b. YouTube c. Games

Table 3. Functionalities of the Online Care Platforms (cont.)

No.	Information	Communication	Commercialism	Community care	Healthcare	Monitoring	Recreation
			CATEGORY 3 CARE NETWORKS				
11	a. Profile b. Contacts	a. Video calling service b. Messages c. Care calendar (to coordinate with the care networks)	-	-	a. Log b. Notes c. Healthcare file (option to register and monitor health measurements)	-	a. Photo album
12	-	a. Contacts b. Tasks c. Meetings and appointments d. Timeline e. Log	-	-	a. Medication	a. Mobile alarm	a. Forum and photos
13	a. Weather b. Local news c. Calendar (viewing-only for the end-user) d. Quote of the day	a. Video calling service (inbound only) b. Messages (send and receive) c Text to speech	a. Meal and grocery service	a. Online church service	a. Log	a. Medication reminder b. Check In – the older adult has to accept a check-in every morning (safety measure).	a. Games b. Digital photo frame c. Photos and videos d. Internet browser
14	a. Information on healthy living/aging b. Instruction videos on the instrumental activities of daily living c. Calendar and tasks d. Contacts e. Bookshelf f. Social yellow pages	a. Video calling service b. Messaging c. E-mail d. Forum	-	a. Social marketplace b. E-coach	a. Personal health record	a. Sensor technology	a. Games (educational) b. App store c. Videos (send and receive)

Table 3. Functionalities of the Online Care Platforms (cont.)

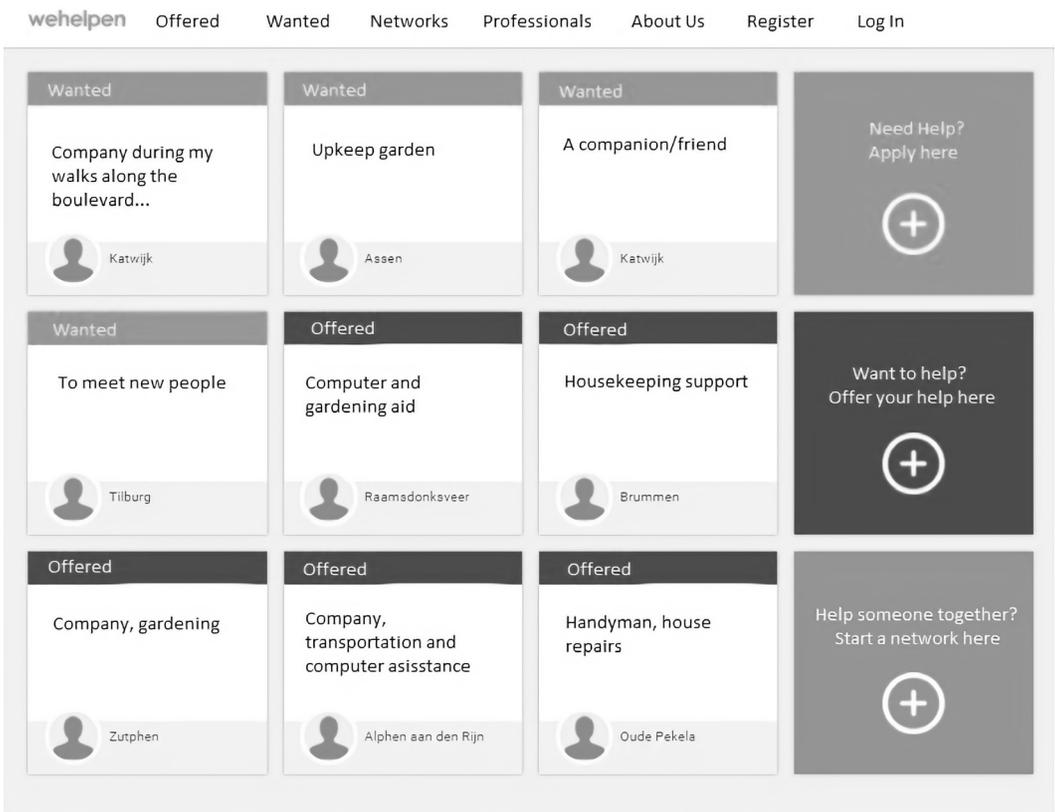| No.	Information	Communication	Commercialism	Community care	Healthcare	Monitoring	Recreation
CATEGORY 3 CARE NETWORKS							
15	a. Patient profile b. Overview members c. Notifications	a. Calendar (shared) b. Chat c. Group-email d. Group-texting e. Media (record video message)	-	-	-	-	a. Media (photos videos and audio files)
16	a. Contacts b. News	a. Calendar (shared) b. Messages	-	a. Tasks (divided among network members)	-	-	-
17	a. Contacts b. Profile of healthcare organisations	a. Exchange files b. Messages c. Calendar d. Forum e. Group message (text)	-	-	-	-	a. Photos and videos (share)
18	a. Profile b. Network overview	a. Calendar b. Messages	a. Services	-	-	-	-
19	a. Weather b. Bulletin board c. Personal newspaper	a. Video calling service b. Messages c. Chat d. Calendar	a. Medication reminder (pharmacy service)	-	a. Care notebook (track actions of the caregivers) b. Personal healthcare record	Check-In: the patient has to accept a check-in every morning (safety measure).	a. Family (photos and stories) b. Radio c. Games d. Digital photo frame
20	a. Progress overview	a. Set goals b. Set activity c. Score of the day d. Network (share progress) e. Timeline	-	-	a. Electronic health record	-	-
21	a. Internet URLS b. Group members	a. Calendar	-	-	a. Dashboard (healthcare organisations and municipalities)	-	-

Figure 2. Screenshot of the functionality of the 'Social Marketplace' platform

Consultations with the relevant stakeholders

As proposed by Arksey & O'Malley (2005), it was of value to involve the stakeholders, in order for them to provide insights beyond those that were found in the literature searches. Therefore, the description of each online platform was presented to the owner or the administrator via e-mail, so as to confirm the study's findings. Eventually 19 administrators responded to our request and provided feedback. This feedback and the additional information details were, if relevant and applicable, processed into the final platforms' description.

RESULTS

Selection process

The searches in the scientific databases and on the Internet generated 765 potentially relevant documents; based upon their title, 81 abstracts and their platform-descriptions were examined (*Figure 1*). Eventually, no scientific articles were included after reviewing these 81 abstracts, because they were not about online care platforms or because they were about platforms that were intended for older adults suffering from a specific disease or condition. Thus, the selection process finally yielded 21 documents for the review and they were all retrieved from websites or from online descriptions of their platforms.

Characteristics of the online platforms

The characteristics of the 21 included platforms are presented in *Tables 2* and *3*, from which 3 types of platforms were able to be distinguished: Community Care Platforms (9), System Integrator Platforms (1) and Care Network Platforms (11).

Community Care Platforms

These 9 platforms (BuurtWelzijn, 2017; Care Living Labs, 2018; Coöperatie Thuisverbonden, 2018; Dorpsportaal Burum, 2018; Eerste Verdieping, 2017, 2018; Munity Services, 2018; RO, 2018; Sevagram Connect, 2017; Trivici, 2017; WeHelpen, 2017; WijkConnect, 2018) were all designed, so as to support local communities, by enhancing social cohesion and by encouraging informal care. In order to obtain the objective of a more 'cohesive community', these platforms predominantly offered online functionalities regarding the domains of 'information', 'communication', 'commercialism' and 'community-care'. A few examples of the aforementioned functionalities were: a) local yellow pages, an online database of local entrepreneurs, shops and services, which granted older adults the opportunity to remotely employ services; b) social marketplace (*Figure 2*), in which the older adults could ask for, or be offered help, regarding "care-related"
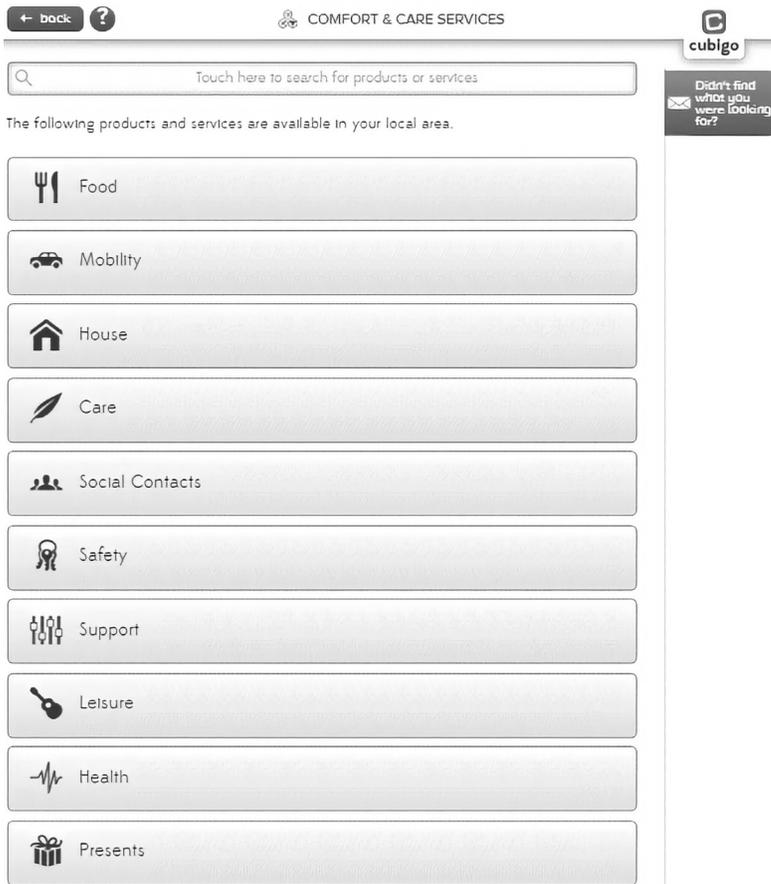
Figure 3. Screenshot of the menu functionality of the 'Comfort and Care Services' platform Cubigo

adults could contact people in their network.

Care Network Platforms
The remaining 11 platforms (BV, 2018; Caren Zorgt, 2018; Compaan, 2018; ConnectedCare, 2018; Dela, 2018; FamilieNet, 2018; Mantelplan, 2018; MiBida, 2017; Praktikon, 2018; Quli, 2018; ShareCare, 2018) were mainly designed to support (informal) caregivers who wished to coordinate assorted collaborations and (health) care issues for an older person. Consequently, these platforms predominantly offered online functionalities in the domains of 'information' and 'communication'. The 'shared calendar' (*Figure 4*), by which caregivers could coordinate their care activities, was a key functionality in these care-network platforms.

Table 4 provides many additional platform characteristics. The majority of the platforms were established between 2010 and 2015. The number of registered individuals varied substantially between the platforms. 'Small' platforms had an overall of 1100 to 6000 members and the 'larger' platforms had an overall of 30000 to 65000 members. Some platforms reported on their 'distribution range', by citing the number of organisations or neighbourhoods which had adopted their platform (e.g. 30 municipalities, 10 neighbourhoods or 500 healthcare organisations).

issues, such as assistance with a garden's upkeep, or shopping for groceries; c) local calendar, in which the older adults could find out about information regarding various activities – for example, groups and/or meet ups regarding hiking, playing card games and creative crafts and so on.

System Integrator Platforms
One platform, the Cubigo platform (Cubigo, 2018), was a system integrator: a platform which had the capability of integrating existing services and applications into their own software. This platform had a large number of functionalities, within all of the domains that were taken into account during the selection procedure, such as 'information', 'communication', 'commercialism', 'community care', 'health care' and 'monitoring'. A few exemplar functionalities of the platform were: (a) calendar, a customisable 'app', into which several calendars could be integrated, for example, a personal calendar and a local (activity) calendar; (b) comfort and care services (*Figure 3*), a catalogue and a web shop for numerous care services; and (c) video calling service, a visual communication tool, by which the older

The costs for the purchase and the maintenance of the online platforms' software were mostly reimbursed by neighbourhood organisations, (health) care organisations, or by municipalities (17 out of the 21 platforms). These organisations paid fees that ranged from €500 to €5000 per year. In these particular cases, the use of the platform was free of charge for the older adults. In a few cases, (e.g. Companion or Caregivers Plan) the older adults themselves paid an annual fee for them to use a platform. These costs then ranged from €60 to €240 per year.
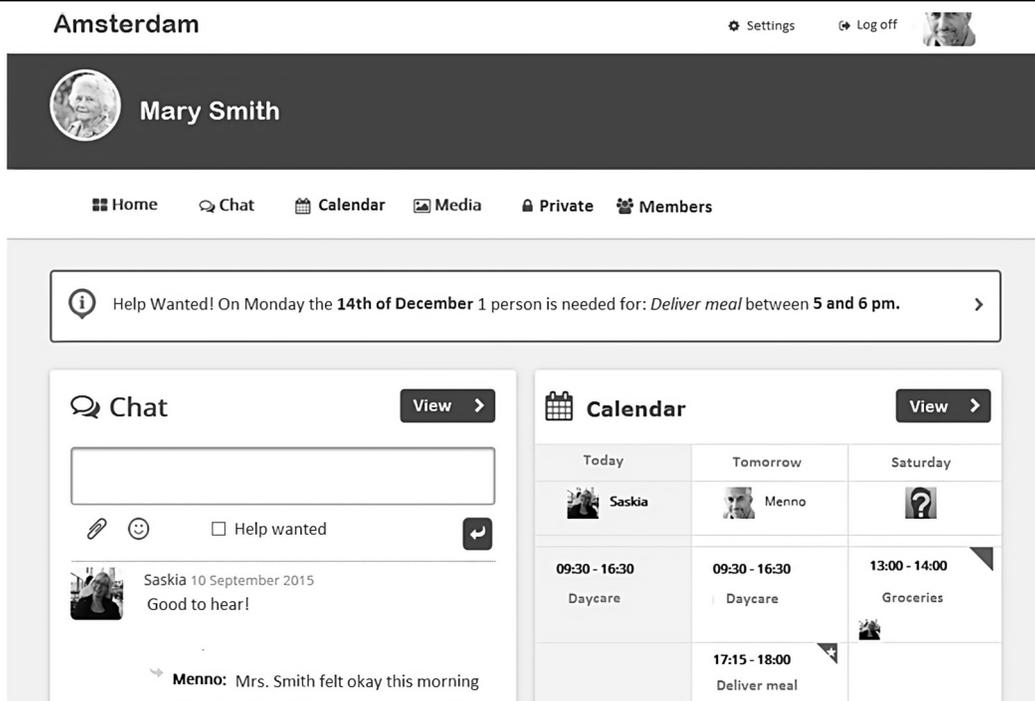
Figure 4. Screenshot of the functionality of the 'Shared Calendar' platform ShareCare

A majority of the platforms (N=17) operated by using a web-based format and they were independent of any substantial hardware. Of these, 6 could also be accessed via applications for mobile devices (Android and iOS). Three of these platforms were primarily designed as an application for mobile devices, but nonetheless, they could also be accessed via a regular website. Only 1 platform operated on a hardware device and it was not available via a regular website. Most of the platforms (N=15) had a statement, or information available, regarding 'privacy' and the way in which the personal data was used or protected. Furthermore, many online platform owners (N=15) included end-users' requirements, experiences and feedback, regarding the 'usability and the content' of their website, for the development and the improvement of their online platform.

Distinctive platform features
A few platforms were distinctive, since they had a wider employability and the possibility of being integrated with other systems. These were: (a) the Cubigo platform, which had an open structure, for instance, the platform could be integrated with existing services and applications, into their own software. The users could individually determine the layout of the platform's main menu. Thus, this platform could essentially be adapted to every wish and demand of the user, hence, the categorisation of this platform was determined as an 'integrator'; (b) the 'community-care' platforms, which classified their online platforms as a 'method'. These could be purchased and adopted by each neighbourhood. The initiators of this method (such as a municipality, a local resident, or a welfare organisation) were responsible for the success and the implementation of the platform. Consequently, these platforms seemed to be flexible and widely applicable for the various groups of older adults.

Discussion
This review has provided an overview of the available Dutch online care platforms for community-dwelling older adults. Three types of platforms were identified: (1) Community Care Platforms, which attempt to enhance social cohesion, by interlinking the community-dwelling older adults, with neighbouring informal caregivers and by promoting local activities on a neighbourhood level; (2) Care Network Platforms, which provide older adults, professionals and informal caregivers, with tools to coordinate, plan and communicate about (health) care; (3) System Integrator Platforms, which interconnect a variety of functionalities. The majority of the online platforms operate by using a web-based format and are independent of any substantial hardware. The number of registered individuals varies per platform from between 1100 and 65000.

This scoping review has shown the existence of a considerable number of comparable online care platforms. It took a great amount of effort to retrieve the relevant information from the majority

Table 4. Characteristics of the Online Platforms

No.	Status and distribution	Costs	Hardware/software	Privacy	Evaluation	Other details
1.	Community Welfare was established in 2014, is available on a national level and has been implemented in 411 Dutch neighbourhoods.	Use of the platform is free for the end-users.	The platform is web-based and independent of hardware.	The platform has a privacy statement available on their website.	The platform is frequently updated, based upon user experiences. No research was performed or available.	The platform has an ANBI status. It is non-profit and it provides various offline activities, in order to enhance the symbiosis between offline and online social care.
2.	The Burum Portal was established in 2013. 4 different organisations have had a platform developed by the Trivici Welfare Portal.	The 'basic' services of the portal are free for the end-users. Certain paid services are optional.	The platform is web-based and is independent of hardware.	-	-	
3.	Son and Breugel Connects has 2100 members (circa 30% of the local residents).	Use of the platform is free for the end-users.	The platform is web-based and is independent of hardware. It can also be accessed via applications for mobile devices (Android and iOS).	The platform has a privacy statement and information regarding the use of personal data (available on the platform's website).	The platform is frequently tested and reviewed by a panel of end-users.	The platform is an initiative of the local residents and it is financed by the foundation 'Son and Breugel Connects'. The platform provides various offline activities to enhance the symbiosis between offline and online social care.
4.	Sevagram Connect was established in 2015 and it is mostly used by the residents of one city (Heerlen). The information on Sevagram Connect can be accessed by approximately 2000 employees of Sevagram Connect (the healthcare organisation) and 1100 volunteers, clients and their informal caregivers.	Use of the platform is free for the end-users. Local entrepreneurs or organisations who wish to display their products or services on the platform have to choose a 'subscription' and pay an annual fee (ranging from €275 to €500).	The platform is web-based and it is independent of hardware and it can also be accessed via the applications for mobile devices (Android and iOS).	-	-	Sevagram Connect also facilitates recreational activities (no online functionality is designed for this service). The software is merely considered as the means to an end (i.e. to connect). Individuals can use the services without ever consulting the website or the application.
5.	My Neighbourhood was established in 2011 and it is currently used by 30 municipalities in the Netherlands and in Germany.	Use of the platform is free for the end-users. The custom online platform is €48.50 per month, including software updates and the technical upkeep.	The platform is web-based and it is independent of hardware.	The platform has a privacy statement available on their website.	Research by a Graduate Student Sociology (Radboud University Nijmegen).	My Neighbourhood is a "method" in which an initiator plays an important role (e.g. a municipality, a local resident, a welfare organisation). Each community or neighbourhood can have their own custom online platform. The responsibility for the (success of) the online platform lies with the initiator. The platform is accompanied by a constructive communication approach.

Table 4. Characteristics of the Online Platforms (cont.)

No.	Status and distribution	Costs	Hardware/software	Privacy	Evaluation	Other details
6.	Community Connect was established in 2012 and it has been implemented in 10 neighbourhoods of the Dutch City Utrecht.	Use of the platform is free for the end-users. The platform is financed by the membership fees of non-profit organisations or local entrepreneurs who display their services on the platform (the membership fees range from €50 p.a. for local residents to €200 p.a. for organisations).	The platform is web-based and it is independent of hardware.	The platform has a privacy statement available on their website. The users remain the owner of their own online content. This content is saved on private servers and it is not shared with third parties.	In each neighbourhood, the platform collaborates with so called development groups (local residents and professionals who give their opinions on the platform's functionalities and operation).	Community Connect employs ambassadors in every neighbourhood and it employs a community-driven-development process. Every neighbourhood can use Community Connect to create their own custom online neighbourhood platform.
7.	Region Online was established in 2015 and it has been implemented in 19 neighbourhoods (mainly in the city of Amsterdam).	Use of the platform is free for the end-users. A provider of the Region Online platform (i.e. an organisation or a person that employs the software) pays approximately €2000 p.a. This provider also becomes a member of the Region Online Cooperation.	The platform is web-based and it is independent of hardware.	The data is encrypted by using SSL certificates.	The Amsterdam University of Applied Sciences (Division School of Digital Media and Creative Industries) performs research on the ways in which digital tools can strengthen the urban networks. All results from this study are processed by Region Online.	Region Online originated as a local website of a single neighbourhood (IJburg, Amsterdam). Several organisations were also interested. Consequently, the format was made available for every community who wished to adopt this 'method'. The platform's technology is flexible, modular, adjustable and customisable.
8.	Wiki:Community was established in 2012 and it is mainly used in the Dutch province of Brabant.	Use of the platform is free for the end-users. Additional services include a monthly fee (e.g. video sitter €14.95).The costs for the video sitter (and other services) are dependent on the provider (i.e. the fees may vary) and are not fixed or charged by the Wiki:Community.	The platform is web-based and it is independent of hardware.	The platform has a privacy statement and information regarding its 'terms and conditions'. These are available on their website.	Wiki:Community has developed their online platform based on the input and the needs of the end users. Tilburg University has evaluated the platform.	Wiki:Community has an open structure which enables integration with other online systems: other applications or external functionalities are integrated into the Wiki:Community platform, instead of being merely linked to an URL.
9.	WeHelpen was established in 2012 and it has 31000 members.	The use of the platform is free for the end-users.	The platform is web-based and it is independent of hardware.	The platform has a privacy statement available on their website.	-	In order to ensure that WeHelpen is implemented correctly, they have developed a toolkit. All requests for help and help offers are monitored by an appropriate language.

Table 4. Characteristics of the Online Platforms (cont.)

No.	Status and distribution	Costs	Hardware/software	Privacy	Evaluation	Other details
10.	Cubigo was established in 2011 and it is available worldwide. The platform is in use in various areas of the Netherlands, Belgium and the United States.	The use of the platform is free for the end-users. Local entrepreneurs or commercial organisations pay a monthly fee of €12.50 (to have their own functionality on the platform). The provider of the Cubigo platform (i.e. the organisation which employs the software) pays approximately €5000 p.a.	The platform is web-based and it is independent of hardware and it can also be accessed via the applications for mobile devices (Android and iOS).	Cubigo follows privacy laws; the users retain the ownership of their data and they decide whether or not to share this data. The data is encrypted and it is only accessible for authorised people. The data travels over secure 'lines'. The data is not used or sold for commercial purposes.	The platform is continuously evaluated and improved based upon the user's requirements. In a collaboration with several research facilities the needs of the older adults regarding this online platform were examined.	Cubigo has an open structure, i.e. the platform integrates existing services and applications into their own software. The users can individually determine the layout of this the platform's main menu.
11.	Caren was established in 2012 and it is only available in the Netherlands. 180 healthcare organisations (the intensity of use varies) and 65000 individuals use Caren weekly.	The use of the platform is free for the end-users.	The platform is web-based and it is independent of hardware.	Caren only has a little information published regarding privacy. The website services have an https connection. The data is saved on separate servers.	Caren was tested by a healthcare organisation (Zorggroep Groningen). Employees and clients of this organisation were excited about the possibilities, the transparency and the straightforwardness of Caren.	The Caren Fund supports informal caregivers: in other words, someone who voluntarily cares for another can receive a small grant from the Caren Fund. The platform offers an online personal health environment. Personal health data can be copied to Caren. The person in the need of care creates and coordinates their own Caren environment and they have control over the data and they decide which individuals gain an access to it. There is extensive online support for the user (the person in the need of care).
12.	HelloCare was established in 2012 (until 2016, it was known under a different name, ConnectedCare).	The use of the platform is free for the end-users. Certain modules can be accessed for a fee (e.g. mobile alarm). (Health) care professionals pay a monthly fee and healthcare organisations pay fees for implementation activities.	The platform is web-based and it is independent of hardware.	The platform has a privacy statement available on their website.	-	-

Table 4. Characteristics of the Online Platforms (cont.)

No.	Status and distribution	Costs	Hardware/software	Privacy	Evaluation	Other details
13.	The Companion Tablet has been available since 2014.	The (hardware) tablet costs €299. A monthly fee is paid for 2 informal caregivers to gain access to the administrator's portal (€12.95). Every extra administrator costs are €2.50 (PPPM).	The platform is a hardware solution, i.e. it is a tablet	It is only merely mentioned on the platform's website is that the privacy of its users is respected.	In July 2014, the Companion was tested by the Dutch Consumer Association. Furthermore, a test was performed (the proof of concept) in 2014 in a collaboration with a healthcare organisation and the Dutch municipality of Bloemendaal (N=50).	Older adults who use the Companion tablet have limited administrative 'rights'. The platform's settings are modified by an informal caregiver (e.g. a family member). They, for example, set alarms, provide the calendar with content and/or choose a photo for the digital photo frame. Healthcare and welfare organisations and municipalities have the option to develop their own functionality, in order to be integrated into the Companion tablet
14.	Quli was established in 2014 and it is used (2015) by 21 healthcare organisations.	The use of the platform is free for the end-users. (Healthcare) organisations pay a fee in proportion to their number of users.	The platform is web-based and it is independent of hardware and it can also be accessed via the applications (Android and iOS).	The platform has a privacy statement available on their website. Quli offers 'privacy by design', in which case, the user determines whether certain contents are shared with third parties.	In 2015, 50 clients of a healthcare organisation filled out a questionnaire about self-management competencies in relation to Quli. Additionally, the usability of the platform was tested with the end-users. Based upon the results, Quli 2.0 was launched on the 1st of October 2016.	Quli is capable to integrate several electronic health records. Quli aspires to collaborate with Pazio (the healthcare platform) in the future.
15.	ShareCare was launched in 2007 (since 2011, it has been operated by the company, Simac Healthcare). ShareCare has been employed by various hospitals, municipalities and healthcare organisations.	ShareCare is a paid service, which is bought by healthcare organisations or municipalities, allowing their citizens and patients to use the platform free of charge. Private individuals pay €69.95 per year.	The platform is web-based and it is independent of hardware and it can also be accessed via the applications (Android and iOS).	The user data is encrypted and it is stored on private servers. The privacy policy is extensively explained in their 'terms and conditions'.	ShareCare has been redeveloped three times, based upon usability studies.	-
16.	Fello was established in 2015 and it has more than 2800 users.	The use of the platform is free for the end-users.	Fello was primarily designed as an application for mobile devices (Android and iOS), but it can also be accessed via a regular website.	The platform has a privacy statement available on their website.	Fello frequently asks users to evaluate the usability and content of the platform (via short online questionnaires).	Fello was formerly known under a different name: 'Mantellink'.

Table 4. Characteristics of the Online Platforms (cont.)

No.	Status and distribution	Costs	Hardware/software	Privacy	Evaluation	Other details
17.	FamilyNet was established in 2006 and has been employed by over 500 healthcare organisations in the Netherlands and in Belgium.	Healthcare organisations pay €495 per year (in this case, the clients and families may use the platform free of charge). Private individuals pay €4.95 per month.	The platform is web-based and it is independent of hardware.	It is FamilyNet characterises-itself as a safe and reliable software program (ISO 2700, NEN 7510).		The prime customers of FamilyNet were originally healthcare organisations. Only at a later stage, the platform made its product available for private individuals.
18.	Caregivers Plan was established in 2010.	Caregivers Plan costs €19.50 per month for private individuals (their expenses are sometimes reimbursed by the municipality).	The platform is web-based and it is independent of hardware.	It is Caregivers Plan characterises itself as a safe online environment, which can only be accessed by members of a private network.	-	Every member of the network (e.g, an older adult, an informal caregiver, or a professional) can take on the role of an administrator.
19.	MiBida was established in 2013. Approximately 300 healthcare professionals, 500 people in need of care, and 5000 informal caregivers use the platform.	MiBida costs €8.95 per month for an entire network (maximum no. of informal caregivers: 2. Every extra person costs €4.50 per month).	The platform is web-based and it is independent of hardware and it can also be accessed via the applications for mobile devices (Android and iOS).	Data is encrypted at all times and it is stored on private servers.	MiBida originated from 3 European research projects in the domains of 'User-Centred Design, Ethics and Privacy'. The platform was repeatedly improved, based upon the experiences of several user panels (3 x N=20).	-
20.	BetterApp	Healthcare organisations pay €2500 for 10 'Better' licences (including support and implementation activities). The license for a professional costs €100 per year (unlimited no. of patients).	BetterApp was primarily designed as an application for mobile devices (Android and iOS). Caregivers and healthcare professionals can also access the application via the web-based platform.	The platform has a privacy policy available on their website (there are separate privacy policies for caregivers and clients).	The platform is frequently tested and reviewed by a panel of end-users.	BetterApp is capable of being integrated in the connections with several electronic health records.
21.	Netty was established in 2014 and it has 5000 end-users (collaborating with 6 health and welfare organisations).	Healthcare or welfare organisations who wish to adopt Netty pay €4850 every year (including support).	Netty was primarily designed as an application for mobile devices (Android and iOS), however, it can also be accessed via the web-based website. platform.	The platform has a privacy statement available on their web-based website.	Netty is researched, in order to (1) investigate which clients and networks that Netty is suitable for; (2) determine which (health) care tasks can be best assigned to the network; and (3) determine the ways in which healthcare professionals can employ Netty in an efficient manner.	-

of these online platforms. Thus, for older adults, it may be challenging to discover what a platform's focus is and which available services it has. In addition, the researchers ascertained that some platforms were exclusively 'tailor-made' for small regions, such as for a neighbourhood.

Online care platforms for older adults have not yet been adopted onto a large scale, nor are they widely employed. These findings suggest that it is challenging to successfully exploit these online care platforms. A system integrator, or a platform with an open source is, therefore, perhaps a promising 'type', since it has the potential to interconnect with a variety of functionalities, systems and moreover, it is likely to prevent fragmentation. In other words, this platform type can help to reduce the number of separate platforms and applications for older adults by integrating them within one single platform (Aminpour, Sadoughi, & Ahamdi, 2014; Conte et al., 2017; Cresswell, Mozaffar, Lee, Williams, & Sheikh, 2017; Mulder, Hartog, Zijda, & Gorp, 2017).

Most of the online platform owners reported on and wanted the end-users' requirements, experiences and feedback, on the 'usability and the content' of their website, for the development and the improvement of their product. This 'owner research' had the sole objective of determining whether a certain platform had a marketable value. No research by platform owners, or by research institutes, has yet focused on the impact, or on the effects that are related to the online platforms' initial goals.

This study excluded several online platforms, because they were no longer available (i.e. 'online'). Due to the fast changing world of (health) care innovations that coincides with a highly competitive environment and with a pressure to achieve results; these platforms 'come and go' quickly.

Limitations of the review

Despite the study's efforts to conduct a comprehensive search, some relevant online care platforms may not have been discovered. Furthermore, due to the lack of any previous research in this field, this scoping review has been based solely on grey-literature reports. All sorts of documents, such as web pages, reports, or online descriptions about these platforms, formed the basis for this review.

Conclusion

This scoping review has shown the existence of a considerable number of comparable online care platforms, which can be divided into three types: Community Care Platforms, Care Network Platforms, and System Integrator Platforms.

The results have provided an insight into how these platforms should be categorised, which in turn, has allowed for one to have a more adequate discourse about this particular theme. The misperceptions regarding the nature and the capabilities of these online platforms are now able to be somewhat alleviated. Furthermore, the typology of online platforms can better guide the interested users, such as the older adults, the professionals, the informal caregivers and the municipalities, in choosing a suitable platform.

Researchers should, to a greater extent, investigate if these online care platforms have added value and do indeed fulfil their promise in tackling the problems that have arisen due to the current transitions in health care. It should be investigated whether these online care platforms indeed do have a positive impact on aging-in-place, solidifying social cohesion, whilst at the same time, supporting older adults in coordinating or managing their care, as well as in enhancing the self-reliance of the older adults.

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