

Report

A review of the use of mHealth to promote healthy ageing and support the delivery of age-friendly health and longterm care services

by

Professor Siaw-Teng Liaw

Dr Sameera Ansari

Dr Jitendra Jonnagaddala

Dr Padmanesan Narasimhan

Dr Md Mahfuz Ashraf

A/Professor Ben Harris-Roxas

Professor Mark Harris

Date: 28 Feb 2018

Foreword

The WHO Western Pacific Regional Office (WPRO) has identified healthy ageing as a key public health challenge. Equitable access to safe and high quality age-friendly health services is an important component of universal health coverage. At the World Health Organization (WHO) regional meeting on ageing and health in the western pacific, held in Manila in July 2017, the member states recommended incorporation of a whole systems approach towards healthy ageing. As part of a whole-of-systems approach to addressing this challenge, tele-/electronic-/mobile-health applications and technology transfer to low and middle-income countries were identified as an important strategy. Healthcare innovations for ageing, including *mobile health* (mHealth) interventions provide an unique opportunity to enhance access and equity of health service delivery to the elderly in LMICs (Low and middle-income countries).

The UNSW Sydney's School of Public Health and Community Medicine was selected to undertake a review on the use of mHealth to enhance healthy ageing and aged care services. We scoped and reviewed the literature to answer four questions:

- 1. How is mHealth being used by all stakeholders to promote healthy ageing and support the delivery of age-friendly health and long-term care services?
- 2. What are the effective models for implementing mHealth?
- 3. What are the lessons learnt from implementing mHealth initiatives?
- 4. Is there enough evidence to support the impact of mHealth?

This report presents the findings from the review.

Professor Siaw-Teng Liaw on behalf of the UNSW review team

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Definitions

The following definitions were adopted for this review:

- 1. mHealth:
 - mHealth is defined by the WHO Global Observatory for eHealth (GOE) as medical and public health practice supported by mobile devices, such as mobile phones, patient monitoring devices, personal digital assistants (PDAs) and other mobile wireless devices.
 - mHealth involves the use and capitalisation on a mobile phone's core utility of voice and short messaging service (SMS), as well as more complex functionalities and applications including general packet radio service (GPRS), third, fourth and fifth generation mobile telecommunications (3G, 4G and 5G systems), global positioning system (GPS) and Bluetooth technology.
 - Wearable technologies such as activity trackers and self-monitoring devices, that may be linked with non-mobile devices such as a computer, will be included in this review.

2. Healthy ageing:

• WHO(1) defines healthy ageing as 'the process of developing and maintaining the functional ability that enables wellbeing in older age,' where 'functional ability comprises the health-related attributes that enable people to be and to do what they have reason to value'.

3. Age-friendly environments:

- The 2015 WHO World report on ageing and health(1) describes eight domains of the age-friendly environments:
 - 1. Housing,
 - 2. Social participation,
 - 3. Respect and social inclusion,
 - 4. Civic participation and employment,
 - 5. Communication and information,
 - 6. Community support and health services,
 - 7. Outdoor spaces and built environment, and
 - 8. Transportation.

Glossary

	Applications
apps	Applications
AT	Assistive technology
BP / DBP / SBP	Blood Pressure / Systolic Blood Pressure / Diastolic Blood Pressure
CAD / CVD	Coronary Artery Disease / Cardiovascular Disease
CASP	Critical Appraisal Skills Programme
COPD	Chronic Obstructive Pulmonary Disease
EHR	Electronic health record
GPS	Global positioning system
HbA1c	Glycosylated Hemoglobin A1c, an indicator of diabetes control
HIS	Health Information System
HRM	Human Resource Management
ІСТ	Information & Communication Technology
IHD	Ischaemic Heart Disease
IoT	Internet of Things
LIS	Laboratory information system
LMIC	Low and Middle-Income Countries
МСН	Maternal and Child Health
mHealth	Mobile health
MDGs	Millennium Development Goals
PICO	Population, Intervention, Comparator, Outcome
POC	Point of Care
PRISMA	Preferred reporting items for systematic reviews and meta-analyses
QoL	Quality of Life
RCT	Randomised Control Trial
RE-AIM	Reach, Effectiveness, Adoption, Implementation, Maintenance
RIS	Radiology information system
SDGs	Sustainable Development Goals
SMS	Short Messaging Service
UI	User Interface
VOIP	video-over-internet protocols
UK	United Kingdom
USA	United States of America
WHO	World Health Organisation
-	

Summary

Background

The WHO Western Pacific Regional Office (WPRO) has identified healthy ageing as a key public health challenge and recommended a whole systems approach to address this challenge. Tele-/electronic-/mobile-health applications and technology transfer to low and middle-income countries was identified as an unique opportunity to enhance access and equity of health service delivery to the elderly in low and middle income countries. **Objectives**

Conduct a review of the literature and Google play store to answer the following questions:

- 1. How is mHealth being used by all stakeholders to promote healthy ageing and support the delivery of age-friendly health and long-term care services?
- 2. What are the effective models for implementing mHealth?
- 3. What are the lessons learnt from implementing mHealth initiatives?
- 4. Is there enough evidence to support the impact of mHealth?

Methods:

A comprehensive literature review and a search of the Google play store for apps related to aging and aged care.

Key Findings

- Conclusive evidence for the cost-effectiveness of mHealth to improve healthy ageing and support aged friendly health services is currently lacking.
- Feasibility and usability studies are well designed and confirm positive attitudes to mHealth with high intention-to-use and positive trends in user participation, uptake and engagement.
- Pilot studies on adoption and implementation should include safety and reliability testing, accuracy of underlying algorithms and validity and reliability of decision support rules.
- Heterogeneity in study design, implementation and measurements must be addressed and standardised to enable meta-analysis to further understand the impact of mHealth on clinical and patient outcomes.
- Innovation in research and evaluation methodology is important to translate feasibility studies into definitive clinical trials focused on outcomes. Mobile technology and electronic health records have important roles in broadening the reach and representativeness of RCTs, while substantially reducing the time to determine intervention effectiveness and reducing study costs.
- Future research needs experimental study designs and a holistic approach that addresses multilevel determinants (clinical, behavioural, and care coordination) of shared care, self-care and proactive collaborations between health care professionals and patients.
- The rapid pace of technological change and the rapid development, adoption (and demise) of mHealth apps presents crucial challenges for clinicians, users and policy makers.
- The gaps in mHelath to support sexual health, violence and injury, drug and alcohol abuse, and age-friendly environments highlighted need to be addressed. This may require a paradigm change from the biomedical model to a more holistic biopsychosocial one.

- Good implementation is important and must consider sociotechnical requirements of all the actors to optimise the use of mHealth in achieving the quadruple aims cost-effective beneficial outcomes for the patient and the community, patient satisfaction and provider well-being.
- Good collaborative partnerships among all the actors in the design, development, testing, implementation and evaluation of mHealth apps are essential.
- A participatory design approach is needed in which target users are involved in the codevelopment of cost-effective and personalized mHealth apps that are sufficiently mature before implementation.
- Healthcare organizations need to consider the risk of fragmenting clinical practice within the organization as a result of too many apps being developed or used.
- Robust governance frameworks are essential to anticipate and/or act on intended and unintended clinical outcomes and consequences of integrating mHealth tools and associated information into electronic health records (EHRs) and health information system (HIS) either directly or through an Internet of Things infrastructure.
- A robust governance framework for the use of mHealth tools and integration with the EHR and HIS is important.

Background and rationale

WHO regional context

WHO Member States are grouped into 6 WHO regions:

- 1. African Region,
- 2. Region of the Americas,
- 3. South-East Asia Region,
- 4. European Region,
- 5. Eastern Mediterranean Region, and
- 6. Western Pacific Region.

WHO Member States are also grouped into 4 income groups (low, lower-middle, uppermiddle, and high) based on the World Bank list of analytical income classification of economies for the fiscal year, which is based on the annually released Atlas gross national income per capita estimates.

Countries are further separated into 6 World Bank regions: East Asia and Pacific, Europe and Central Asia, Latin America and the Caribbean, Middle East and North Africa, South Asia and Sub-Saharan Africa. A 7th group comprising high-income countries in each of the 6 regions is also used in determining the reporting of **UN Sustainable Development Goals (SDGs)** indicators in 2017. In contrast, the **UN Millennium Development Goals** (MDGs) program classified regions into "developing" and "developed" regions, with further categorisation into the subregions.

The financial categorisation is important because, while the LMICs have the health of their people and the delivery of better health services as core development goals and eHealth is a recognized part of eGovernment, there are resource constraints. In LMIC the role of ICT and eHealth is largely limited to the collection and management of health data in contrast to upper-middle and high income countries where eHealth and eGovernment play a major role in improving health outcomes, for example, electronic health records (EHRs), clinical decision support and telehealth.

Population and mHealth context

The proportion of people aged over 60 years is increasing globally; it is expected to double by the year 2050¹. This is due to a longer life expectancy which can be attributed to advancement in healthcare as well as improved access to health services worldwide. The increase in longevity is especially rapid in low and middle-income countries (LMICs), which is a major public health concern. According to the WHO (2014), there were 240 million people aged 60 years and above in the Western Pacific Region in 2010, of which 78% were from LMICs.

In this context, it has been estimated that there are over 3.2 billion unique mobile phone users(2) and approximately 1.75 billion smartphone users worldwide(3). The smartphone market, including the health information technology market, is shifting from Apple iOS towards the Android operating system, with current estimates that the ratio of *iOS:Android* smartphone is almost 20:80(3). The use of Android-based apps is due to a number of reasons: low- and medium-end hardware, availability in various screen sizes, multiple specifications, pricing and favourable costs.

Studies have emphasised the smartphone's efficiency as a communication tool, educational tool, information source and decision-support resource for patients and providers(2). Specific examples include the use of the 3D accelerometer for actimetric, body posture and falls monitoring; camera for evaluating cardiovascular system parameters, blood oxygen saturation, and eye pathologies; and microphone for recognizing diseases of the respiratory or cardiovascular systems(4). A recent meta-analysis examining the effects of mobile technology utilisation on psychotherapy outcomes found that patients who utilized mobile technology (including apps) as either a supplement to treatment or as a substitute for direct therapist contact experienced superior outcomes as compared with patients who did not receive mobile technology(5).

Positive drivers from a public perception perspective, market and population surveys have consistently demonstrated that patients, regardless of patient's age, race, gender or income, have positive perceptions of physicians who use smartphones in the clinical setting(6).

Mobile telephony and smartphones in aged care settings

The process of aging leads to sensory and motor deficits as well as changes the interactions between cognitive and sensory motor aspects of behaviour. Older adults may adapt to these changes by focusing cognitive resources serially, for instance by stopping conversation while putting on shoes(7). This strategy of approaching tasks serially may preclude older adults from getting the information that they need in a social or clinic setting. Within this context of serial cognitive resource allocation, interactive games provide older adults with opportunities to practice parallel processing of everyday tasks. Games that improve psychological health and cognitive functioning of older adults have demonstrated a positive impact on self-management and behaviour change(8)

Apps can be used as assistive technologies (ATs) for overcoming age-related sensory deficits, for detecting accidents and incidents while ageing in place, for supporting older adults with chronic diseases, and for enhancing personal communication and social companionship (9). Many authors have identified health-related ATs on smartphones as having the greatest potential for older adults; including services for improving diagnosis, investigation, monitoring, treatment, self-management and adherence(4).

Despite the increasing ubiquity of portable smartphones globally, the adoption and use of smartphones is highly age-dependant as demonstrated by recent population-based figures from the USA and the UK. For instance in 2013, while 58% of adults owned a smartphone in the USA, the percentage of younger old adults (aged 55-64) was 49% and the 65 and older age group was only 19%(10). The UK Office of Communication reported a similar age-related gap in the UK in 2013: while 62% of adult Britons owned a smartphone, only 20% of those aged 65-74 years and only 5% of those aged 75 years and over used smartphone. The inequitable age-dependent gap is likely to be similar, if not more, pronounced in LMICs.

The research to address this age inequity has recommended that:

- Smartphones and smartphone apps should have an optimal design that is appropriate for older adults to accommodate their age-related perceptive, cognitive, and movement control resources(11). Accordingly, it is argued that gestural interfaces and other design characteristics of smartphones such as a large display could overcome existing barriers related to the use of feature phones(12, 13).
- 2. The uptake of smartphones could be fuelled by the proliferation of user-friendly

services and apps, called "launchers", that meet people's social and personal needs as well as generating positive expectations in terms of their quality of life(12, 14).

Launchers can be designed to ease older adults' use of smartphones and other assistive technologies by addressing perceptual, cognitive, and motoric changes that might hinder their ability to operate smartphones. Launchers enable older adults to be more successful and efficient in operating the smartphone(15). The overall completion rate of tasks for the age-adapted launcher was much higher than for the standard Android user interface (UI) with the participating older adults perceived the age-friendly launcher's UI as more comfortable and efficient than the standard Android UI(16). The trends point to the design of holistic frameworks related to different components of the Quality of Life (QoL) models(14).

Readiness to accept, adopt/adapt and use mHealth

Research using the Mobile Health Technology Acceptance Model (M-TAM) suggests that Performance Expectancy, Mobile Anxiety, Perceived Service Availability and Personal Innovativeness were major influencing factors of Behavioural Intention. Information gathering and communication were the major enablers in mHealth app usage, partly explaining why Communication and Consulting, Clinical Decision Making, Reference and Information Gathering, and Information Management are the most popular app categories(17). Major barriers to mHealth app usage include lack of knowledge and lack of investment.

Khatun et al (2015) developed a conceptual framework to assess community readiness for mHealth, consisting of three high level dimensions: technological, motivational and resource readiness(18). This has been tested in a rural sub-district in Bangladesh, where it was found that the community has some technological readiness but inequity was observed for human resource readiness and technological capabilities. The study population was motivated to use mHealth.

Liaw et al (2017) developed an informatics capability maturity framework to assess the readiness of health organisations to adopt and use eHealth and mHealth in their practice(19). This includes five dimensions:

- 1. Data collection, integration and management in the health information system and electronic health record;
- 2. Information sharing in the heath neighbourhood;
- 3. Managing health ICT implementation and change;
- 4. Data quality management and information governance; and
- 5. Using health intelligence to improve care and population health.

This was tested in some Australian Integrated Primary Care Centres in the context of enabling and supporting integrated care(19). The WHO integrated person-centred health services framework provides the broader context within which mHealth to support healthy ageing and age-friendly health services operates. The ultimate aim is to achieve improved cost-effectiveness, integration, safety and quality of care.

Maturity and usability of mHealth apps

The usual sequence of questions from a health care professional or clinician user with regards to the maturity and usability of mHealth apps is:

- 1. Will the app do any good in promoting health and or improving safety and quality of care?
- 2. Can I rely on the information gathered from the apps and is it evidence-based?
- 3. Can I rely on the robustness of the app including the maturity and reliability in its performance?
- 4. Will this app save me time and how easy is it to use in my routine workflow?

These are important questions to consider in the design, development and implementation of mHealth apps. It applies equally to all users from clinicians to managers to patients and carers.

Any proposed design and development of an app must carefully consider what's important from the perspective of the user, the environment and the resource constraints under which the user may be using the app. There must be iterative testing and evaluation for safety and effectiveness before any app is distributed or marketed.

There are different development and implementation requirements depending on the complexity of the app. We see these levels of complexity as including:

- 1. Stand-alone applications providing limited and specific point-of-care information for one particular use case or specialty.
- 2. Integrated with other third party systems to provide them with patient information from electronic health records (EHR), laboratory information (LIS) or radiology information system (RIS).
- 3. Clinical documentation to capturing patient and encounter data via a mobile device is complex when used in the routine clinical workflow.
- 4. Clinical decision support and complex tasks such as medication management with alerts for drug-drug interactions, drug-allergies, food allergies and so on.

The same levels of complexity apply for apps designed as patient decision aids. They should be considered in any evaluation of apps.

It is with this background that we developed the framework for the methodology (**Figure 1**) to answer the four review questions as framed below:

Review questions:

1. How is mHealth being used by all stakeholders to promote healthy ageing and support the delivery of age-friendly health and long-term care services?

- To answer this question, we assessed the extent of use as a proportion of an estimated total number of mHealth apps available for health care.
- We also asseseds the pattern of use in terms of how, by whom, when and for what. The framework for the use of mHealth apps includes information sharing, education and training, healthy ageing behaviour, self-management, disease management, care delivery, organisational and managerial strategies and social approaches.
- The overall context is the Internet of Things (IoT) and the characteristics of the population from middle age onwards (aged >45 years) to understand healthy ageing, with a sub-categorisation into the healthy and frail aged as ageing progresses.
- 2. What are the effective models for implementing mHealth?
 - We used the RE-AIM and access frameworks (20, 21) to assess the

effectiveness of models to implement mHealth apps to promote healthy ageing and to support the provision of age-friendly aged care services.

- These implementation models were reviewed according to the
 - *i.* WHO themes of healthy ageing, including:
 - 1. Management of health,
 - 2. Healthier eating,
 - 3. Active living,
 - 4. Tobacco-free living,
 - 5. Reducing harmful alcohol and drug use,
 - 6. Mental health,
 - 7. Violence and Injury,
 - 8. Prevention of falls,
 - 9. Sexual health, and
 - 10. Age-friendly environments.
 - *ii.* Level of health care, including:
 - 1. Self-care,
 - 2. Clinical care by a multi-professional team,
 - 3. A healthcare organisation, and
 - 4. The health system and in the social context.

3. What are the lessons learnt from implementing mHealth initiatives?

• What are the success factors, barriers, challenges and facilitators for implementing mHealth initiatives?

4. Is there enough evidence to support the impact of mHealth?

1. The answer to this question considered the study methodology, quality of evidence, domains of healthy ageing, self-management, information or behaviour, implications for practice and/or policy.

Figure 1 describes the conceptual framework that guided the review and methodology adopted. There are 2 phases in the development cycle for mHealth apps:

- "mHealth app in development" through a formal design, development and testing cycle, and
- implementation and evaluation of mHealth apps that have been tested and found to be mostly mature i.e. reliable.

Testing of mHealth apps includes feasibility, acceptability or usability studies.

We described the implementation using the RE-AIM framework.

Evaluation may use qualitative or quantitative methods including time series, pre- and postintervention studies or randomised control trials (RCTs). These will be assessed using the Critical Appraisal Skills Program (CASP) or PICO templates.

Included Users & Stakeholders	To qualify the	h app "in develo re must be some ta eptability/usability	esting such as	Implementation and evaluation of "tested" mHealth ap					
 Patients aged 45+ years Clinicians Health 	Design	Development	Testing	Implementation May be qualitative or quantitative or use RE-AIM framework	Evaluation May include time series, cohorts, pre- and post-intervention, quasi- experimental studies and RCTs.				
professionals 4. Managers	These 3 co	lumns address C	-	This addresses Question 2This addresses Question 4review questions, but especially Questions 1 and 3					

Note: The target population is from middle age onwards (aged > 45 years) to enable an understanding of mHealth related to healthy ageing. However, some studies include all adults aged > 18 years; these should be included if the study population is predominantly > 45 years

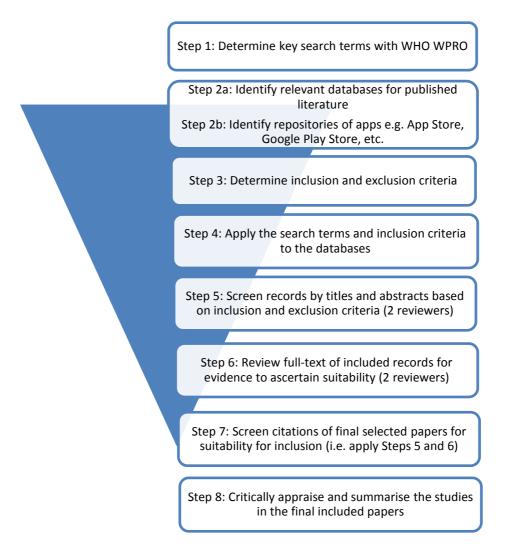
Methodology

The systematic review was carried out in various steps as per the PRISMA guidelines(22).

Figure 2 summarises the methods adopted for this review and is described below. The scope and stages involved in this systematic review (Figure 3) were discussed and agreed with the sponsor. The literature review was registered with Prospero, an international prospective register of systematic reviews, and can be accessed at:

https://www.crd.york.ac.uk/prospero/display_record.php?RecordID=82383

Figure 2 Stepwise description of the review process



Inclusion criteria

- Literature which describe the use of mHealth interventions in people aged 45 years and older
- Literature published from 2007 onwards

Exclusion criterion

• Non-English literature

Search strategy

We searched the following electronic bibliographic databases: MEDLINE, EMBASE, Global Health, PsycINFO, Scopus, ScienceDirect, CINAHL and the Cochrane Library. The search strategy included terms relating to or describing mobile health interventions for adults. A combination of the terms *mobile health, healthy ageing and aged care* were used along with terms from the RE-AIM framework including *reach, effectiveness, adoption, implementation* and *maintenance*.

The search was restricted to records published in the English language from 2007 onwards. Where possible, the search was limited to people aged 45 years and older. In ScienceDirect, the broad Science categories were limited to the ones most applicable to this systematic review. The first search of the databases was conducted on 19th October 2017. Following the initial search results, further searches were conducted and the search strategy refined until a consensus was reached by the review team. The fifth and final search of the databases was conducted on 3rd November 2017.

Search terms

Various search keywords which broadly fell into following groups were used as part of the search strategy.

- a) mHealth OR mobile health
- b) Healthy ageing
- c) Aged care

The final search strategy along with the search keywords is provided in Attachment 2.

Quality appraisal

- The above databases were finalised in consultation with a research librarian at UNSW Sydney.
- Consensus meetings were held on a weekly basis to discuss the review process.
- At least 2 members of the review team screened and selected records for inclusion based on titles and abstracts (Step 5).
- Depending on their expertise, two independent reviewers critically appraised the full text of each included study. In the event of disagreement, a consensus was achieved through discussion with at least one other reviewer.

Data extraction and management

- A detailed template incorporating the various parameters of the study was prepared and a unified scoring system used to extract the data (See Figure 1 and Attachment 1).
- Two reviewers independently reviewed each included paper. Disagreements were discussed to achieve consensus, often during a full review team meeting.
- Study biases were assessed and included for reporting.

Data synthesis

- The relevance of the studies was the first filter to include literature for the review.
- The RE-AIM framework(20, 21) was used to assess the extent of success of the implementation and uptake of the mHealth interventions.
- The assessment of access was done via a patient-centred model(23) that considers both health service and patient perspectives.

Search strategy for Android apps

Rationale: As part of this review we also searched the Google Play store to understand the number of Android-based health related apps available to the general public. We chose to understand the Android market for reasons we have stated in the Introduction. The smartphone market, including the health information technology market, is shifting from Apple iOS towards the Android operating system, with current estimates that the ratio of *iOS:Android* smartphone is almost 20:80(3).

Method: The Google play store in each country was searched using the same keywords from the search term groups - mHealth, healthy ageing and aged care – used in the literature search strategy. The Google play store application programming interfaces were used to carry out this search.

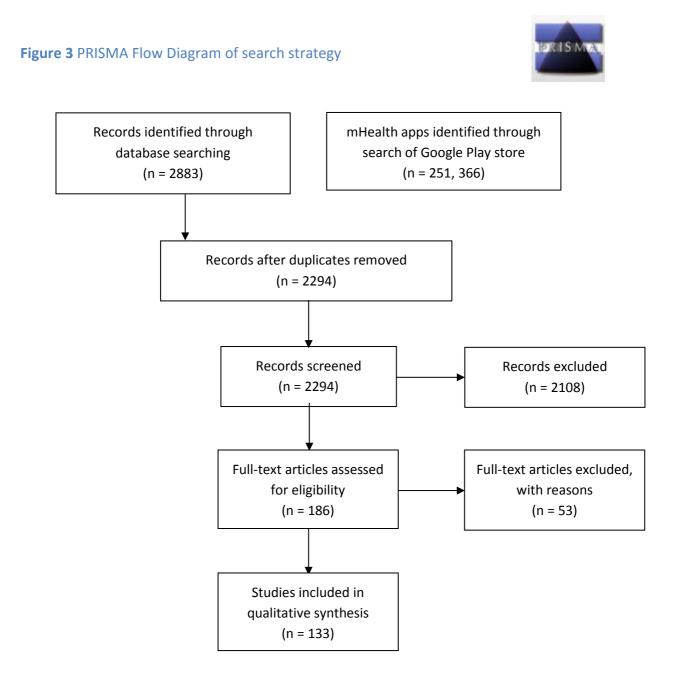
The mHealth apps from each country were further grouped based on the healthy ageing category indicated by their title and by the WHO region. We did not appraise the individual apps as this was out of the scope of this review.

Caveat: It is important to note that an app may be available in multiple countries and as part of multiple groups. The search results presented later in the findings section need to be interpreted in this context.

Findings

Search process and yield

The search results are summarized and presented as a PRISMA flow diagram (Figure 3). The final search of the 8 chosen databases yielded 2883 papers. Removal of duplicates left 2294 papers. Assessment of the title and abstracts by at least two independent reviewers excluded 2108 papers. This left 186 papers for further assessment of eligibility. Of these 186, 53 were excluded and 133 were included for assessment of full-text and data extraction.



Distribution of included papers in the healthy ageing and health system strengthening frameworks to support age friendly services

The included studies were classified under the following themes of healthy ageing:

- Management of health
- Healthier eating
- Active living
- Tobacco-free living
- Reducing harmful alcohol and drug use
- Mental health
- Violence and injury
- Prevention of falls
- Sexual health
- Age-friendly environments

These studies were also classified under the following elements of use of mHealth to strengthen health systems to support age-friendly health services, at the 4 levels of care, including: self-care, care by multi-professional teams, care by healthcare organisations and within the health system in the social context. The framework includes:

- 1. Self-management applications such as education and patient information tools and decision aids
- 2. Sensors & point of care (POC) diagnostics such as fitness trackers, wearables, anaemia detection devices, etc.
- 3. Applications used by health care providers such as communication tools, information sharing, medication management, electronic health records and clinical decision support systems;
- 4. Applications used by health organisations to strengthen health systems(24) such as:
 - a. Information exchange,
 - b. Data collection and reporting systems especially in Maternal & Child Health in LMIC rather than in aged care,
 - c. Patient/disease registries,
 - d. Events monitoring especially in LMIC, and
 - e. Human resources management (HRM), financial management and supply chain management systems

Table 1 summarises the numbers of included papers, classified by the combined framework and which review question was addressed.

Table 2 further describes the distribution of papers by the framework and by year of publication.

Table 3 summarises the number of apps available in the open market by geographic regions of the WHO.

Table 4 summarises the papers by how they address the RE-AIM framework.

Table 5 summarises the papers that were considered to contribute some evidence to the impact of mHealth.

The tables will be discussed under each review question.

Table 1 Included papers classified by the WHO themes of healthy ageing and age-friendly services framework addressing the review questions

			Papers on mHealth supporting the healthy ageing themes									Papers on mHealth supporting the delivery of age-friendly services				
	Review question	Heath Management	Healthier eating	Active living	Tobacco-free living	Reducing harmful drug & alcohol use	Mental health	Violence and injury	Prevention of falls	Sexual health	Age-friendly environments	Self-management applications	Applications to support care by health teams	Applications to support care by organisations	Sensors & POC diagnostic applications	Health system strengthening applications including managerial systems
1.	How is mHealth being used to promote healthy ageing and support the delivery of age-friendly healthcare services?	65	13	28	3	1	11		1		1	58	48	3	31	
2.	What are the effective models for implementing mHealth initiatives?	58	9	20	3		11					51	43	2	21	
3.	What are the lessons learnt so far from mHealth initiatives?	66	14	27	4	1	13		1		2	66	51	4	27	
4.	What is the evidence to support the impact of mHealth?	32	9	14	2		2					34	27	2	12	

Table 2 Included papers classified by framework and by year of publication

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
mHealth initiatives for enhancing healthy agein	g	<u> </u>	<u> </u>			I				<u> </u>	
1. Management of health		1				3	5	11	21	23	13
2. Healthier eating						1	1	1	5	3	4
3. Active living						1	4	9	9	9	6
4. Tobacco-free living								2		1	
5. Reducing harmful alcohol and drug use											1
6. Mental health								1	3	8	5
7. Violence and injury											
8. Prevention of falls							1				
9. Sexual health											
10. Age-friendly environments							1	1			
mHealth initiatives for strengthening age-friend	lly health	services									
1. Self-management applications						4	3	9	18	24	14
2. Applications to support care by health teams		1					4	9	19	16	9
3. Applications to support care by health organisations									2		2
4. Sensors and point-of-care diagnostic applications						1	4	9	8	9	9
5. Health systems strengthening applications including managerial systems											

Healthy ageing the	mes	Num	Number of mHealth apps associated with healthy ageing									
1. Management of h	ealth	3871	6026	5488	4965	2495	6468					
2. Healthier eating		3871	5978	5439	4985	2490	6517					
3. Active living		3912	5774	5321	4984	2491	6307					
4. Tobacco-free livin	g	2462	4133	3542	1320	800	2189					
5. Reducing harmful alcohol and drug		1915	3127	2714	1021	580	1701					
6. Violence and inju	ry	4018	6125	5390	4180	2450	6615					
7. Mental health		3822	5782	5635	4802	2450	6615					
8. Prevention of falls	s	4018	6272	5292	4900	2352	6517					
9. Sexual health		4263	3481	588	4851	2450	6517					
10. Age-friendly environments		4018	1312	11270	4802	2352	5341					
WHO region		Americas	Europe	Africa	Eastern Mediterranean	South-East Asia	Western Pacific					

Table 3 Included apps from Google Play classified by the WHO geographical regions

Review question 1: How is mHealth being used by all stakeholders to promote healthy ageing and support the delivery of age-friendly health and long-term care services?

We examined the pattern of use in terms of how, by whom, when and for what in healthy ageing and aged-friendly health services. These include the functionalities:

- information sharing, especially in between face-to-face sessions;
- education and training, including "gamification";
- healthy ageing behaviour, including values and activities where indicated;
- self-management, including daily mood rating, prompts and reminders;
- disease and medication management;
- care delivery;
- organisational and managerial strategies, including data collection, monitoring and display; and
- social approaches, including values-driven activities and synching to personal calendars.

The data extracted shows that there were enough papers to address the review questions, especially from 2012 onwards. This is especially so for the themes of healthy ageing, except for violence and injury and sexual health where no papers were found. There were very few papers on falls prevention, harmful use of drugs and alcohol, and the age-friendly environment.

Table 1 shows that most papers describing mHealth apps development and evaluation addressed management of health (65 papers), followed by active living (28 papers), healthy eating (13 papers) and mental health (11 papers). The health problems managed were mainly chronic disease (diabetes, cardio vascular/ischaemic/coronary artery disease (CVD/IHD/CAD), Hypertension, heart failure, prostate, urinary, back pain, cancer). There were mHealth papers on apps to assist self-management, management by health teams and about sensors and point-of-care diagnostic applications.

Table 2 shows the evolution of the mHealth domains. Papers on mHealth apps showed an increasing trend from 2012, especially for health management, healthy eating and physical activity and in 2014 for mental health (Table 2). There appears to be a peak in 2015-2016, which may be a manifestation of the hype cycle. For instance, there were a few smoking cessation papers, but we did not find any published beyond 2016.

Table 3 illustrates the global digitalisation through the "Internet of Things", with all of the WHO regions having potential access to apps in all aspects of healthy ageing through the Android world. This is significant as Android phones and apps are much cheaper than the Apple iOS apps and tools. We identified other issues to do with the reliability, quality and security of mHealth, but that is not directly relevant to this review. The large numbers (251, 366) of apps found was due to the search methodology as the same apps may be available in a number of countries.

The relatively lower number of apps on sexual health and the use of tobacco, alcohol and drugs parallel the number of papers in the main literature review (Tables 1, 2 and 4). Sexual heath apps were particularly low in the African region. Tobacco, alcohol and drugs apps were particularly low in the South East Asian region. The Western Pacific region appears to be no different from the rest of the other regions. However, it is important to note that digitalisation breaks down international boundaries and barriers to access to mHealth apps.

Some positive examples from the literature review include:

• A cluster randomised controlled trial of a medication adherence and lifestyle

modification app for cardiovascular disease in Tibet, China and India showed improved clinical outcomes and quality of care in China and India (25).

- Testing of a tablet-based intervention for patients recovering from surgery for gastric cancer resulted in better post-operative self-care compared to a retrospective control group who received usual care (26).
- A longitudinal study of a mobile phone-based intervention for identifying hypertension in a cohort of Chinese patients found that participating in the study enhanced their health beliefs (27).
- The use of mobile health has shown positive effects towards enhancing lifestyle and wellbeing in older people globally. Piloting of a smartphone-based tool to stimulate physical activity in Dutch general practices in patients with either COPD (chronic obstructive pulmonary disease) or diabetes had a positive impact on the participants' level of physical activity (28).
- A more recent pilot of a pedometer app for smartphones in Mexican oncology clinics was successful in detecting chemotherapy-induced toxicity by monitoring patients' daily step count (29). A pilot randomised controlled trial of a mobile phone intervention to assist mindfulness for curbing depression in a rural German population showed improved clinical outcomes over the four-month follow-up period (30).
- The use of a mHealth application among older American adults indicated enhanced cognitive function and self-rated wellbeing among the participants (31). The use of a mobile device to promote healthy eating and physical activity in another American population showed significant weight loss among the participants (32). These studies imply that mHealth applications can be a useful aid for management of chronic health conditions.

In contrast to the above studies, a randomised trial of incorporating a mobile phone intervention into existing diabetes programmes in three LMICs did not show a change in diabetes control in the two-year follow-up period (33). This is not surprising given the evolving and dynamic nature of mHealth applications (34).

The application of mHealth also has implications for provision of healthcare:

- Implementation of a phone application for cardiovascular risk assessment among community health workers in South Africa led to reduction in training and screening time as well as calculation errors (35).
- Evaluation of the impact of giving tablets to healthcare providers in an American healthcare organisation revealed that more than half the providers felt comfortable using the device. The intervention led to an increase in overall productivity, improved patient-provider communication and process of care (36).

In summary:

There is a large range of uses where mHealth technologies have been applied. Many of the apps provided feedback, reminders or prompts in self-care as an adjunct to complement existing clinical services. This is usually in the context of outreach services in disease specific specialties such as diabetes, CVD, COPD, cancer and mental health. This is as close as mHealth gets to the concept of multidisciplinary teams providing integrated age-friendly care.

There were little or no papers on apps used in the violence & injury, sexual health and agefriendly environment categories. The lack of recent work on smoking cessation was surprising, but the increasing emphasis on mental health is encouraging.

There was little on mHealth as a new service delivery model or model of care or to support care

by health organisations, including stepped up care, or to support managerial systems. A reason for this is the context as the functionalities provided by mHealth apps will be prioritised differently in different countries under different resource constraints. In many Low and Middle Income Countries (LMICs), the prevailing context of mHealth is Maternal and Child Health (MCH) rather than Aged Care. This is reflected in the model for mHealth in strengthening health systems developed by Labrique et al, which is based on MCH in LMICs (24). There is therefore an emphasis on MCH data collection and reporting systems of some managerial systems such as supply chain management or linking community health workers with the hospital system in LMICs. This is not completely applicable to adult and aged care.

However, the evidence base is growing and as it grows, we expect the policies and strategies governing these applications will also follow.

Review question 2: What are the effective models for implementing mHealth?

We assessed the implementation using the RE-AIM and access frameworks (20, 21) at the following levels of health care (Table 4):

- self-care,
- clinical care by a multi-professional team,
- by a health care organisation, and
- by the health system and in the social context.

Little was reported on models of successful implementation or evaluation of theory-based models. Those reported were mainly assessments of readiness using the Technology Adoption Model (17), with little explicit description of the translation into the design, development and testing as well as the evaluation phases. There were studies that tested the accuracy of algorithms for specific sensor technologies.

Launchers with a larger number of features were found to have, on average, more usability problems. Reducing the number of features is not necessarily a feasible way to increase usability. More research-based development is needed, which should better consider recommendations for the age-friendly design of user interfaces (UIs) on smartphones (11-13). Nevertheless, the design and development aspect of mHealth interventions appear to be mature and is well-illustrated in many studies.

Many of the studies conducted feasibility testing and/or usability testing or a pilot study followed by, usually, small trials and post-intervention feedback. The FITT (Fit between Individuals, Task, and Technology (37)) and Health-ITUEM (Health IT Usability Evaluation Model (38)) has been used to understand the usability and learnability of mobile devices and applications. Usability is assessed on three dimensions: 1) task-technology fit; 2) individual-technology fit; and 3) individual-task fit. The 9 concepts of the Health-ITUEM includes: *Error prevention, Completeness, Memorability, Information needs, Flexibility/Customizability, Learnability, Performance speed, Competency, Other outcomes.* To develop a finer granularity of analysis, the nine concepts can be broken into positive, negative, and neutral codes. The resultant 27 codes were used to code text data for usability analysis. These studies demonstrated the positive usability of smartphones in solving health challenges with some differences in performance among devices.

Self-Regulation Theory (SRT) was a theoretical framework to explain the use of text messages to promote adherence. According to SRT, text messages provide patients with support to cope with and adapt to their health care experiences and conditions, act as prompts and reminders, reduce forgetfulness, clarify misinformation and support and encourage adherence to medications and other treatments. It is based on assumptions of patients, their roles in self-care and shared care and acceptance of their roles by health care providers (HCPs). The eventual outcomes to be achieved are to maintain usual activities of the patients and help patients to be emotionally comfortable (39).

The Health Belief Model (HBM) or Self-Determination Theory (SDT) was also used to guide the development of the content of the text messages in some studies e.g. how to present information on how the participants' medication works (40). Also used is the Patient Activation Measure (PAM), a 13-item instrument, is an interval-level, unidimensional Guttman-like measure that contains items measuring self-assessed knowledge about chronic conditions, beliefs about illness and medical care, and self-efficacy for self-care. The PAM focused on physical conditions and measures activation as a broad construct (41). The Health Care Climate Questionnaire (HCCQ) assesses patients' perceptions of the ability of the health-care professionals in supporting their autonomy (versus "controllingness") and in motivating their

initiative in care management. The HCCQ consists of 15 items on a seven-point Likert scale ranging from "strongly disagree" to "strongly agree" (42).

There was also implicit use of the 12 'theoretical domains' from 33 theories to explain behaviour change:

- knowledge,
- skills,
- social/professional role and identity,
- beliefs about capabilities,
- beliefs about consequences,
- motivation and goals,
- memory, attention and decision processes,
- environmental context and resources,
- social influences,
- emotion regulation,
- behavioural regulation, and
- nature of the behaviour (43).

Smoking cessation apps were examining the psychopathology and treatment models underlying Acceptance and Commitment Therapy (ACT), which is linked to the nature of human language and cognition (44). ACT is consciously based on basic behavioural principles. The evidence available suggests that ACT works through different processes than active treatment comparisons such as the traditional Cognitive-Behaviour Therapy (CBT) (45).

There was some evidence to suggest that when there is more direct contact between the research team and participant through technologies such as video-over-internet protocols (VOIP), retention rates are greater and less subject to bias (46) suggesting a hybrid approach may provide an optimal response (47). Continuing user engagement with self-guided mobile-Web interventions can be improved with support by professional caregivers or integrated within a health promotion program (48).

A study of an mHealth app for obesity suggested that, despite a mobile delivery method e.g. phone or tablet, a majority (58%) often use a non-mobile device (desktop computers) to access podcasts mostly at their home or work, and 62% were mainly non-mobile (e.g., sitting at work) when listening (49). This raises the questions as to the nature of the effect of the mHealth app. Is it a facilitator or the effector of the changes? Implementation needs to consider this fidelity issue.

A small trial demonstrated that direct-to-consumer mHealth apps aligned with behaviour change theories can augment brief psychoeducation interventions (50). However, this was not a definitive trial and not powered to detect moderators and mediators of this tool.

Interrogative plus social context messages are more effective in the context of cancer screening. mHealth is not a uni-directional intervention and there is a continuous interaction cycle happening with a program team (51). The high completion of the interactive surveys (75%) demonstrated a general willingness in the community to respond to mobile technology and mHealth tools. The automatic alerts sent to patients as reminders were also possible explanations for the high survey response.

Many of the papers did not appear to explicitly examine the effect of launchers to enhance the usability for the elderly. This appeared to be part of the consistent theme from this review – the technology did not appear to have sufficiently matured beyond feasibility studies. A comparison of a set of commercialised smartphone launchers with an adapted user interface (UI) and

assistive technologies (ATs) for older adults by means of heuristic evaluation showed that launchers generally integrate only basic features such as calls, texting or contacts and only one assistive technology such as an SOS service. The overall usability varied across different launchers. They often were inadequate in meeting older adults' needs and abilities. In particular, usability problems linked to content and perception were discovered that limit the older adults' capability for error recovery as well as visual, auditory, and haptic access to the information provided by the UI (11-13).

Co-design and development appeared to be gaining momentum. At the team and organisational level, medical staff members and dietitian enrolled to co-develop a mHealth app to provide a feasible solution to the challenge of post-operative management of cancer patients (26).

Another good example for co-development is the Integrated Illness Management and Recovery (I-IMR) was based on the stress vulnerability model, which asserted that biological vulnerability and stress are impacted by factors that people have control over, such as coping skills. This model uses an adaptive systems engineering framework and user-centered design to guide the multi-stage iterative design and testing of a smartphone intervention (I-IMR) to self-monitor their behaviour (52).

In summary:

This section illustrates examples of some of the conceptual frameworks and theories that underpin the development, implementation and evaluation of mHealth projects. This includes an examination of the reach, efficacy/effectiveness, adoption, implementation and maintenance of the mHealth apps and tools.

Table 4. Included papers that addressed implementation of mHealth within the RE-AIM construct

Aspects of implementation	Reach	Efficacy / Effectiveness	Adoption	Implementation	Maintenance
mH	ealth stren	gthening healt	hy ageing		
1. Management of health	9	54	2	26	1
2. Healthier eating	2	8		1	
3. Active living	4	21		9	
4. Tobacco-free living	3	3		4	
5. Reducing harmful alcohol and drug use	1			1	
6. Mental health	3	12		10	
7. Violence and injury					
8. Prevention of falls					
9. Sexual health					
10. Age-friendly environments					
mHealth s	trengtheni	ng age-friendly	y health ser	vices	
1. Self-management applications	12	46	2	22	1
2. Applications to support care by health teams including EHRs and EDS	9	42	1	20	
3. Applications to support care by health organisations	1	3		5	
4. Sensors and Point of Care (POC) diagnostics applications	5	21	1	5	
5. Health system strengthening applications					

Review question 3: What are the lessons learnt from implementing mHealth initiatives?

The review brought to light several key lessons learnt from implementing mHealth initiatives. These are highlighted below.

Constraints and barriers in implementing mHealth initiatives: Many studies report constraints and barriers at almost every step in the process of design, development, testing, implementation and evaluation of a mHealth app. These barriers relate to the technology, the context and the participants (53).

Expectations around mHealth apps: Adherence to medication regime, or any protocol for that matter, is a multidimensional problem and cannot solely be solved by an app. It is important to "Avoid the hype" to manage expectations. This was exemplified by Apple's promise "there is an app for that" when they introduced the Medication Plan its App Store in 2008 (54).

Challenging current practices and assumptions: Implementing mHealth may challenge existing assumptions and practices, creating a change management barrier. For example *SIRRACT: An International Randomized Clinical Trial of Activity Feedback During Inpatient Stroke Rehabilitation Enabled by Wireless Sensing* (55) found that based on sensing data, walking time amongst patients actually decreased by 30% over the course of their rehabilitation admission. Their conventional rehab intervention wasn't operating as they assumed it to be. Sensors and other objective measures of outcome indicators provide the ability to check the effectiveness of conventional treatments and rehabilitation for ageing people.

Practical considerations were ignored: Particular difficulties with engaging participants include high risk patients and patients from low income groups. Some lessons to facilitate participant engagement include the ability to save and share messages, having the support of providers and family, a feeling of support through participation in the program, the program being initiated close to the time of a CV event, personalised messages, opportunity for initial face-to-face contact with a provider, and program and content was perceived to be from a credible source. Diet and physical activity messages were most valued. Four messages/week was ideal. Program duration should be at least for six months or longer (56).

In a pilot study of an accelerometer-equipped smartphone to monitor older adults with cancer receiving chemotherapy in Mexico, the main reasons for not recording steps were being on a geographic area without GSM coverage, not wanting to carry the smartphone, "feeling too bad" to carry the smartphone, technical problems with the application, forgetting to charge the smartphone, and forgetting to carry the smartphone (29).

Post- intervention measures are important: Video consultations preceded by uploading relevant measurements can lead to clinically and statistically significant improvements in glycaemic control among patients who have not responded to standard regimens. However, continuing effort and attention are essential as the effect does not persist when intervention ends. Furthermore, future studies should focus on differentiation as the most vulnerable patients are at greater risk of non-adherence (57).

A pilot randomized controlled trial in Kenya (WelTelKenya) showed that an interactive mobile phone text-messaging intervention can improve adherence and viral load suppression in five participant groups: youth (14–24 years), mature (50 years), English as a second language, remote (3 hours travel time to clinic), and non-suppressed. The intervention was a useful way to communicate with health care providers, thus increasing the ability to access services, report side effects, and attend appointments (58).

Text interventions are feasible in patients with cancer prescribed oral anticancer agents (OAs) for symptom management and medication adherence and may be effective in helping patients engage in behaviour change and improve self-care (59).

A theory-based intervention, called HEART, aimed to encourage adults with ischemic heart disease (IHD) to undertake regular physical activity and improve fitness through an automated system of text messages and a supporting Web site. To participate, patients need access to the Internet, which will limit participation (60). The mobile usability and feasibility of Bite Counter, a watch-like device that detects when a user consumes food or beverages, was tested in a behavioural weight loss study, Participants found the Bite Counter easy to use and that use was associated with weight loss (32).

Limited evidence on the cost-effectiveness of mHealth apps: There were limited evidence available on the cost-effectiveness of mHealth apps. The simplified cardiovascular management model tested in the SimCard study in multiple countries demonstrated some cost-effectiveness. It has the potential to be scaled up in more regions in China, India, and other countries to benefit a large number of disadvantaged populations (25).

Integrating mHealth with social media had larger benefits: We also found that integrating mHealth tools with social media applications such as Twitter had larger and compounding benefits. The type of device used for podcast listening did not affect participant engagement but there was a trend toward greater weight loss among mobile phone users. Twitter postings were associated with greater engagement and weight loss. Mobile app users posting more to Twitter lost more weight (49).

In summary:

The included studies suggest that mHealth apps for the care of chronic diseases are feasible, usable and reliable. However, it should be noted that many of the included studies were not adequately powered or did not showed significant differences between control (usual care) and intervention groups. This might be due to the diversity and lack of quality in study designs (e.g., inaccurate or incompletely reported sample size calculations).

Future research needs innovative experimental study designs to complement the traditional RCTs as well as a holistic approach that focuses on multilevel determinants (clinical, behavioral, and care coordination) to promote self-care and proactive collaborations between health care professionals and patients to manage chronic disease care. The use of observational electronic health record data is a promising area to enhance prevailing research methodologies (61-63).

A participatory design approach is needed in which target users are involved in the development of cost-effective and personalized interventions. Too often technology is being developed within the scope of the existing structures of the health care system. Including patients and carers as part of the design team stimulates and enables designers to think differently, unconventionally, or from a new perspective, leading to apps that are better tailored to patients' and carers' needs (64).

Review question 4: Is there enough evidence to support the impact of mHealth?

The included studies covered the use of mHealth apps in a range of healthy ageing themes ranging from:

- mHealth to complement a diabetes prevention program (33, 65, 66)
- different patient reminders for pneumococcal vaccination in eligible adults (67)
- cardiovascular management (25)
- obesity and weight loss (49) (68)
- comparing impact of Fitbit tracker and website with pedometer on moderate to vigorous physical activity amongst post-menopausal women (69)

Cardiovascular Management: The simplified cardiovascular management model tested in the SimCard study in multiple countries demonstrated some cost-effectiveness. It has the potential to be scaled up in more regions in China, India, and other countries to benefit a large number of disadvantaged populations (25).

Diabetes Management: The Diabetes Prevention Intervention Using a Mobile App complemented the 6-sessions Diabetes Prevention Program with home-based program delivered by a mobile phone App and pedometer, with daily text messages and a video clip. The control group received a pedometer without step goals and standard medical care. The recruitment was stringent with 20% not completing screening. 61 out of 103 invited were recruited after screening and randomised (30 intervention, 31 control). Outcome measures were self-reported diet, weight, a calorie and physical activity diary, and pedometer readings. Weight loss and pedometer readings were greater in the study group. There was reduction in hip circumference, BP, and intake of sat fat and sugar sweetened drinks. However, there was no effect of lipid or glucose levels. There was good adherence over 5 months. Small sample size with relatively high incomes and larger proportion of females limits generalisability. Social desirability bias of self-reported measures is highly likely and limits the integrity of the study (66).

The study on the effect of text message support on diabetes self-management in developing countries did not show a benefit of adding the mHealth intervention to existing care and self-management programmes (33). The absence of an effect might be explained by the variety of patients and disease-related characteristics, the non-homogeneous implementation of the intervention, and/or the influences that the routine programme might have had on the outcomes. The readiness of the individual and community may not have been optimal (18) as may be the informatics capability maturity of the local health facilities and system(19) (33).

An app was effective in decreasing hypoglycemic events by immediately alerting patients about the need to manage their hypoglycaemia, particularly if it was severe hypoglycaemia (blood glucose <74 mmol/l with hypoglycemic symptoms and <2.78 mmol/l, requiring the assistance of another party, respectively (65). The beneficial results seem to come from the increased physical activity and a healthy dietary pattern induced by the tailored feedback instantly generated by the clinical decision support system (CDSS) rule engine in the clinical information system. While this can be seen as a digital divide issue based on age or socioeconomic status (70), the 85% participation rate in the study indicate that older patients can adopt a new and advanced technology, refuting a common stereotype that this age group is inflexible.

Obesity and weight loss: This quality problem is consistent across all the clinical trials conducted on "mHealth apps to support the management of health theme in healthy ageing" as reported in the included papers. However, access and equity are important issues to address as tailored

text messaging is a promising approach to weight control among underserved, urban African American adults. This is significant because African Americans, and African American women in particular, have among the highest rates of obesity in the US (68).

Patients with a variety of chronic conditions will complete interactive voice response (IVR) selfcare support calls regularly. Risk factors for missed IVR calls overlap with those for missed appointments. Despite the favourable findings, IVR cannot fully address the barriers to health service engagement among some of high-risk patients. Involvement of informal caregivers may significantly increase engagement (71, 72).

Population based trials were more robust. Reminders through mobile phones can work at a primary care level in a LMIC in a real-world setting (73).

Elderly vaccination programs: A randomised controlled trial on the effect of various types of reminders communicated to eligible patients identified in the clinic electronic health records on the uptake of pneumococcal vaccine in adults (67) found that SMS and email reminders are effective for patient uptake of vaccination, and can be reinforced by subsequent phone calls. Pneumococcal vaccination rates increased significantly in the phone-call reminder group. However, there were logistic problems such as a shortage of vaccine availability following first reminder, which could have lowered the vaccination rate. Personalising the messages may increase the rates. A hybrid approach of old and new technologies is indicated (67).

mHealth apps in the acute care of aged patients were also more promising, especially if there was a link between the app and the EHR and clinical information system (65). It is possible to integrate home based measurements collected through the mHealth app into EHR and use the decision support tools in the EHR to personalise guidance for self-management (74).

The type of device used for podcast listening did not affect participant engagement but there was a trend toward greater weight loss among mobile phone users. Twitter postings were associated with greater engagement and weight loss. Mobile app users posting more to Twitter lost more weight (49).

Wireless automated data transfer technology is another potential and driver for mHealth. SmartLoss provides the ability to deliver intensive behavioural weight loss interventions, consistent with treatment guidelines, remotely. The platform provides remote monitoring of progress and the delivery of personalized treatment recommendations and lesson material via the multimedia capabilities of smartphones (75). SmartLoss promoted clinically meaningful weight loss over 12 weeks compared with an attention-matched control group and usersatisfaction was favourable. This small feasibility and pilot study provides an insight into the wireless automated data transfer technology.

Papers addressing Question 4	/High)	Strengths & Limitations	Healthy ageing theme	Care setting	Mean Age (yrs)	Intervention	Co- interventions	Primary Outcomes	Secondary outcomes	Harms
63. Hagoel, L., Neter, E., Stein, N., & Rennert, G. (2016). Harnessing the question-behavior effect to enhance colorectal cancer screening in an mHealth experiment. American Journal of Public Health. 106(11), 1998-2004. doi:10.2105/AJPH.2016.303364	н	Phone message not read; a personalised signature may be more effective; the mechanisms underlying QBE were not examined; population- level interventions seldom influence heterogeneou s audiences significantly.	Cancer	Primary	60.4	interrogative + social context compared to non- interrogative questions and no intervention	No	Question based behaviour effect (QBE) modest in colorectal cancer screening, but the absolute number of potential screenees may translate into a clinically significant health promotion change		
157. Tian, M., Ajay, V. S., Dunzhu, D., Hameed, S. S., Li, X., Liu, Z., Yan, L. L. (2015). A cluster- randomized, controlled trial of a simplified multifaceted management program for individuals at high cardiovascular risk (SimCard Trial) in Rural Tibet, China, and Haryana, India. Circulation. 132(9), 815-824. doi:10.1161/CIRCULATIONAHA.115.015373	M/H	may not be generalizable to healthcare settings without existing or available CHWs	CVD	Commu nity	59.7	Summarized as a 2+2 model, consisting of 2 therapeutic lifestyle modifications (smoking cessation and salt reduction) and the appropriate prescription of 2 medications (BP–lowering agents and aspirin).		Significant increase in % high-risk individuals taking aspirin (17.1%, P<0.001) across both countries but higher in China. Significant reduction in mean SBP (-2.7 mm Hg, P=0.04).	Sample not adequate and data not complete enough for subset analyses;	

Papers addressing Question 4	Evidence (Low/Med /High)	Strengths & Limitations	Healthy ageing theme	Care setting	Mean Age (yrs)	Intervention	Co- interventions	Primary Outcomes	Secondary outcomes	Harms
88. Lim, S., Kang, S. M., Kim, K. M., Moon, J. H., Choi, S. H., Hwang, H., Jang, H. C. (2016). Multifactorial intervention in diabetes care using real-time monitoring and tailored feedback in type 2 diabetes. Acta Diabetologica. 53(2), 189- 198. doi:10.1007/s00592-015-0754-8	M/H	Only if can use SMS or have Internet access. Short (6-month) follow-up period might not be long enough to evaluate the long-term effect of this system.	Diabetes	Primary	64.3	Physical activity- monitoring device and dietary feedback WITH integration into a EHR-CDSS package	combined with exercise		11.6 % u- healthcare group reduced their dose of oral antidiabetic drug or insulin (no change in antidiabetic medication in the SMBG group)	
5. Akhu-Zaheya, L. M., & Shiyab, W. e. Y. (2017). The effect of short message system (SMS) reminder on adherence to a healthy diet, medication, and cessation of smoking among adult patients with cardiovascular diseases. International Journal of Medical Informatics. 98, 65-75. doi:https://doi.org/10.1016/j.ijmedinf.2016.12.0 03	М	Text messages found to be boring and repetitive by some, esp in placebo group. Change in patients' health status not monitored. A process evaluation of intervention needed to examine acceptability and feasibility. Longer follow-up period is needed to	CVD	Primary	55	Automated messages about medication, diet and smoking cessation were sent to mobile phones of patients in the experimental group from a database that was created by a commercial software company	Routine care, which included arranged cardiac clinic physician visits, diagnostic procedures, lab tests and prescription of	Significant change in 8-item Morisky Medication Adherence Scale (MMAS-8)	(p=0.327), Significant	

Papers addressing Question 4	Evidence (Low/Med /High)	Strengths & Limitations	Healthy ageing theme	Care setting	Mean Age (yrs)	Intervention	Co- interventions	Primary Outcomes	Secondary outcomes	Harms
		assess maintenance of improved medication adherence.								
11. Anzaldo-Campos, M. C., Contreras, S., Vargas-Ojeda, A., Menchaca-Díaz, R., Fortmann, A., & Philis-Tsimikas, A. (2016). Dulce wireless Tijuana: A randomized control trial evaluating the impact of project Dulce and short-term mobile technology on glycemic control in a family medicine clinic in Northern Mexico. Diabetes Technology and Therapeutics. 18(4), 240-251. doi:10.1089/dia.2015.0283	М	Incomplete data due to patient and employment mobility; varying intensity of intervention; small margin for attrition	Diabetes	Primary	51	Project Dulce– only (PD); Project Dulce technology enhanced with mobile tools (PD-TE); or IMSS standard of care/control group (CG).		HbA1c reducted and knowledge improved		
20. Bobrow, K., Farmer, A. J., Springer, D., Shanyinde, M., Yu, L. M., Brennan, T., Levitt, N. (2016). Mobile Phone Text Messages to Support Treatment Adherence in Adults with High Blood Pressure (SMS-Text Adherence Support [StAR]): A Single-Blind, Randomized Trial. Circulation. 133(6), 592-600. doi:10.1161/CIRCULATIONAHA.115.017530	М	Well- designed study with ITT analyses. General population could not detect change in SBP,	Hypertens ion	Primary	54.3	information- only SMS text messages (n=457); interactive SMS text messages (n=458); or usual care (n=457).	Interactive adherence support and information- only group could respond to selected messages that generated an automated series of responses, focused on techniques of goals & planning, repetition & substitution, social support, and natural consequences.	No evidence that an interactive intervention increased this small reduction in systolic blood pressure control compared with usual care at 12 months.	There was no evidence of differences in intervention effectiveness between men and women, younger and older patients, and patients with and without comorbid conditions.	

Papers addressing Question 4	Evidence (Low/Med /High)	Strengths & Limitations	Healthy ageing theme	Care setting	Mean Age (yrs)	Intervention	Co- interventions	Primary Outcomes	Secondary outcomes	Harms
							Translated, and tested in English, isiXhosa, and Afrikaan.			
42. DeVito Dabbs, A., Song, M. K., Myers, B. A., Li, R., Hawkins, R. P., Pilewski, J. M., Dew, M. A. (2016). A Randomized Controlled Trial of a Mobile Health Intervention to Promote Self- Management After Lung Transplantation. American Journal of Transplantation. 16(7), 2172-2180. doi:10.1111/ajt.13701	М	Small trial in one centre. Adequately powered (80%). Very specifc group of lung transplant patients with no attrition	Diabetes	Tertiary	62	Smartphone with custom Pocket PATH programs to record daily health indicators, view graphical display of trends, and receive automated feedback messages to notify health co-ordinators.	A toll-free, tech-help line was available.	 Self- monitoring more frequently, More likely to show adherence Report Clinical Health indicators more frequently 	Self care perception and	
55. Ghadieh, A. S., Hamadeh, G. N., Mahmassani, D. M., & Lakkis, N. A. (2015). The effect of various types of patients' reminders on the uptake of pneumococcal vaccine in adults: A randomized controlled trial. Vaccine. 33(43), 5868-5872. doi:10.1016/j.vaccine.2015.07.050	М	Beneficiaries of organisation Insurance Plan only; Shortage of vaccine following first reminder;; messages were not personalised; no ability to make appointments for patients.	Vaccinati on	Primary	40+	Reminders for patients to get the PPSV23 vaccine: Subgroups 1a and 1b - standardised phone call reminder by nurse, subgroups 2a and 2b - SMS- text reminder, subgroups 3a and 3b - e-mail reminder;	Subgroups 1b, 2b and 3b also received additional information about seriousness of pneumococcal disease Delivered via phone (nurse), SMS and e- mail	Vaccination rate increased to 14.9%: short phone calls group (16.5%); sms-text group (7.2%); e-mail group (5.7%).	Rates were independent of age, associated education message and predisposing condition	

Papers addressing Question 4	Evidence (Low/Med /High)	Strengths & Limitations	Healthy ageing theme	Care setting	Mean Age (yrs)	Intervention	Co- interventions	Primary Outcomes	Secondary outcomes	Harms
 61. Greaney, M. L., Puleo, E., Sprunck-Harrild, K., Bennett, G. G., Cunningham, M. A., Gillman, M. W., Emmons, K. M. (2012). Electronic reminders for cancer prevention: Factors associated with preference for automated voice reminders or text messages. Prev Med. 55(2), 151-154. doi:https://doi.org/10.1016/j.ypmed.2012.05.01 	М	Health & English literacy; Part of a RCT;	Cancer	Primary	50.8	SMS or automated voice response calls	part of ongoing trial providing multiple risk behaviour intervention	Less than one third chose SMS compared to AVR	Participants selecting SMS remiders were younger, more comfortable with computer and/or sent or received SMS more often	
65. Hansen, C. R., Perrild, H., Koefoed, B. G., & Zander, M. (2017). Video consultations as add- on to standard care among patients with type 2 diabetes not responding to standard regimens: A randomized controlled trial. European Journal of Endocrinology. 176(6), 727-736. doi:10.1530/EJE-16-0811	М	Multiple measures but short duration with 16% drop outs. Low adherence in poor control group at baseline	Diabetes	Primary	58	Video consultation preceded by uploads of measurements		Lower HbA1 in intervention group but ITT analysis at 6 months showed no difference.		
74. Irvine, A., Russell, H., Manocchia, M., Mino, D. E., Glassen, T. C., Morgan, R., Ary, D. V. (2015). Mobile-Web app to self-manage low back pain: Randomized controlled trial. Journal of Medical Internet Research. 17(1), 1-21. doi:http://dx.doi.org/10.2196/jmir.3130	М	Good study but short duration. Social desirability bias of self- reports. Participants employed, educated, with a middle-class income.	Back pain	Commu nity		FitBack: a multi-visit reminder program; provides NLBP education and behavioral strategies.;	weekly email reminder prompts for 8 weeks plus emails to do assessments	Intervention group performed better on current back pain, behavioral, and worksite outcomes at 4- month follow-up	Patient activation, constructs of the Theory of Planned Behavior, and attitudes toward pain	
78. Karhula, T., Vuorinen, A. L., Rääpysjärvi, K., Pakanen, M., Itkonen, P., Tepponen, M.,	М	Stratified RCT; Low HbA1c	Diabetes and Hypertens	Primary	69	Phone with a PHR app and bluetooth	Health coaches and patients can see	Only significant difference in waist	No differences in any other outcome	

Papers addressing Question 4	Evidence (Low/Med /High)	Strengths & Limitations	Healthy ageing theme	Care setting	Mean Age (yrs)	Intervention	Co- interventions	Primary Outcomes	Secondary outcomes	Harms
Saranummi, N. (2015). Telemonitoring and mobile phone-based health coaching among Finnish diabetic and heart disease patients: Randomized controlled trial. Journal of Medical Internet Research. 17(6), e153. doi:10.2196/jmir.4059		threshold for inclusion; Patients called every 4 weeks; more missing values for smoking and alcohol use; Assistive technology principles applied.	ion			connected devices for manual/automa tic reporting of BP, Weight, BGL & steps using a binary SMS text message. Measurements sent weekly to the PHR.	measurements in PHR and use them during health coaching phone calls. Self- management guide (hardcopy) was also provided to increase patient knowledge.	circumference in T2DM group; more likely due to multiple testing rather than a true difference.	variables - HRQL (SF-36), HbA1c, blood pressure, weight, and lipid levels)	
 81. Kumar, S., Shewade, H. D., Vasudevan, K., Durairaju, K., Santhi, V. S., Sunderamurthy, B., Panigrahi, K. C. (2015). Effect of mobile reminders on screening yield during opportunistic screening for type 2 diabetes mellitus in a primary health care setting: A randomized trial. Preventive Medicine Reports. 2, 640-644. doi:https://doi.org/10.1016/j.pmedr.2015.08.00 	М	Real world setting; Unequal number of intervention and control groups; 70% followed up.	Diabetes	Primary	46.5	Diabetics and pre-diabetics at a PHC clinic received a mobile reminder to attend clinic for definitive tests.		85.7% of outpatients in intervention arm returned for definitive test compared to 53.3% in control arm		
90. Lin, M., Mahmooth, Z., Dedhia, N., Frutchey, R., Mercado, C. E., Epstein, D. H., Cheskin, L. J. (2015). Tailored, Interactive Text Messages for Enhancing Weight Loss Among African American Adults: The TRIMM Randomized Controlled Trial. The American Journal of Medicine. 128(8), 896- 904. doi:https://doi.org/10.1016/j.amjmed.2015.03.0 13	М	African- American cohort through a church. Need SMS capability; 32% attrition at 3 months. Important context	Healthy eating	Primary	40+	Patients with BMI>27 randomised to: Standard care (one-on-one counselling sessions with dietitian & physician) or standard care plus 3-4 daily tailored text		Significant decrease in weight in TRIMM group at 3 and 6 months (3.7 kg). The mean between- group difference in weight change from baseline was 2.5 kg at 3 months and 3.4	mean of 66% in month 1 to	

Papers addressing Question 4	Evidence (Low/Med /High)	Strengths & Limitations	Healthy ageing theme	Care setting	Mean Age (yrs)	Intervention	Co- interventions	Primary Outcomes	Secondary outcomes	Harms
						messages for 6 months.		kg at 6 months	6. The mean response rate over the 6 months was 47.6%.	
93. Maddison, R., Pfaeffli, L., Whittaker, R., Stewart, R., Kerr, A., Jiang, Y., Rawstorn, J. (2015). A mobile phone intervention increases physical activity in people with cardiovascular disease: Results from the HEART randomized controlled trial. European Journal of Preventive Cardiology. 22(6), 701-709. doi:10.1177/2047487314535076	М	Intervention may not have had enough increasing intensity in physical activity, cost- benefit analysis only considered costs of intervention	CVD	Primary	60	Text messages and videos, delivered by mobile phone		No differences in physical activity, but increased self-efficacy and self-reported physcial health (SF36)	Cost analyis - costs of implementing and delivering the intervention only	
96. Martin, C. K., Miller, A. C., Thomas, D. M., Champagne, C. M., Han, H., & Church, T. (2015). Efficacy of SmartLossSM, a smartphone-based weight loss intervention: Results from a randomized controlled trial. Obesity. 23(5), 935- 942. doi:10.1002/oby.21063	М	Well- designed study. Duration only 12 weeks, sample size small, no formal evaluation of scalability and cost- effective analysis	Healthy eating	Primary	44.4	smartphone, body weight scale, and	Participants in the Health Education control group (n=20) received health information via text messages or e-mails delivered to the smartphone during the study.	Greater weight loss (%initial weight) in SmartLoss group (p<0.001), especially at weeks 4, 8, and 12.	Significant improvements compared to Health Education on waist circumferences at all time points (P<0.05). Smart Loss participants had significantly larger reductions in systolic blood pressure compared with the Health Education	

Papers addressing Question 4	Evidence (Low/Med /High)	Strengths & Limitations	Healthy ageing theme	Care setting	Mean Age (yrs)	Intervention	Co- interventions	Primary Outcomes	Secondary outcomes	Harms
110. Muller, C. J., Robinson, R. F., Smith, J. J., Jernigan, M. A., Hiratsuka, V., Dillard, D. A., & Buchwald, D. (2017). Text message reminders increased colorectal cancer screening in a randomized trial with Alaska Native and American Indian people. Cancer. 123(8), 1382- 1389. doi:10.1002/cncr.30499	М	No individual data understand findings; Contaminatio n in a single health care system; used eHR to screen and monitor participants; a research project.		Primary	40+	3 reminder text messages sent 1 month apart.	Use of focus groups to collaboratively create the study protocol and the text messaging content ensured local relevance and cultural acceptability of communication strategy.	Increased CRC screening for AN/AI aged 50- 75 years and aged 40 to 49 years (p=0.55), especially for women (0.09).	group, P<0.05 Services were offered without requiring out=of-pocket payments.	Excellent collaborat ion between clinical staff and research team promoted cultural respect
127. Piette, J. D., Marinec, N., Janda, K., Morgan, E., Schantz, K., Yujra, A. C., Aikens, J. E. (2016). Structured Caregiver Feedback Enhances Engagement and Impact of Mobile Health Support: A Randomized Trial in a Lower-Middle- Income Country. Telemed J E Health. 22(4), 261- 268. doi:10.1089/tmj.2015.0099	М	Small short (4mths) study; Female (62%), 60+ years (62%), and indigenous (29.2%); Self-reported outcomes	Manage health	Primary	60+	Weekly IVR calls including self-care education and questions either alone (standard m-health) or with automated feedback about health and selfcare needs sent to their Care Partner after each call	(Care Partners, defined as a	mHealth+CP patients completed significantly more IVR calls than standard mHealth patients (62.0% versus 44.9%;	mHealth+ CP patients more likely to report excellent health via IVR and less likely to report days in bed due to illness. No variation due to age.	
129. Piette, J. D., Rosland, A. M., Marinec, N. S., Striplin, D., Bernstein, S. J., & Silveira, M. J. (2013). Engagement with automated patient monitoring and self-management support calls: Experience with a thousand chronically ill patients. Medical Care. 51(3), 216-223. doi:10.1097/MLR.0b013e318277ebf8	М	77% white and 70% male; 83% completion	Heart failure, depressio n	Primary	60.9	Weekly IVR calls including self-care education and questions either alone (standard m-health) or with automated feedback about	Involvement of Informal Caregivers (Care Partners, defined as a relative or friend living	Patients with a variety of chronic conditions will complete IVR self-care support calls regularly. Risk factors for missed IVR calls		

Papers addressing Question 4	Evidence (Low/Med /High)	Strengths & Limitations	Healthy ageing theme	Care setting	Mean Age (yrs)	Intervention	Co- interventions		Secondary outcomes	Harms
						health and selfcare needs sent to their Care Partner after each call		overlap with those for missed appointment. Involvement of informal caregivers may significantly increase engagement		
130. Piette, J. D., Striplin, D., Marinec, N., Chen, J., & Aikens, J. E. (2015). A Randomized Trial of Mobile Health Support for Heart Failure Patients and Their Informal Caregivers. Medical Care. 53(8), 692-699. doi:10.1097/MLR.00000000000378	М	VA patients may have more support for HF management than patients in less- resourced contexts. Patient participants were almost exclusively men. Intervention targeted at CarePartners outside the patient's household.	Heart failure	Commu nity	67.9	Weekly IVR calls including self-care education and questions either alone (standard m-health) or with automated feedback about health and selfcare needs sent to their Care Partner after each call	Informal caregivers (Care Partners, defined as a	mHealth+CP patients reported lower levels of caregiving strain at both 6 and 12 months	There was increased CarePartners' involvement in self-care assistance, while time spent for the small number of CarePartners (who were spending the most time at enrolment) was decreased.	
137. Redfern, J., Santo, K., Coorey, G., Thakkar, J., Hackett, M., Thiagalingam, A., & Chow, C. K. (2016). Factors influencing engagement, perceived usefulness and behavioral mechanisms associated with a text message support program. PLoS ONE. 11(10). doi:10.1371/journal.pone.0163929	М	Mixed methods evaluation of a text message support program	Health Behaviour	Primary	58	Regular semi personalised text messages providing behaviour change advice, motivation, and information that aimed to		Factors increasing engagement: ability to save and share messages, having the support of providers and family, a feeling	Diet and physical activity messages were most valued. Four messages/wk was ideal	

Papers addressing Question 4	Evidence (Low/Med /High)	Strengths & Limitations	Healthy ageing theme	Care setting	Mean Age (yrs)	Intervention	Co- interventions	Primary Outcomes	Secondary outcomes	Harms
						improve general heart health, diet, physical activity and encourage smoking cessation	during working hours)			
158. Toy, B. C., Myung, D. J., He, L., Pan, C. K., Chang, R. T., Polkinhorne, A., Blumenkranz, M. S. (2016). Smartphone-based dilated fundus photography and near visual acuity testing as inexpensive screening tools to detect referral warranted diabetic eye disease. Retina. 36(5), 1000-1008. doi:10.1097/IAE.0000000000000955	М	Burden of disease affecting Latino patients	Diabetes	Primary	60.5	Smartphone used to estimate near visual acuity and capture anterior and dilated posterior segment photographs, which underwent masked, standardized review		Smartphone- based telemedicine system demonstrated sensitivity and specificity to detect referral- warranted diabetic eye disease with good correlation between clinical Snellen and smartphone visual acuity measurements.		
160. Turner-McGrievy, G. M., & Tate, D. F. (2014). Are we sure that Mobile Health is really		Mostly white women in a	Healthy eating	?	42.7	1) Theory- based podcast		POD participants in the TBP group		

Papers addressing Question 4	Evidence (Low/Med /High)	Strengths & Limitations	Healthy ageing theme	Care setting	Mean Age (yrs)		Co- interventions		Secondary outcomes	Harms
mobile? An examination of mobile device use during two remotely-delivered weight loss interventions. International Journal of Medical Informatics. 83(5), 313-319. doi:https://doi.org/10.1016/j.ijmedinf.2014.01.0 02		narrow age range 2) mHealth advances since 2011, with greater usability. 3) Present analysis does not include groups randomized to these methods.				(TBP) of the Pounds Off Digitally (POD) study 2) TBP + mobile group (self- monitoring app and Twitter app for social support) of the mobile Pounds Off Digitally (mPOD) study.		lost significantly more weight than control podcast group (p < 0.001). mPOD participants, showed no significant difference in % weight loss at 6 months between TBP or TBP + mobile.		
164. Van Der Weegen, S., Verwey, R., Spreeuwenberg, M., Tange, H., Van Der Weijden, T., & De Witte, L. (2015). It's LiFe! Mobile and web-based monitoring and feedback tool embedded in primary care increases physical activity: A cluster randomized controlled trial. Journal of Medical Internet Research. 17(7). doi:10.2196/jmir.4579	М	Mean baseline PA was above recommende d level. Only 10% of practices and 37% of patients approached agreed to participate, suggesting selection bias. Cycling, swimming, strength training, and upper body movements not measured because they could not be	Active living	Primary	57.8	The complete It's LiFe! intervention consists a self- management support program and a monitoring and feedback tool.	four individual consultations with the PN; in the first week, after 2 weeks, after 2-3 months, and after 4-6 months	Group 1 who received the tool and the SSP showed 8 minutes more moderate and vigorous physical activity (≥3 METS) than participants in the SSP, and 12 minutes more PA than the care as usual group.	general self- efficacy (general self- efficacy scale), exercise self- efficacy (exercise self-	

Papers addressing Question 4	Evidence (Low/Med /High)	Strengths & Limitations	theme	Care setting	Mean Age (yrs)	Intervention	Co- interventions	Primary Outcomes	Secondary outcomes	Harms
		captured with the PAM. Short follow- up (3 mths).								
167. Van Olmen, J., Van Pelt, M., Malombo, B., Ku, G. M., Kanda, D., Heang, H., Schellevis, F. (2017). Process evaluation of a mobile health intervention for people with diabetes in low income countries – the implementation of the TEXT4DSM study. Journal of Telemedicine and Telecare. 23(1), 96-105. doi:10.1177/1357633X15617885	М	Limitations was related to study design, data collection and data analysis. To maintain context, message content will differ among contries with impact on information quality.	Diabetes	Primary	55+	Diabetes Self- Management Support (DSMS) by SMS containing information on healthy behaviours and disease management;	A nurse in DRC, a peer educator in Cambodia, a community health worker or education nurse in the Philippines through automated software. Messages were sent manually in Philippines	Philippines. Problems with 1/3 of phones, including breakage, loss and cancelled subscriptions. Number reached	: Implementation of the intervention meets constraints at every step in the process. Barriers relate to the technology, the context and the participants.	
8. Anguera, J. A., Jordan, J. T., Castaneda, D., Gazzaley, A., & Areán, P. A. (2016). Conducting a fully mobile and randomised clinical trial for	L	Feasibility study, high attrition	Mental health	Commu nity	32 yrs	3 apps to assess and treat depression. \$	An online custom dashboard of	Access, engagement and expense	Cost: \$314,264 over 2 years	

Papers addressing Question 4	Evidence (Low/Med /High)	Strengths & Limitations	Healthy ageing theme	Care setting	Mean Age (yrs)	Intervention	Co- interventions	Primary Outcomes	Secondary outcomes	Harms
depression: Access, engagement and expense. BMJ Innovations. 2(1), 14-21. doi:10.1136/bmjinnov-2015-000098						incentives.	their study progress.			
(Methodology paper)										
 24. Bricker, J. B., Mull, K. E., Kientz, J. A., Vilardaga, R., Mercer, L. D., Akioka, K. J., & Heffner, J. L. (2014). Randomized, controlled pilot trial of a smartphone app for smoking cessation using acceptance and commitment therapy. Drug and Alcohol Dependence. 143, 87- 94. doi:https://doi.org/10.1016/j.drugalcdep.2014.0 7.006 	L	Small, short duration uncontrolled study. Low program completion	Tobacco free	Primary	41.5	A programmed software to participants' mobile phones.	NA	High user receptivity, modest quit rates, and high smoking reduction rates.		
 27. Burke, L. E., Styn, M. A., Sereika, S. M., Conroy, M. B., Ye, L., Glanz, K., Ewing, L. J. (2012). Using mHealth Technology to Enhance Self-Monitoring for Weight Loss: A Randomized Trial. American Journal of Preventive Medicine. 43(1), 20-26. doi:https://doi.org/10.1016/j.amepre.2012.03.0 16 	L	Small study of slef- monitoring and distal feedback	Healthy eating	Hospital	46.8	Self- monitoring diet using a PDA alone (PDA) or with daily tailored feedback (PDAFB) compared to a conventional paper diary	Meetings held weekly for Months 1–4; biweekly for Months 5–12, and monthly for Months 13– 18.	Small weight loss at 24 months;	Greater adherence to dietary self- monitoring over time.	
 28. Burke, L. E., Zheng, Y., Ma, Q., Mancino, J., Loar, I., Music, E., Sereika, S. M. (2017). The SMARTER pilot study: Testing feasibility of real- time feedback for dietary self-monitoring. Preventive Medicine Reports. 6, 278-285. doi:https://doi.org/10.1016/j.pmedr.2017.03.01 7 	L	Small study with less male participation	Healthy eating	Commu nity	44.8	Self- monitoring using the Lose It! smartphone app	NA	Adherence and retention	blood pressure and self- efficacy for weight loss	

Papers addressing Question 4	Evidence (Low/Med /High)	Strengths & Limitations	Healthy ageing theme	Care setting	Mean Age (yrs)	Intervention	Co- interventions	Primary Outcomes	Secondary outcomes	Harms
29. Cadmus-Bertram, L. A., Marcus, B. H., Patterson, R. E., Parker, B. A., & Morey, B. L. (2015). Randomized Trial of a Fitbit-Based Physical Activity Intervention for Women. American Journal of Preventive Medicine. 49(3), 414-418. doi:https://doi.org/10.1016/j.amepre.2015.01.0 20	L	Small short duration study of postmenopau sal women	Active living	Commu nity	58	Use of Fitbit tracker and website versus pedometer use		Increased moderate to vigorous physical activity amongst post- menopausal women	The Fitbit was well accepted in this sample of women	
41. Depp, C. A., Ceglowski, J., Wang, V. C., Yaghouti, F., Mausbach, B. T., Thompson, W. K., & Granholm, E. L. (2015). Augmenting psychoeducation with a mobile intervention for bipolar disorder: A randomized controlled trial. Journal of Affective Disorders. 174, 23-30. doi:https://doi.org/10.1016/j.jad.2014.10.053	L	Excluded drug use and severe mental health problems; 65% compliance Not powered to detect moderators and mediators	Mental health	Primary	47.5	Personalized Real-Time Intervention for Stabilizing Mood (PRISM).		MADRS Total Score	YMRS and IIS Total Scores.	
49. Fukuoka, Y., Gay, C. L., Joiner, K. L., & Vittinghoff, E. (2015). A Novel Diabetes Prevention Intervention Using a Mobile App. American Journal of Preventive Medicine. 49(2), 223-237. doi:10.1016/j.amepre.2015.01.003	L	Higher income and more females; Small and short duration study	Diabetes	Commu nity	55	Six diabetes prevention sessions with home based program delivered by mobile phone app (daily text and videos), pedometer, and weight, calorie and physical activity diary.		6.2 kg weight loss compared to 0.3kg gain in control group.	Increase steps by 2551 (cf. decrease of 734 per day in control group). Reduced hip circumference, BP, intake of sat fat and sugar sweetened drinks.	
71. Hoffman, V., Söderström, L., & Samuelsson, E. (2017). Self-management of stress urinary	L	Small cohort study with well-educated	Urinary	Commu nity	44.2	Tät® mobile app		Improved ICIQ- UI SF and ICIQ- LUTSqol from	Patient Global Impression of Improvement	

Papers addressing Question 4	Evidence (Low/Med /High)	Strengths & Limitations	Healthy ageing theme	Care setting	Mean Age (yrs)	Intervention	Co- interventions	Primary Outcomes	Secondary outcomes	Harms
incontinence via a mobile app: two-year follow- up of a randomized controlled trial. Acta Obstetricia et Gynecologica Scandinavica. 96(10), 1180-1187. doi:10.1111/aogs.13192		group. No control group						baseline to two years	(PGII)	
77. Kardas, P., Lewandowski, K., & Bromuri, S. (2016). Type 2 Diabetes Patients Benefit from the COMODITY12 mHealth System: Results of a Randomised Trial. Journal of Medical Systems. 40(12). doi:10.1007/s10916-016-0619-x	L	Short study of feasibility and usability with incusion criterion being diabetics able to use the technology!! Title misleading!	Diabetes	Primary	59	COMMODITY 12 system: smart phone with bluetooth sensors (glucometer, ECG, heart rhythm, respiratory movements, triaxial accelerometer, patient adherence monitor)		Good scores (4/5 likert scores) on usability instruments.	Minor improvementob served in 4 out 5 dimensions of HQOL (self- care, usual activities, pain/discomfort and anxiety/depress ion)	
80. Kim, J. H., Kwon, S. S., Shim, S. R., Sun, H. Y., Ko, Y. M., Chun, D. I., Song, Y. S. (2014). Validation and reliability of a smartphone application for the international prostate symptom score questionnaire: A randomized repeated measures crossover study. Journal of Medical Internet Research. 16(2). doi:10.2196/jmir.3042	L	Self-reported data; Possible selection bias, no open questions, no assessment of quality of repsonses; no test of reliability over time.	Prostate (LUTS)	Primary	58	Smartphone application of a questionnaire		IPSS scores		
103. Mertens, A., Brandl, C., Miron-Shatz, T., Schlick, C., Neumann, T., Kribben, A., Becker, S. (2016). A mobile application improves therapy-adherence rates in elderly patients	L/M	60+ yr with a minimum visual acuity of -0.75; Small short	CAD	Rehab	73.8	Medication Plan via Apple iPad with data logging		iPad-delivered intervention improved subjective and objective	Majority of participants would like to use the medication app	Manage expectatio ns and avoid the hype

Papers addressing Question 4	Evidence (Low/Med /High)	Strengths & Limitations	Healthy ageing theme	Care setting	Mean Age (yrs)	Intervention	Co- interventions	Primary Outcomes	Secondary outcomes	Harms
undergoing rehabilitation A crossover design study comparing documentation via iPad with paper-based control. Medicine (United States). 95(36). doi:10.1097/MD.0000000000004446		study – 28 days in each crossover phase.						medication adherence from baseline and compared to paper diary.	and would not need further assistance with the app.	
108. Moore, S. L., Fischer, H. H., Steele, A. W., Joshua Durfee, M., Ginosar, D., Rice-Peterson, C., Davidson, A. J. (2014). A mobile health infrastructure to support underserved patients with chronic disease. Healthcare-the Journal of Delivery Science and Innovation. 2(1), 63-68. doi:https://doi.org/10.1016/j.hjdsi.2013.12.016	L	Small short (9mths) study; Access to SMS; Mainly female (65%) & Latino (65%):	Diabetes	Primary	40.6	Automated, bidirectional text messaging (outreach messages) for appointment reminders and collection of patient- reported blood sugar measurements.	Feasibility of integrating mHealth infrastructure with clinical information systems, using patient relationship management software	Patients sent over 6500 messages with response rates of 53.7% (bloodsugar), 48.8% (step counts), and 31.9% (blood pressure).	% responses correctly formatted by patients	
134. Pludwinski, S., Ahmad, F., Wayne, N., & Ritvo, P. (2016). Participant experiences in a smartphone-based health coaching intervention for type 2 diabetes: A qualitative inquiry. Journal of Telemedicine and Telecare. 22(3), 172-178. doi:10.1177/1357633X15595178	L	Qualitative evaluation of a RCT	Diabetes	Primary	55+	Smartphone based health coacing intervention containing education, peer support and coaching frequently by adherence level	provision of a smartphone and self- monitoring software to optimise patient's own time through 2- 4 contacts monthly and one phone call/3 months	Interventions with T2DM assisted by smartphone software and health coaches actively engage individuals in improved hemoglobin A1c (HbA1c) control.	 (a) smartphone use in relation to health behavior change; (b) how client/ health coach relationships were assisted by smartphone (c) perceptions of the overall intervention; (d) difficulties with self- management of T2DM 	
136. Quinn, C. C., Clough, S. S., Minor, J. M.,	L	Very small	Diabetes	Primary	55+	WellDoc System:	Feedback every 2 weeks for	HbA1c values declined	Improvement in knowledge	

Papers addressing Question 4	Evidence (Low/Med /High)	Strengths & Limitations	Healthy ageing theme	Care setting	Mean Age (yrs)	Intervention	Co- interventions	Primary Outcomes	Secondary outcomes	Harms
Lender, D., Okafor, M. C., & Gruber-Baldini, A. (2008). WellDoc [™] mobile diabetes management randomized controlled trial: Change in clinical and behavioral outcomes and patient and physician satisfaction. Diabetes Technology and Therapeutics. 10(3), 160-168. doi:10.1089/dia.2008.0283		study				Diabetes management software system, real- time feedback on patients blood glucose levels, patient medication adherence, treatment algorithms	patients and 4 weeks for healthcare providers	significantly in intervention group	of food choices, confidence and provider feedback	
140. Ross, K. M., & Wing, R. R. (2016). Impact of newer self-monitoring technology and brief phone-based intervention on weight loss: A randomized pilot study. Obesity. 24(8), 1653- 1659. doi:10.1002/oby.21536	L	Small short study	Healthy eating	Commu nity	51	 Self monitoring - a calorie reference book, a pedometer to monitor daily step counts, and a body weight scale (ST); Fitbit Aria (TECH) Fitbit plus phone-based interventionist contact over the 6-month intervention (TECH+PHON E) 		Newer self- monitoring technology; plus brief phone- based intervention can improve adherence to self-monitoring and lead to greater weight loss than traditional self- monitoring tools.		
145. Sepah, S. C., Jiang, L., & Peters, A. L. (2015). Long-term outcomes of a web-based diabetes prevention program: 2-Year results of a single- arm longitudinal study. Journal of Medical Internet Research. 17(4), e92.	L	Non Randomized uncontrolled single arm design with a self selected	Diabetes	Commu nity	43.6	'Prevent' Internet based lifestyle intervention includes small group support,		Mean reduction in weight (lbs) and HbA1c (%) were similar in groups pre and post intervention	Digital therapeutics can produce a sustained behaviour change and aid	

Papers addressing Question 4	Evidence (Low/Med /High)	Strengths & Limitations	Healthy ageing theme	Care setting	Mean Age (yrs)	Intervention	Co- interventions	Primary Outcomes	Secondary outcomes	Harms
doi:10.2196/jmir.4052		sample, fewer males, Attrition				personalized health coaching, weekly diabetes prevention program curriculum and digital tracking tools.		without any statistical significance	for healthy ageing	
148. Silveira, P., Van De Langenberg, R., Van Het Reve, E., Daniel, F., Casati, F., & De Bruin, E. D. (2013). Tablet-based strength-balance training to motivate and improve adherence to exercise in independently living older people: A phase II preclinical exploratory trial. Journal of Medical Internet Research. 15(8). doi:10.2196/jmir.2579		 small convenience sample; different recruitment methods without initial randomisatio n & blinding may have introduced a selection bias that questions the validity of adherence & attrition findings. 	Falls preventio n	RACF	75	monitors, and motivates older people to follow personalized training plans autonomously	version of ActiveLifestyle	significantly between groups; Attrition 41%	Social motivation strategies seemed to be more effective to stimulate the participants to comply with the training plan and remain on the intervention	
152. Spoelstra, S. L., Given, C. W., Sikorskii, A., Coursaris, C. K., Majumder, A., DeKoekkoek, T., . Given, B. A. (2015). Feasibility of a Text Messaging Intervention to Promote Self- Management for Patients Prescribed Oral Anticancer Agents. Oncology Nursing Forum. 42(6), 647-657. doi:10.1188/15.ONF.647-657		Small sample Self-report is limited recall & social desirability biases;	Cancer	Commu nity	58.5	Text messages to promote self- management among patients prescribed oral anticancer agents (OAs)	The intervention group received daily texts for adherence and weekly for symptoms for 21–28 days.	30/37 satisfied with intervention reported they reas the texts all the time	Text group reported fewer symptoms. Medical record & prescription data (n = 26) showed higher adherence in the text group.	

Papers addressing Question 4	Evidence (Low/Med /High)	Strengths & Limitations	Healthy ageing theme	Care setting	Mean Age (yrs)	Intervention	Co- interventions	Primary Outcomes	Secondary outcomes	Harms
153. Spring, B., Duncan, J. M., Janke, E. A., Kozak, A. T., McFadden, H. G., Demott, A., Hedeker, D. (2013). Integrating technology into standard weight loss treatment a randomized controlled trial. JAMA Internal Medicine. 173(2), 105-111. doi:10.1001/jamainternmed.2013.1221	L	Small sample from a specific outpatient clinic limits generalisabiit y.	Healthy eating	Primary	57.7	Personal digital assistance through mobile technology to self monitor diet & physical activity PLUS discussion of nutrition, physical activity, and behavior change		Weight loss at 6 and 12 months	The addition of a personal digital assistant and telephone coaching can enhance short- term weight loss in combination with an existing system of care.	
154. Sun, N., Rau, PL. P., Li, Y., Owen, T., & Thimbleby, H. (2016). Design and evaluation of a mobile phone-based health intervention for patients with hypertensive condition. Computers in Human Behavior. 63, 98-105. doi:https://doi.org/10.1016/j.chb.2016.05.001		The sample size was small and the evaluation lasted for only 6 weeks. Patients who believe in TCM may ascribe hypertension to daily activities.	Hypertens n	Commu nity	59.2	An electronic BP monitor and a mobile phone a health app, BP Tagger which helps users to store BP data and to generate BP reports and provide a self- reflective feature		Average score "self-reflective behaviour" increased from 5.56 to 6.00 in first 2 weeks (effect size 0.189), and then to 6.42 in the next 2 weeks (effect size 0.410).		Need to anticipate the cultural context, especially of TCM
156. Thorsteinsen, K., Vittersø, J., & Svendsen, G. B. (2014). Increasing physical activity efficiently: An experimental pilot study of a website and mobile phone intervention. International Journal of Telemedicine and Applications. doi:10.1155/2014/746232	L	Small short study	Active living	Commu nity	55.3	Intervention included an activity planner, progress monitoring and gamification components; used SMS text as a secondary delivery channel and		Lifestyle group performed consistently more physical activity, at a higher intensity, than the control group.	Including gaming elements and SMS-text in an interactive, computer- tailored physical activity intervention is useful.	

Papers addressing Question 4	Evidence (Low/Med /High)	Strengths & Limitations	Healthy ageing theme	Care setting	Mean Age (yrs)	Intervention	Co- interventions	Primary Outcomes	Secondary outcomes	Harms
						feedback to improve engagement in the content.				
166. Van Olmen, J., Kegels, G., Korachais, C., de Man, J., Van Acker, K., Kalobu, J. C., Schellevis, F. (2017). The effect of text message support on diabetes self-management in developing countries – A randomised trial. Journal of Clinical & Translational Endocrinology. 7, 33-41. doi:https://doi.org/10.1016/j.jcte.2016.12.005	L/M	Representativ eness is good for this multi- country study; High attrition rates;	Diabetes	Primary care in DR Congo (Kin- réseau), Philippi nes (FiLDC are), Cambod ia (MoPoT syo)	58	Intervention group received DSMS through automated Short Message Services (SMS) through Frontline. Internet-based. messages sent 5 times/week in Kin-réseau, 6 times/week in MoPoTsyo, and 2 times/week in FiLDCare. The messages were developed by a country team (project manager, assistant programme manager, educator, general doctor with extra diabetes training	Community- based peer educator	Control (HbA1c < 7.0%) was achieved by 33.9% of intervention group and 31.1% of control group (p = 0.39). In Kin-réseau, the percent increase was significant (p = 0.04) In MoPoTsyo, the %controlled diabetes decreased. In FiLDCare, %controlled diabetes increased in the intervention but decreases in the control group.	The intervention did not appear to have an effect on the intermediate outcome indicators, including patient knowledge, perceptions, and the utilisation of care. All showed a drop in attendance to meetings with the educator in MoPoTsyo and FiLDCare. In MoPoTsyo, the number of subjects that self-monitored glucose levels significantly decreased in both groups.	
169. Verwey, R., van der Weegen, S., Spreeuwenberg, M., Tange, H., van der Weijden, T., & de Witte, L. (2014). A pilot study of a tool to	L	Small sample size - pilot study	Active living	Primary	60	Accelerometer and a smartphone (Galaxy Ace,	the practice three times: in	Adherence regarding the use of the tool was high (on average	Mean activity significantly increased by 10.6 min per	

Papers addressing Question 4	Evidence (Low/Med /High)	Strengths & Limitations	Healthy ageing theme	Care setting	Mean Age (yrs)	Intervention	Co- interventions	Primary Outcomes	Secondary outcomes	Harms
stimulate physical activity in patients with COPD or type 2 diabetes in primary care. Journal of Telemedicine and Telecare. 20(1), 29-34. doi:10.1177/1357633X13519057						Samsung) with data subs and equipped with the web app.	after two weeks, and after 8–12 weeks. The consultations (20 min) could be extra or an extension of a routine consultation (10 min).	80%). Most patients (12 out of 17) were positive about the intervention. The intervention appears to be feasible in primary care.	day, from 28.7 (SD 21.1) min per day in the first two weeks compared to 39.3 (SD 24.2) in the last two (P=0.02).	
170. Vidoni, E. D., Watts, A. S., Burns, J. M., Greer, C. S., Graves, R. S., Van Sciver, A., Bieberle, N. A. (2016). Feasibility of a Memory Clinic-Based Physical Activity Prescription Program. Journal of Alzheimer's Disease. 53(1), 161-170. doi:10.3233/JAD-160158 (Promoting Activity through Clinical Education and Reinforcement, PACER)	L	Feasibility trial with limited efficacy testing; Cross over design not appropriate as the second arm was delayed; Small sample size and large attrition; Study was biased to the clinician's prescription as intended; Subjective ratings subject to reporting biases		Primary	72.3	Exercise booklet and accelerometers to count steps. Study coaches made calls every three weeks to assess adverse events only.	Personal study coach made bi- weekly phone calls to encourage exercise, problem-solve barriers to exercise, and provide technical supp	Participants and study partners were comfortable with the setup and use of the Internet- connected accelerometer	Significant positive changes in physical activity can occur among mild cognitively impared individuals	
173. Wayne, N., Perez, D. F., Kaplan, D. M., & Ritvo, P. (2015). Health coaching reduces hba1c	L/M	Not representative	Diabetes	Primary	53.2	Intervention: Samsung	Can communicate	No significant between-group	Changes in psychometric	

Papers addressing Question 4	Evidence (Low/Med /High)	Strengths & Limitations	Healthy ageing theme	Care setting	Mean Age (yrs)	Intervention	Co- interventions		Secondary outcomes	Harms
in type 2 diabetic patients from a lower- socioeconomic status community: A randomized controlled trial. Journal of Medical Internet Research. 17(10). doi:10.2196/jmir.4871		as only recruited from two GP clinics				Galaxy Ace II mobile phone, with a data- only carrier plan, a user account with the Connected Wellness Platform (CWP) which supported participants in health-related goal setting and progress monitoring. Participants track key metrics, blood glucose levels, exercise frequency/durat ion/intensity, food intake (via photo journaling) and mood.	phone contact, and/or during in-person meetings.	differences in HbA1c from baseline to 6 months when analyzed with intention-to-treat (P=0.48) and per-protocol (P=0.83) principles	assessments at baseline and 6 months were analyzed using the Satisfaction with Life Scale, the Hospital Anxiety and Depression Scale, the Positive and Negative Affect Schedule, and the Short Form Health Survey- 12 (SF-12).	
174. Wayne, N., & Ritvo, P. (2014). Smartphone- enabled health coach intervention for people with diabetes from a modest socioeconomic strata community: Single-Arm longitudinal feasibility study. Journal of Medical Internet Research. 16(6). doi:10.2196/jmir.3180	L	small sample size, short duration, self- reporting bias, no control group	Diabetes	Primary	55.6	After baseline data collection, health coach communicated with participants about eating, physical activity patterns, and overall health	Wellness plans collaboratively created in multiple interactions focused on exercise instruction and reviews of electronic monitoring	a mean reduction of 0.43% (SD 0.63) (P<0.05) with minimal change in		

Papers addressing Question 4	Evidence (Low/Med /High)	Strengths & Limitations	Healthy ageing theme	Care setting	Mean Age (yrs)	Intervention	Co- interventions	Primary Outcomes	Secondary outcomes	Harms
						goals.	entries, with diet and medication guidelines set by primary care physicians and dieticians.			
177. Wijsman, C. A., Westendorp, R. G. J., Verhagen, E. A. L. M., Catt, M., Slagboom, P. E., De Craen, A. J. M., Mooijaart, S. P. (2013). Effects of a web-based intervention on physical activity and metabolism in older adults: Randomized controlled trial. Journal of Medical Internet Research. 15(11). doi:10.2196/jmir.2843	L/M	Attention bias could have been introduced; Netherlands is a high income country with high internet usage among elderly. Translating to other settings will be challenging.	Active living	Commu nity	64.7	DirectLife, a commercial Web-based program directed at increasing daily physical activity, using the stages of change and I- change health behavior change models. It considers the individual's current activity level and provides a personal goal.	individual's physical	After 13 weeks, daily physical activity as measured by an ankle/wrist-worn tri-axial accelerometer increased by 46% (SE 7%, P<.001) in the intervention group, compared to 12 % (SE 3%, P<.001) in the control group.	Mean change of -1.49 kg in intervention group compared to -0.82 kg in the control group (Pdifference=.0 46). Likewise, waist circumference and fat % age also decreased more in the intervention vs control group.	
180. Wu, JM., Yu, HJ., Ho, TW., Su, XY., Lin, MT., & Lai, F. (2015). Tablet PC-enabled application intervention for patients with gastric cancer undergoing gastrectomy. Computer Methods and Programs in Biomedicine. 119(2), 101-109. doi:https://doi.org/10.1016/j.cmpb.2015.03.004	L/M	Small pilot study; App not regulated by medical authorities in Taiwan; Bias in retrospective	Cancer	Tertiary	61	A tablet PC application developed to serve the functions of nutritional monitoring, medical information		App group had a lower body weight loss percentage and more outpatient clinic (OPC) visits relative to the control group during the 6-	BMI, No of outpatient clinic visits, readmission, emergency room visits	

Papers addressing Question 4	Evidence (Low/Med /High)	STRANGTING X	Healthy ageing theme	Care setting	Mean Age (yrs)	Intervention	interventions		Secondary outcomes	Harms
		study. Very speicialised field				management, drainage follow-up and wound care. 20 consecutive gastrectomy patients at the National Taiwan University Hospital received perioperative care via the application		month follow up,		

Synthesis and discussion

This scoping review of the published literature and ageed/age care apps in the Android domain found a large range of uses where mHealth technologies have been applied in aged care.

Healthy ageing

The lack of recent papers on smoking cessation was surprising, but the increasing emphasis on mental health is encouraging. The emphasis on disease management and healthy lifestyle contrasts with the lack of apps to address sexual health, violence and injury, drug and alcohol abuse, and age-friendly environments. Nevertheless, this health focus (as opposed to a more social focus) fits with prevailing biomedical values and attitudes rather than the comprehensive biopsychosocial approach to health and health care.

There were only a few robust studies that looked at patient outcomes (Table 5). There is evidence to support non-clinical outcomes like intention to continue-to-use and positive trends in user participation, uptake and engagement. These findings support the belief that older people, as well as their caregivers, are able and willing to adopt mHealth technology to address their communication, information and decision support needs as they age and use health services. However, the literature also suggests that they do not want mHealth apps to impact too much on the personal relationship and interactions they have with their health care providers. Moreover, it is uncertain how well the positive intention to use might translate into successful implementations with positive clinical outcomes.

A range of impacts of mHealth – positive, neutral and negative - on the management of health, lifestyle enhancement, active living and other themes of healthy ageing was found. This is not surprising given that most of the trials are small and of short duration. More importantly, the evolving and dynamic nature of the mHealth domain makes variations and heterogeneity an expected and predictable constraint. However, the generally positive sentiments and engagement with mHealth suggest that these apps can be useful complements to current service delivery models leading to improved models of care for the diagnosis and management of chronic non-communicable health problems and their exacerbations.

Aged friendly services

The application of mHealth to the provision of age-friendly healthcare is less direct. mHealth apps to make decision aids, such as for cardiovascular risk assessment, can reduce screening time and calculation errors among non-medically trained health care providers such as community health workers. Introduction of a tablet to healthcare providers in an American healthcare organisation was well adopted and is believed to have led to an increase in overall productivity, improved patient-provider communication and process of care. Similar assessments of the use of tablets by patients and their physicians in other organisations showed mixed outcomes. While patients perceived the use of the tablets during patient-provider consultations negatively, the use of the tablets in the waiting room resulted in enhanced patient satisfaction and uptake of information provided by their physicians. The context is central to any evaluation of mHealth, with perhaps patient-centredness being a core principle for the use of mHealth.

Little was found that evaluated mHealth as a new service delivery model or model of care for the provision of age-friendly care and services. The most common health service context was hospital outreach services provided by disease specific specialties such as diabetes,

cardiovascular disease (CVD), chronic obstructive pulmonary disease (COPD), cancer and mental health. The evidence is sparse on how mHealth can support care by health organisations, including stepped up care, or to support managerial systems. This is likely due to countries having different health and social priorities under different resource constraints. In many Low and Middle-Income Countries (LMICs), the prevailing context of mHealth was and continues to be Maternal and Child Health (MCH) rather than Aged Care. As such the model for mHealth in strengthening health systems developed by Labrique, et al, was based on MCH not aged care or non-communicable disease in LMICs (24). The effect is that the search would not find papers outside the ageing and aged care domain.

Design development and testing

Many of the papers reported on accuracy and feasibility testing rather than implementation and evaluation to examine impact on patient and provider outcomes. In this context, the large number of apps available in the market and the relatively small number of papers reporting on the testing, let alone evaluation, of mHealth apps is an issue that need to be addressed for safety and quality reasons.

The mHealth apps vary in levels of complexity from standalone information sources in a range of media to communication tools mainly through the asynchronous use of text messages to provide motivational support to facilitating behaviour change, alerts and reminders to encourage adherence to self-management plans to complement existing clinical services. More complex apps capture patient information and measurements which may be linked and integrated with personal health information in electronic health records (EHRs) and clinical decision support systems (CDSS) to provide more complex and personalised guidance in matters such as medication guidance.

The need for more research-based development of mHealth launchers was expressed as the prevailing focus was on assistive technologies. Issues such as larger number of features being associated with more usability problems indicated an underlying complexity to be addressed. Co-design and co-development of mHealth apps, engaging the teams & organisation, clinicians & managers, and patients & carers dietitian will logically develop more usable and relevant mHealth apps to improve patient empowerment and the safety and quality of care (26). This requires an understanding of mHealth readiness(18) and informatics capability maturity of individuals, oranisations and communities (19, 76). An adaptive systems engineering framework and user-centered design is essential to guide the multi-stage iterative design and testing of a smartphone intervention to self-monitor their behaviour (52).

Innovation in research and evaluation of mHealth

The heterogeneity in study designs, implementation processes and measurements precluded meta-analysis of pooled results of these usually small studies of short duration. This emphasises the imperative for a common methodology and terminology for research and evaluation.

Patient engagement

When patients were engaged for longer periods of time, the processes and impacts of mHealth apps on the quadruple aims of cost-effectiveness of care in terms of patient health outcomes and satisfaction, provider well-being and the health of populations can be evaluated. Patient engagement can occur in the iterative co-design and co-development of mHealth apps as well as in the implementation and evaluation of the" tested app". This applies to other actors such as the clinicians and other health professionals. In this context, even pilot and feasibility studies need to be well-designed, adequately powered and

sufficiently resourced to recruit and retain participants as well as to innovate with new methodologies being pioneered in clinical research informatics and the use of observational data in health information systems and EHRs.

Ethics and governance

As this review and contemporary environment indicates, the fast pace of technological improvement and the rapid development and adoption of mHealth apps presents crucial challenges for clinicians, users and policy makers. There is a need to ensure the safety of mHealth apps and establish their cost-effectiveness and their impacts on patients, carers, clinicians and other health care providers. For instance, can mHealth tools improve the role of patients, carers and clinicians in shared health decision-making? The impact of mHealth tools on the clinician-patient relationship and interactions needs to be explored, together with the skills required for both groups to benefit from the use of apps within and adjunct to the face-to-face consultation.

Conclusion

Conclusive evidence for the cost-effectiveness of mHealth, in terms of patient outcomes, is lacking. Feasibility and usability studies confirm positive attitudes to mHealth tools with high intention-to-use and positive trends in user participation, uptake and engagement. Pilot studies on adoption and implementation should address safety and reliability testing, accuracy of underlying algorithms and validity and reliability of decision support rules. Heterogeneity in study design, implementation and measurements must be addressed and standardised to enable meta-analysis to further understand the impact of mHealth on clinical and patient outcomes.

Innovation in research and evaluation methodology is important to translate feasibility studies into definitive clinical trials focused on outcomes. Mobile technology and electronic health records have important roles in broadening the reach and representativeness of RCTs, while substantially reducing the time to determine intervention effectiveness and reducing study costs (77). Future research needs experimental study designs and a holistic approach that addresses multilevel determinants (clinical, behavioural, and care coordination) of shared care, self-care and proactive collaborations between health care professionals and patients (64).

This review of apps and publications, in the context of the contemporary environment, highlights the fast pace of technological change and the rapid development, adoption and demise of mHealth apps presents crucial challenges for clinicians, users and policy makers. The gaps in sexual health, violence and injury, drug and alcohol abuse, and age-friendly environments highlighted need to be addressed. This may involve a paradigm change from the biomedical model to a more holistic biopsychosocial one.

Good implementation is important and must consider sociotechnical requirements of all the actors to optimise the use of mHealth in achieving the quadruple aims cost-effective beneficial outcomes for the patient and the community, patient satisfaction and provider well-being. This reiterates the need for good collaborative partnerships among all the actors in this design, development, testing, implementation and evaluation of mHealth apps.

A participatory design approach is needed in which target users are involved in the codevelopment of cost-effective and personalized mHealth apps that are sufficiently mature before implementation. Including patients, carers and clinical users as part of the design team stimulates and enables designers to think differently, unconventionally, or from a new perspective, leading to applications that are better tailored to patients' needs(64).

Healthcare organizations need to consider the risk of fragmenting clinical practice within the organization as a result of too many apps being developed or used. What mechanisms are required for the integration of mHealth tools and information into the wider electronic health records (EHRs) and health information system (HIS)? What are the required standard operating procedures and governance framework for their use and linkage to the EHR or HIS either directly or through an Internet of Things infrastructure? (78)

Robust governance frameworks are essential to anticipate and/or act on intended and unintended clinical outcomes and consequences of mHealth apps in healthy ageing and to support age friendly health services (79).

Acknowledgements

Ms Joyce Cornelius, research librarian at UNSW Sydney, for her guidance and support.

The WHO Western Pacific Regional Office for funding this review.

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Attachments

Attachment 1: Data extraction template with data

Attachment 2: Strategy for search of databases

				Publication det	ails	
						Study
	Article	Co-		Year of		type (eg:
No.	no.	reviewer	Title of article	publication	Journal name	RCT)
			Daily mood ratings			
			via text message as			
			a proxy for clinic			
		-	based depression	2015	Journal of Affective	Single-group
1	2	Teng	assessment	2015	Disorders	interventional study
			survey evaluating			online, mixed-
		_	Text4Mood: mobile			method survey
2	3	Teng	health program to	2016	BMC Pyschiatry	evaluating a mobile
						Observational open
3	4	Teng	Improvements in illn	2015	Primary Care Diabetes	label trial
			message system		International Journal	Randomised
4	5	Mark	(SMS) reminder on	2017	of Medical Informatics	
_			Classifying		Journal of Biomedical	Preliminary findings
5	6	Padma	obstructive sleep	2014	Informatics	from
			Preliminary			preliminary
			Outcomes of a Web			outcomes of a
			and		Journal of Medical	smartphone-based
6	7	Padma	Smartphone–Based	2016	Systems	mHealth platform
			mobile and			
			randomised clinical			Randomised clinical
7	8	Teng	trial for depression:	2016	BMJ Innovations	trial Developmined
			Outpatient blood		Journal of the	Randomised
8	9	Tong	pressure	2015	American Society of	controlled 3-arm trial
0	9	Teng	monitoring using	2015	Hypertension	lidi
			mobile-based			
			tailored			Initial results of a
			intervention to		Journal of Medical	cluster randomised
9	10	Mark	enhance	2014	Internet Research	controlled trial
			Tijuana: A			Open label
10		Dealers	randomized control	2016	Diabetes Technology	randomised
10	11	Padma	trial evaluating the	2016	& Therapeutics	controlled trial
			Intervention for		Diahataa Taabaa la	
14	12	Tarra	Inner City Patients	2012	Diabetes Technology	Pilot trial of a
11	12	Teng	with Poorly	2012	& Therapeutics	mHealth program

			Peer-Group		The Journal of	effectiveness of a
			Lifestyle		Nervous and Mental	lifestyle intervention
12	12	Tong	Intervention	2010		
12	13	Teng		2016	Disease	incorporating
			Features and			Development and
			usability			preliminary usability
			assessment of a		Applied Nursing	of a mHealth
13	14	Mark	patient-centered	2016	Research	application
			The Effect of a			
			Mobile Health			
			Decision Support		The Journal for Nurse	Randomised
14	16	Mahfuz	System on	2014	Practitioners	controlled trial
			preliminary efficacy			
			of remotely			Reanalysis of data
			delivering cognitive		Schizophrenia	from a randomised
15	19	Mark	training to people	2017	Research: Cognition	controlled trial
			Messages to			
			Support Treatment			Pragmatic, single-
			Adherence in			blind, 3-arm
			Adults with High			randomised
16	20	Teng	Blood Pressure	2016	Circulation	controlled trial
			smartphone-based			
			intervention to			Within-subjects
17	21	Ben	reduce sedentary	2014	PLOS ONE	experimental trial
		Den	controlled pilot trial	2014		
			of a smartphone			
			app for smoking		Drug and Alcohol	Randomised
18	24	Mahfuz	cessation using	2014	Dependence	controlled pilot trial
		initian az	usability evaluation	2011		
			of the mHealth Tool			Feesibility and
					Dationst Education and	Feasibility and
10	25	Deduce	for Lung Cancer	2015	Patient Education and	usability of a
19	25	Padma	(mHealth TLC): A	2015	Counseling	mHealth tool
			adult experience of			
			a web-based, tablet-			Qualitative
			delivered heart			evaluation of a
			failure self-care			mHealth
20	26	Teng	program using	2017	Geriatric Nursing	intervention
			Technology to			
			Enhance Self-			Randomised 3-arm
			Monitoring for		American Journal of	behavioural clinical
21	27	Jitendra	Weight Loss: A	2012	Preventive Medicine	trial
			The SMARTER pilot			
			study: Testing			
			feasibility of real-		Preventive Medicine	Pilot randomised
22	28	Jitendra	time feedback for	2017	Reports	clinical trial

			Randomized Trial of			
			a Fitbit-Based			
			Physical Activity			
			Intervention for		American Journal of	Randomised
23	29	Ben	Women	2015	Preventive Medicine	controlled trial
			tablet-based			
			instruction of			
			breathing		International Journal	Randomised
24	30	Mark	technique in	2016	of Medical Informatics	controlled trial
			technology-based		Disability and	implementation and
			embedded		Rehabilitation	evaluation of a
25	31	Jitendra	assessment in the	2014	Assistive Technology	location tracking
			Developing a			
			Mobile Health			
			Intervention to Link		Journal of Ambulatory	Pilot randomised
26	32	Teng	Diabetes	2015	Care Management	controlled trial
20		10115	Engagement and	2010		Evaluation of a
			abstinence among			mobile phone-based
27	34	Mahfuz	users of a smoking	2016	Addictive Behaviors	smoking cessation
			Improvement in		Journal of Allergy and	Usability and
			Asthma Control		Clinical Immunology	effectiveness of a
28	35	Mahfuz	Using a Minimally	2016	in Practice	smartphone
			App for Self-			•
			Management and			
			Education of		Journal of Medical	Usage and utility of
29	37	Mark	Cardiac Diseases in	2016	Systems	a mHealth app
			Postoperative	2010	by sections	
			, monitoring with a			
			mobile application			
			after ambulatory		European Spine	Feasibility of a
30	39	Teng	lumbar discectomy:	2016	Journal	mHealth app
			psychoeducation	_,		
			with a mobile			
			intervention for		Journal of Affective	Randomised
31	41	Jitendra	bipolar disorder: A	2015	Disorders	controlled trial
		Jicenara	Controlled Trial of a	2010		
			Mobile Health			
			Intervention to		American Journal of	Randomised
32	42	Padma	Promote Self-	2016	Transplantation	controlled trial
52		. aanna	mobile-phone-	2010	Telemedicine and	smartphone
33	44	Teng	based home	2014	Telecare	mHealth app
			international			International
			randomized clinical		Neurorehabilitation	randomised
34	45	Ron	trial of activity	2015	and Neural Repair	controlled trial
54	40	Ben	tildi Ul attivity	2015	and Neural Repair	

			A Novel Diabetes			
			Prevention			
			Intervention Using		American Journal of	Randomised
35	49	Mark	a Mobile App	2015	Preventive Medicine	controlled trial
35		IVICIT	levels and steps of	2015	Journal of Neurologic	SmartShoe system
36	50	Ben	people with stroke	2012	Physiotherapy	in stroke patients
30	50	Dell	criterion-related	2012	Гпузютнегару	validation of an
			validity with a		Biomedical	iPhone
37	51	Teng	smartphone used in	2014	Engineering Online	accelerometer
57		Teng	Mobile Romberg	2014		Cross-sectional
38	52	Mark	test assessment	2014	BMC Research Notes	survey of patients'
50	52	Wark	The impact of	2011		survey of putients
			tailored text		Research in Social and	
			messages on health		Administrative	Pilot randomised
39	54	Padma	beliefs and	2016	Pharmacy	controlled trial
			The effect of			
			various types of			
			patients' reminders			Randomised
40	55	Jitendra	on the uptake of	2015	Vaccine	controlled trial
			effects of home-			
			based smartphone-			
			delivered		Parkinsonism and	Pilot randomised
41	56	Ben	automated	2016	Related Disorders	controlled trial
			Treatment seeking		Journal of Substance	Secondary data
42	57	Mahfuz	as a mechanism of	2017	Abuse Treatment	analysis of a RCT of
			Function of			Cross-sectional
			Healthcare			survey of patients'
			Professional in		Journal of Diabetes	perceptions
43	60	Teng	eHealth and	2016	Research	regarding mHealth
			reminders for			
			cancer prevention:			
			Factors associated			Cluster randomised
44	61	Padma	with preference for	2012	Preventive Medicine	controlled trial
			Technology for			
			Atrial Fibrillation			
			Management		The American Journal	Pilot randomised
45	62	Mark	Integrating Decision	2017	of Medicine	controlled trial
			Harnessing the			Assessment of
			question-behavior		American Journal of	effectiveness of text
46	63	Padma	effect to enhance	2016	Public Health	reminders to
			Supporting the self-			Qualitative
		_	management of		Journal of Human	evaluation of
47	64	Teng	hypertension:	2016	Hypertension	patient experience

			as add-on to			
			standard care			
			among patients		European Journal of	Randomised
48	65	Mark	with type 2	2017	Endocrinology	controlled trial
			Devices to Promote			medication
			Medication		The Journal for Nurse	adherence through
49	67	Jitendra	Adherence in	2012	Practitioners	use of handheld
			Preliminary			
			Findings Describing		Journal of the	Preliminary findings
			Participant		Association of Nurses	of a randomised
50	68	Mahfuz	Experience With	2016	in AIDS care	controlled trial
			A personalized,			Pilot testing of a
			multi-platform			multi-platform
51	69	Padma	nutrition, exercise,	2017	Internet Interventions	lifestyle coaching
			of stress urinary			
			incontinence via a		Acta Obstetricia et	Two-year follow-up
			mobile app: two-		Gynecologica	of a randomised
52	71	Jitendra	year follow-up of a	2017	Scandinavica	controlled trial
			Mobile-Web app to			
			self-manage low			
			back pain:			
			Randomized		Journal of Medical	Randomised
53	74	Teng	controlled trial	2015	Internet Research	controlled trial
	/4	TCHg		2015		
			A New mHealth			
			application to			
			support treatment		Journal of	Feasibility and
			of sleep apnoea		Telemedicine and	acceptability of a
54	75	Mark	patients	2017	Telecare	mHealth app
			Patients Benefit			
			from the			
			COMODITY12		Journal of Medical	Randomised
55	77	Padma	mHealth System:	2016	Systems	controlled trial
			mobile phone-			
			based health			
			coaching among			
			Finnish diabetic and		Journal of Medical	Randomised
56	78	Teng	heart disease	2015	Internet Research	controlled trial
			reliability of a		Journal of Medical	repeated measures
57	80	Mark	smartphone	2014	Internet Research	crossover trial
			Effect of mobile			
			reminders on			
			screening yield		Preventive Medicine	Randomised
58	81	Padma	during	2015	Reports	controlled trial

			evaluation of an			Development and
						evaluation of an
			audiology app for			
			iPhone/iPad mobile		Acto Oto-	iPhone/iPad
59	82	Padma	devices	2015	Laryngologica	mHealth app
			Self-Reported			
			Health Outcomes of			
			a Patient-Designed			
			Do-it-Yourself		Diabetes Technology	Cross-sectional
60	83	Teng	Mobile Technology	2017	& Therapeutics	online survey of
			treatment			evaluation of
			adherence for			participants'
			blood pressure			experience of a RCT
			lowering via mobile			of SMS-based
61	84	Mark	phone SMS-	2015	BMC Family Practice	mHealth
			intervention in			
			diabetes care using			
			real-time			
			monitoring and			Randomised
62	88	Teng	tailored feedback in	2016	Acta Diabetologica	controlled trial
			Patient handling		<u></u>	
			activity recognition			Description and
			through pressure-			pilot testing of a
			map manifold			smart footwear
63	89	Ben		2017	Smart Health	device
			learning using a Tailored, Interactive			
			Text Messages for		The American Journal	Randomised
64	90	Padma	Enhancing Weight	2015	of Medicine	controlled trial
			based lifestyle		of Environmental	evaluation of a
			intervention for		Research and Public	mobile phone-based
65	91	Mark	reducing overall	2015	Health	lifestyle intervention
			intervention			
			increases physical			
			activity in people		European Journal of	Randomised
66	93	Ben	with cardiovascular	2015	Preventive Cardiology	controlled trial
			SmartLossSM, a			
			smartphone-based			
			weight loss			Testing of a
			intervention:			smartphone-based
			Results from a			weight loss
67	96	Padma	randomized	2015	Obesity	intervention
			Cardiovascular			
			screening in low-			
			income settings			
			using a novel 4-lead		International Journal	Validation of a
68	97	Teng	smartphone-based	2017	of Cardiology	portable ECG device

			Feasibility of a			Feasibility of a
			lifestyle			lifestyle intervention
			intervention for			delivered through
69	98	Mark	overweight/obese	2015	Gynecologic Oncology	web and mobile-
09	50	IVIAIK	-	2015	Gynecologic Oncology	
			evaluation of			Design and
			theory-informed			evaluation of a
			technology to			mobile app to
			augment a wellness		Translational	promote physical
70	100	Padma	motivation	2014	Behavioral Medicine	activity
			PULSE-SMART:		Journal of	Testing of an
			Pulse-based		Cardiovascular	enhanced
71	101	Teng	arrhythmia	2016	Electrophysiology	smartphone app for
						Preliminary findings
			Mobile personal			from
			health system for			implementation of a
			ambulatory blood		Computational and	mobile personal
			pressure		Mathematical	health monitor
72	102	Jitendra	monitoring	2013	Methods in Medicine	application
			A mobile			
			application			
			improves therapy-			
			adherence rates in			Crossover usability
73	103	Jitendra	elderly patients	2016	Medicine	trial
			A spanish pillbox			
			app for elderly			
			patients taking		Journal of Medical	Randomised
74	104	Teng	multiple	2014	Internet Research	controlled trial
			Acceptability of			feasibility,
			Ecological			acceptability and
			Momentary		American Journal of	initial validity of
75	107	Mahfuz	Assessment of Daily	2017	Geriatric Psychiatry	smartphone-based
			infrastructure to			Feasibility of
			support			integrating mHealth
			underserved			infrastructure with
			patients with			clinical information
76	108	Jitendra	chronic disease	2014	Healthcare	systems
,0	100	Jicenard	Text Messaging for	2017		o joterno
			Exercise Promotion			
			in Older Adults		Journal of Medical	Randomised
77	109	Mahfuz	From an Upper-	2016	Internet Research	controlled trial
			Text message			
			reminders			
			increased colorectal			Randomised
78	110	Teng	cancer screening in	2017	Cancer	controlled trial
. 0						

			Effects of a			
			Whatsapp-			
			delivered physical			
			activity intervention		The Journal of Sports	3-arm pilot
			to enhance health-			randomised
79	111	Teng	related physical	2017	Fitness	controlled trial
75		TCHS	Developing a	2017		Qualitative
			behavioral model		Patient Education and	evaluation of a text
80	115	Teng	for mobile phone-	2013	Counseling	message-based
	115	TCHg	Randomized	2015	Journal of Medical	Randomised
81	116	Teng	Controlled Pilot	2016	Systems	controlled pilot trial
01	110	TCHg		2010	Systems	
			medication			feasibility and
			adherence and			preliminary out
			blood pressure		Journal of the	comes of a mHealth
82	117	Mahfuz	control in recent	2015	Neurological Sciences	system
			Increasing physical			Evaluation of
			activity in stroke			
			survivors using		Tanica in Stroka	potential
02	120	Mahfur	STARFISH, an	2010	Topics in Stroke	effectiveness of a
83	120	Mahfuz	interactive mobile	2016	Rehabilitation	mobile app
			Mobile App for			evaluation of a
			Managing Urinary	2015		mobile app for
84	121	Mahfuz	Incontinence	2015	The Journal of Urology	management of
			Smartphone			
			Application		AIDS Dationt Care and	Randomised clinical
85	122	Mahfuz	Incorporating Personalized Health-	2014	AIDS Patient Care and STDs	trial
65	122	IVIdIIIUZ		2014	Journal of	liidi
			Acceptability of a mobile health			Randomised
86	124	Mahfuz	exercise-based	2015	Cardiopulmonary Rehabilitation and	
00	124	IVIdIIIUZ		2015		controlled trial
			activity in a cardiac			mobile phone
			rehabilitation		lowersh of Madical	physical activity
87	135	Padma	population using a	2013	Journal of Medical Internet Research	questionnaire and
6/	125	Paullia	smartphone-based Structured	2013	internet Research	comparison with
			Caregiver Feedback			
			Enhances			
			Engagement and		Telemedicine and	Randomised
88	127	Jitendra	Impact of Mobile	2016	eHealth	controlled trial
	/	Jitenuru	Engagement with	2010		Patient experience
			automated patient			of a IVR self-
89	129	Jitendra	monitoring and self-	2013	Medical Care	management
			of Mobile Health			
			Support for Heart			Randomised
			Failure Patients and			comparative
90	130	Jitendra	Their Informal	2015	Medical Care	effectiveness trial
50	100	Jicciura		2013	incultur cure	

			intervention			
			supporting heart			
			failure patients and			
			their informal			Randomised
			caregivers: A		Journal of Medical	comparative
91	131	Mahfuz	randomized	2015	Internet Research	effectiveness trial
			Development and			User acceptance,
			initial evaluation of			perceptions and
			a mobile		International Journal	usage of a mobile
92	133	Mahfuz	application to help	2017	of Medical Informatics	
			experiences in a		La consta f	
			smartphone-based		Journal of	
			health coaching		Telemedicine and	Qualitative
93	134	Mahfuz	intervention for	2016	Telecare	evaluation of a RCT
			motivational			
			mobile phone short			
			message service on			
			aspirin adherence		International Journal	Pilot randomised
94	135	Padma	after coronary	2013	of Cardiology	controlled trial
			WellDoc™ mobile			
			diabetes			
			management			
			randomized		Diabetes Technology	Randomised
95	136	Padma	controlled trial:	2008	& Therapeutics	controlled trial
			Factors influencing			Parallel design,
			engagement,			single-blind
			perceived			randomised
96	137	Mahfuz	usefulness and	2016	PLOS ONE	controlled trial
			smartphone-based			
			intervention to			Pilot testing and
			promote cancer			evaluation of a
97	138	Mahfuz	prevention	2017	of Medical Informatics	
		iniainia2	self-monitoring	2017	of medical mornatics	
			technology and			Randomised pilot
98	140	Jitendra	brief phone-based	2016	Obesity	study
30	140	JICEIIUIA		2010	Obesity	study
			mHealth		Longet D'alast	Developsis
			intervention to	2016	Lancet Diabetes	Randomised
99	141	Padma	improve the	2016	Endocrinology	controlled trial
			remote mood and			Qualitative
			activity monitoring			evaluation of an
100	142	Mahfuz	in bipolar disorder:	2017	European Psychiatry	intervention
			tablet computing			Survey evaluating
			on provider			practitioner
			productivity,			perceptions of
			communications,		International Journal	mobile tablet
101	144	Mahfuz	and the process of	2016	of Medical Informatics	computers
			· ·	-		

			Long-term			
			outcomes of a web-			Outcomes of a
			based diabetes		Journal of Medical	longitudinal pilot
102	145	Padma	prevention	2015	Internet Research	study
102	145	Tauma		2015		Study
			using a mHealth			
			device and			Quantitatius
			correlations with			Quantitative
100			psychopathology in	2016		evaluation of a
103	147	Mahfuz	patients with	2016	Pyschiatry Research	mHealth application
			strength-balance			
			training to motivate			
			and improve		Journal of Medical	Phase II preclinical
104	148	Jitendra	adherence to	2013	Internet Research	exploratory trial
			Investigating the			
			Use of a Mobile		Journal of the	Qualitative
			Phone Short		Association of Nurses	evaluation of a pilot
105	149	Mahfuz	Message Service	2014	in AIDS care	study
			A pilot study of an			
100	4.50		accelerometer-	2017	Journal of Geriatric	
106	150	Jitendra	equipped Feasibility of a Text	2017	Oncology	Pilot feasibility study
			Messaging		Oncology Nursing	Randomised
107	152	Padma	Intervention to	2015	Forum	controlled trial
107	152	Paulila		2015	JAMA Internal	Randomised
108	153	Mahfuz	Integrating technology into	2013	Medicine	controlled trial
100	155	IVIAIIIUZ	Design and	2013	Medicine	
			evaluation of a		Computers in Human	Exploratory
109	154	Jitendra	mobile phone-	2016	Behavior	longitudinal study
105		Jiteliara	Evaluating the use	2010		Development and
			of mobile phone		International Journal	evaluation of a
110	155	Mahfuz	technology to	2014	of Medical Informatics	mobile application
			Increasing physical		International Journal	Pilot testing of an
			activity efficiently:		of Telemedicine and	online physical
111	156	Jitendra	An experimental	2014	Applications	activity intervention
			randomized,			
			controlled trial of a			
			simplified			
			multifaceted			Cluster randomised
112	157	Padma	management	2015	Circulation	controlled trial
			dilated fundus			Usability of a
			photography and			smartphone-based
113	158	Padma	near visual acuity	2016	Retina	telemedicine system
			Byte by bite: Use of			Examination of
			a mobile Bite			usability and
			Counter and weekly			feasibility of a
114	159	Mahfuz	behavioral	2017	Smart Health	mobile app

			Mobile Health is			
			really mobile? An			Examination of two
			examination of		International Journal	randomised
115	160	Jitendra	mobile device use	2014	of Medical Informatics	
115	100	Jiteliara	Effects of exercise	2014		
			intervention in			
					Dreast Canaar	
			breast cancer		Breast Cancer	
110	4.54		patients: is mobile	2017	Research and	Quasi-randomised
116	161	Mahfuz	health (mHealth) It's LiFe! Mobile	2017	Treatment	multicenter trial
			and web-based			
			monitoring and		Journal of Medical	Cluster randomised
117	164	Jitendra	feedback tool	2015	Internet Research	controlled trial
117	104	Jitenura	Usability testing of	2015		Usability testing of a
			a monitoring and		Patient Preference	tool to stimulate
118	165	Mahfuz	feedback tool to	2014	and Adherence	physical activity
110	105	Wantaz	The effect of text	2014		physical activity
			message support		Journal of Clinical &	Randomised
			on diabetes self-		Translational	controlled trial in
119	166	Padma	management in	2017	Endocrinology	three countries
			Process evaluation			
			of a mobile health		Journal of	Process evaluation
			intervention for		Telemedicine and	of a mHealth
120	167	Mahfuz	people with	2017	Telecare	intervention
			tool to stimulate			
			physical activity in			Pilot testing and
			patients with COPD		Journal of	evaluation of a tool
			or type 2 diabetes		Telemedicine and	to stimulate physical
121	169	Padma	in primary care	2014	Telecare	activity
			Feasibility of a			
			Memory Clinic-			
			Based Physical			
			Activity Prescription		Journal of Alzheimer's	Randomised
122	170	Mahfuz	Program	2016	Disease	crossover trial
122	170	Wantuz	multimedia food	2010		
			recording tool, food			Testing of a revised
			log: Smartphone-		Journal of Diabetes	Testing of a revised version of a
			based self-		Science and	
123	171	Jitendra	management for	2015		smartphone
125	1/1	JICEIIUIA	-	2013	Technology	application
			reduces hba1c in			Evolution of a
			type 2 diabetic			Evaluation of a
124	170	Decline	patients from a	2015	Journal of Medical	health coach
124	173	Padma	lower- Smartphone-	2015	Internet Research	intervention Development and
			enabled health			testing of a
			coach intervention		Journal of Medical	smartphone
125	174	Mahfuz	for people with	2014	Internet Research	application
123	1/4	IVIdITIUZ	ior people with	2014	Internet Resedicit	application

			of goit quality			Evaluation of a body-
			of gait quality during daily life		Neurorehabilitation	based
120	175	litandua		2012		
126	175	Jitendra	provide insight into Adapting a	2013	and Neural Repair	accelerometer
						Development and
			Psychosocial			evaluation of a
			Intervention for		American Journal of	smartphone
127	176	Mahfuz	Smartphone	2017	Geriatric Psychiatry	application
			based intervention			
			on physical activity			Randomised,
			and metabolism in		Journal of Medical	waitlist-controlled
128	177	Padma	older adults:	2013	Internet Research	trial
			Using a mobile			
			health application		British Journal of	Embedded
129	178	Jitendra	to support self-	2014	General Practice	qualitative study
			mobile phone			
			intervention to		Mental Health &	Pilot randomised
130	179	Mahfuz	assist mindfulness	2016	Prevention	controlled trial
			Tablet PC-enabled			
			application		Computer Methods	
			intervention for		and Programs in	Single-arm pilot
131	180	Padma	patients with	2015	Biomedicine	study
			Adoption and use			
			of a mobile health		Transforming	Longitudinal
			application in older		Healthcare with the	evaluation of a new
132	183	Padma	adults for cognitive	2016	Internet of Things	tablet application
			Extended,		Journal of	Development and
133	186	Padma	continuous	2017	Neuroscience	real-world feasibility
	-					

	Details of study methods							
Overall duration of study	Number of groups/sites	Informed consent obtained (Y/N)	Power calculation	Type of intervention	Healthy A Disease group			
Not mentioned	1	Y	Not done	Text messages enquiring regarding mood	Depression			
6 months	1	N	Not done	text messages (Text4Mood	Depression and			
6 months	2 groups, 16 sites (OP clinics)	Y	Not reported	program) mHealth services, including	anxiety diabetes & hypertension			
Not mentioned	3	Y	0.8	text messages about	CVD			
Not mentioned	2	Not mentioned	Not done	Smartphone- based portable	Obstructive sleep apnoea (OSA)			
6 months	1	Y	0.8	mobile phone app for patients and their providers to	Hypertension +/ dyslipidemia +/ heart failure +/HIV infection			
	3	Y						
15 days	3	Y	Not done	i) EMR-only group, ii) EMR + reminder group	HTN			
21 months	2	Y	0.8	based intervention to promote physical activity delivered an integrated, multidisciplinary	CVD			
30 months 3 weeks	3	Y Y	0.975 Not done	care program for A text message–capabl e mobile phone	T2DM Diabetes			

				A peergroup	
				lifestyle	
24 weeks	1	N/A	N	intervention	Mental health
				onbancod with	
				An App	
				connected by	
				blue tooth to a	
NA	1	N	N	monitoring	CHF
		N	Not	mHealth decision	N/A
			mentioned	support system	
				(DSS)	
	3			()	
				Delivery of	
				cognitive training	
				-	
	2			by iPad or by	
36 months	2	Y	N	computer	Schizophrenia
					Hypertension
12 months	3	Y	Y		
				App to prompt	
				movement	ovewrweight or
4 weeks	1	Y		periodically	obese
4 WEEKS	1	1		EG: Smartphone	N/A
				delivered	
	2			acceptance and	
2 months	2	Y	0.8	commitment	
					Health professionals
				One hour	dealing with Lung
9 days	1	N/A	NA	interview	cancer
					Heart failure
					ricart failure
				self-monitoring	
				diet using a PDA	
24 months	3	Y	Y	alone	weight loss
				SM using the	
				Lose	
				It! smartphone	
12 weeks	3	Y	N	арр	weight loss

				impact of Fitbit	
				tracker and	
				website with	
				pedometer on	
16 weeks	2	Y		moderate to	Overwight or obese
				application that	
				instructs COPD	
				patients in	
28 months	2	Y	Y	respiratory	COPD
				sensor-based	
				location indoor	Neuromuscular
6 weeks	1	Y	N/A	and outdoor	disorders
				web application	
			N	with secure	Diabetes
			IN		Diabetes
6 months	1	Y		messaging (tablate)	
	No group	Not	Not	A pre-	N/A
		mentioned	mentioned	programmed	
24 months				library of	
			Not	A smartphone	Asthma
			mentioned	based app	
4 months	1	Y		containing self-	
				provides	
				information,	
				patient held	
9 months	1	Y	N/A	health and	CVD
				Mobile app for	
				postoperative	
		Y	Ν	monitoring after	Spine
				outpatient	
15 days	1			lumbar	
				Real-	
				TimeIntervention	
				forStabilizingMo	
6 months	2	Y	N	od(PRISM).	Bipolar disorder
				group-Pocket	
				PATH-	
				Smartphone with	Cohort of Lung
			Yes	custom Pocket	Transplant recipients
				hasod on	
6 months	1	Y	Not done	based on	AeCOPD
dependent on					
rehabilitation				Single blinded	
length of stay	2	Y		RCT	Stroke rehabilitation

				prevention	
				sessions with	
				home based	
				program	
4 months	1	Y	Y	delivered by	Nil
sectional (one				- testing acuracy	People with mild to
off)	3	Y		of neural	moderate stroke
NA	1	N/A	N/A	NA	NA
				Useof a mobile	Elderly (9 Frail and 9
NA	1	Y	NA	phone	non Frail
				Daily text	
				messages for 90	Diabetics with
90 days	2	Y	N	days	HbA1c>8%
				Different types	DM/CHF/Asthma/CO
				of reminders	PD/CAD (Conditions
				inviting patients	with increased risk
4 months	6	N	0.8	to get the	of pneumonia)
				provides	
				reminders for	
				corrective	People with
10 weeks	2	Y		actions for gait,	Parkinsons
	2	N	Not	Provided a smart	Alcoholic disorder
8 months			mentioned	phone based	
		V	N		
		Y	N	NA	NA
NA	1				
				SMS or	
				automated voice	
6 months	2	Y	Incomplete	response calls	Healthy adults
	-			providing	
				medical record,	
				clinical decision	
4 months	2	Y	Y	support, self	Atrial Fibrillation
4 11011(13	2			Comparison	
				among a	
6 months	5	Y	Yes	question mode	Healthy adults
o montrio	5		103		reality durits
				mobile app on	HTN
8 weeks	N/A	Y	N/A	HT self Mx	

				Video	
				consultations as	
				add on to	
8 months	3	Y	Y	standard care.	T2DM
				adherence was	
		Not		assessed by the	(unspecified) chronic
12 weeks	1	mentioned	N	On Time RxTM	illness
				Short messaging	HIV &
				service	neurocognitive
				intervention	behaviour due to
16 weeks	2	Y	Not done	containing	HIV
				containing Web based multi	
				platform,	
12 months	1	Y	NA	nutrition	Obese adults
24 months	2	Y	Not done	Tät® mohilo ann	Urinary incontinence
24 11011115	2	ř	Not done	Tät [®] mobile app	Ormary incontinence
	3	Y			
				Self monitoring	
				of CPAP	
				treatment using	Obstructive Sleep
6 weeks	1	Y	N	a mobile App	Apnea patients
				system	diagnosed >6
				composed of	months prior to the
				smart phone,	study, currently in
6 Weeks	2	Y	Y	wirelessly	maintenance phase
				with a PHR app	
	3 for each	Y	0.8	and bluetooth	DM and HTN
	disease		0.0	connected	
12 months				measurement	
12 11011113				douises for	Donion recetato
12		V	X	application of a	Benign prostate
12 months	1	Y	Y	questionnaire	hypertrophy
				Eligible	
				outpatients	
				either received	
11 days	2	Y	Yes	(intervention	Healthy adults

				Multi-center	
				prospective non-	Patients attending
				randomized	otolaryngology
Five Months	Single group	Yes	NA	validation study.	clinics
		N/A	N	NA	DM
3 months	1				
				improve blood	
				pressure	
				medication	
				adherence semil	
24 months	1	Y	N/A Primary	tailored to	Hypertension
				Physical activity-	
			endpoint: %	monitoring	
			patients	device and	DM
			achieving	dietary feedback	
6 months	2	Y	HbA1c<7 %	Integrated into a	
				Non intervention	Not focused on
				- 8 participants	disease group,
				undertook 8	applications likely to
				routine on-ward	focus on
N/A	1	Y		activities and	rehabilitation or
				Participants were	
				randomized to	
12 months	2	Y	Yes	standard care	BMI>27
				prescritpion,	
				written	
18 months	8	Y	Y	handbook.	Healthy workers
				Text messages	
				and videos,	
			Not	delivered by	Ischaemic heart
24 weeks	2	Y	mentioned	mobile phone	disease outpatients
				participants	
				were prescribed	
				a 1,200 to 1,400	
				kcal/d diet and	
				were provided	Overweight/ obese
12 Weeks	2	Y	NA	with a	people
		N/A	NA	NA	CVD
	1				

					Overseischt en ehees
				Mobilie APP for	Overweight or obese
				logging food	patients with Stage 1
				intake and	or 2 Endometrial
1 month	1	Y	N	volitional	cancer
				Pilot	Older adults with fall
				implementation	risk and low physical
10 days	2	NA	NA	and evaluation	activity
				NA	CVD
		Y			
		Y			
				Medication Plan	Coronary heart
	1	Y	Not done	via Apple iPad	disease
				Personalization	
3 months	2	Y	No	of prescriptions	
5 11011115	-		110	and medical	
				advice, showing	
				smartphone-	
				based ecological	
				momentary	
				assessment	
	ts				
	were recruited			automated, bidir	
	from			ectionaltextmess	
	WestsideComm			aging (outreach	
9 months	unity Health	Y	N/A	messages).	Diabetes
	,			SMS text	N/A
				messeging about	
				knowledge on	
24 weeks	2	Y	0.8	exercise	
					Conserv
					Cancer

				Whatsapp-based	
				physical activity	No specific disease
10 weeks	3	Y	N/A	intervention	targeted
10 WCCK3	y	•			
				Text message	DM
				based self mx	DM
5 months	N/A	Y	N/A	program	
with data	2 groups	Y	N	centered, tablet-	DM and
collection at	2 8,000	•		based colf	Hypertension
3 months	2		Not	mHealth	Post-stroke patients
			mentioned	program	wth uncontrolled
				involving a GSM	hypertension
				enabled	<i>,</i> ,
					Stroke survivors
				a smartphone	Stroke survivors
				based app	
				containing	
				behaviour	
6 weeks	2		0.84	change activity	
Not	N/A	N	N/A	a Mobile App for	Urinary Incontinence
mentioned				Managing	symptoms
				Urinary	
	2				HIV infection
24 weeks	2 arms			HEART	ischemic heart
24 WEEKS	2 01115				
				intervention was	disease (IHD)
				designed to	
				based Physical	CVD, Hypertension,
				Activity	Diabetes, AF, High
				Questionnaire	Cholesterol, Angina,
1 week	1	Y	N/A	and Pedometer	Heart Attack etc.
				weekly IVR calls	
				with automated	Patients with
				feedback from	diabetes and/or
4 months	4	Y	Not done	care partners	hypertension
				IVR chronic	heart failure,
				disease self-	depression,
23 months	N/A	Y	N/A	management	diabetes, Cancer
20 11011113					undered, euneer
				IVR chronic	
				disease self-	
				management	
12 Months	2	Y	Not done	support	Heart failure

	2	Y	0.8		Heart disease (Heart
				for caregivers of	failure)
				HF patients over	
				and above the	
				impact of a	
				standard	
Not	1	Y	Not	An Anroid app	N/A
mentioned	T	T	mentioned		IN/A
mentioned			mentioned	containing	
				information	
				about	
			Not	smartphone	Type 2 diabetes
			mentioned	based health	
				coacing	
6 months	2	Y		intervention	
					Patients who had
			Not	Motivational	undergone coronary
1 month	2	Y		SMS	
THIOHUI	۷	ř	mentioned	Cell phone based	stenting
				diabetes	
				management	
	-			software system,	Patients with
3 months	2	Y	N	real-time	Diabetes
			Not	Text messaging	Coronary heart
			mentioned	program	disease
6 months	2	Y			
			Not	smart phone	N/A
			mentioned	based	
				intervention	
4 weeks	1	Y		contatining	
				monitoring - a	
				calorie reference	
6 months	1	Y	0.8	book, a	Weight Loss
					Prehypertensives
12 months	2	Y	Y	Intervention	120-139 mmHg
			Not		
			mentioned		
		Y	mentioned		
		T			
18 months		N	N/A		

				-	
				Prevent' Internet	
	One group but			based	
	analysed into			personalized	Healthy adults Mean
Two years	two groups	Y	NA	health coaching	age 43.6
		Y			Schizophrenia
		1			Schizophrenia
				Tablet-Based	
_	Horgen,			Strength-Balance	
N/A	Switzerland	Y	N/A	Training	Elderly
			Not		
N/A	1	Y	mentioned	Self-monitoring	Cancer
				proof of concept	
				of a mobile	
10 Weeks	2	Y	NA	health (mHealth)	Oral cancer patients
		Ν	Not	SMS and	Obese
12 months	2		mentioned	telephonic	
	Tsinghua Elderly			Self-monitoring	hypertensive or pre-
	University and a	Not	Not	and self-	hypertensive
N/A	nearby	mentioned	mentioned	reflection	condition
,				mobile phone	Cardiovascular
				based CVD risk	disease
		Y	Not done	assessment	uiscuse
N/A	Norway	Y	No	Self-monitoring	None specifically
				Healthcare	
				Workers were	
				aided by the	
				smartphone-	high cardio-vascular
27 months	2	Yes	Yes	based electronic	risk
27 11011113	2	103		telemedicine	
					undergoing
0		N.		app.	ophthalmic
8 months	2	Yes	NA	The visual acuity	screening for
				mobile Bite	N/A
				Counter (a	
				watch-like device	
4 weeks	1	Y	Not done	that detects	

				basedpodcast	
				(TBP)	
		Not		2) the TBP +	
36 months	3	mentioned	No	mobile group (a	Weight Loss
50 11011113	5	mentioned			
					Cancer
			Based		Carroci
	Twenty four		on a power of		chronic obstructive
Not	family practices.		80%, an alpha	monitoring and	pulmonary disease
mentioned	Netherlands	Y	of .05 (two-	feedback tool	or type 2 diabetes
	N/A	N	Not	A monitoring and	
			mentioned	feedback tool	
				consisting	
				Mobile phone	
				for self-	
2	2	X	N N	management of	Diskatas
2 years	3	Y	Y	Diabetes	Diabetes
				Diabetes Self-	N/A
				Management	
12 months	3	Y	Not done	Support (DSMS)	
12 11011(115	5	1	Not done	by SMS	
				Pre and post	
				intervention	
3 months	1	NA	NA	study	Diabetes or COPD
	-			Promoting	Alzheimers
				Activity through	/ inferience is
				Clinical	
				Education and	
16 weeks	2	Y	Not done	Reinforcement,	
Not			Not	Self	
mentioned	Not mentioned	Y	mentioned	management	T2DM
				with or without	
				mobile phone	
				monitoring	Diabetics with
6 months	2	Yes	yes	support. health	HbA1c>7.3%
24 weeks	1	Y	Not	smartphone	Diabetes
			mentioned	based health	
				coach	
				intervention for	

		Net	Not	Self monitoring	
6 months	2	Not mentioned	mentioned	using accelerometer	Elderly
adaptive	1	Y	Not	smartphone	mental illness
systems	T	T	mentioned	interventions (I-	mentarimess
engineering			mentioneu	IMR) that allow	
framework5				participants o do	
Traineworks				Philips DirectLife,	inactive adults aged
				which was	60-70
				directed at	years without
3 months	Two groups	Yes	Yes	increasing	diabetes
	patients from				
	various		Not	Self	
6 months	community NHS	Y	mentioned	management	COPD
	,			An SMS-	people with
			Not	assistedMindfuln	depression
	2	Y	mentioned	ess-	
	_			A tablet PC	
				application	Patients who have
				developed to	undergone surgery
6 weeks	2	Y	Pilot study	serve the	for gastric cancer
6 months	1	N/A	Pilot study	Evaluation study	Healthy adults
				Functional	Alzheimers disease
5 months	1	Y	N/A	monitoring of	and related

geing setting/con	text		Population details				
Care setting (Primary, secondary, tertiary)	wider health promotion and disease prevention program, specify the other	Mean Age	Sex	Total sample size	Number of patients per group	Issues with access to or equity of intervention or services within the population	
Primary	N/A	52.6	M & F	33	N/A	42% of participating patients did not know how to use text	
Primary and secondary	N/A	46-65 (31.3%) >65 (7%)	M & F 83% F	4111	N/A	None	
OPD	a)monitor pts sx/self-mx	100 (770) 100	97% male	422	108 in 3-mth, 193 in 6-mth	equitable access	
Primary	N/A	54.94	M & F 54.4% M	180	60	their phone lines disconnected	
Primary	N/A	Varying ages, not	93% M	15	8 and 7	Most participants	
Primary and secondary	N/A	56	M & F 78.6% M	62	N/A	with Android or iOS smartphones could	
Primary care	N/A	60	M & F	123	47 in 1st group, 33 in the 2nd and 43 in the	None	
Tertiary care (cardiac rehabilitation centre)	N/A	59	M & F (78% male)	69	29 in intervention and 40 in control group	None	
Primary care	N/A	51	M & F (67% F)	301	group (CG), 99	with active health insurance could	
ED at the Los Angeles County Hospital		45 years	60% were male	three patients		speaking patients have	

				32		people living
			56%	patients		with severe
Primary	Yes	49	female	with	1 group only	mental health
						problems and
Patients admited						
to hospital with			M & F			
diagnosis of CHF	No	58.2	60% M	25	N/A	NA
N/A	N/A		M & F;	363	Cohort1=93;	N/A
, i	,		mostly		cohort 2= 132;	,
			female		cohort 3=138	
			Ternare			
Outpatient clinic,						
						Reduced access
mental health					Committee 24	Reduced access
centres and					Computer 21;	in remote
community	Nil	45	81% M	47	iPad 26	communties
					only SMS text	within walking
					messages	distance of both
Primary care	no			1372	(n=457),	communities. All
					interactive SMS	primary boolthcore
setting,					30 (repeated	online, so may
recruitment			83%		measures with	not be
through		47	female	30	same group)	representative
Primary	N/A	41.5	M & F	196	98	Not completing
i iiiiai y	19/5	41.5	Male:	150	50	baseline survey
			47%			and
			(smart			confirmation call
	group		Seven			professionals
	providing		females			with a higher
	rehab. Services		and one			level of
Tertiary	for Lung cancer	20-50	male	8	NA	knowledge and
					paper diary	
					group	
			women	• • •	68 assigned to	
Hospital?	NA	46.8 years	(84.8%)	210	PDA group	
		44.85 ±	female			
community		12.75	(87.18%)	39	13	

		F.0				Web based
		58				interface relied
Not in core		interventio				on consumer
Not in care		n/61	100% Female	49	2E/24 control	access and
settings		control	Female	49	25/24 control	digital literacy
Medical wards of		74 5	02 40/ 14	74	36 interv; 35	NI (A
Tertiary Hospital	Nil	71.5	83.1% M	71	control	N/A
			M & F			
Primary care	N/A	65	1VI & F 60% F	5	5	N/A
Primary care	N/A	05	00% F	5	S ACLIVE CHVVS.	N/A
Primary and			CHW	patients	completed	Targeted low
secondary	Yes		mostly	with type	some college or	SES groups
secondary			female	2	college	SES BLOOPS
Primary	N/A	48	M & F	diabotos: 1470	N/A	Not receiving
			Male 75%		,	the intervention
						due to the
Primary	N/A	50	M & F	60	N/A	N/A
Secondary care						Some rural
(cardiologists)	N	58	M & F	32	NA	access issues
C	N	42 (22 77)	F/M =	60		
Secondary	No	42 (23-77)	18/42	60		
		47.5%	58.5%			
Primary care		(12.8)	Female	82	41	
	Yes, Part of the	(received
	University of				Pocket PATH-	transplantation
	Pittsburgh		Males-		99, Usual care-	at UPMC,
Tertiary	Medical Centre	62	55%	201	102	recruitment
Secondary	IVI-COPD	65	$\Gamma/NA = 1/4$	UL) O		N
Secondary	enhanced care	65	F/M = 1/1	initially,	NA	Ν
					feedback	
			40%		intervention, 58	
Tertiary		62	female	125	standard	

	Addadta					
	Added to					
	reduced face				201 1 24	
	to face			~ ~	30 Int 31	
Community	program	55	33% M	61	control	NA
Not in care			50%		sitting, walking	
setting		62.1	female	12	groups)	
NA	NA	68 years				
			Not		9 Frail 9 non	
University	No	83	reported	18	Frail	NA
University	NO	65	reporteu	10	Fidii	Diabetics with
						HbA1c>8%, use
						a mobile or text
Tertiary	No	46	M & F	48	24	messages,
rendary	110	10		10	27	Participants had
						to be
						beneficiaries of
Primary care	N/A	> 40	M & F	1380	230	the American
						participants had
		Not				used a
Not in care		reported	Not		20 intervention,	smartphone
setting		in paper	reported	38	18 control	prior to
Primary	N/A	38.3	M & F	349	l: n=156	
			39.3%		C: n=155	
NA	N/A	58.3	M & F	93	NA	None
NA	N/A	50.5	69% M	95	NA	None
						Only those who
						were able to
			59.3%		SMS= 167,	read/write
Primary care		50.8	females	598	AVR= 431	English
					113	
					Intervention; 96	
Tertiary hospital	N/A	67	58% M	205	Usual care	No
	Yes, part of the					Study included
	national Israeli		51.1%			only those who
Primary care	Colorectal	60.44	females	50000	10000	are eligible for
	Yes, regular	F 58yrs	Females	49/51	51 patients	
Primary care	follow-up visit	(46–72); M			actively used	
	with physician	62.5 yrs	Males (n	d	the system for	

Outpatient clinic						
of 3 Tertiary			M & F		Interv 83	
hospitalt	N/A	58	64% M	165	Control 82	Nil
·						
			Female			
primary care		58.6	83.8%	35	35	
	N/A	51.8	M & F	21	l: n=11	Physical
Primary	IN/A	51.0		21		-
			(M=9,		C: n=10	condition which
			F=2)			might limit
						moderate
			89%			
N1.0	N 0	10.04			Cincle celeent	N1.0
NA	NA	49.64	Females	77	Single cohort	NA
		s 44.2 yr				
		(10.3)				
		non-			App group = 61	
	NCT01848938	responder	F	123	control = 62	
	Neither				(1) treatment	
	supported by			were	group (n=199),	
	professional				which used the	Low eHealth
	caregivers nor			screened,		literacy
	integrated			consented	intervention, (2)	
	within a health			and	alternative care	
Sleep unit of						
Tertiary Hospital	Nil	56	47% M	60	NA	NA
		Interventio	on-			was based on
		n- 59.9,	Females-			the ability to use
		Control-	43%,			the cell phone
Primary	NA	59.0	Control-	60	30	and the sensors
, initially	nearth coaches	neart	me	00	207 meart	
	and patients	patients	majority		patients and	
Deine	can see	was 69.1	of	F 4 7	250 diabetes	
Primary	patients'	(SD 9.1)	patients	517	patients started	
	measurements	years, and	were		in the trial, of	
	in the DUD and	diabatas	man in		which 24C and	
					Interv 790	
Primary care	No	58	100 M	1581	Control 791	No
	Yes,	Inteventio	Interventi			
	Outpatients	n- 46.5,	on-			
	attending a	Control-	Females-		Intervention=23	
Primary care	PHC	44.6	44.4%,	268	3, Control=135	None

			Females-			
Tertiary	No	43.9	55%	110	NA	NA
				1208	1157 nau	For children, the
Online			74.8%		diabetes in the household with	most common
community	NA	41 years	females		62.6%(n = 724)	viewers were the mother, the
community			Ternales	communit	. ,	father, the child
					Nightscout	himself or
						dispensed for 28
						days from clinics
						(pre packaged
Large primary		36-78				from regional
care practice	NA res.	years	35% M	37	Not reported	chronic
Seoul National	individualized	healthcare	ale: U-	patients	50 each in the u-	
University	multidisciplinar	group 64.3		(121	healthcare and	
Bundang	y u-healthcare	(5.2),	e 40/10	screened	SMBG groups	
Hospital (SNUBH)	service	SMBG 65.8	and	and 21	Shine Broaps	
trong Decomplex	<u>completed with</u>	(1.7)				
				8		
		Not	Not	participan		
Not identified		reported Interventio	reported	ts	N/A	African
		n- Age 40+-			Intervention=63	Americans, Aged
NA	NA	85.2%,	Females-	124	, Control=61	21+ years with a
					,	,
					99 Interv and	
Workplace	Nil	61	58% M	589	147 control	NA
Secondary						
(outpatient			M & F		75 intervention,	
cardiac rehab)		60	81% M	153	78 control	
			Females-			
Tertiary	NA	44.4	82.5%	40	20	
Secondary -		20+11	60/117			Yes = Africa &
ommunity	No	39±11	69/117 males	117	NA	Yes = Africa & LMIC
hospital		years	males			LIVIIC

Hospital	N	58	F	50	NA	No
lioopitui		evaluation-		50		
		Mean-74.6				
		Follow up	n-		Initial	
		Mean age-			evaluation-9,	
NA	NA	84	45%	23	Follow-up- 14	NA
			+370	25		
Secondary						
,						
			M & F			
		58.9	61.9% F	21		
Cardiac rehab		73.8 yr				
sports groups		(7.5)	M & F	24	24	
72 of 99 pats					48 controls, 51	Control group
(73%) took more			45%	99	experimental	received oral
than 5			female	55	group	and written
Meds/day; 36 of					group	information
	chronic disease					Safetynet
	management					patients .i.e
	in safetynet	40.6% in				people with no
	patients .i.e	age group				or little
Primary care	people with no	50-59	M & F	135	135	insurance
Primary	N/A	63.64	M & F	43	l: n= 22	4 patients had
					C: n=21	injuries which
						was not related
						to the
		40-45 yrs:	The HR	2386	Identified 808	
Primary		Control	estimates	AN/AIs	eligible	Yes. Cross
,		404/Interv		-	participants in	cultural issues
		ention	higher for	75 years	wave 1, and	

Primary care	N/A	63.78	M & F 75% F	32	20 in training group, 15 in mobile group and 13 in control group	None
	IN/A	three-	75% F		56 patients	None
Primary care		quarters were	female (67%)	American	identified, 45 patients were	
Home		69 years	68% females	61 after attrition	n=32, control	Ν
tertiary	N/A		M & F	24	mHealth group=8, Eight patients were randomly	N/A
Primary	N/A	56	M & F 12 women	23	l: n=15 C: n=8	
			Female	878		N/A
Primary	N/A	46	M & F 26 men	28	l: n=17 C: n=11	
				171	l: n=85 C: n=86	
Tertiary- Cardiac rehabilitation centre	No	NA	Males - 87%	30	NA	Zealand Eurpoeans, so more likely to be educated and
Primary care	N/A	62.5% of patients above 60	M & F	72	27 (standard mhealth)+45(m health + CP)	29.2% indigenous
Primary care		60.9	M & F	1173	N/A	N/A
					Standard mHealth (n=180)	
Primary care		67.9	M & F	369	mHealth+CP (n	N/A

	N/A	67.8 years	NA 8. E	331	l: n=165,	N/A
	N/A	07.8 years		221	C: n=166	N/A
					C: 11=100	
		•• •				
N/A	N/A	Not	M & F	3977	1st trial: 26	N/A
		mentioned			2nd trial: 3951	
Drimory	N/A	Mala-62 F	МОГ	11	N/A	N/A
Primary	N/A	Male=63.5 Female=55		11	N/A	N/A
			F=9			
		.8				
					250	
					250 in	
			N 0 -		intervention	
T			M&F	534	and 249 in	
Tertiary care	N/A	64 Interventio	76.5% M Males	521	control group	None
		n Age 55-	Interventi			
		64 n=5,	on n=4,			
		Control	Control			
Drimony	No			26	13	No
Primary		n=7 58	n=5	710		NO
Primary	N/A	58	M & F; 83% male	/10	l: n=352 C: n=358	
			65% IIIdle		C. 11-556	
N/A	N/A	Participant	M & F	32	N/A	N/A
,	,	s age			,	,
		between				
		18-35;				
		,			2) TECH (n 5	
					27)	
Research centre	N/A	51.1 years	M & F	80	3) TECH1PHONE	N/A
			Interventi			
			on 47%		Intervention-	
Primary care	N	43	Control-	637	316 Control-321	No
				21	N/A	
		Not	M & F	42		all of the
		mentioned				participants
						were provided a
						mobile tablet
						computer to

					Charaka ay / A a	Deutlaiseuta
					Starters (4+	Participants
			Males n		lesssons) = 187,	recruited by a
			(%)=38		Completers (9+	non-randomized
Individual	No	43.6	(17.3)	220	lessons) = 155	uncontrolled,
			M & F	61		
recruited by						
convenience						
sampling from 2						
institutions for		75	M & F	44	3 groups	Elderly
		75	IVI GLI		N/A	N/A
			M & F			
		46	80% F	25		
		40	00% F	25		
Tertiary		73	M & F	40	40	N/A
		75	IVIQI	40	40	Patients were
Community care			Females-			eligible if they
centre	NA	58.5	60%	80	40	were aged 21
Primary	N/A		M & F		35	N/A
Fillinary	N/A	J7.7 years		09 auuits	55	
Elderly						
community		59.2	M & F	19	19	Elderly
connunty			34%	- 13	15	Lideny
			male,			
		years; communit				
		communit	0070		The Lifestyle	
					group	
Research centre		55.3	M & F	21	consisted of 12	Not mentioned
			Interventi			
			on-			Residents of
	To improve		65.4%,		Intervention-	participating
Community	cardiac health		Control-		1095, Control-	villages in China
based study	status	59.7	66.8%	2086	991	and India
	00000		00.070			a
			Females-			disproportionat
Tertiary	NA	60.5	58%	50	NA	e burden of
reitialy	NA				NA	e buruen or
		54.1	Male=1,	12		
			Female=1			
			1			

					participants	
					were	
					randomized to	
Not mentioned		42.75	M & F	174	theTBP	Not mentioned
		50.3		356		
	monitoring and				Group 1 (n=65),	
	feedback tool				Tool & SSP	
Duineana	embedded in	57.0		199	Group 2 (n=66),	
Primary care	the Self-	57.8	M & F	patients	SSP	
	Part of the					
	wider		Females		Intervention-	
	TEXT4DSM		Interventi		401, Control-	Diabetic
Primary	study	58	on- 71%	781	380	population
N/A	N/A	DRC=62;	M & F	1470	TEXT4DSM	N/A
		Cambodia			group=505	
		= 55; Philippines			Cambodia= 484 Philippines=	
		Prinippines			Philippines-	complex co-
						existing medical
						conditions,
General Practice-			Females-			insufficient
Primary	NA	60	45%	20	20	mastery of the
Primary	N/A	Cognitively	M & F	30	2 cohorts;	N/A
		impared			group with	
		group=			cognitive	
		72.3;			impairment due	
		normal			to	
Not mentioned		58.6	M & F	5	Not mentioned	Not mentioned
Not mentioned		50.0	WICT	5	Not mentioned	served were
						from a lower-
			Females-		Intervention-48	income
Primary	NA	53.2	72%	97	Control-49	neighborhood
Primary	N/A	55.6	M & F	21	N/A	N/A

community-living		78.36	M & F	71	32 (falls) and 39(non-falls)	
secondary	N/A	55.3	Male=5, female=5	10	N/A	N/A
NA	NA	Interventio n-64.7 and Control- 64.9	on- Female- 39.5%, Control-	235	Intervention- 119 and Control 116	age between 60 and 70 years, (2) no history of diabetes or use
respiratory community nursing service,		67	M & F	19	19	
secondary	N/A	43.38	M & F	41	l: n=21, C:n=20	N/A
Tertiary	NA	61	M & F 60% M	40	20	
N/A	N/A	79-88 years old	Females- 60%	15	15	Seniors between 79-88 years
Primary care	Participants were part of	45 and older	M & F	12	12	Only those with a caregiver were

	Intervention and comparator details						
		Interve	ention and comp	arator details			
Demographic							
profile and							
location of study	Intervention	Intervention	Intervention	Intervention	Co-interventions		
groups	description	duration	frequency	provided by	(if any)		
Patients from a	Automated text	duration	inequency	provided by	(ii diiy)		
public-sector	messages						
mental health clinic	measuring mood			Automated	Group cognitive		
in California, 94%	on a scale of 1 to			messages from a	behavioural		
of the patients	9, and enquiring	2 weeks	Daily	website	therapy		
depression and	text messages,	2 WEEKS	Duny	WEDSILE	therapy		
anxiety seeking	written by CBTs			Preprogrammed			
• -	and counsellors	180 days	Daily	online software	N/A		
psychological or	a)monitor pts	3 and 6	weeкiy: Each	Ann Arbor VA	Guidance on seit-		
clinics in	sx/self-mx	months	week IVR	Healthcare System	mx support for		
Michigan Illinois In	nrohlems	montris	system makes		caregivers via		
cardiac outpatient	messages about	2	Daile	Automated	which included		
clinics of a Patients from a	medication, diet Measurement of	3 months	Daily	software	arranged cardiac		
medical sleeping	subjects' oxygen	One-off test	N/A	The researchers	N/A		
two clinics, a	medication	one on test		reminders were	N/A		
primary care and	management			automated, and			
hospital, in	platform, which			there was bi-			
Barcelona, Spain	can be accessed	6 months	Daily	directional	N/A		
Barcelona, Spann		omontins	Daily	uncetional	11/7		
Patients were	All patients were			The reminder			
recruited from a	given a BP cuff			messages were sent			
primary care clinic	and shown how	15 days	Daily	by custom-built	N/A		
recruited from the	access to an			reminders and			
Skibotn	online interface			tailoring of the			
Rehabilitation	with information			intervention were			
Centre in northern	about CVD and	3 months	Every 2 weeks	automated through	N/A		
2 DM were	(PD) comprised		month and	physicians, nurses			
recruited from a	multidisciplinary		twice a week	and peer educators;			
medical family unit	care by trained	10 months	during 2nd	messages of the TE	N/A		
(1) + 10 years oru,		subjects		runy automateu,			
(2) had diabetes,	Text-based	received three	daily	Web-based			
(3) had a text	mHealth for	text messages		program developed			

16% living with facilitate peer24-weeksfacilitate peercupport for Hospital, 36% high school or less, 40%Mobile APP linked toschool or less, 40%linked toAlso	
familu 16% current for Hospital, 36% high Mobile APP school or less, 40% linked to	
Hospital, 36% high Mobile APP school or less, 40% linked to	
"white", 36 African questionnaire https://www.com/action/acti	provided to
	ealth care
American, 20% and, vital signs to Not stated Continuous Not stated	workers
training delivered via	
delivered by 60 minutes per	
14 years of either desktop day 5 days a	
	Exercise
	ssages were
outpatient chronic interactive messages were interactive of	delivered
12 months	matically via
	opensource
	lob based
smartphone three weeks outcomes	
prompts to be (first week was measures (i.e.	
USA active after 4 weeks baseline physical activity)	
Not mentioned It is a self-paced Intervention N/A N/A	N/A
intervention duration	·
programme and	
its content was	
professionals based stigma	
working in a reduction	
tertiary care intervention mHealth tool for	
	ΝΑ
hospital game- Narrative 9 days daily Lung cancer	NA
married, college;	
Very motivated	
patients NA NA NA NA	NA
educated male; 2/3	
familiar with the	
held weekly for	
Months 1–4,	
biweekly for PDA with Dietmate	
white (78.1%) PDA 24 months Months 5–12, Pro© software f	feedback
Lose It! app for	
White (84.62%) 12 weeks 1-4 daily dietary SM	none

					Coventry
	Compared Fitbit				Coventry, Aberdeen, and
LISA post	tracker and				London—Refined
USA, post-				Web app and	
menopausal	website use, with		Continuous	Web app and	(CALO-RE)
women	pedometer use	16 weeks	Continuous	tracking band	framework
	video delivered		Practice for 20-		
	via mobile hone		30 minitues		
43.7% elementary	for patient	3 stages lasting	three times a	Doctors and nurses	
school	education	30 minutes	day	in hospital ward	Nil
recruited from	system was				
those who	installed in		Tracking was	Tracking through	_
participated in a	participants' we developed	3 to 6 weeks	done daily	Wi-Fi and GPS	N/A
70) were African	the Web				
, American with	application using	NA	NA	NA	NA
physician	an iterative user-				
diagnocod typo 2	contored decign				
Not mentioned	Daily messaging	8 weeks	daily	Automated	N/A
	programme was			software	
	scheduled	A 11			21/2
Older adults with	The smartphone	4 months		automated	N/A
asthma; clinic	app was				
patients who had	designed by				
	that provides				
с · і · · с	information,				
Spanish provine of	patient held	2 11			A.111
Valladolid.	health and	2 months	Not reported	self administered	Nil
	The Mobile app	We analyzed	Overall		
	recovery	the alarms	satisfactionwas		
	indicators		3.5/4; usability		
	included a visual	their types and			
African-American	analogue scale	reasons as well	userumess of	internet-enabled	
8.5%				smart phone	
a.5% Asian 2.4%			twice a day for	(Samsung	
Latino/jispanic		10 weeks	10 weeks	(Sansung Fascinate)	none
Latino/Jispanic	custom Pocket	TO MEEKS	TO WEEKS	i ascillate)	none
USA- Uni.	PATH programs				
Pittsburgh Medical	to record daily		2, 6 and 12	Univ.Pittsburgh	
Centre	health indicators,	12 months	months	Medical Centre	NA
	Pilysicialis	12 months	montris	medical centre	
Ex-smokers	reviewed the				
	augmented	depending on	feedback	sensor data and	
16 rehab centres in	rehabilitation	rehab stay,	sessions	alogithm outputs	
11 countries	feedback based	intervention	delivered 3	provided by study	

	person program				
San Francisco and	based on				
Berkley California.	Diabetes			F2F by trained non	
48% ethnic	Prevention			medical research	
minority	program. Mobile	5 months	daily	staff.	See intervention
	study - testing				
USA	accuracy of				
Height 171cm; BMI					
27.8 kg/m2; ETGUG			NA		
27.8 Kg/112, E1000					
	Smart phone				
Mean BMI 23.1	(iphone4)	5 minutes	once	Not reported	Nil
Subjects taking					
treatment with the	Tailored text				
Michigan health	messages about				
system	DM	90 days	Daily	NA	None
Participants were	Subgroups 1a				
recruited from a	and 1b -				
family medicine	standardised			Nurse via phone,	
centre in Beirut,	phone call	4 weeks	Weekly	SMS and e-mail	None
	provides				Gait advice (given
	prompts on gair	6 weeks, 4			to both
	based on sensor	weeks follow	Constant (app	Smartphone and	intervention and
Belgium and Israel	data. Control and	up	prompts)	two inertial sensors	control groups)
Persons with	the participants	8 months	Not mentioned	automated	N/A
alcohol use	were provided a			software	
disease duration c					
11 years.	NA	NA	NA	NA	NA
,					
					an ongoing trial
					called HD2, where
	SMS vs AVR			Healthy Directions	they were provided
USA	every other week	6 MONTHS	fortnightly	2 RCT staff	multiple risk
	which contained				
	personal health				
	record, clinical				
China	decision support	3 months	Continuous	self administered	Nil
	Question based	5 11011115	Single message	Staff of the	1411
Israel- High Income	behaviour effect		sent at the	National Israeli	
Country	(QBE) explored	6 Months	beginning of	Colorectal Cancer	NA
4 different primary	3 components: (i)	daily self-		21st Century	
health-care centers	a mobile phone	reports for 8		Mobile: technology	
in southern Sweden		weeks		is based on data	
in southern sweden	plation filling sell-	WEEKS		is based off udid	

Denmark. Higher	videoconference				
education 18%,	s with health				
Non western	care centre nurse				A 111
background 23%	via a tablet	8 months	Monthly	Health centre nurse	Nil
White 70.3%					
Black 27%					
Native American		12 weeks	not mentioned	handheld device	
People with HIV	Automated	16 weeks	3 times daily	Automated	N/A
and neurocognitive	messages about			software	
behaviour due to	the improvement				
HIV of HIV	of moderate				
Middle aged female			Each	Multi-pronged	
caucasian patients	Nutrition		participant	intervention-	
from Columbia,	Coaching	12 months	received two	Precision Nutrition	
education (>3 yr)					
Responders 37					
(80.4)			three times a		
Non-responders 14		two years	day	mobile app	
	A self-tallored	т пе нтваск	тпе ғітваск		
No significant	cognitive-	group also	intervention is		
differences among	behavioral	received	designed to		No
the 3 groups	approach, based	weekly email	encourage		110
the 5 groups	on (1) expert	reminder	users to adopt		
	naperad	nromnts for 8	annronriate		
	completed daily				
	and weekly				
	questions on App				
	about use of				
	CPAP , physical				
Barcelona	activity and diet.	6 weeks	Daily	Self administered	Nil
	operability and				
	whole trial				
	feasibility,				
Polan	including	6 Weeks		NA	NA
	a structureu		nearth coaches		
the diabetes group,	mobile phone-		called patients		
but BMI	based health	12 months	every 4 to 6		
distribution was	coaching		weeks and		
similar between	program		patients were		
Tertiary hospital in	questionnaire		on course of to		
South Korea.	completed by	NA	NA	self administered	No
	Eligible			Sch duministered	NO
	outpatients			РНС	
Puducherry state of	either received		everyday for 3	doctors/investigato	
India	(intervention	11 days	working days	rs	None
mula	Intervention	II Uays	working uays	13	NULLE

	underwent two				
	hearing				
	evaluations, a				
Spain	standard	5 Months	NA	AudCal iOS device	NA
whites (92.1%);	applications	Nightscout			
most were	were most	enables 24-h			
caregivers or	popular,	access to			
parents/guardians	followed by	sensor glucose			
of individual with	wearables and	data for			
	from library				
	focusing on				
Capetown. Poorly	behaviour				
educated, high	change: goals				
unemployment	and planning,	12 months	Not reported	Automated	Nil
differences in	designed				
biochemical	glucometer and	6 ,pnyhs			
parameters,	activity monitor				
including fasting	that				
USA	N/A				
Baltimore, USA-	Participants		Weekly goals		
High Income	received an	12 11	with messages		Engagement with
country	automated, 6-	12 months	delivered 3-4	TRIMM study staff	the text message
education or	printed		risk (ranging		
above. Work units	liestyleprescripti	12	from phone	Descendents	N.11
affiliated with	on to reduce CVD	12 months	calls twice a	Research team	Nil
New Zealand				Mobile phone	
Pennington	provides the				
Biomedical	ability to				
Research	deliver intensive				
Center, Baton	behavioral				
Rouge, Louisiana,	weight loss			SmartLoss study	
USA	interventions,	12 weeks	Weekly	staff	NA
mean SBP 119 ±					
21/78; 5 (4%)					
presented a history	NA				
of coronary artery					
disease					

	Participants were				
	then instructed				
Akron NE Ohio, US,	to use the AP to				
88% "white:	log daily food	4 weeks	Daily	Not reported	Nil
	informed app				
	was designed to				
	augment an				
	intervention				
USA	promoting	7-10 days	Daily	Study staff	NA
03/1	PULSE-SMART	7 10 ddy5	Duny	Study Stuff	10/ (
	conducted pulse				
	analysis using 3				
	alialysis using 5				
Level of education					
Secondary school					
= 10					
Qualifications for					
		not ence;fied	not enceified	Annla iDad	
university = 8		not specified	not specified	Apple iPad	
Exp group: 22/51					
(43%) had					
computer; 19/51					
(37%) had home					
Participants (with	All participants				
HIV) were recruited					
from ongoing	with an Android				
studies at the	Operating				
female	messaging for				
(65%) and	appointmentrem			Automated using	
Latino(65%), with	inders and to			patient relationship	
substantial					
	prompt for and	0	N1 / A	management	NI / A
participation	collect patient-	9 months	N/A	software	N/A
Participants were	At baseline each	12 weeks	daily	automated text	N/A
recruited from local				messages using an	
resident	participants was			online	
associations and	provided a			tool specifically	
Unscreened AN/AIs	3 text messages				
in a tribal health	sent 1 month				
care system in	apart.				
Anchorage, Alaska	apart.				

	True training				
	Two training				
	sessions every			A study coordinator	
	week 48 hours			sent the messages	
	apart in the			and training	
	training and			information to	
Mallorca, Spain	mobile group -	10 weeks	Twice a week	participants	N/A
25% lived alone,	Patient-centereu,	2			
>50% primary	tablet-based self-	3 months	monthly		
Post stroke patient,		3 months			N/A
encountared at a	enabled				
tertiary medical	medication				
centre	adherence and				
a sample of stroke	a smartphone	6 weeks	Daily	automated text	N/A
-	-	0 weeks	Dally		IN/A
survivours was	based app			messages using an	
recruited from local	U			online	
stroke support	behavioural			app specifically	
groups	change			made for tis study	
women with					
Urinary					
Incontinence					
Participants were	an augmented	3 months		automated	N/A
recruited from the	version of the			software	
Auckland City	application				
Hospital	which, in				
were recruited	The intervention	6 months			N/A
from 2 large	delivered a				
metropolitan	theory-based,				
	were provided a				
	smartphone and			Mobile based	
	a pedometer. 1st			questionnarire	
New Zealand	visit- Complete a	7 days	Daily	survey	
predominantly	weekly IVR calls	7 00 95	Duny	Calls originated	
female	including self-			from the IVR	
(62%) and above 60	•			platform	
years (62%), with	questions and			established at the	
substantial	self-care	4 months	weekly	Universidad	None
Substantial	weekly IVR calls	The median	WEEKIY	IVR systems were	NOTE
77% white and 70%	including self-	number of		programmed to	
male	management	weeks	weekly	automatically	None
		WEEKS	weekiy		NOTE
	including self-			programmed to	
	management			automatically	
99% male and 77%	questions and			attempt	
white	self-care	12 months	weekly	to contact patients	None

Patients were	The mHealth+CP	12 months	weekly; Up to	automated	N/A
recruited from VA	intervention was	12 11011015	nine	software	IN/A
			-	Soltware	
Cleveland Medical	based on self-		call attempts		
Center	regulation		per week were		
outpatient clinics	theory, which		made at times		
between June 2009	emphasizes				
Study 1: Subjects	It is a mobile	1st trial: 8	Not mentioned		N/A
were recruited	phone based	weeks			
from a face-to-face	app; evaluation	2nd trial: 17			
workshop	of this app was	months			
Patients with type 2	smartphone	Not mentioned	2-4 contacts	The smartphone	N/A
diabetes who took	based self-		monthly and	software used was	
participation in a	monitoring		one phone	provided by NexJ	
RCT based	software that		call/3 months	Systems, Inc.	
who had					
undergone	Personalised SMS				
coronary stenting	reminding				
and been	patients of			Computer-	
discharged from	Aspirin intake	1 month	Daily	generated SMS	N/A
	Cell phone based		Every 2 weeks	80.0000000000	
	diabetes		for patients and		
	management		4 weeks for		
	software system,		healthcare	Phone calls,	
Maryland USA	real-time	3 months	providers	Internet, Bluetooth	
patients with CHD	Messages	6 months	4	automated	N/A
from a tertiary	contained		messages/week	messages using	,
hospital - a cardiac	behaviour		(messages sent	TEXT ME message	
rehabilitation	change		four or five	management	
		4 weeks (28	one		N/A
		consecutive	messages/day		·
		days)			
participants were	Technology and		based group	Self and phone-	
an average of (6SD)	Brief Phone-		Fourteen	based	
51.1611.7 years old	Based	6 months	structured	interventionist	None
three different	motivational				
countries-	counselling calls		Monthly calls	Phone calls and	
Argentina, Peru and	U	12 months	and weekly text	SMS	
Patients with	Under AMoSS	Not mentioned		Automated	N/A
bipolar disorder	study particiants	entioned		software	
took part in the	monitor their			Soleware	
42 care providers	N/A	N/A	N/A	N/A	N/A
workingat Palmetto	N/A	N/A		N/A	N/A
Health, a single					
health care					
organization with					

	Internet based		6, 12 and 24		
220 participants	lifestyle		month		
from across the	intervention		assessment		
USA	includes small	24 months	timepoints	Internet based DPP	
Hospitalized	includes sindi	24 11011(113	timepoints		
patients with a					
DSM-IV diagnosis					
of schizophrenia in					
the Bugok National					
75 years (SD 6),	technology (IT)-				
predominantly	based system for				
female (64%), held	active and				
a trade or	healthy aging	12 weeks	Once (daily-life)		None
HIV-infected clients	intervention	6 months	weekly sms	Automated	N/A
at an HIV clinic -	involved a			software	
Oak tree clnic in	weekly				
Vancouver, British	SMS based on				
Forty patients	a smartphone	median follow-			
(median age 73;	with a	up was 21 days			
57% [N=23]	pedometer	(range 2–28)	Once (daily-life)	Self monitoring	None
	The intervention		daily texts for		
	group received	10 11/2 - 1 -	adherence and		Nama
Michigan USA	daily texts for	10 Weeks	weekly for	Study staff	None
overweight and	Personal digital	12 moths	daily (1-2	dieticians,	N/A
obese adults at a	assistance	4 weeks	weeks), weekly	psychologists, or	
Participants' ages	The intervention				
ranged from 49 to	was consisted an	(excluding 2	1	Colfmonitoring	None
70 years old, with CHWs with no	electric BP	weeks of	1	Self monitoring mobile based	None
	The CHWs were				N/A
previous	issued basic			application	
experience in 11 men and 10	features phones The intervention				
women-who	design included				
ranged in age	an activity	3-months	Once (daily-life)	Seflf monitoring	None
	key elements of				
	the intervention				
	were				
	summarized as a			Community health	
China and India	2+2 model,	Daily	1 Year	workers	NA
	used to estimate				
	near visual				
California, USA	acuity and	8 Months	Monthly	Ophthalmologist	None
,	Upon meeting		weekly face-to-		
	study criteria,		face sessions		
	participants		and twice		
	were e-mailed a		weekly audio		
	Here e maneu a		neekiy addio		

	the Pounds Off				
	Digitally	2 months and			
Mostly middle-	(POD)study, was a 3-month	3-months and		Calf	Nama
aged white female		6-months	Once (daily-life)	Self management	None
	a pedometer				N/A
	and a newly				
	developed				
	smartphone				
	application to		form in dividual		
	The complete		four individual		
Above 55 mostly	It's LiFe!		consultations		
and above 90% of	intervention	a	with the	- ···	
dutch origin	consisted of the	6 months	PN; in the first	Practice nurse	None
	Patients in the		the sucress		
DB Congo			the average number of SMS		
DR Congo,	intervention			Open source software and web-	
Philippines,	group received	24 Mantha	messages		NIA
Cambodia	DSMS through	24 Months	sent to	based	NA
Participants were	SMS contained		several tmes a	a	N/A
from the	information on		week	nurse in DRC, a	
Democratic	healthy			peer educator in	
Republic of Congo	behaviours			Cambodia, a	
	provided with		visited the		
	the		practice three		
	accelerometer		times: in the		
	and a		first		
Netherlands	smartphone	12 weeks	·	Nurse	None
participants with	Participants	8 weeks	bi-weekly	Each participant	N/A
cognitive	were provided			was assigned one	
impairment	with the the			study coach	
at routine patient	exercise booklet			who made bi-	
visits to the	at baseline and			weekly phone calls	
	study, they				
	received a				
	smartphone				
	(Samsung Galaxy				
Mostly male	Note 1, Seoul,	1 week	Once (daily-life)	Research staff	
	group was				
primary health	provided with a				
clinics in	Samsung Galaxy		Daily review of		
Toronto, Canada	Ace II mobile	6 MONTHS	, participant logs	Health coaches	None
Participants were	After completion	24 week	Daily	Health coach	N/A
recruited from the	of baseline				
Black Creek	formalities of				
Community Health	the participants,				

	triaxial				
65% female and	accelerometer				
mostly above 75	on their lower	3 days	Once (daily-life)	Research staff	
Middle aged and	IMR is based on	5 uays		a masterslevel	N/A
older adults with	the stress			clinician and a	N/A
serious mental	vulnerability			nurse in a	
illness, participants	model,22			community mental	
inness, participarits	intervention				
	group received a			Web-based	
	commercially		Daily review of	physical activity	
Netherlands	available Web-	3 Months	participant logs		None
Nethenanas	This mHealth	5 10011113	participant logs		None
Mostly male and	intervention				
above 65	focused	6 months	Once (daily-life)	Research nurse	
individuals with	a	4 months	weekly	automated	N/A
depression after	a manualizedgroup	inontris	incenty	datomateu	
discharge from	introduction to				
	Twenty				
	consecutive				
	gastrectomy				
Taiwan	patients at the	6 MONTHS	Weekly	Study staff	
	Stim'Art				
	Application is a		Daily usage		
	mobile		pattern of the		
France	application that	6 months	game	Арр	NA
	Functional			By an automated	This was a part of
Nebraska, USA	monitoring to	5 months	Daily	GPS software	an ongoing

	Det	ails of outcomes			
Comparator groups (e.g.				Individual level	Method to identify target population
control/placebo	Primary	Secondary	Negative		
or other groups	outcome and	outcome and	outcomes		
based on a	changes	changes	or harmful		
factorial design)	observed	observed	effects		
	Significant	No variation in		N/A	Patients
	relationship	correlation			undergoing CBT
	between daily	between daily			for depression in
	mood scores	mood ratings,			a public sector
None	and 1-week	weekly and 2-	None		clinic
				N/A	advertisements,
					social media and
None	N/A	N/A As intervention	None	Good from	word-of-mouth
3 months versus	with	progressed there		qualitative	Through DVA
6 months	significantimprov			feedback at evit	OPD clinics
which received	change in 8-item	change in		participants in	recruited from
only routine care	Morisky	Readiness to	None	the 3 groups	cardiac
	Apnoea/hypoapn			8 subjects were	Subjects were
None	oea index (AHI)	N/A	None	diagnosed with	recruited in
	medication - no	satisfaction with		Patients were	recruited from a
	significant	the Medplan		managed across	primary care
	difference in	platform		primary and	clinic and a
None	PDC (proportion	assessed through	None	secondary care	hospital
					done via
					traditional ads in
EMR-only BP	Self-			All patients were	city buses, Patients were
measurement in	measurement of			managed by	recruited from a
the first group	BP twice a day	None	None	physicians from	primary care clinic
version of the	using the	using the PC-EX		had been to the	were referred to
intervention was	International	(perceived		same cardiac	the 4-week
delivered to the	Physical Activity	competence for		rehabilitation	cardiac
control group	Questionnaire	regular exercise)	None	centre for a 4-	rehabilitation
group received	(significant	low-density		never been	participants were
standard care as	improvement	lipoprotein		prescribed	identified by
prescribed by	after 10 months	cholesterol (LDL-	None	Insulin before the	direct patient
	Subjects	hebeviers			T-MEEK
	reported eating	behaviors, diabetes self-			enrollment
	fruits/vegetables	diabetes self-			period: 83 ED

	weight loss was				
	significantly	76% used the			
	associated with	private Facebook			
	porceived peer	group			
		Task completion			
		and self			
	Usability	confidence of			Approached on
Nil	assessment.	health workers	Nil reported	Not reported	admission
	management				
	of obesity and				
	overweight and				
	pediatric				
	· ·				hospital
	Attrition and				outpatients,
	adherence to				community
Nil		Nil	Nil	Unknown	mental health
All that stall	training. Primary	Primary outcome	Analyses		
were masked to	outcome data	data were	were		
treatment	were available	available for	intention		
allocation. The	for 1256		to treat.		
information-only	participants	1256 participants	There was		
adharanca	(02%) Odda	(92%).	no		
None - within	mins activity				
trial variation of	after 30 mins				
intervention	sedentary				
National Cancer	Among the user	N/A	N/A	In total 196	through teir
Institute's	of smart quit			participants	employer or
application for	app, quit rates			included in the	facebook
smoking	were 13% which			study	advertisement
	found to be	Reward system,			
	believable,	Comprehension,			
	regardless of	acquisition of			
NA	major technical	information		Individual level	
	Ineme 1:	Improvement	Navigation		
	Benefits	requested	glitches Exit		
NA	information	related to	button		
	sharing with	lifestyle (adding	would not		
	others, usability	a diet/nutritional	work, On-		
	percentage	tracking foaturo)	scroon		took place at the
	weight change	adherence to			University of
	from baseline	self-monitoring			Pittsburgh School
paper diary	to 24 months	of diet			of Nursing,
paper and y	Adherence and	Secondary			Participantswere
	retention were	outcomes			recruited from the
	primary	included blood			community using
none	outcomes in this	pressure and self-			the University
none	Succomes in this	pressure and sell-			the oniversity

Approached on
admission
identified from a
/ery few large-scale survey
articipants of people with
total 1470 Users enrolled
rticipants online or by text
uded in the message
Cardiologists
t reported chose
out patients
diagnosed with
either Bipolar
Disorder I or II
Lung transplant
recipients of
vidual level UPMC
Rehab admitted
patients

Pedometer only		2551 compared		assessed. 54 did	
without step	6.2kg weight	to decrease of		not complete	Primary care
goals and	loss comp;ared	734 per day in		screening. 103	clinics and
standard medical	to 0.3kg gain in	control group.		invited but 22 did	posting
care.	control group.	Reducation in	Nil reported	not show up at	studyflyers
				· · · ·	
	Feasbility. Ability				
Nil	to detect	Nil	Nil	NA	NA
Control group-	Change from	Changes in			
Usual care and a	baseline in	health beliefs			
monthly 'check-	medication	and attitudes-			Electronic
•			NLA	Vac	
in' text message Subgroups 1b, 2b	adherence Pneumococcal	No significant	NA	Yes Participants were	database Electronic
and 3b received	vaccination rates			either smokers or	medical records
reminders	following the			had different	of patients
without	reminder period	N/A	None	chronic	attending the
	•	N/A	None	CHIONIC	attending the
received gait	(MiniBESTest)				
advice (no	and maintained		No		
smartphone app	quality of life (SF-		evidence of		
feedback)	36 physical		harm	Yes	Rehab services
Control group	reduction of	Abstinence from	N/A	In total 349	Participants were
received only	frrequency of	alcohol use		participants	recruited from
	perception and	T2DM patients			
NA	assessment of	engagement is			
N/A	the healthcare	predictive of			
	the healthcare	predictive of			
					Participants who
	Less than one				received
	third chose SMS				reminders for the
	compared to AVR	None	None	Yes	larger RCT
	knowledge, drug	Patients in usual			
	aherence,	care group			
	quality life	expressed			
Usual care	(EQ5D)	greater	Nil	Not reported	Not reported
	Fecal Occult	0			Nation wide
	Blood Testing			No Population	survey,
Standard care	was higher	None	None	level study	participants
	For patients self-	system perceived			I
	managing their	as easy and			
	hypertension,	relevant for			
	nypertension,	Televalit IUI			

	intervention	BP, BP, Lipids,		165 agreed to	recruited from
	group by 0. 69%	creatine,		participate out of	University
	vs .18% in	glocuse. No		859 eligible who	hosptial by
Usual care	control group.	change in SF36	Nil	were approached.	Endocrinologist
					were identified as
	Adherence rate				having difficulty
no comparator	89.64%	not mentioned			with adherence
Same to the	increased	N/A	N/A	IN total 21	Participants were
experimental	physical activity			participants were	recruited by the
group but were	and improved			included in the	programme
not provided any	neurocognitive			study	recruiter
	Significant	Significant			Recruited from a
	reduction in	reduction in			primary care
No	weight (between	diastolic BP (3.77	NA	Yes	practice
	Consultation on				follow up
	Incontinence	Patient Global			investigation of a
	Modular	Impression of			clinical trial
control	Questionnaire	Improvement			(NCT01848938).
	FITBACK group	нтваск group	How self-		Inrougn 4
No significant	showed greater	showed greater	guided		companies
differences in	improvement	improvement	mobile-		(trucking,
sociodemographi	compared to the	compared to	Web		manufacturing,
c profiles	control group in	both control and	intervention		technology, and a
	everv	alternative care	s will he		cornorate
	Feasibility and				
	acceptability.				
	CPAP				Recruited from
	compliance ws				hospital sleep
Nil	high.	Nil	Nil reported	NA	clinic.
	operability and	system modestly			diagnosed with
	whole trial	improved			DM2 being
	feasibility,	glycaemic and			treated in
Standard care	including	blood pressure	NA	Yes	primary care
randomization	difference in	patients may be	withdrew		selected patients
design: Heart	waist	more likely than	due to		from the EHR
disease and	circumference in	HD patients to	unfamiliarit		
		benefit from this			system were invited in two
diabetes patients	T2DM group,	benefit from this	y with		
Paper	scores between				patients
questionnaire	groupsNil	Nil	Nil repoted	NA	attending clinic
	85.7% of	Number of			
	outpatients in	patientswhowere			
	intervention arm	diagnosed			Outpatients
Standard care	returned for	with diabetes in	NA	Yes	coming to OPD

	randomly				
	generated				
	audiometries,				
NA	the	NA Nightscout	NA Hall Of	Individual level	NA nearg of CGIVEIII
	reported	enables 24-h	users		the Cloud
	checking their	access to sensor	report		through
	BG with a meter	glucose data for	using		Facebook
	less often (P <	multiple family	unapproved		(59.4%), followed
	0.001), bolusing	mombors	footuros		(39.4%), 1010Weu
	Nparticipant			Text messages	Purposive
Usual care	experiences	NA	Nil	acceptable.	sampling
The same		Effective III			
physical activity	healthcare	decreasing			
device without u-	group,	hypoglycemic			
healthcare	significant	events by			
system was given	improvements in	immediately			
to the CMDC	86.6% accuracy	alortina nationto			
	in categorising				
	activities				
	(walking, sitting,				
	standing, rolling			N/A	
An initial clinical	Weight in the	Engagement	No adverse	,	
assessment	TRIMM group	with the TRIMM	events		
consisting	decreased 2.6 kg	intervention was	were	Yes	Through a church
report on annual	risk: The	systolic blood			Annual medical
medical	reduction in 10-	pressure (–5.55			examination for
examination	year CVD risk at	vs. 6.89 mmHg; p	Nil reported	Not reported	work unit.
	Self reported	costs of			
	activity, general	implementing			
Usual cardiac	health (SF36)	and delivering			
rehab care	and self efficacy	the			
the Health	group	Satisfaction			
Education	experienced	questionnaire			
control group	significantly	showed			
(n=20) received	greater weight	smartLoss			
health	loss (percent of	participants			
information via	initial weight)	favorably rated	NA	Yes	Not Provided

	pre- and post-				Cancer registry
					dta used to
	interventionweig				
	ht (105.0±21.8				identify eligible
Nil	kg versus	Nil reported	Nil reported		patients
	participants				community-
	assessed the app				based health
	as valid, usable,				promotion
	acceptable, and				programs and a
No	able to sense	NA	NA	Individual level	county fair
	Excellent	Good accuracy		Patients with	After obtaining
	sensitivity	for PAC (0.955)		frequent PACs or	informed
	(0.970),	and PVC		PVCs were	consent, baseline
	subjective	Objective			Cardiac patients
	adherence	adherence			were recruited via
	w/o supporting	(medication			local cardiac-
	system 50.02	intake) - figure 4			rehab sports
no control	(SD=3.44)	initial 98%			groups (phase III
	better MMAS-4	ALICE		Designing apps	
	scores (P<.001);	Significantly		for elderly with	
	fewer missed	reduce		multimorbidity	
	doses of	medication		and	
					Participants were
					recruited for this
					study using recent
					results on a
	responserate to	percent of			
	text	responses			
	messageprompts	correctly			
	for home	formatted by			
N/A	measurements	patients	None		Diabetes registry
didn't receive	frequency of	exercise	N/A	Equal number of	Older age people
any text message	exercise	self-efficacy, PA-		participants in	were recruited
any text message	CAETCISE	related energy		the 2 groups	from local
		expenditure,		the z groups	residents
	Screening status	Increased CRC			The authors
	was ascertained	screening for			randomized to
	from EHRs 3	AN/AI aged 50-			the intervention
		-			
	months and 6	75 years (HR,			or usual-care

The control	CVD risk factors				Advertisements in
group	(BP and post-	International			mass media, face-
maintained their	training HR	Physical Activity			to-face
	decreased			Thoro woro moro	
usual physical		•		There were more	information,
activity	significantly in	(no significant		participants in	distribution of
throughout the	training group	change)	None	the training group	posters and
	brier and short	Knowledge of			
i	improved BP;	diabetes			
Uncontrolled r	medication	Not mentioned	N/A		Patients were
	adherence and	Not mentioned	,,,		contacted
· ·	blood pressure				through their
	noou pressure				preferred mode
receive any					•
	physical activity	sedentary time,	N/A	Participants were	With the help of
but didn't receive		heart rate, blood		distributed in a	local stroke
text messages;		pressure, BMI,		2:1 ratio to	support group,
received only		Fatigue, ,		intervention or	target population
usual care		Ten-Meter Walk		control group	were recruited
individuals were	Adherence to	perceived	N/A	The sample size	According to the
provided with a	Anti retro-viral	understanding		was male	inclusion criteria
standard version	treatment	of HIV infection,		dominated	purposive
of		treatment			sampling was
k	behaviour of the				
r	participants with				
I	IHD regarding				
	correlation of				
	Mobile based				
	PAL and paper				
NA	based activity				
		patients'			Most participants
		likelihood of			were initially
weekly IVR calls	patients' IVR call	reporting			identified as part
together with a	engagement and	excellent			of a 2013 survey
care partner	call completion	health and days	None		of 1,144 patients
Involvement of	completion	haracteristics			patients were
Informal	rates, trends in	associated			initially identified
Caregivers	completion, and	with persistent	None		from
	reported	helping with self-			patients were
	measures of	care,			initially identified
C	caregiving strain	accompanying			from electronic
	calegiving strain	accompanying			from cicculonic

received only	change in HF-		N/A		Potentially
mHealth	specific quality		,		eligible patients
intervention	of life				identified from
	between				electronic medical
	baseline and 12				records were sent
	months				an invitation
N1/A	montins		N1 / A	N1/A	
N/A			N/A	N/A	Purposive
					sampling
Received health	individual's		N/A	N/A	
coahing without	health			19/7	
using any	behaviour,				
software	communicate				
SUILWAIE					
	aspirin adherence			Dationtoware	
				Patients were	
Control group	(significant			equally	
received	increase) and	.		randomised into	
standard care	controlled	Not mentioned	None	the two groups	Not mentioned
Control group-					
Usual care	Change in HbA1c				
the control	cardiovascular	ucor/participant	NI/A	Almost equal	
group received	risk	user/participant	N/A	Almost equal number of	
usual care	TISK	engagement with the			
without the text				participants were included in the	
N/A	participants'	programme, Not mentioned	N/A		Individuals were
	ability og	Not mentioned			recruited via e-
	usability,				mail and
	feasibility,				Facebook. The
vs Fitbit vs	differences in	adherence to			recruited through
Fitibit+Phone	weight change	self-monitoring			advertisements in
based	from	by group			local newspapers,
	systolic and	intake of high			
Control group-	diastolic blood	sugar and fat			
Usual care	pressure	foods			
N/A	Behaviour	Not mentioned	N/A	A sub-set of 21	Recruitment into
,	change		,	patients	AMoSS was via
	0.10.180			participated in a	outpatient
N/A	Patient's	Patient's	N/A		
	perception of	satisfaction			
	the provider,	about the care			
	interaction and	provided			
	communication				

Groups	Mean reduction				
compared by					
those had 4+	in weight (lbs)				
	and HbA1c (%)	News	News		
lessons (Starters	were similar in	None	None		A + - + - 1 - (70
	physical activity	feasibility of	N/A		A total of 79
	of patients with	using mHealth			patients with
	schizophrenia	device			chronic
					schizophrenia in
					the inpatient unit,
composed of (1)		effectiveness of			recruited by
an individual		the motivation			convenience
group that	Adherence and	instruments built			sampling from 2
followed training	Attrition	into the			institutions for
N/A	medication	Not mentioned	N/A	N/A	porposive
	adherence and				sampling
	retention in				
	treatment				
	Feasibility(interv	Acceptability			Consecutive
	ention would be	(For our			patients seen at
N/A	feasible if ≥75%	acceptability			the various
	Fewer	57% (83 of 145)			two community
	symptoms were	of eligible			cancer centers in
Standard care	found in the	participants	NA	Individual level	the midwestern
Standard care	weight loss at 6	weight loss at 12	N/A		Participants
group	months	months			completed a
	change in self-	change in			
	reflective	lifestyle			From elderly
N/A	behavior	modification			communities
N/A	CVD screening		N/A		The CHWs
					underwent
The Lifestyle	change in				training in the Healthy adults (
group	physical activity				= 21) recruited
consisted of 12	behavior after	None			through ads in n
	antihypertensive	was a significant			
Standard care	medication	net increase in			
with free	use-the	the proportion of			
medications only	proportion	high-risk			
in India	increased	individuals taking	None	Individual level	Household visit
	distance	6			visited the
	spectacle-				Diabetic
NA	corrected visual	NA	NA	Individual level	Ophthalmology
	weight loss	eating	N/A	Adherence to	Participants were
		behaviour, self-		dietary self-	recruited through
		efficacy around		monitoring	workplace
		weight loss and		monitoring	listservs and
		weight loss and			iistseivs allu

participants were					
randomized to		3-			
theTBP condition	body weight	monthquestionna			
(37 to a control	assessment	ires			Not mentioned
received an	Physical function				
exercise brochure	and QOL				
	The primary	Secondary			invited 250 family
Control group -	outcome	outcome			practices in the
care as usual	measure was	measures were			South of
(group 3)	the average	general			Netherlands by
	After 2 years, an	In Kin récord	all		
Standard care	HbA1c < 7.0%	In Kin-réseau,			Dationts visiting
		the percent	participants showed a		Patients visiting
with mobile	(53 mmol/mol),	increase in		In dividual laval	the participating
phones	which was	subjects with	•	Individual level	centres
			N/A		
	(12 aut of 17)	-::f:			
	(12 out of 17)	significantly			
	were positive	increased by			
	about the	10.6 min per day,			The second second state
N	intervention.	from 28.7 (SD		Construction of the constr	Those who visit
No	They felt	21.1) min per		individual level	the GP clinic
Patients with	implementation,		N/A		Participant of the
normal cognition	and safety				cognitive
who weared	regardless of arm				imparement
accelerometer to	assignment				group were
assess the					identified from a
	input of meal				Part of a previous
None	photos	-			RCT
with HC support	outcome was	between HbA1c			
but without	the difference	mean levels			
access to a	between	within groups			Patients who visit
mobile phone or	intervention	were also		individual level	the GP clinics
N/A	glycosylated		N/A		Recruitment was
	hemoglobin				through health
	(HbA1c)				care provider
					referral and

Falls and Non-		Measures of			
falls	Patient falls	overall gait			Not mentioned
N/A			N/A	N/A	
,			,	,	
group was placed	3-month follow-	effect of the			
on a 3-month	up, daily	intervention on			Advertisement in
waiting list, after	physical activity	weight loss was			newspapers and
which they	was	seen with a mean	NA	Individual level	press notifications
					Patients meeting
					the eligibility
None	None	None			criteria
didn't receive	depressive		N/A		after attending a
any text message	symptomsand				mindfulness
Standard care	perseverative	BMI, No of			group
patients		outpatient clinic			National Taiwan
reviewed	Change in % of	visits,			University
through	body weight loss	readmission,		Yes	Hospital in Taipei
tinough	On average,	Perceived well		103	
	each user has	being-All seniors			
	played half an	had			
NA	hour (29.16	improvement in	NA	Yes	Not mentioned
	Measurement of	Lifespace data -		Participants were	Participants in
None	daily activity	79% of GPS	None	all from the	the intervention

Inclusion criteria	Reach Exclusion criteria	Participation rate	Representativeness	Individual level
Not specified	Not specified	51.2% (9- 98%)	Spanish-speaking and low-income background, not representative of a larger population	Relationship between daily mood scores and 1-week average mood
N/A	N/A	21.70%	were mental health patients, carers as well as healthcare providers VA population only: not	N/A
T2DM; 1+	cognitive impairment, severe mental illness or	422 eligible, 301 (72%)	reelvant to women or	emcacious with
	living in a supervised	participated	children	emthodolgical
CVDs (either	such as Diabetes		participants had	medication
hypertension or	Mellitus (DM), Renal	88.88%	hypertension, 49.4%	adherence,
		No details	Those with OSA had	Subjects'
Not specified	Not specified	about how	mild, moderate and	oxygen
heart failure and/or hypertension and/or	smartphone, using a device that was not Android or iOS (e.g. Blackberry or Windows	67.74%	Patients had HTN, dyslipidemia, HTN+dyslipidemia or HIV	patients found the app design acceptable
At least one			Patients were not	Success of BP
abnormal BP			evenly randomised into	recordings
measurement	Not mentioned	73.17%	the 3 groups	was 47.8% in
18 years, history of cardiovascular				physical activity at 3 month follow-
disease,	Not mentioned	27%	Participants had a broad range of co-morbidities	up in the
age, diagnosis of	medical/psychiatric	2770	Participants were all	HbA1c levels
type 2 diabetes,	conditions and those		from the same family	in PD and PD-
HbA1c ‡8%	unable to attend the	87%	medicine clinic	TE groups
above, had diabetes, had a	Overt psychosis, inability to provide informed consent, pregnancy	the 3-week trial, 20 of the		

Aged >21 years;	ivied contraindication to			
had a chart	weight loss; pregnant or			
diagnosis of	planning to become			
	prognant within the next			
admitted with a				
diagnosis of				Usuability
CHFwere	Nil	Unknown	Low	assessment
The minimum				
patient ages for				
inclusion were				
obesity, age 2;				
clinically stable				36.6%,
at the time of				completed
testing (no	neurological			average 3.06
hospitalization	disorder.	Not reported	Moderate	hours per
(1) be age 18 or	Not mentioned	85%	Not mentioned	Participants'
older, (2)				receptivity on
smokeat least				acceptance
five cigarettes				and
Connected to				found to be
Lung cancer				believable,
through				users not
experience	NA	100%	Healthcare professionals	hindered by
adults, alert and	children, chronic			
oriented,	cognitive impairment			
documented	documented in the			
New York Heart	electronic health record,			
Association class	dialysis patients,			
eligible if	requiring medical			
they were aged	supervision			
59 years with a	of diet or exercise,	51.47%		
, BMI between 27	physical limitations	(210/408)	white (78.1%)	
Individuals were	Exclusion criteria	,	, , ,	
eligible if they	included pregnancy;			
were ≥18 years	conditions requiring			
of age with a	medical	66.1% (39/59)	White (84.62%)	

COPD with	unconscious or had			beathing self
pulmonary	severely impaired			efficacy in
function test	cognitive function,		Patients admitted with	intervention
data	(2)had communication	32%	COPD	compared to
disabilities who			Patients had different	
were 45 years		4.000/	neuromuscular	
and older	Not mentioned	100%	conditions	N/A
American, 19	stage medical conditions			secure
years and older,	with limited life			messaging to
with poorly	expectancy (<6 months),			relay patient
<u>controlled type</u>	in case of not providing	Not mentioned	NI / A	Darticipantel
Having a device that able to	in case of not providing	Not mentioned	N/A	Participants'
	any quit date or set a quit date >2weeks after			frequency of
receive	quit date >2weeks after	Not mentioned	N/A	reporting
		Not mentioned		
Sampling				
stratified by				
urban rural and				
gender.	Not reported	Not reported	Low	NA
All patients who	patients who required			
had failed to	urgent surgery due to			
respond to	cauda equina syndrome			
conservative	or progressive			
treatment for a	neurological deficit.			
older, 2)	substance use disorder	Condition,	African-American 8.5%	
outpatients and	in the prior 3months,	mean	Asian 2.4%	
currently	2)were psychiatrically	compliance	Latino/jispanic 14.6%	
prescribed	hospitalized in the prior	was 65%	More than one ethnicity	
years,	transplant or were		Only those who	level self-
underwent	unable		underwent a transplant	reporting
transplantation	to perform their		at UPMC, so this would	characteristics
January	personal care were	75%	impair generalizability	were assessed
least two	(including respiratory,			
admissions for	Residual prior and repair			walking time;
Admitted stroke	effets, apahsia, minimal		Good	15 metre
rehab patients	stroke paresis	97%	representativeness	walking speed
		5770	representativeness	waiking speed

(BMIZ23 for	of diabetes or other			
Asian-Pacific	disease associated with			
Islanders)8;	disordered glucose			Weight loss,
age>35 years;	metabolism (e.g.,			increased
risk for diabetes	suboptimally treated	60%	Good	teps.
				(acceleromete
				r and
	history of pain in the last			
	twelve months, or a			
	history of surgery,			
Older people	molignon or or			
purposively	Not reported	Not reported	Poor	NA
Diabetics with				
HbA1c>8%, use	Heart		Only diabetics with	
a mobile or text	attack/stroke/CHF, non-		HbA1c>8% and with	
messages,	English speaking	90%	pharmacy benefits	Individual level
Unvaccinated	Lack of access to at least			Patients who
active patients	one of the reminder		All participants were	received
(who had at	methods (mobile		from the same medical	reminders
least one visit to	number or e-mail) or	100%	centre	and the
10 min				significant
continuously;				canges in only
had a score of				two outcome
24 or higher on		38/40		measures and
Participants with	Participants were	91.8%	N/A	Participants'
18+ age whho	excluded due to having	approached		use of post
by type 2	impairment, active			
diabetes, aged	psychiatric disorders,			
over 18 years,	blindness, deafness, or			
and of both	lack Italian language			
part of the HD2			of the HD2 trial which	
trial, not			was designed to study	
undergone			physical activity, fruit	
cancer therapy		Cluster RCT	and vegetable intake,	Individual level
aged >18 years	years, those with			and drug
with atrial	valvular atrial fibrillation			adherence
fibrillation	(eg, prosthetic), and			and
diagnosed with	those unable to provide	Not reported	Not clear	satisfaction
women and men				
aged 50 to	Non-HMO members, not		Representive of the age	Population
74 years, with	able to give a consent	96%	groups from 50-74	level
>30 years, taking				
meds for				
hypertension,				

inhabitants of	terminal disease with an			
the City of	expected lifespan of <6			No significant
Copenhagen	months or need of an			effect on H
with T2D and a	interpreter.	19.20%	?	bA1c at 6m
the alarm				
sounds and read				
the screen on	not mentioned	77.14%		
person with age	physical conditions that	89%	N/A	participants
of 18 years and	might limit moderate			with
or old, having	physical activity			cognitively
the capacity of				impared due
men and	females who were			
women aged	pregnant or wanting to	40% completed	Not representative of	
18–65 years of	become pregnant over	the study	women of this age group	Yes
			Responders 37 (80.4)	
			Non-responders 14	
			(93.3)"	
not specified	not specified	100%		
(1) 18-65 years				
USA resident, (2)		Low attrition		
employed at		and low data		Yes
least half time		loss		103
(which is typical		1033		
for employees to				
patients with				
OSA visiting				
Sleep Unit who				
had some				
knowledge of				
smartphone use.	Nil Reported	Unknown	Unknown	NA
diabetes type 2	inter allia, the need to		phone and the sensors,	
diagnosed ≥6	rely on the		elderly population who	
months prior to	other persons with drug		would be able to use	
the study,	taking.	94%	these sensors by	Yes
			,	
least 3 months,				
HbA1c above				
6.5% within 1				
year; Heart				
attending clinic	history of cancer of any			
with LUTS	organ, neurologic	Unknown	Unknown	IPSS Score
All outpatients	Known patient with			
(>30 years)	diabetes mellitus;	70% followed		
attending	pregnancy; alcoholics	up for	Yes participants who	
routine OPD	attending OPD who	definitive test	came to OPD	Yes
				100

Age >	18 years, active		Patients from	
18 years,	otorrhea, > 75 dB loss in		otolaryngologyclinics in	
inactive	standard		Spain, further details	
otorrhea,	audiometry (any	Not provided	are not provided.	Individual
			Not representative of poor or LMIC	NA
Inclusion in trial.	Not reported	NA	Similar to trial population	NA
Aged 60+, DM with HbA1c 7.0–10.5%.	Patients who were unable to use text messages or to access the internet for any reason were excluded	85%	Reflects the digital divide	results seem to come from the increased physical
				N/A
African	self-reported substance	84 participants	Small sample of church	
American adults	abuse,	(67.7%)	going African Americans	
aged 21>years,	uncontrolled	completed the	with BMI>27, not	Individual level
years and willing	No known CVD, a history			
to participate in	of mental abnormalities,			10 year CVD
the program.	having difficulty in	Not reported	High of work units	risk
overweight and obese adults (BMI 25-35 kg/m2) age 18 to 65 years	dieting; 62 kg weight change in the past 60 days assessed by selfreport; inability to engage in moderate intensity	95%	Small sample size	Individual

agod 19 to 75	non English spoaking			DMI
aged 18 to 75	non-English speaking,			BMI,
years with	inability			nutrition,
histologically	to read the consent			physical
confirmed Stage	form, lack of	33%	Unknown	activity,
60 from rural				
and urban				
communities.				
The principal				
investigator,	Not Available	NA	Small sample size	Individual level
			"Level of education	
must be at least			Secondary school = 10	
60 yr with a			Qualifications for	
minimum visual	previously owned a		university = 8	
acuity of -0.75	smart phone	100%	University degree = 6	
Spanish for		23 pats and 7		
elderly patients		health prof	No, sample too small	Y/N
taking multiple		participated	No, sample too sman	1710
medications		qualitative		
HIV seropositive;	psychotic disorders			
age at	(e.g., schizophrenia);			
enrollment 50	neurological disease			
years or older;	(e.g., head			
2) English or			. , (65%) and Latino(65%),	
Spanish as first			with substantial	
language			participation among	
3) Access to text	N1/A	N1/A	whites	
message English	N/A	N/A	(25%)and	froquency of
English-	Not mentioned	Not mentioned	N/A	frequency of
speakingn				doing exercise
community,				
aged between				
1) AN/AI				
heritage				
documented in				
EHR; 2)				

1) owned one of				
	If hereine medical			
three types of	If having medical			
Internet-capable	conditions or other			
mobile devices:	physical problem that			Improved BP,
iPhone®,	needs special medical		Mostly female	HR and hand
BlackBerry [®] , or	attention	66.67%	participants	grip strength
adults with	had been beenitalized in			
T2DM, on oral	had been hospitalized in			
hypoglycemic	the prior 2 months			
and/or	lifethreatening			
Not mentioned		Not mentioned	N/A	
person had to	Not mentioned	Not mentioned	N/A	Physical
have had a				activity of the
single unilateral				stroke
stroke, could				survivours
walk				increased
participants,				mercuseu
diagnosed with				
IHD and who				
	Not mentioned	Not mentioned	NI / A	notionto!
Individuals were	Not mentioned	Not mentioned	N/A	patients'
eligible to				adherence to
participate if				anti retroviral
they had been on				therapy
patients with		Seventy-five	N/A	
IHD and who		intervention		
could perform		participants		
			predominantly female	
			(62%) and above 60	
with diabetes		around 30%	years (62%), with	
	Refused consent, Unable	(74/247) - JJ	substantial indigenous	
hypertension	to reach	calculated	(29.2%)	
Englishspeaking	ineligible if they	HF- 57%		
patients with	had diagnoses of	Depression -	77% white and 70%	
heart failure,	cognitive impairment,	95%	male	
patients had to	if they had diagnostic			
have a HF	codes indicating			
diagnosis	dementia, bipolar		99% male and 77%	

CarePartners had to live outside			N/A	
the patient's				
home, speak				
English, have				
access				
	Not mentioned	Not mentioned	N/A	Partcipants
				showed
				positive
				attitudes
Patients with	Not mentioned	Not mentioned	N/A	Participants'
type 2 diabetes				ability (who
				using
				smarphone
had undergone				
coronary				Improved self-
stenting for ACS				reported
with good in-				aspirin
hospital aspirin	Not mentioned	96%	N/A	adherence
				HbA1c values
				declined
				significantly
				among
				intervention
Patients had to	Not mentioned	87%	N/A	Participants'
have				willingness to
significantly				use the app
lower LDL				for changing
aged between	Not mentioned	Not mentioned	N/A	Patients'
18-35 years,				abililty to
owned a mobile				perceive the
pone and had				impact of the
included age	excluded if they reported		were	
between 18 and	any of the following:		an average of (6SD)	
70 years, body	physical limitations that	27% (80/293)	51.1611.7 years old and	
			,	did not affect
				change in
				systolic and
Not mentioned	lack of capacity to	Not mentioned	N/A	
liter mentioned	consent and			
	those who had been a			
providers with	Not mentioned			
strong				
familiarity with				
existing HER				
system and				
Systemanu				

				Program
				Program
				Starters
				Weight loss
				Reduced
1) hospitalized	1) Patients restricted	80% (approx)	N/A	
patient with	from outdoor activity; 2)			
chronic	patients with severe			
schizophrenia; 2)	medical condition that			
involved in	limits physical activity; 3)			
were older	cognitive		Participants were 75	
adults aged 65	impairment, progressive		years (SD 6),	
years or older;	neurological disease,		predominantly female	
living	stroke, severe	N/A	(64%),	
at least 14 years	Not mentioned	Not mentioned	N/A	
	Not mentioned	Not mentioned		
of age, HIV				
diagnosed,				
currently on or Inclusion criteria	Patients who used		Forty patients (median	
for the current	walking		age 73; 57% [N=23]	
study were: 1)	aidswere excluded	97% (40/41)	female)	
Patients were	Those with cognitive			
eligible if they	impairment that limited		Participants with cancer	
were aged 21	the ability to understand	85%	in Michigan area	Individual
a body mass	Recent psychiatric	80%	N/A	
index between	hospitalization,			
hypertensive or				
pre-hypertensive				
condition	None	Not mentioned	Not mentioned	
Aged between		Not mentioned	N/A	
35 and 75 years,				
no history of				
Not mentioned	Not mentioned	67% (21/31)	Not mentioned	
were ≥40 years	CVD-related			
of age with a	complications that			
self-reported	cannot be managed in a		Participants belonged to	
history of (1)	primary		the village therefore	
coronary heart	care setting; (2) having a	87%	representative	Individual
with			Pilot study- Sample size	
a diagnosis of			not adequate for	
diabetes	NA	100%	generalizability	Individual
participants must	unstable medical	Not mentioned	N/A	
have been	condition, uncontrolled			
overweight or	thyroid condition, eating			
obese, between	disorder, or a psychiatric			
obese, betweell	disorder, or a psychiatric			

			Mostly middle-aged	
Not mentioned	Not mentioned	Not mentioned	white female	
Patients		Not mentioned	white female	
confirmly	history of treatment for			
	accompanying severe			
diagnosed with	disease (e.g.,			
breast cancer,	other malignancy) within			
age between 20 between 40 and	one month; severe presence of coexisting	36.8% (540		
70 years old	medical	patients a	Above 55 mostly and	
with DM2 or	conditions with a low	general	above 90% of dutch	
COPD,	survival rate, severe	invitation letter		
	Survivariate, severe		origin	
people with COPD or type 2				
diabetes, aged diabetes.				
Subjects were			Representativeness is	
eligible for study			good for this multi-	
participation,	NA	54%	country study	Individual level
		5470		
vears, five	co-existing medical			
years, five of whom had	co-existing medical			
of whom had	conditions,		Pilot study- Sample size	
of whom had type 2 diabetes	conditions, insufficient mastery of		Pilot study- Sample size	
of whom had type 2 diabetes with a body-mass	conditions, insufficient mastery of the Dutch language, or	85%	not adequate for	Individual
of whom had type 2 diabetes with a body-mass index>25 kg/m2	conditions, insufficient mastery of the Dutch language, or without an Internet	85%	not adequate for generalizability	Individual Particinants
of whom had type 2 diabetes with a body-mass index>25 kg/m2 1) age 60–85; 2)	conditions, insufficient mastery of the Dutch language, or without an Internet individuals with normal	85%	not adequate for	Participants
of whom had type 2 diabetes with a body-mass index>25 kg/m2 1) age 60–85; 2) cognitive	conditions, insufficient mastery of the Dutch language, or without an Internet individuals with normal cognition was also	85%	not adequate for generalizability	Participants and their
of whom had type 2 diabetes with a body-mass index>25 kg/m2 1) age 60–85; 2) cognitive impairment due	conditions, insufficient mastery of the Dutch language, or without an Internet individuals with normal cognition was also recruited as an active	85%	not adequate for generalizability	Participants and their study
of whom had type 2 diabetes with a body-mass index>25 kg/m2 1) age 60–85; 2) cognitive impairment due to Alzheimer's	conditions, insufficient mastery of the Dutch language, or without an Internet individuals with normal cognition was also recruited as an active control	85%	not adequate for generalizability	Participants and their study partners were
of whom had type 2 diabetes with a body-mass index>25 kg/m2 1) age 60–85; 2) cognitive impairment due to Alzheimer's disease and not	conditions, insufficient mastery of the Dutch language, or without an Internet individuals with normal cognition was also recruited as an active control cohort from a registry of	85%	not adequate for generalizability	Participants and their study
of whom had type 2 diabetes with a body-mass index>25 kg/m2 1) age 60–85; 2) cognitive impairment due to Alzheimer's disease and not 1) Able to	conditions, insufficient mastery of the Dutch language, or without an Internet individuals with normal cognition was also recruited as an active control cohort from a registry of cpomplications	85%	not adequate for generalizability	Participants and their study partners were
of whom had type 2 diabetes with a body-mass index>25 kg/m2 1) age 60–85; 2) cognitive impairment due to Alzheimer's disease and not 1) Able to exercise	conditions, insufficient mastery of the Dutch language, or without an Internet individuals with normal cognition was also recruited as an active control cohort from a registry of cpomplications 2) serum cretatnine	85%	not adequate for generalizability	Participants and their study partners were
of whom had type 2 diabetes with a body-mass index>25 kg/m2 1) age 60–85; 2) cognitive impairment due to Alzheimer's disease and not 1) Able to exercise 2) Diagnosed	conditions, insufficient mastery of the Dutch language, or without an Internet individuals with normal cognition was also recruited as an active control cohort from a registry of cpomplications 2) serum cretatnine <1.5mg/DL	85%	not adequate for generalizability	Participants and their study partners were
of whom had type 2 diabetes with a body-mass index>25 kg/m2 1) age 60–85; 2) cognitive impairment due to Alzheimer's disease and not 1) Able to exercise 2) Diagnosed with T2DM at	conditions, insufficient mastery of the Dutch language, or without an Internet individuals with normal cognition was also recruited as an active control cohort from a registry of cpomplications 2) serum cretatnine <1.5mg/DL 3) Proliferative		not adequate for generalizability N/A	Participants and their study partners were
of whom had type 2 diabetes with a body-mass index>25 kg/m2 1) age 60–85; 2) cognitive impairment due to Alzheimer's disease and not 1) Able to exercise 2) Diagnosed with T2DM at least 5 years ago	conditions, insufficient mastery of the Dutch language, or without an Internet individuals with normal cognition was also recruited as an active control cohort from a registry of cpomplications 2) serum cretatnine <1.5mg/DL	85%	not adequate for generalizability	Participants and their study partners were
of whom had type 2 diabetes with a body-mass index>25 kg/m2 1) age 60–85; 2) cognitive impairment due to Alzheimer's disease and not 1) Able to exercise 2) Diagnosed with T2DM at least 5 years ago eligible for	conditions, insufficient mastery of the Dutch language, or without an Internet individuals with normal cognition was also recruited as an active control cohort from a registry of cpomplications 2) serum cretatnine <1.5mg/DL 3) Proliferative		not adequate for generalizability N/A Mostly male 4/5	Participants and their study partners were
of whom had type 2 diabetes with a body-mass index>25 kg/m2 1) age 60–85; 2) cognitive impairment due to Alzheimer's disease and not 1) Able to exercise 2) Diagnosed with T2DM at least 5 years ago eligible for participation if	conditions, insufficient mastery of the Dutch language, or without an Internet individuals with normal cognition was also recruited as an active control cohort from a registry of cpomplications 2) serum cretatnine <1.5mg/DL 3) Proliferative		not adequate for generalizability N/A Mostly male 4/5 Not representative as	Participants and their study partners were
of whom had type 2 diabetes with a body-mass index>25 kg/m2 1) age 60–85; 2) cognitive impairment due to Alzheimer's disease and not 1) Able to exercise 2) Diagnosed with T2DM at least 5 years ago eligible for participation if diagnosed	conditions, insufficient mastery of the Dutch language, or without an Internet individuals with normal cognition was also recruited as an active control cohort from a registry of cpomplications 2) serum cretatnine <1.5mg/DL 3) Proliferative retinopathy	Not mentioned	not adequate for generalizability N/A Mostly male 4/5 Not representative as only recruited from two	Participants and their study partners were comfortable
of whom had type 2 diabetes with a body-mass index>25 kg/m2 1) age 60–85; 2) cognitive impairment due to Alzheimer's disease and not 1) Able to exercise 2) Diagnosed with T2DM at least 5 years ago eligible for participation if diagnosed with T2DM, if	conditions, insufficient mastery of the Dutch language, or without an Internet individuals with normal cognition was also recruited as an active control cohort from a registry of cpomplications 2) serum cretatnine <1.5mg/DL 3) Proliferative retinopathy	Not mentioned 75%	not adequate for generalizability N/A Mostly male 4/5 Not representative as only recruited from two GP clinics	Participants and their study partners were
of whom had type 2 diabetes with a body-mass index>25 kg/m2 1) age 60–85; 2) cognitive impairment due to Alzheimer's disease and not 1) Able to exercise 2) Diagnosed with T2DM at least 5 years ago eligible for participation if diagnosed	conditions, insufficient mastery of the Dutch language, or without an Internet individuals with normal cognition was also recruited as an active control cohort from a registry of cpomplications 2) serum cretatnine <1.5mg/DL 3) Proliferative retinopathy NA Participants were	Not mentioned	not adequate for generalizability N/A Mostly male 4/5 Not representative as only recruited from two	Participants and their study partners were comfortable
of whom had type 2 diabetes with a body-mass index>25 kg/m2 1) age 60–85; 2) cognitive impairment due to Alzheimer's disease and not 1) Able to exercise 2) Diagnosed with T2DM at least 5 years ago eligible for participation if diagnosed with T2DM, if patients over 18 years old,	conditions, insufficient mastery of the Dutch language, or without an Internet individuals with normal cognition was also recruited as an active control cohort from a registry of cpomplications 2) serum cretatnine <1.5mg/DL 3) Proliferative retinopathy NA Participants were excluded if their	Not mentioned 75%	not adequate for generalizability N/A Mostly male 4/5 Not representative as only recruited from two GP clinics	Participants and their study partners were comfortable
of whom had type 2 diabetes with a body-mass index>25 kg/m2 1) age 60–85; 2) cognitive impairment due to Alzheimer's disease and not 1) Able to exercise 2) Diagnosed with T2DM at least 5 years ago eligible for participation if diagnosed with T2DM, if patients over 18	conditions, insufficient mastery of the Dutch language, or without an Internet individuals with normal cognition was also recruited as an active control cohort from a registry of cpomplications 2) serum cretatnine <1.5mg/DL 3) Proliferative retinopathy NA Participants were	Not mentioned 75%	not adequate for generalizability N/A Mostly male 4/5 Not representative as only recruited from two GP clinics	Participants and their study partners were comfortable

were not				
previously				
clinically		Not mentioned	Not mentioned	
aged 49 + years		Not mentioned	N/A	
with medical				
illnesses				
(defined as				
age between 60				
and 70 years, (2)			Representative of the	
no history of			age group in	
diabetes or use	Not Available	91.20%	Netherlands	Individual level
A diagnosis of				
chronic			Mostly male and above	
obstructive	Not mentioned	82.6%(19/23)	65	
age between 18-	Patients were excluded	Not mentioned	N/A	
75 years, had	if they showed psychotic	Not inclutioned		
symptoms of	or manic symptomsor			
an age >20			This is a pilot study with	
-	ovporionand			
years, gastric	experienced		very little sample size,	
cancer	difficultieswith accessing		so representativeness is	
diagnosis, and	the app		a challenge	Individual level
			Sample size not	
			adequate for	
Not mentioned	Not mentioned	100%	generalisability	Individual
Medicare			Participants were	
enrolled or	Not mentioned	100%	enrolled only from 1 of	N/A

	Efficacy/Effectiveness				
Measures/re	Intent-to-treat analysis	Impact on QOL	Percentage	Organisational	Description of
sults for at	used	(quality of life)	of attrition	level (setting	intervention
least 1	(Y/N)			and staff)	location
follow-up					
After 1 week	Ν	N/A	Not specified		Intervention was
and 2 weeks				N/A since the	delivered
				intervention	through
				delivery was not	automated text
				through personnel	messages.
N/A	N/A	Most	N/A	intervention	Intervention was
		respondents		delivery was not	delivered
		felt that the		through personnel	through
weekiy measuremen	Yes with linear regression	Partly with	261 (87%) patients	DVA outpatient	US VA health
te	res with linear regression	MCS and PAID	completed	clinics	system
After 3				intervention	delivered
months	Ν	Not measured	11.11%	delivery was not	through a
				N/A since the	N/A since this
N/A	N/A	N/A	N/A	application was run	was a diagnostic
months		using EQ-5D,		providers were	N/A since
(control		no significant		satisfied with the	intervention was
phase) and 6		change post-		app and found it	delivered
months	Ν	intervention	32.26%	user-friendly	electronically
					intervention was
					delivered
					electronically
				A research assistant	N/A since
				explained the	intervention was
After 2 weeks	N/A	N/A	26.83%	respective interface	delivered
				content was	N/A since
After 1				created by the staff	intervention was
month and 3				of the	delivered
months	N	Not measured	73%	rehabilitation and	electronically
After 4		No significant		nurses from the	education
months and		change post-		centre, as well as	sessions took
10 months	Y	intervention	13%	community peer	place at the
					culturally
					sensitive, low-

			7 out of 32		Health coaches, etc
Moderate self		Attl			line a field
confidence	No	Nil	NA	NA	Hospital
NA	No	Not reported	36.60%	NA	NA
Only 1 follow	N/A	Not measured	16%	N/A since the	Intervention was
up after 2				intervention	delivered
months				delivery was not	through a
				through personnel.	programmed
NA	NA				
absolute					took place at the
weight					University of
change from					Pittsburgh School
baseline to	Y	NA	14.29		of Nursing,
At 12 weeks,					SM data were
the outcome					downloaded
weights			25.64%		hourly between 9
were on	Y		(10/39)		AM and 10 PM

1,2 and 3		No difference			Tertiary Hospital
months	No	of QoL	23%	Hospital	in Taiwan
averages of					Participants'
time spent					homes and
indoors and	N/A	N/A	0	N/A	outdoors
	· · · · · · · · · · · · · · · · · · ·	,	-	,	
NA	NA	NA	NA	NA	NA
After 42 days	N/A	N/A	Not	N/A since the	Intervention was
of quit date,			mentioned	intervention	delivered
participants				delivery was not	through a
	N	N/A	Not	N/A since the	Intervention was
			mentioned	intervention	delivered
				delivery was not	through a
4 weeks	No	No	Not reported	Hospital	NA
			randomized,		
			82 analyzed,		
table 2 of			22 lost-to-		
manuscript??	Y	not mentioned	followup or		not specified
					not specified
monitoring,		including re-			
adherence		hospitalization		UPMC Tertiary care	
to the		and mortality		hospital and	
regimen,	Y	rares	None	trained staff	
sifgnificant					Multi-site
difference				Stroke rehab, rehab	international - 16
between	No		NI/A		
between	No	N/A	N/A	therapists	rehab clinics

M/aight			adherence to		
Weight,			mobile		
steps, diet,					
hip			activity diary		
circumferenc			decreased		
e, BP, Lipids,	Y	NA	from 90% in	NA	NA
				N/A	
NA	NA	NA	NA	NA	NA
No	11/7				
significant					
difference					
observed	N	N/A	10%		
00301700			1076		Intervention
					delivered
				Process evaluation	through
After 4 weeks	N	N/A	0	not done	phone/email
(MiniBESTest)		using SF-36 but	Ŭ	not done	priorie/ errian
significant		only changes in			
at 6 weeks,		physical health			
physical	Y	scale		N/A	
At 4, 8 and	N	N	Not	N/A since the	Intervention was
a2 month of	IN IN	IN IN	mentioned	intervention	delivered
			mentioned		uenvereu
chosen SMS.					
Participants					
selecting					
SMS	NA	NA	NA	NA	NA
51415			in		
			intervention		
		Improved QoL	group by 3		
3 months	No	(EuroQual	months	Not reported	Not reported
Fecal Occult	INU	LuioQuai	montins	Νοιτεροπευ	Not reported
Blood					
Testing was	Y	NA	4%	Not reported	NA
Testing was	I	NA	470	Not reported	INA

			16% at 6		
NA	Y	CF2C no change		Not reported	Notroportod
	Ŷ	SF36 no change	months	Not reported	Not reported
89.64%					
adherence					
rate	N	N	23%		not mentioned
	Ν	N/A	Not	N/A since the	Intervention was
			mentioned	intervention	delivered
				delivery was not	through a
Significant				through personnel.	programmed
reduction in					
	Ν	NA	60%	NA	NA
weight	IN		00%	INA INA	INA
mean		score			
decrease 3.1		Responders			
(95Cl 2.0 -		34.2 (6.4)	24.6%		
4.2)	Ν	Non-	(15/61)		not mentioned
Measures at		Significant	Fitback 8%;		
O, 2 and 4	Yes	improvement	other groups		
months		improvement	2.5%		
	NIA	NIA	Not reported	NIA	NIA
NA	NA	NA	Not reported	NA	NA
telehealth		improvements			
system		were observed			
dimensions		in four out of			
reached	NA	the five	4%	NA	NA
Reliability of					
scores	No	NA	0.40%	NA	NA
85.7% of					
outpatients					
in					
intervention	Yes	NA	31.30%	NA	NA

randomly					
generated					
audiometries					
, the	NA	NA	NA	Individual level	Not Mentioned
NA	NA	Yes	NA		
					Primary care
NA	No	No	Not reported	Primary care clinic	clinic
Yes	No	No	15%		
Weight in					
the standard-					
care group	Yes	NA	20%	NA	NA
					Hospital and
1 year	Y	Not reported	27.50%	Not reported	Workplace
туса	1	Not reported	27.30%	Not reported	vvorkplace
SmartLoss					
group					
experienced					
significantly					
greater					
weight loss	Yes	Yes	5%	NA	NA

		No change in			
1 month	Ν	FACT G scoe	30%	NA	NA
theory-					
based					
motivational					
messages					
Usability	NA	NA	NA	Individual level	Community based
Osability				individual level	
"subjective					
adherence					
w/o					
supporting					
system 50.02	N	N	0		not mentioned
N	N	N		N	N
IN .					IN .
over 6500					
responsemes					
sages with					
response					
rates of	N	N/A	N/A		home based
after 12	Y	N/A	Not	N/A since the	Intervention was
weeks and			mentioned	intervention	delivered
24 weeks				delivery was not	through a
				through personnel.	programmed

					Intervention was
					Intervention was
					delivered
					through
				A process	Whatsapp to the
After 10				evaluation was not	mobile group
weeks	Ν	N/A	33%	done	and on a sports
			4 10St to		
			follow up in		
at 3 month	N	NI / A	control and		Intervention was
at 3 month	Ν	N/A	Not	N/A since the	
			mentioned	intervention	delivered
				delivery was not	through a
				through personnel.	programmed
after 3 and 6	N	Increased	Not	N/A since the	Intervention was
weeks		physical	mentioned	intervention	delivered
		activity may		delivery was not	through a
		increrase one's		through personnel.	programmed
				tinougii personnei.	
		self-efficacy			software to
at baseline,	Ν	N/A	Not	N/A since the	Intervention was
1 month and			mentioned	intervention	delivered
3 month				delivery was not	through a
				through personnel.	programmed
at 24 weeks	N	N/A		N/A	N/A
Participants					
were					
followed up					
for a total of					
1,225	No	No	N/A		home based
0001					
83%			approx 5 %		
completion	No	No	overall		home based
patients					
reported					
lower					
levels of	Ν	None			home based
	14	None			nome buseu

				N/A since the	Intervention was
				intervention	delivered
				delivery was not	through a
				through personnel.	programmed
					software to
					participants'
Not	Ν	Not measured	Not	N/A since the	Intervention was
mentioned			mentioned	intervention	delivered
				delivery was not	through a
				through personnel.	programmed
	Not mentioned		Not	N/A since the	Intervention was
			mentioned	intervention	delivered
				delivery was not	through a
				through personnel.	programmed
					Intervention was
					delivered by
After 1					computer-
month	Not mentioned	N/A	4%	N/A	generated SMS
		Improvement			
		in knowledge			
		of food			
		choices,			
	NA	confidence and	14%		
Not	N	N/A	Not	N/A since the	Intervention was
mentioned		, i	mentioned	intervention	delivered
				delivery was not	through a
				through personnel.	programmed
after 4 weeks	N	N/A	Not	N/A since the	Intervention was
		,	mentioned	intervention	delivered
			mentioned	delivery was not	through a
				-	J
demonstrate				through personnel.	programmed
d a					
significant	No	N/A	8% (7/80)		home based
		reduction in			
		the intake of			
	Y	high sugar and	14%		
after 12	N/A	N/A	Not	N/A since the	Intervention was
weeks			mentioned	intervention	delivered
				delivery was not	through a
				N/A since the	Intervention was
				intervention	delivered
				delivery was not	through a
				through personnel.	-
				unougn personnel.	programmed
					software to

			2004		
	N		30%		
	Ν		20% (approx)	N/A since the	Intervention was
				intervention	delivered
				delivery was not	through a
				through personnel.	programmed
					software to
across			group		
training plans			showed 41%		
differed			attrition		
significantly	No	N/A	(primarily		home based
N/A	N	N/A	25%	N/A since the	Intervention was
,,,,		,,,	2370	intervention	delivered
				delivery was not	through a
				through personnel.	_
Out of the 40				unougn personnel.	programmed
patients who					
completed	No	N/A	0%		home based
Of the 37	NO	N/A	078		nome based
patients in					
the	NA	NA	15%	Individual level	Michigan USA
at 3, 6, 9 and	N	N/A	Not	N/A since the	Intervention was
12 months	IN	N/A			
The average			mentioned	intervention	delivered
score of					
users'	No	NI/A	0%		home based
		N/A		N/A since the	
N/A	Ν	N/A	Not	N/A since the	Intervention was
			mentioned	intervention	delivered
After the				deliverv was not	through a
onset of the					
intervention	No	N/A	9% (2/21)		home based
reported			(-/-/		
antihyperten					
sive					
medication					
	Vec		120/	Community lovel	India and China
use-the	Yes	NA	13%	Community level	India and China
distance					
spectacle-					
corrected	NA	NA	NA	Individual level	USA
	Ν	N/A	Not	N/A since the	Intervention was
			mentioned	intervention	delivered
				delivery was not	through a
				through personnel.	programmed

participants					
in the TBP					
group			Not		
lostsignifican	No	None	mentioned		home based
physical	N	physical, role,			
activity-at 6		emotional, and			
weeks and		cognitive			
12 weeks; 🛛		functioning			
		scores were			
Directly after		Physical			
the		Component			
intervention,		Score and			Family practice
participants	No	Mental	12.66%		and home-based
After 2		Assessed. The			The studies took
years, an		intervention			place within the
HbA1c <		did not appear			'Kin-réseau'
7.0% (53	Yes	to have an	46%	Individual level	programme in DR
			11.9% in DRC,		
			14.5% in		
			Cambodia		
			and 64.6% in		
patients (12					
out of 17)					
were					General Practices
positive					in the
about the	NA	NA	15%	Individual level	Netherlands
at 8 weeks	N	significant	Not	N/A since the	Intervention was
		positive	mentioned	intervention	delivered
		changes in		delivery was not	through a
		physical		through personnel.	
		activity can be			software to
current 1-					
week study,					
input of					
meal photos			Not		
was higher	No	No	mentioned		home based
			mentioned		nome based
outcome					
was the					
difference	N.		2524		Primary care
between	Yes	NA	25%	Individual level	clinics
24 week	N		Not	N/A since the	Intervention was
			mentioned	intervention	delivered
				delivery was not	through a
				through personnel.	programmed

performance-					
based			Not		lab and home
measures of	No	No	mentioned		based
				N/A since the	Intervention was
				intervention	delivered
				delivery was not	through a
				through personnel.	programmed
and 3-month					
follow-up,					
daily					
physical	Y	nA	9%	Individual level	NA
patients'					
transition					lab and home
from being	No	No	21%(4/9)		based
after 1 week	Ν	Not mentioned	Not	N/A since the	Intervention was
			mentioned	intervention	delivered
				delivery was not	through a
Significant				Organisational	
results - App				level- Medical staff	
group had				members and	Tertiary care
alower body	No	NA	NA	dietitian enrolled to	facility in Taiwan
On average,					
each user					
has played		N 0		te dividue llaval	
half an hour At least one	NA	NA	NA	Individual level	Not Mentioned
15 minute	N/A	N/A	0	N/A	N/A
15 minute	N/A			N/A	

	Adoption				
Description of	Method to	Level of	Inclusion/exc	Adoption	Organisational
staff who	identify staff	expertise of	lusion	rate of	level
delivered	who delivered	delivery agent	criteria of	delivery	level
intervention	intervention	denvery agent	delivery	agent or	
intervention	(target		agent or	setting	
	delivery agent)		setting	Setting	
	denvery agenty		Setting		
N/A	N/A	N/A	N/A	Process	
				evaluation	
				of the	The intervention
				intervention	was delivered as
				was not	intended.
N/A	N/A	N/A	N/A	N/A	The intervention
					was delivered as
					intended.
		nt using another			
	-	nt support using r			Not reported here
				evaluation	was delivered as
N/A	N/A	N/A	N/A	of the	intended.
				Process	
N/A	N/A	N/A	N/A	evaluation	N/A
					The intervention
					was delivered as
					intended.
N/A	N/A	N/A	N/A	N/A	
					The intervention
					was delivered as
					intended.
A research		The research			The intervention
assistant who		assistant	N 1/2	NI / A	was delivered as
worked closely	Not mentioned	worked closely	N/A	N/A	intended.
					The intervention
					was delivered as
					intended.
N/A	N/A	N/A	N/A	N/A	
were		completed a			The intervention
responsible for		16-hour			was delivered as
prescribing	N/A	training based	N/A	N/A	intended.

	NA	Good	NA	NA	NA
Hosital staff N/A for this study.	Not reported N/A for this study.	Not reported N/A for this study.	Not reported N/A for this study.	NA N/A for this study.	NA The intervention was delivered as intended.
NA	NA	NA	NA	NA	NA
N/A for this study.	N/A for this study.	N/A for this study.	N/A for this study.	N/A for this study.	The intervention was delivered as intended.
					Implemented at the organization level
not mentioned	not mentioned	not mentioned	not mentioned	not mentioned	
research staff	not mentioned	not mentioned	not mentioned	not mentioned	

Doctors and					
nurses	Not reported	High	Not reported	NA	NA
regularly		0	•		
interacted					
with the	N/A	N/A	N/A	N/A	N/A
with the			14/74		
NA	NA	NA	NA	NA	NA
NI/A for this	N/A for this	N/A for this	NI/A for this	N/A for this	The intervention
N/A for this	N/A for this	-	N/A for this	-	was delivered as
study.	study.	study.	study.	study.	
N/A for this	N/A for this	N/A for this	N/A for this	N/A for this	intended. The intervention
					was delivered as
study.	study.	study.	study.	study.	
					intended.
Cardiologists	NA	High	NA	NA	Not reported
was a master's		mactarla			
trained family		master's			
therapist and		trained family	not	not	
was trained by	not mentiones	therapist	mentioned	metnioned	
NA	NA	NA	NA	NA	NA
					have the alternative to the state
Dakah			N	NI-1	but individual clinic
Rehab	l la altra i	l la classi	Not	Not	level intervention,
therapists	Unclear	Unclear	addressed	addressed	not focused on unit

Research staff	NA	NA	NA	NA	NA
					N/A
NA	NA	NA	NA	NA	NA
Numeration					
Nurses at the					
clinic made					Intervention was
the phone and					delivered as
email	N/A	N/A	N/A	N/A	intended
					N/A
N/A for this	N/A for this	N/A for this	N/A for this	N/A for this	The intervention
study.	study.	study.	study.	study.	was delivered as
NA	NA	NA	NA	NA	NA
				Not	
Not reported	Not repored	Not reported	Not reported	reported	Not reported
NA	NA	NA	NA	NA	Yes

				Net	
Not reported	Not	Not reported	Not reported	Not reported	Not reported
		Notreported	Notreporteu	reporteu	Notreported
			not	not	
	not mentioned	not mentioned	mentioned	mentioned	
N/A for this study.	The intervention was delivered as				
study.	Study.	study.	study.	study.	intended.
NA	NA	NA	NA	NA	No
			net	t	
not mentioned	not mentioned	not mentioned	not mentioned	not mentioned	
Not reported	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	No

NA	NA Social media is	NA	NA	NA	Individual level
	a critical tool				
	for				
	dissemination				
	of knowledge,				
	NIA	NIA	NIA		
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA
Not reported	Not reported	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA
INA	NA	NA NA	NA	NA	INA

Not reported	NA	Not reported	NA	NA	NA
NA	NA	NA	N	NA	Individual level
NA			IN	INA	
			not	not	
not mentioned	not mentioned	not mentioned	mentioned	mentioned	
N	N	N	N	N	N
N/A N/A for this	The intervention				
study.	study.	study.	study.	study.	was delivered as
					intended.

A study					The intervention
coordinator					was delivered as
who was					intended.
familiar with					
the			Not		
intervention	Not mentioned	Not mentioned	mentioned	N/A	
	Not mentioned	Not mentioned	mentioned	11,77	
N/A for this	N/A for this	N/A for this	N/A for this	N/A for this	The intervention
study.	study.	study.	study.	study.	was delivered as
					intended.
N/A for this	N/A for this	N/A for this	N/A for this	N/A for this	The intervention
				-	
study.	study.	study.	study.	study.	was delivered as
					intended.
N/A for this	N/A for this	N/A for this	N/A for this	N/A for this	The intervention
study.	study.	study.	study.	study.	was delivered as
Study.	Study.	Study.	Study.	Study.	intended.
					intended.
N1/A	NI / A	N1 / A	NI / A	NI / A	
N/A	N/A	N/A	N/A	N/A	
N/A	N/A	N/A	N/A	N/A	
11/74		N/A	11/7	N/A	
NI / A	NI/A	NI / A	NI/A		
N/A	N/A	N/A	N/A	N/A	
N/A	N/A	N/A	N/A	N/A	

N/A for this study.	N/A for this study.	N/A for this study.	N/A for this study.	N/A for this study.	The intervention was delivered as intended.
N/A for this study.	N/A for this study.	N/A for this study.	N/A for this study.	N/A for this study.	The intervention was delivered as intended.
N/A for this study.	N/A for this study.	N/A for this study.	N/A for this study.	N/A for this study.	The intervention was delivered as intended.
51/0	81/0	N/0	81/6	N/A	N/A
<u> N/A </u>	N/A	N/A	N/A	N/A	<u>N/A</u>
N/A for this study.	N/A for this study.	N/A for this study.	N/A for this study.	N/A for this study.	The intervention was delivered as intended.
N/A for this study.	N/A for this study.	N/A for this study.	N/A for this study.	N/A for this study.	The intervention was delivered as intended.
N/A	N/A	N/A	N/A	N/A	
N/A for this study.	N/A for this study.	N/A for this study.	N/A for this study.	N/A for this study.	The intervention was delivered as intended.
N/A for this study.	N/A for this study.	N/A for this study.	N/A for this study.	N/A for this study.	The intervention was delivered as intended.

N/A for this	N/A for this	N/A for this	N/A for this	N/A for this	The intervention
study.	study.	study.	study.	study.	was delivered as
					intended.
N1 / A	N1/A	N1/A	N1/A	NI / A	
N/A	N/A	N/A	N/A	N/A	
N/A for this	N/A for this	N/A for this	N/A for this	N/A for this	N/A
study.	study.	study.	study.	study.	
N/A	N/A	N/A	N/A	N/A	
Study staff	NA	NA	NA	NA	Individual level
N/A for this	N/A for this	N/A for this	N/A for this	N/A for this	N/A
study.	study.	study.	study.	study.	
N/A	N/A	N/A	N/A	N/A	
N/A for this	N/A for this	N/A for this	N/A for this	N/A for this	N/A
study.	study.	study.	study.	study.	
N/A	N/A	N/A	N/A	N/A	
	-	N/A	N/A	N/A	
	medical	Trainerd			
	students in	Trained			
Community	Tibet	community			
Healthcare	University and	healthcare			Community-
workers	Community	workers	NA	NA	Individual level
	Santa Clara				
Ophthalmologi	Valley Medical	Tertiary			
st	Center	education	NA	NA	Individual level
N/A for this	N/A for this	N/A for this	N/A for this	N/A for this	N/A
study.	study.	study.	study.	study.	

N/A	N/A	N/A	N/A	N/A	
		For mastering			
		the execution			
		of the	Not	Not	
Practice nurse	Not mentioned	intervention,	mentioned	mentioned	
			N/A for this		
			study.		
community-	Staff of the				
based peer	respective				to d'add and the set
educator	centres	NA	NA	NA	Individual level
Nursing staff	NA	NA	NA	NA	Individual level
N/A for this	N/A for this	N/A for this	N/A for this	N/A for this	N/A
study.	study.	study.	study.	study.	,
Research staff	N/A	N/A	N/A	N/A	
	degrees in	bachelor's			
	kinesiology	degrees in			
	and health	kinesiology and			La alta dale - L La - L
Healthcoach	science and/or	health science	NA N/A for this	NA N/A for this	Individual level
N/A for this study.	N/A for this study.	N/A for this study.	study.	study.	N/A
study.	study.	study.	study.	study.	

Research staff	none	none	none	none	
N/A for this	N/A for this	N/A for this	N/A for this	N/A for this	N/A
study.	study.	study.	study.	study.	
Web based	NA	NA	NA	NA	Individual level
			not	not	
not mentioned	not mentioned	not mentioned	mentioned	mentioned	
N/A for this	N/A for this	N/A for this	N/A for this	N/A for this	N/A
study.	study.	study.	study.	study.	,
,,.			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	,.	
Medical Staff					
employed in		Qualified			
the university		medical			
hospital	NA	professionals			Yes
позрітаї	NA NA	professionals			165
NA	NIA	NIA	NIA	NIA	NA
N/A since this	NA	NA	NA	NA	The intervention
was GPS	N/A	N/A	N/A	N/A	was delivered as
was GPS	N/A	N/A	N/A	N/A	was delivered as

Implementation Fidelity of the intervention (%)	Measures of cost of implementation	Individual and organisation level	Maintenance Assessed outcomes ≥ 6 months post intervention	Indicators of program level maintenance	Measures of cost of maintenance
100	Not mentioned	Process evaluation not done.	Only 2-week follow-up	No information provided.	Not provided
100	3 cents per message per participant	Program subscribers found that the	Only 6-week follow-up	No information provided.	Not provided
<pre><40% patients chose to participate with</pre>	relatively inexpensive	Quadratic analyses confirmed a	Compared 3 and 6 months	Part of service provision	Not reported
100	Not mentioned	evaluation not done.	Only 3-month follow-up	No information provided.	Not provided
N/A	Low cost compared to polysomnography	Process evaluation not	N/A	N/A	N/A
reported problems receiving the reminders	Not mentioned	patients wanted to continue using the app	Only 3 months' follow-up post- intervention	No information provided.	Not provided
	Not mentioned				\$314,264 over 2 years
1 patient in the 2nd group did not receive any	Not mentioned	Process evaluation not done.	Only 15 day follow-up	No information provided.	Not provided
100%	Not mentioned	evaluation was done in terms of patients' perceived	Only 3 months' follow-up post- intervention	No information provided.	Not provided
100%	To be reported in the future	evaluation done, not yet reported.	At 10 months	No information provided.	Not provided
		to continue program; 100%			

NA	NA	NA	NA	NA	NA
NA	Nil	NA	Nil	Nil	Nil
100%	Not mentioned	Process evaluation not done.		N/A	Not provided
Not reported	Not reported	NA	NA	NA	NA Aithough hot
					reported here, the authors believe that the costs of
100%	Not mentioned	Process evaluation not done.	Only 1 follow- up after 2 months	No information provided.	Not provided
not mentioned	They were compensated \$50 per assessment excluding baseline.		not mentioned	not mentioned	not mentioned
not mentioned	not mentioned		not mentioned	not mentioned	not mentioned

N	N	N/A	N/A	N/A	N/A
	are needed to install	participants			
	the system in the	felt the	Only 6-week		
80	patient's home	tracking	monitoring	N/A	Not mentioned
NA	NA	NA	NA	NA	NA
	Not mentioned	Process	N/A	No information	No information
		evaluation not		provided.	provided.
	Not montioned	done.	NI / A	Nainformation	No information
	Not mentioned	Process evaluation not	N/A	No information provided.	No information provided.
		done.		provided.	provided.
Not so so to d	N.11		N11	N11	NU
Not reported	Nil	Not reported	Nil	Nil	Nil
	compensated \$25 for each completed		intervention feedback was		
	assessment		done 12 weeks		
not mentioned	(maximum \$100), but		after	not mentioned	not mentioned
			Primary and		
			Secondary		
NA	NA	Individual	outcomes		
Not addressed	Not addressed	N/A	N/A	N/A	N/A

No repoted	Not reported	Nor reported	5 months	NA	NA
		N/A			
NA	NA	NA	NA	NA	NA
	No cost to clinic;				
	USD16 out-of-pocket				
	cost to patient for the		Only 4 month		
100	vaccine	N/A	follow-up	N/A	N/A
			N/A		
	N/A	Process	N/A	No information	No information
		evaluation not		provided.	provided.
NA	NA	NA	NA	NA	NA
Not reported	Not reported	Not reported	Not known	Not known	Not reported
					literreported
96%	NA	NA	NA	NA	NA

Not reported	Nil	Not reported	Not reported	Not reported	Not reported
not mentioned	not mentioned		not mentioned	not mentioned	not mentioned
	N/A	Process	N/A	No information	No information
		evaluation not done.		provided.	provided.
		uone.			
	NA	NA	NA	NA	NA
not mentioned	not mentioned		not mentioned	not mentioned	not mentioned
Not reported	Not reported	NA	Nil	Nil	Nil
NA	NA	NA	NA	NA	NA
Not reported	Not reported	NA	No	Nil	NII
NA	NA	NA	NA	NA	NA

All proposed					
interventions					
were					
implemented	Not performed	Individual	NA	NA	NA
·					
	Cheap and easy to	Nightscout and			
	install, with good	its potential			
	support from CGM	impact on			
	community	outcomes			
	,	current that			
Not reported	Not reported	NA	NA	NA	NA
Not reported	Νοιτεροπεά	NA NA			
			No		
NA	NA	Individual	NA	NA	NA
Not reported	Nil	Not repored	Yes	Not reported	Not reported
Not reported	INII	Not repored	165	Notreporteu	Not reported
	Cost-effective				
NIA	NA	NIA	NA	NIA	NA
NA	NA	NA	NA	NA	NA

Not reported	Nil	NA	NA	NA	Nil
- Hot reported					
All proposed					
interventions					
were					
implemented	Not performed	Individual	NA	NA	NA
not mentioned	not mentioned		not mentioned	not mentioned	not mentioned
Ν	Ν	Ν	N	Ν	Ν
			No, just a focus group with		
No	No		small patients	No	No
100%	Not mentioned	Process	N/A	No information	No information
		evaluation not		provided.	provided.
		done.			

		Process			
		evaluation not			
		done.			
100%	not mentioned		No	None	Not mentioned
	N/A	Process	N/A	No information	No information
		evaluation not		provided.	provided.
				provided.	provided.
		done.			
100%	Not mentioned	Process	N/A	No information	No information
		evaluation not		provided.	provided.
		done.			
	Not mentioned	Process	N/A	No information	N/A
		evaluation not		provided.	,
		done.		providedi	
		uonei			
	Not mentioned	N/A	N/A	N/A	N/A
	Not mentioned				
No	No		No	No	No
No	No		No		No
No	No		No		No

	N/A	Process evaluation not done.	N/A	No information provided.	No information provided.
	Not mentioned	Process evaluation not done.	N/A	No information provided.	N/A
	Not mentioned	Process evaluation not done.	N/A	No information provided.	N/A
100%	Not specified but noted to be	in the intervention group reported satisfaction with the SMS-	Only 1-month	N//A	NI/0
100%	inexpensive	with the SIVIS-	follow-up	N/A	N/A
96%	Not mentioned	Process evaluation not done.	N/A	No information provided.	N/A
	Not mentioned	Process evaluation not done.	N/A	No information provided.	N/A
No	No		No	No	No
Not mentioned	Not mentioned	Process evaluation not done.	N/A	No information provided.	N/A
	Not mentioned	Process evaluation not done.	N/A	No information provided.	N/A

	Not mentioned	Process	N/A	No information	N/A
		evaluation not		provided.	
		done.			
No	No		N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A
,	,	,	,	,	,
N/A	N/A		N/A	N/A	N/A
All proposed					
interventions					
were	Not performed	Individual	NA	NA	NA
N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A		No	No	No
N/A	N/A	N/A	N/A	N/A	N/A
	,	,	,	,	,
N/A	N/A		No	No	No
	,				
All proposed					
All proposed					
interventions					
were					
implemented	Not performed	Individual	NA	NA	NA
interventions					
were					
implemented	Not performed	Individual	NA	NA	NA
N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A		N/A	N/A

N/A	N/A		No	No	No
Not mentioned	Not mentioned		Not mentioned	Not mentioned	Not mentioned
Not mentioned	Not mentioned		Not mentioned	Not mentioned	Not mentioned
All proposed interventions					
were					
implemented	Not performed	Individual		NA	NA
all proposed					
interventions					
were	Networfermend	te altriation l			NA
implemented N/A	Not performed N/A	Individual N/A	NA N/A	NA N/A	NA N/A
N/A		N/A		NA	
Not mentioned	Not mentioned		Not mentioned	Not mentioned	Not mentioned
all proposed					
interventions					
were	Not porformed	Individual	NA	NA	NA
implemented N/A	Not performed N/A	N/A	NA N/A	NA N/A	NA N/A

Not mentioned	Not mentioned		Not mentioned	Not mentioned	Not mentioned
N/A	N/A	N/A	N/A	N/A	N/A
NA	Not performed	Individual	NA	NA	NA
Not mentioned	Not mentioned		Not mentioned	Not mentioned	Not mentioned
N/A	N/A	N/A	N/A	N/A	N/A
All proposed					
interventions					
were implemented	Not performed	NA	NA	NA	NA
Implemented	Not performed				
NA	NA	NA	At 6 months	None	N/A
	Not specified but	Process	Only 5 month		Not specified
100	inexpensive due to	evaluation not	follow-up	Not mentioned	but inexpensive

	s the study answer	the review questio	n(s)		
Question 1 How is mHealth being used	Question 2	Question 3 Lessons learnt	Question 4		
for healthy	Effective	from	Good		
ageing?	implementation	implementation	evidence?	Limitations and	
(Y/N)	model (Y/N)	(Y/N)	(Y/N)	challenges	Lessons learnt
				Narrow range	Daily assessment of
				of depressive	, mood ratings may
				symptoms, low-	provide accurate
				income	indication of
Y	N	Y	Ν	minority	longitudinal
				generic and not	replacement of
				tailored	email and web-
Y	Y	Y	Ν	according to	based counselling Develop milealth
	N	Ň			
Y	Y	Y	N	long-term	apps and services
				messages were	improve
Y	Y	Y	Y	found to be	medication
				The current	Smartphones have
Y	Y	Y	Ν	application is	the potential to
				to iOS and	automatically
				Android	collects and sends
				interfaces,	data to developers
Y	Y	Y	Ν	small sample	is needed, the app
					mobile RCTs are
					quick and cost-
N	Y	Y	Y		effective, but
				Clinical	Bi-directional text
				outcomes were	messaging as well
Y	Y	Y	N	not	as text message
				randomised	intervention has
				equally into	potential to
				both groups,	improve physical
Y	N	Y	N	small sample	activity following
				patient data	peer education and
				could not be	multidisciplinary
Y	Y	Y	Y	collated due to	care enhanced by
				small sample	designed for
Y	N	Y	N	size,	resource-poor
				uncontrolled	

Y	N	N	N		
N Y	N Y	N Y	N N	Patients only used for 2 hours. program director emphasis on	Nil mHealth DSS was efficacious for the management
N	N	Y	N	the NP (nursing Not RCT, small sample	of obesity and High attrition. Ipad is feasible with comparable retention rates
N	Y	Y	Y		
Y N	N Y	Y Y	N Y	The small size was very small that limited the	shorter, more regular periods of physical activity The application smart quit 2.0 had high user
Y	Y	Y	N	precision of the small sample, testing a prototype	receptivity, modest can be achieved among those with minimal game experience and mese order adurts
Y	N	Y	N		viewed the mHealth technology positively
Y	Ν	Y	Y		
Y	N	Y	Y		

				recruitement	
				mechanisms	
				are unicear	
				(university	
Y	N	N	Y	clinic) and may	
Ť	IN	IN	ř		
				training. Lack	
				of blinding.	May be usefl
				Confounded by	supppleme nt to
N	Y	Y	N	other activities	patient edcuation.
				of the tracking	challenges in
				system is	implementation of
Y	N	Y	N	subject to	the UbiTrack
				intervention	UCD in the
Y	Ν	Y	N	was brief at 6	development of the
				months. The	Web application
				ongoing	rocultod in a tool
Y	Ν	Y	N	Self-reporting	Combination of
				bias, the	smoking cessation
				information on	medication with
N	Y	Y	N	underrepresent	smartphone apps
				ation of	are an effective
				minorities,	means to improve
v		•			N.11
Y	N	N	N	Not reported Questions were	Nil Dationto con orallu
					Patients generally
Y	X	v		based primarily	have a positive
Y	Y	Y	N	on a survey of	attitude towards
				the patient's	mobile health apps
				immediate	[19], including for
				definitive trial	phone intervention
				and was not	is feasible,
Y	Y	V	V	powered to	acceptable, and
Y	Y	Y	Y	detect	may enhance the
				from one	
				transplant	
				centre, health	
Y	Y	Y	Y	indicators	wireless sensors to
Y	Ν	Ν	N	prototype	measure symptoms
				ceased when	highlight
				no difference	unanticipated
Y	Y	N	N	found between	service issues. For

				5 months.	
				Relaively high	Nood to last st
				rincomes and	Need to look at
Y	X	N	N/	large	longer term
Y	Y	Y	Y	proportion of	maintenance
					sensor data and
Y	N	N	N		neiral networks
м	•.				mounted in the
Y	N	N	N		iPhone 4 [®] is
					aufficiently relieble
Y	•			Small purposive	N.''I
Y	N	N	N	sample. Needs	Nil SMS can be
				Subjects drawn	
				from health	effective but more
Y	N	Y	NI	system's	robust studies are
Y	Y	Y	N	electronic Shortage of	needed SMS and email
				vaccine	reminders are
				availability	effective in patient
Y	Y	Y	Y	following first	uptake of
•	•	•		significant	feedback for gait
				differences	wasn't significanty
				between	different across
Y	Y	Y	N	groups, findings	
Y	N	Y	N	Self-reporting	Advancing
•	i N	•		bias, not	knowledge of
				5103, 1101	Knowledge of
Y	Y	Y	Ν		
				criteria as	preferred mode,
					•
				English only,	but SMS preferred
Y	Y	Y	Y	majority were well educated	by more tech savvy
Y	ř	ř	ř	measure clinical	and young
				outcomes such as stroke or	
Y	Y	N	N	bleed.	Nil
T	T	IN	IN	Lean mode of	Interrogative plus
				the	social context
Y	Y	Y	Y		
ŕ	ſ	ſ	ſ	intervention, Small	messages are more
Y	Y	Y	N		
Ŷ	r	r	Ν	qualitativer	
				study, but done	

				Many patiens	Low adherence in
				were	group with poor
				vulnerable.	glycaemic control
Y	Y	Y	Y	16% drop out.	at baseline.
				majority was	not significantly
				femalestudy	related to
Y	Y	Y	N	participants	adherence.
N	Ν	Y	N	The sample size	iSTEP intervention
				was very small	is feasible to
				so that the	administer which
				findings cannot	can make high
				Observational,	
				no control	Further research
N	Y	Y	N	group therefore	needed
					clinical data are
				low numbers,	improvements
				no control at 2	achieved from
Y	Y	Y	Y	year follow-up,	baseline to two
Y	Ν	Y	Y	USA trucking	
				industry only	
Y	N	N	N	Nil reported	Nil
				criteria of	end users,
				ability to use	assessment of their
				the sensors,	needs and
Y	Y	Y	Y	alerts and	expectations on the
				inclusion	support may help
				criteria in terms	people to stay
Y	Y	Y	Y	HbA1c for	engaged and feel
				diabetic	supported,
				notionto nocod	importent to
				selection bias,	
Y	Ν	N	Y	self report, no	No
				Short follow-up	Mobile reminders
				period of three	can work at a
				days, baseline	primary care level
Y	Y	Y	Y	health seeking	in a LMIC

				calibration was	become a useful
				not possible.	tool for
				use of	professionals in
Y	Y	Y	NI		•
Ŷ	Ŷ	Ŷ	Ν	consecutive	their daily clinical
				process ensures	particularwere
Y	N	Y		that the sample	quite popular,
Y	Y	Y	Ν	of individuals	interestingly not
				acquired	only for the
				connot ha	caragivare but alca
				allocation so	multiple stressors
				could not focus	related to their
				on reasons for	personal, family,
				particular trial	socio-economic
Y	N	Y	N	outcomes.	circumstances and
				up period might	rate indicatse older
				not be long	patients can adopt
Y	N	Y	Y	enough to	a new and
				evaluate the	advanced
				long torm	tooknology and
				Non-	
				intervention	
				study, mostly	
Y				about	
Y	N	N	N	describing the duration of the	tailored text
				intervention	messaging is a
Y	Y	Y	Y	was only 6	promising approach
				text messages.	
				Also given	
Y	Y	Y	Ν	prescription	NA
				may not have	physical activity,
				had enough	but increased self-
				increasing	efficacy and self-
Y	Ν	Y	Y	intensity in	reported physcial
				12 weeks,	promoted clinically
				sample size	meaningful weight
				small, no	loss over 12 weeks
				formal	compared with an
				evaluation of	attention-matched
Y	Y	Y	Y	scalability and	control group and
Y	Ν	N	Ν		

				Cmall new	1
				Small non	
				random	
				sample. No	older patients used
Y	Y	N	N	control.	the app.
				the	data suggested that
				initial and	evaluation
				follow-up	participants found
				evaluation may	the app feedback
V	V	V	N		
Y	Y	Y	N	not be	helped them
Y		•			
Y	N	Ν	Ν		
Y	Y	Y	N	11	
				medication	The
				intake needed	interventions
				to be confirmed	improved all the
				via iPad, length	related types of
Y	Y	Y	Y	of study was	adherence, though
					Designing apps for
N/		v		Too little, too	elderly. Elderly has
Y	Y	Y	Ν	short,	more femalse but
				-	this cohort has less.
Y	Y	Y	N		
	-				
				,	,
				patients for	integrate home
				longer period	based
				would allow	measurements into
				evaluation and	EMR and use for
Y	Y	Y	Y	impact on	self-management
N	Y	Y	N	lack of	Text messaging
			-	statistical	mHealth
				power and	application can
				small sample	reach those most in
				Lack detailed	Use of focus groups
Y	Y	Y	Y	individual-level	to collaboratively
				data for	create the study
				evaluating	protocol and the

				Small sample	
					Structured exercise
				size, uneven	
				randomisation	interventions can
				of participants,	control sarcopenia
				lack of	and CVD risk factors
Y	N	Y	N	generalisability	in the elderly
				Limited	these technologies
Y	Y	Y	N	sampling, Brief	can be used to not
				limited	only send
Ŷ	N	Y	N	short duration,	the involvement of
•				no subgroups	health care
N	Y	Y	N	Not mentioned	
N	Y	Y	N	Participants	the intervention
				were relatively	using the STARFISH
				young &	app can increase
				recruited from	step/day, walking
				local support	time and reduced
N	Y	Y	N	1) this was not a	
	•	•		controlled	
				study, it	
N	Y	Y	N	Participants	the augmented
IN	T	T	IN		
				might have underestimated	application as a tool to help people
				the	
N	N	N N	NI		with
N	Y	Y	N	1) To receive	text-messaging
				this	intervention to
				intervention	increase physical
Y	Y	Y	N		
				1) reliance on	1) providing
				self-reported	feedback to an
					informal caregiver
				have biased the	substantially
Y	Y	Y	Y	results.	increased patients'
				1) limited the	1) Despite the
				multivariate	favorable findings,
Y	Y	Y	Y	analyses of	IVR cannot fully
				conducted	increased
				among VA	CarePartners'
				among VA patients who	CarePartners' involvement

N	Y	Y	N	1) Possibility of	health systems
	•	•		patients being	using
				biased about	mHealth
				their	
					approaches should
				medicaction	consider creative
				adherence	ways to engage
N	Ν	Y	Ν	the sample size	Users perceived
				was very small	the app as user-
				in the first	friendly and helpful
				study, raw data	to obtain health
N	Y	Y	Y		smartphone-based
					behavior
					monitoring
					software helped
				intervention	SMS reminders are
				was not	effective in
				developed	improving aspirin
				around a	adherence
N	Y	Y	N	theoretical	following coronary
					WellDoc System is
				Pilot study with	an effective tool for
				its own	real-time support,
Y	Y	Y	Y	limitations	education and data
Y	Y	Y	Y	the sample was	patients with CHD
				recruited from	were engaged with
				a tertiary	and positive about a
				hospital that	text message
Y	Y	Y	N	small sample	Happy is usable and
				size and study	might help users
				design limits its	change
				generalizability,	their behaviour
				was limited	demonstrate that
				2) participants	newer self-
Y	N	Y	Y	were followed	monitoring
				adjusted for	mHealth is a
				multiple	promising
Y	Y	Y	N	comparisons	technology for LMIC
N	Ŷ	Ŷ	N		Mood and activity
					monitoring is well
					tolerated by
N	Y	Y	N	1) The findings	Use of mobile
				of the study	tablet in medical
				were not	practice can draw a
					-
				generalizable to	positive impact
				allproviders and	upon overall

				Non	Digital therapeutics
				Randomized	can produce a
				uncontrolled	sustained
Y	Y	Y	Y	single arm	behaviour change
N T	Y	Y Y	N N	1) All the	1) physical activity
i N	•	•		patients were	showed a
				recruited from	significant
				the close ward,	association with
				results might	positive symptoms
				sample size. 2)	strategies seemed
				different	to be more
				recruitment	effective to
Y	Ν	Y	Y	methods and	stimulate the
Y	Y	Y	N	1) selection	the use of the
				bias; 2)	WelTel SMS
				generalisability	support
				and	intervention as a
					The reasons
					for not recording
Y	Ν	Y	N		stepswere being on
				Measuring	Text interventions
				adherence by	are feasible in
Y	Y	Y	Y	self-report is	patients with
Y	Y	Y	Y	recruited	The addition of a
				sample from a	personal digital
				1) The sample	1) Patients who
				size was small	believe in
Y	Y	Y	Y) and the	traditional Chinese
Y	Ν	N	N	this application	the mobile phone
				was not as easy	application (non-
				toexplain the 1) small	blood based CVD 1) including gaming
				number of	elements and SMS-
Y	N	Y	Y	participants	text in an
	IN			be	cardiovascular
				generalizable to healthcare	management
					program's
) (N		N N	settings without	
Y	Y	Y	Y	existing or	increasing the
				size and clinic	smartphone based
				based	telemedicine to
Y	Y	Y	Y	population	screen for referral-
Y	Ν	Y	N	short duration,	participants found
				single-arm	the Bite Counter
				design, two vs.	easy to use and
				three days of	that use was

				was	alsoentered the
				conductedin	study with their
				mostly white	own mobile device,
Y	N	Y	Y	women in a	meaning theydid
N	Y	Y	N	lack of	mHealth with
N.	•	ľ		assessment of	pedometer might
				adherence to	not
					have substantial
				each	
				intervention the mean	superiority for most Ideally, a 12-month
				baseline	follow-up is
				physical	recommended [48].
Y	Y	Y	Y	activity was	Due to
		Y		activity was	
N	N	Y	N		
					study did not show
				High rates of	a benefit
				Loss to Follow-	of adding the
Y	Y	Y	Y	Up	mHealth
N	Ŷ	N	Y	Limitations was	
N.	•	in in	•	related to study	
				design, data	
				collection and	
				conection and	stimulated patients
					to
				Small sample	become more
				cizo and a nilot	
v	v	v	v	size and a pilot	physically active
Y	Y	Y	Y	study	and supported
Y N	Y Y	Y N	Y Y	study 1) it	and supported mHealth
				study 1) it was designed as	and supported mHealth technologies such
				study 1) it was designed as a feasibility trial	and supported mHealth technologies such as
				study 1) it was designed as a feasibility trial with limited	and supported mHealth technologies such as internetconnected
				study 1) it was designed as a feasibility trial	and supported mHealth technologies such as internetconnected accelerometers can
				study 1) it was designed as a feasibility trial with limited	and supported mHealth technologies such as internetconnected accelerometers can study, participants
				study 1) it was designed as a feasibility trial with limited	and supported mHealth technologies such as internetconnected accelerometers can study, participants often thought that
				study 1) it was designed as a feasibility trial with limited efficacy	and supported mHealth technologies such as internetconnected accelerometers can study, participants often thought that small portions did
N	Y	N	Y	study 1) it was designed as a feasibility trial with limited efficacy a small	and supported mHealth technologies such as internetconnected accelerometers can study, participants often thought that small portions did not contain
				study 1) it was designed as a feasibility trial with limited efficacy	and supported mHealth technologies such as internetconnected accelerometers can study, participants often thought that small portions did not contain enough calories to
N	Y	N	Y	study 1) it was designed as a feasibility trial with limited efficacy a small	and supported mHealth technologies such as internetconnected accelerometers can study, participants often thought that small portions did not contain enough calories to between-group
N	Y	N	Y	study 1) it was designed as a feasibility trial with limited efficacy a small	and supported mHealth technologies such as internetconnected accelerometers can study, participants often thought that small portions did not contain enough calories to
N	Y	N	Y	study 1) it was designed as a feasibility trial with limited efficacy a small	and supported mHealth technologies such as internetconnected accelerometers can study, participants often thought that small portions did not contain enough calories to between-group
N	Y	N	Y	study 1) it was designed as a feasibility trial with limited efficacy a small 1-week study,	and supported mHealth technologies such as internetconnected accelerometers can study, participants often thought that small portions did not contain enough calories to between-group difference in
N Y	Y	N	Y	study 1) it was designed as a feasibility trial with limited efficacy a small 1-week study, Reliability on	and supported mHealth technologies such as internetconnected accelerometers can study, participants often thought that small portions did not contain enough calories to between-group difference in improved
N Y Y	Y	N Y Y	Y N Y	study 1) it was designed as a feasibility trial with limited efficacy a small 1-week study, Reliability on HbA1c	and supported mHealth technologies such as internetconnected accelerometers can study, participants often thought that small portions did not contain enough calories to between-group difference in improved glucoregulation,
N Y Y	Y	N Y Y	Y N Y	study 1) it was designed as a feasibility trial with limited efficacy a small 1-week study, Reliability on HbA1c small sample	and supported mHealth technologies such as internetconnected accelerometers can study, participants often thought that small portions did not contain enough calories to between-group difference in improved glucoregulation, electronically

				generating	
					not observe robust
				questions	group differences
Y	Ν	Y	N	for follow-up	between the
Y	Y	Y	N	lack of	User-centered
				monitoring	design enabled us
				about the using	to target the
				hour of mobile	unique needs of
				could have	using
				been	Web-assisted
				introduced in	interventions for
Y	Y	Y	Y	the study	increasing physical
•	•	•	•	The patient	1) The findings of
				sample was	this study show that
v	N	V	N		-
Y	N	Y	N	recruited within	
Y	Y	Y	Ν	selection bias,	people with severe
				small sample	mental illness are
				size,	willing and able to
				App was not	Provides a feasible
				regulated by	solution to the
				medical	challenge of post-
Y	Y	Y	Y	authorities in	operative
					a better game
					adoption by
				Small sample	the elderly as well
Y	Y	Y	Ν	size	as an improved
				Small sample	Obtaining highly
Y	Ν	Y	Ν	size, incomplete	
				, ,	,

			1		
Comments					
Future research is					
needed to inform if					
daily mood ratings					
can guide					
treatment					
the survey and					
data analysis was					
conducted way be more					
effective to offer					
individualized IV/R					
evaluation of the					
intervention is					
This study					
describes					
adverse events and					
other chronic					
conditions should					
be added to the					
A process					
evaluation is					
needed to					
participants should					
be better					
addressed					
accounting for					
care programs					
should be provided					
to patients	 	 		 	
scalable,					
unidirectional text					

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Not trial.					
Descriptive study					
with very small					
sample.					
Sumple.					
against RE-AIM					
framework as not					
developed in a					
To make a					
significant					
comparable inference, study					
interence, study					
shoulld we					
exclude? Since this					
was a feasibility					
study of the					

a clinical setting,				
hard to place				
within RE-AIM as it				
ws developed and				
trialled outside				
Good quality				
тиорпе пеанн				
technology				
(mHealth) has the				
potential to link				
the community				
Need to consider		 		
the group of				
minorities,				
Poor quality study				
with high risk of				
bias				
Aware of ease of				
use and care safety				
of eHealth home				
monitoring, with				
well proven				
using this				
technology in				
regular				
smartphones is				
demonstrated a				
cignificant increase				
conceptualisation				
of the study - they				
have used patient				

	1		1	1	
Good study but					
short duration.					
clearly points to					
the suitability of					
Small descriptive					
study.		 			
Small sample					
RCT should be					
conducted Patient nearth					
Engagement Scale					
(PHE-S), Patient					
Activation Measure					
cannot be					
generalized as it is					
a part of another					
RCT, therefore		 	 		
Nil					
Authors					
investigated					
whether a question					

·				
Good study. Short				
duration follow up.				
Sample size should				
be large and need				
a strong				
monitoring system Web-based multi-				
platform weight				
management is				
This is a pilot study				
which needs to be				
validated in a				
larger study				
for positive				
changes in both				
study groups.				
Control group				
notionto mou hour				
No				
first randomized				
trial in a real-world				
primary care setting				
of a developing				

					r r
mobile					
device-based					
hearing handicap					
calculator available					
Are III-considered					
responses or					
behaviour more					
likely online?					
When describing					
the menth and					
Good qual study					
Approach may					
have relevance for					
gait monitoring,					
step counting, and					
sedentary					
Tailored text					
messages					
NA					
Cost-benefit					
analysis was					
limited in this case					
short duration					
study, but provides					
an insight into the					
wireless					
automated data					
transfer	 		 		

[
Small study					
Small study without control.					
Small sample and					
short duration					
study, but provides					
an insight into					
usability of the App.					
Elderly patients					
with no previous					
experience with					
ICTs are capable of					
I					
Need to make the				ļ	
sample size larger,					
need to strengthen					
the monitoring Study sample	The			ļ	
derived from a					
clinic-based	findings of the				
population for	current				

African-American				
patients with type				
2 diabetes				
No inclusion				
criteria was				
mentioned, the				
study did not				
age group of the				
participants need to consider on the				
basis of mean age				
when the				
HF randomized				
results are also				
presented in below				

Very small sample size				
into the individual				
aspects of mHealth are needed				

r			1		
Further					
investigation at a					
scale is needed					
There was no					
mention abouy					
power calculation					
which is needed					
Use of cell phones					
is increasing					
dramatically, and					
an an actoury, and				 	
cardiovascular					
management					
model tested in					
the SimCard study					
has the potential					
needed to assess					
the sensitivity and					
specificity of this					

		-			
The intervention					
tool appears to be					
a feasible in					
primary care level					
nrimany					
primary					
care can improve					
the glucose					
management of					
a study design of					
RCT with a					
representative					
sample can give a			l		

high income						
country with high						
internet usage						
among elderly.						
Participants' ability		 				
to receive the						
intervention						
This is a pilot study			ļ			
which needs to be						
validated in a						
larger study						
Use of tablets and						
the constitution of						
serious games for						
seniors in close						
Further testing of						
this intervention		 				
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	L	ļ		ļ	ļ	
	L	ļ		ļ	ļ	
		ļ		ļ	ļ	
			I			

					Study		Number	Informed
			Year of		type	Overall	of	consent
Article	Co-	Title of	publicatio	Journal	(eg:	duration	groups/	obtained
no.	reviewer	article	n	name	RCT)	of study	sites	(Y/N)
		The		Internatio				(-/-/
		effect of		nal				
		short		Journal	Randomis			
		message		of	ed	Not		
		system		Medical	controlled	mentione		
5	Mark	(SMS)	2017	Informatic	trial	d	3	Y
		g a fully		BMJ	ed			
		mobile		Innovatio	clinical			
8	Teng	and	2016	ns	trial		3	Y
		wireless		Technolog	label			
		Tijuana:		y &	randomis	30		
11	Padma	А	2016	Therapeut	ed	months	3	Y
		Phone			, single-			
		Text			blind, 3-			
		Messages			arm			
		to		Circulatio	randomis	12		
20	Teng	Support	2016	n	ed	months	3	Y
		ed,		Drug and	Randomis			
		controlled		Alcohol	ed			
		pilot trial		Dependen	controlled			
24	Mahfuz	of a	2014	се	pilot trial	2 months	2	Y
		mHealth		Journal	ed 3-arm			
		Technolog		of	behaviour			
		y to		Preventiv	al clinical	24		
27	Jitendra	Enhance	2012	e Dreventiv	trial Dilet	months	3	Y
		The SMARTER		Preventiv	Pilot randomis			
		pilot		e Medicine	ed			
28	Jitendra	study:	2017	Reports	eu clinical	12 weeks	3	Y
20	JILEHUIA	ed Trial	2017	Journal	Chinical	IZ WEEKS	5	I
		of a Fitbit-		of	Randomis			
		Based		or Preventiv	ed			
		Physical		e	controlled			
29	Ben	Activity	2015	e Medicine	trial	16 weeks	2	Y
	2011	ng	2010	Journal	Randomis	20 11 66 110	_	
		psychoed		of	ed			
		ucation		Affective	controlled			
41	Jitendra	with a	2015	Disorders	trial	6 months	2	Y
		Randomiz		Journal	Randomis			
		ed		of	ed			
		Controlle		Transplan	controlled			
42	Padma	d Trial of	2016	tation	trial			

		Diabetes		Journal				
		Preventio		of	Randomis			
				-				
		n Inton conti		Preventiv	ed			
40	N A a sele	Interventi	2015	e Mariaina	controlled	4	1	V
49	Mark	on Using The	2015	Medicine	trial Randomis	4 months	1	Y
		effect of			ed			
		various			controlled			
55	Jitendra		2015	Vaccine	trial	4 months	6	N
55	Jitenura	types of	2015	vaccine		4 monuns	0	IN
					randomis			
		reminders		Preventiv	ed			
		for		е	controlled			
61	Padma	cancer	2012	Medicine	trial	6 months	2	Y
		Harnessin		American	Assessme			
		g the		Journal	nt of			
63	Padma	question-	2016	of Public	effectiven	6 months	5	Y
		consultati		Journal	Randomis			
		ons as		of	ed			
		add-on to		Endocrino	controlled			
65	Mark	standard	2017	logy	trial	8 months	3	Y
		managem		Obstetrici	follow-up			
		ent of		a et	ofa			
		stress		Gynecolo	randomis	24		
71	Jitendra	urinary	2017	gica	ed	months	2	Y
, <u>,</u>	Jicenara		2017	-	cu	montens		•
		Web app		Journal				
		to self-		of	Randomis			
		manage		Medical	ed			
		low back		Internet	controlled			
74	Teng	pain:	2015	Research	trial		3	Y
		Diabetes		Journal	Randomis			
		Patients		of	ed			
		Benefit		Medical	controlled			
77	Padma	from the	2016	Systems	trial	6 Weeks	2	Y
		oring and		Journal				
		mobile		of	Randomis		3 for	
		phone-		Medical	ed		each	Y
		based		Internet	controlled	12	disease	
78	Teng	health	2015	Research	trial	months		
	0	and		of	ed	12		
80	Mark	reliability	2014	Medical	repeated	months	1	Y
	Mark	Effect of	2014	Preventiv	Randomis	months	-	•
		mobile		e	ed			
		reminders		e Medicine	controlled			
81	Padma	on	2015	Reports	trial	11 days	2	Y
01	rduilid	orial	2012	Reports	tildi	11 days	2	
		interventi			Randomis			
				Acto				
		on in		Acta Diabatala	ed			
0.0	T = -= -	diabetes	2010	Diabetolo	controlled	Currently	2	V
88	Teng	care	2016	gica	trial	6 months	2	Y

90PadmaInteractiv e Text2015Journal controlledcontrolledmonths2Y91Presenti onJournal ofedededinterventi controllededinterventi controllededinterventi controllededinterventi controllededinterventi controllededinterventi controllededinterventi controllededinterventi controllededinterventi controllededinterventi controlledinterventi <b< th=""><th></th><th></th><th>Tailored,</th><th></th><th>The</th><th>Randomis</th><th></th><th></th><th></th></b<>			Tailored,		The	Randomis			
90Padmae Text2015Journalcontrolledmonths2Yinterventiinterventiinterventiinterventiinterventicontrolledinterventi2Y93Benincreases2015etrial24 weeks2Y93Benincreases2015etrial24 weeks2Y94Benincreases2015etrial24 weeks2Y95Padmaweightinc-basedne-basedne-basedne-basedincinc96Padmaweight2015Obesityinterventi12 Weeks2Y96Padmaweight2015Obesityinterventi12 Weeks2Y103jitendratherapy2016Medicinetrialinterventi1Y103jitendratherapy2016Medicinetrialinterventiyy104jitendraunderserv2014einfrastruc9 monthsyy108jitendramessagereculationinfrastruc9 monthsinfrastrucinfrastrucinfrastrucyinfrastruc <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td>12</td><td></td><td></td></t<>							12		
93 Ben interventi interventi on Journal of Preventiv controlled Randomis ed preventiv controlled 24 weeks 2 Y 93 Ben increases 2015 e trial 24 weeks 2 Y 94 Ben of SmartLoss a asmartpho ne-based a asmartpho ne-based a asmartpho 96 Padma weight 2015 Obesity interventi 12 Weeks 2 Y 96 Padma mobile applicatio n Amobile applicatio n asmartpho crossover usability 1 Y 103 Jitendra therapy 2016 Medicine trial 1 Y 104 health infrastruc aspicatio n asmartpho assover usability assover usability assover were assover were 108 Jitendra medersev 2014 e infrastruc assover 9 months d from Y 108 Jitendra Structure a Randomis ed assover assover assover assover 110 Teng 2017 Cancer trial 4 months 4 Y 129 Jitendra Engageme m medical	90	Padma		2015				2	Y
93interventi oninterventi Preventiv controlled preventiv trial24 weeks2Y93Benincreases2015etrial24 weeks2Y94SmartLosSmartLosaasmartLosasmartLosySM, aSmartLosincreases2015Obesityinterventi12 Weeks2YincreasePadmaweight2015Obesityinterventi12 Weeks2Y96Padmaweight2015Obesityinterventi12 Weeks2Y96Padmamotioninterventi12 Weeks2Yinterventiinterven									
93on increasesPreventiv controlledcontrolled24 weeks22Y93Benincreases2015etrial24 weeks2Y94ofSmarthosSmarthosSmarthossmarthobne-basedme-basedweight1196Padmaweight2015Obesityinterventi12 Weeks2Y96Padmameibased2015Obesityinterventi12 Weeks2Y96PadmameibasedControlledrespective1Weeks2Y96PadmameibasedControlledrespectiverespective1Weeks2Y96PadmameibasedControlledrespectiverespective7YY96PadmameibasedControlledrespectiverespective7Y96PadmameibasedControlledrespectiverespectiverespectiveYY96Padmatherapy-2016MedicinetrialrespectiverespectiveYY9103Jitendratherapy-2016Medicinerinfastruc9monthsd fromY9104ture to supportsupport2017Cancertrialrespectiverespectiverespectiverespectiverespectiverespectiverespectiverespectiverespectiverespectiverespectiverespective									
93Benincreases2015etrial24 weeks2Y0of SmartLosSmartLos SM, a smartpho ne-basedaaabbb96Padmaweight weight2015Obesityinterventi12 Weeks2Y96PadmaMobile applicatio naCoessityinterventi12 Weeks2Y103Jitendratherapy-2016Medicinetrial1Y103Jitendratherapy-2016Medicinetrial1Y103Jitendratherapy-2016Medicinemsyy103Jitendratherapy-2016MedicinemHalthsyy104nortersev2014eof infrastrucrticipantsyy108Jitendraundersev2014emelathsyyy109TextfromYCancertrial9 monthsdfromY110Tene2017Cancertrialayyyy110Teneatomate2016ehealthtrial4Yy129Jitendraatomate2016ehealthtrial4Yy129Jitendraatomate2013Careefa iNRnonthsAY129Jitendraetahance2013<									
of a a smartLoss smartpho SM, a smartpho ne-based weight loss interventi 12 Weeks 2 Y 96 Padma weight 2015 Obesity interventi 12 Weeks 2 Y A mobile applicatio n Crossover usability 1 Y 103 Jitendra therapy- 2016 Medicine trial 1 Y 103 Jitendra therapy- 2016 Medicine trial 1 Y 103 Jitendra therapy- 2016 Medicine trial 1 Y 104 health infrastruc g were recruite were 108 Jitendra underserv 2017 Cancer trial - - 108 Jitendra Engageme recruite atomoths d - - 110 Text restaue controlled controlled - - - 127 Jitendra </td <td>93</td> <td>Ren</td> <td></td> <td>2015</td> <td></td> <td></td> <td>21 weeks</td> <td>2</td> <td>v</td>	93	Ren		2015			21 weeks	2	v
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129Jitendraautomate2013Caree of a IVRmonthsN/AYRandomiz ed TrialRandomiz ed Trialededediiii130JitendraHealth2015CareeffectivenMonths2Y130JitendraHealth2015CareeffectivenMonths2Y130JitendratofQualitativ relemediceiii130JitendratcareofQualitativ eiiii130Jitendratcareine and ine andevaluatioiiii134Mahfuzsmartpho2016Telecare ine andn of a RCT6 months2Y134Mahfuzsmartpho2016Telecare ine andiiiii134Mahfuzsmartpho2016Telecare ine andiiiii134Mahfuzsmartpho2016Telecare ine andiiiiii134Mahfuzsmartpho2016Telecare ine andiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiii			Engageme			Patient			
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experienc es in aTelemedic ine and ine and evaluatioevaluatio evaluatioevaluatio evaluatio134Mahfuzsmartpho2016Telecare Diabetesn of a RCT6 months2YWellDoc™DiabetesDiabetesrechnolog RandomisRandomis ed1111diabetesy & managemTherapeut controlledcontrolled1111			t		of	Qualitativ			
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134Mahfuzsmartpho2016Telecaren of a RCT6 months2YWellDoc™DiabetesDiabetesKKKKKKKKIndiabetesManagemY&edKK </td <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>									
WellDoc™DiabetesmobileTechnolog Randomisdiabetesy & edmanagemTherapeut controlled	134	Mahfuz		2016			6 months	2	Y
mobileTechnologRandomisImage: Controlleddiabetesy &edImage: ControlledImage: Controlled									
diabetesy &edmanagemTherapeutcontrolled						Randomis			
managem Therapeut controlled			diabetes						
					-	controlled			
130 Padma jent 2008 lics trial 3 months 2 Y	136	Padma	ent	2008	ics	trial	3 months	2	Y

		Factors			Parallel			
		influencin			design,			
		g			single-			
137	Mahfuz	engagem	2016	PLOS ONE	U	6 months	2	Y
157	Ividiiiuz	newer	2010	FLOS ONL	Randomis	0 111011113	2	1
		self-			ed pilot			
140	Jitendra	monitorin	2016	Obesity	study	6 months	1	Y
140	Jitenura	Long-	2010	Journal	Outcomes	0 111011113	One	1
		term		of	of a		group	
		outcomes		Medical	longitudin		but	
145	Padma	of a web-	2015	Internet	al pilot	Two years		Y
145	ruumu	based	2015	of	preclinical	Two years	anaryse	•
		strength-		Medical	precimical		Horgen,	
		balance		Internet	explorato		Switzerl	
148	Jitendra	training	2013	Research	ry trial	N/A	and	Y
140	Jitenura	Feasibility	2015	Oncology	Randomis	IN/A	anu	r
		of a Text		Nursing	ed			
152	Padma	Messagin	2015	Forum		10 Weeks	2	Y
		Integratin	_010	JAMA	Randomis	10 112		N.
153	Mahfuz	g	2013	Internal	ed	months	2	
133	Manaz	Design	2015	Computer		montens	Tsinghu	Not
		and		s in	ry		а	mentione
154	Jitendra	evaluatio	2016	Human	longitudin	N/A	Elderly	d
		Increasing		Internatio	Pilot	,	/	-
		physical		nal	testing of			
156	Jitendra	activity	2014	Journal	an online	N/A	Norway	Y
		randomiz			Cluster			
		ed,			randomis			
		controlled			ed			
		trial of a		Circulatio	controlled	27		
157	Padma	simplified	2015	n	trial	months	2	Yes
		ne-based			of a			
		dilated			smartpho			
158	Padma	fundus	2016	Retina	ne-based	8 months	2	Yes
		sure that		nal	on of two			
		Mobile		Journal	randomis			Not
		Health is		of	ed	36		mentione
160	Jitendra	really	2014	Medical	controlled		3	d
-		It's LiFe!		Journal	Cluster		Twenty	
		Mobile		of	randomis	Not	four	
		and web-		Medical	ed	mentione	family	
164	Jitendra	based	2015	Internet	controlled		, practice	Y
		The		Journal	Randomis			
		effect of		of Clinical	ed			
		text		&	controlled			
166	Padma	message	2017	Translatio	trial in	2 years	3	Y
		Process		Journal	Process			
		evaluatio		of	evaluatio			
		n of a		Telemedic	n of a	12		
167	Mahfuz	mobile	2017	ine and	mHealth	months	3	Y

		study of a		Journal	testing			
		tool to		of	and			
		stimulate		Telemedic				
		physical		ine and	n of a			
169	Padma	activity in	2014	Telecare	tool to	3 months	1	NA
		ofa						
		Memory		Journal	Randomis			
		, Clinic-		of	ed			
		Based		Alzheimer	crossover			
170	Mahfuz	Physical	2016	's Disease	trial	16 weeks	2	Y
		coaching		of	n of a			
		reduces		Medical	health			
		hba1c in		Internet	coach			
173	Padma	type 2	2015	Research	interventi	6 months	2	Yes
		Smartpho		Journal	Developm	24 weeks	1	Y
		ne-		of	ent and			
		enabled		Medical	testing of			
174	Mahfuz	health	2014	Internet	а			
		a web-		of	ed,			
		based		Medical	waitlist-			
		interventi		Internet	controlled		Two	
177	Padma	on on	2013	Research	trial	3 months	groups	Yes
		Tablet PC-		Computer				
		enabled		Methods	Single-			
		applicatio		and	arm pilot			
180	Padma	n	2015	Programs	study	6 weeks	2	Y

			Care	Wider				l i i i i i i i i i i i i i i i i i i i
			setting	health				
			(Primary,	promotio				Number
	Type of		secondar	n			Total	of
Power	interventi	Disease		program?			sample	patients
calculated			y, tertiary)	Specify	Maan Aga	Sex	size	-
Calculated	on Routine	group	tertiary	specify	Mean Age	Sex	SIZE	per group
	care +							
	text							
	messages about					M & F		
0.8	medicatio	CVD	Primary	N/A	54.94	54.4% M	180	60
0.0	medicatio	CVD	Plilldly	IN/A	54.94	J4.4/0 IVI	100	00
	Dulco							control
	Dulce -		Drimon			M & F		control
0.975	an intograto	T2DM	Primary	NI/A	Γ1		201	group
0.975	integrate	12DIVI	care	N/A	51	(67% F)	301	(CG), 99
					54.3			on-only
		Hypertens	Primary		years		40	, SMS text
		ion	care	no	, (SD, 11.5		1372	messages
					years)			(n=457),
Y								intoractiv
	Smartpho	N/A	Primary	N/A	41.5	M & F	196	98
	ne					Male:		
	delivered					47%		
0.8	acceptanc					(smart		
	monitorin							assigned
	g diet							to paper
	using a	weight				women		diary
Y	PDA alone	loss	Hospital?	NA	46.8 years	(84.8%)	210	group
	SM using							
	the Lose							
	lt!	weight	communit		44.85 ±	female		
N	smartpho	loss	У		12.75	(87.18%)	39	13
	g impact							
	of Fitbit				58			
	tracker				interventi			
	and	Overwigh	Communi		on/61	100%		25/24
	website	t or obese	ty		control	Female	49	control
	ed Real-							
	Time							
	Interventi	Bipolar	Primary		47.5%	58.5%		
N	on for	disorder	care		(12.8)	Female	82	41
	on group-	Lung		of the				Pocket
	Pocket	Transplan		University				PATH-99,
	PATH-	t		of		Males-		Usual
Yes	Smartpho	recipients	Tertiary	Pittsburgh	62	55%	201	care-102

	Diabetes			Added to				
	preventio			reduced				
	n			face to				
	sessions		Communi	face				30 Int 31
Y	with	Nil	ty	program	55	33% M	61	control
•	Different	DM/CHF/	c y	program		3370101	01	control
	types of	Asthma/C						
	reminders		Primary					
0.8	inviting	, (Conditio	, care	N/A	> 40	M & F	1380	230
	automate	,		,				
	d voice							SMS=
Incomplet	response	Healthy	Primary			59.3%		167,
е	calls	adults	care ,		50.8	females	598	AVR= 431
	Comparis			Yes, part				
	on	Healthy	Primary	of the		51.1%		
Yes	among a	, adults	, care	national	60.44	females	50000	10000
	consultati		Outpatien					
	ons as		t clinic of					Interv 83
	add on to		3 Tertiary			M & F		Control
Y	standard	T2DM	, hospitalt	N/A	58	64% M	165	82
					s 44.2 yr			group =
	Tät®	Urinary			(10.3)			61
	mobile	incontine		NCT01848				control =
Not done	арр	nce		938	responder	F	123	62
	- - -			Neither			597	(1)
				supported			adults	treatment
				by			were	group
				professio			recruited,	(n=199),
				nal			screened,	which
		T		caregivers	1		consente	used the
	ITY12	Type 2			Interventi	on-		
	system	diagnosed			on- 59.9,	Females-		
V	composed				Control-	43%,	60	20
Y	of smart	months	Primary	NA neaith	59.0	Control-	60	30 207 Heart
	phone			coaches	patients	majority		patients
0.0	with a	DM and	Driver	and	was 69.1	of	F 4 7	and 250
0.8	PHR app	HTN	Primary	patients	(SD 9.1)	patients	517	diabetes
	and			can see	years,	were		patients
	hluotooth		D	nationts'	and	monin		started in
V	ne	prostate	Primary	N	50	100 14	1504	790
Y	applicatio	hypertrop	care	No	58	100 M	1581	Control
	Eligible			Yes, Outpation	Inteventio	Interventi		Interventi
	outpatien ts either	Hoalthu	Drimon	Outpatien	-	On- Eomalos		on=233,
Voc		Healthy	Primary	ts attanding	Control-	Females-	269	Control=1
Yes Primary	received	adults	care Outpatien	attending res.	44.6 U-	44.4%,	268	35 50 each
endpoint:	activity-		t clinic,	individuali	healthcar	ale: U-	patients	in the u-
% patients	monitorin	DM	Seoul	zed	e group	healthcar	(121	healthcar
achieving	g device	DIVI	National	multidisci	64.3	e 40/10	screened	e and
HbA1c<7	and		University	plinary u-	(5.2),	and	and 21	SMBG
0/ without	diatory		Dundang	hoolthoor	SMPC	CDCM	ميماسطمطي	groups

	Participan				Interventi	Interventi		Interventi
	ts were				on- Age	on-		on=63,
Yes	randomiz	BMI>27	NA	NA	40+-	Females-	124	Control=6
	messages	heart	у					75
	and	disease	(outpatie					interventi
Not	videos,	outpatien	• •			M & F		on, 78
mentioned		ts	rehab)		60	81% M	153	control
						02/0111		
	participan							
	ts							
	were	Overweig						
	prescribe	ht/ obese				Females-		
NA	d a 1,200	people	Tertiary	NA	44.4	82.5%	40	20
	,		,					
	Medicatio		Cardiac					
	n Plan via	Coronary	rehab					
	Apple	heart	sports		73.8 yr			
Not done	iPad	disease	groups		(7.5)	M & F	24	24
	d,bidirecti			chronic				
	onaltextm			disease	40.6% in			
	essaging			managem	age			
	(outreach		Primary	ent in	group 50-			
N/A	messages)	Diabetes	care	safetynet	59	M & F	135	135
				, ,	40-45	The HR	2386	Identified
		Comoon			yrs:	estimates	AN/AIs	808
		Cancer	Primary		Control	were	aged 40	eligible
					404/Inter	higher for	to 75	participan
	weekly	Patients						27
	IVR calls	with						(standard
	with	diabetes			62.5% of			mhealth)+
	automate	and/or	Primary		patients			45(mhealt
Not done	d	hypertens	care	N/A	above 60	M & F	72	h + CP)
	IVR chronic	heart	Drimer					
NI / A	chronic	failure,	Primary		60.0		1172	NI/A
N/A	disease	depressio	care		60.9	M & F	1173	N/A
	chronic							Standard
	disease	11	Duing					mHealth
	self-	Heart	Primary		67.0		200	(n=180)
	managem	failure	care	NI / A	67.9	M&F	369	mHealth+
Not	smartpho	Type 2	Primary	N/A	Male=63.	M & F,	11	N/A
mentioned		diabetes			5	F=9		
	health				Female=5			
	coacing				5.8			
	Cell				Interventi	Males		
	phone	Detiant			on Age	Interventi		
	based	Patients			55-64	on n=4,		
	diabetes	with	Dur		n=5, Control	Control	20	10
N	managem	Diabetes	Primary	No	Control	n=5	26	13

Not	Text	Coronary	Primary	N/A	58	M & F;	710	l: n=352
mentioned		heart	,	,		83% male	0	C: n=358
	g program							
	8 p. 08. a							
	monitorin							26)
	g - a	Weight	Research					2) TECH
0.8	calorie	Loss	centre	N/A	51.1 years	M & F	80	(n 5 27)
	Prevent'	Healthy						Starters
	Internet	adults				Males n		(4+
	based	Mean				(%)=38		lesssons)
NA	personaliz	age 43.6	Individual	No	43.6	(17.3)	220	= 187,
	Based		ts were					
	Strength-		recruited					
	Balance		by					
N/A	Training	Elderly	convenien		75	M & F	44	3 groups
	proof of	Oral	Communi					
	concept	cancer	ty care			Females-		
NA	of a	patients	centre	NA	58.5	60%	80	40
Not	SMS and	Obese	Primary	N/A	57.7 years	M & F	69 adults	35
mentioned								
	Self-	hypertens	-					
		ive or pre-	communit			_		
mentioned			У		59.2	M & F	19	19 Tha
	Self-	None	Decerta					The
	monitorin ~	specificall			55.3	M & F	21	Lifestyle
	g	У	centre	.	55.5		21	group
	ty	la i e la		То		Interventi		1
	Healthcar	high cardio-	Communi	improve cardiac		0n-		Interventi
	e Workers	vascular	Communi ty based	health		65.4%, Control-		on-1095, Control-
Yes		risk		status	59.7	66.8%	2086	991
	were		study	Status	59.7	00.070	2080	991
	Scope	ts undorgoin				Formalaa		
		undergoin		NLA	60 F	Females-	50	NIA
NA	ine app.	g	Tertiary	NA	60.5	58%	50	NA
	basedpod		Net					41
	cast (TBP)	Weight	Not mentione					participan ts were
No	. ,	U			40 TE	М 9. Г	174	randomiz
	2) the monitorin	Loss chronic	d	monitorin	42.75	M & F	174	Group 1
	g and	obstructiv		g and				(n=65),
	feedback	e	Primary	feedback			199	(II=03), Tool &
•	tool	pulmonar	care	tool	57.8	M & F	patients	SSP
	Mobile	pannonal	cure	Part of	57.5		patients	Interventi
	phone			the wider		Females		on-401,
	for self-			TEXT4DS		Interventi		Control-
	managem	Diabetes	Primary	M study	58	on- 71%	781	380
	Diabetes	N/A	N/A	N/A		M & F	1470	TEXT4DS
	Self-			.,	Cambodia			M
	Managem				= 55;			group=50
	ent				Philippine			5

	Pre and							
	post		General					
	interventi	Diabetes	Practice-			Females-		
NA	on study	or COPD	Primary	NA	60	45%	20	20
	Promotin	Alzheimer	Primary	N/A	Cognitivel	M & F	30	2
	g Activity	S			У			cohorts;
	through				impared			group
	Clinical				group=			with
Not done	Education				72.3;			cognitive
	coaching	Diabetics						Interventi
	with or	with						on-48
	without	HbA1c>7.				Females-		Control-
yes	mobile	3%	Primary	NA	53.2	72%	97	49
Not	smartpho	Diabetes	Primary	N/A	55.6	M & F	21	N/A
mentioned	ne based							
	health							
	coach							
	program	adults			on-64.7	on-		on-119
	Philips	aged 60-			and	Female-		and
	DirectLife,	70			Control-	39.5%,		Control-
Yes	which	years	NA	NA	64.9	Control-	235	116
	A tablet	Patients						
	PC	who have						
	applicatio	undergon				M & F		
Pilot study	n	e surgery	Tertiary	NA	61	60% M	40	20

Access to	Demogra						Comparat	
or equity	phic						or groups	Primary
of	profile	Interventi			Interventi	Co-	(e.g.	outcome
interventi	and	on	Interventi	Interventi	on	interventi	control/pl	and
on or	location	descriptio	on	on	provided	ons (if	acebo/ot	changes
services?	of study	n	duration	frequency	•	any)	her	observed
8	Patients	Automate				Routine	Control	Significant
patients	from	d				care,	group	change
-	cardiac	messages				which	which	in 8-item
	outpatien	about			Automate	included	received	Morisky
•	t clinics	medicatio			d	arranged	only	Medicatio
disconnec		n, diet	3 months	Daily	software	cardiac	routine	n
alsconnee	01.0	ii, aice	5 11011113	Duny	Jontware	curuide	Toutine	
patients	with Type	Dulce		during	provided		control	level
-	2 DM	(PD)	10	1st	by		group	(significan
active	were	comprise	months	month	, physicians	N/A	received	t
CIIIIC	Aduits	Participan		Personaliz	Participan		All trial	Odds
within	(>21yrs)	ts		ed SMS	ts	text	staff	ratios for
-	attending	allocated	12	text	allocated	messages	were	participan
	the	to the	months	messages	to the	were	masked	ts with
	outpatien	interactiv		were	interactiv	delivered	to	BP
	t chronic Not	It is a self-		Weekly	N/A	N/A	National	~140/00 Quit
completin		paced		for 8	,	,	Cancer	rates
-	d	interventi		weeks			Institute's	were
baseline		on						13%
				were	PDA with			e weight
				held	Dietmate			change
	white		24	weekly	Pro©		paper	from
	(78.1%)	PDA	months	for	software	feedback	diary	baseline
					Lose It!			Adherenc
					app for			e and
	White				dietary			retention
	(84.62%)		12 weeks	1-4 daily	SM	none	none	were
based	USA,	d Fitbit				based on		
interface	post-	tracker			Web app	Coventry,	Covention	increased
relied on	menopau	and			and	Aberdeen	al	moderate
consumer	sal	website		Continuo	tracking	, and	pedomete	to
access	women	use, with	16 weeks	us	band	London—	r	vigorous
	69.5%				enabled		paper	outcome
	African-			twice a	smart		and	of
	American			day for	phone		pencil	MADRS
	8.5%		10 weeks	10 weeks	(Samsung	none	condition	Total
ts who	USA- Uni.	ne with			Univ.Pitts			monitorin
received	Pittsburgh	custom		2, 6 and	burgh		Usual	g
transplant	Medical	Pocket	12	12	Medical		care	percentag
ation at	Centre	PATH	months	months	Centre	NA	group	es-

	F	·			tura incaral			
	Francisco	in person			trained		r only without	weight
	and	Diabetes			non	6		loss
	Berkley	Preventio			medical	See	step	compared
	California.	n			research	interventi	goals and	to 0.3kg
NA	48%	program.	5 months	daily	staff.	on	standard	gain in
Participan ts had to	Participan ts were	Subgroup s 1a and			Nurse via		Subgroup	Pneumoc occal
be	recruited	s 1a anu 1b -			phone, SMS and		s 1b, 2b	
beneficiar			4 weeks	Maakhi		Nene	and 3b	vaccinatio
	ITOTTI a	standardis	4 weeks	Weekly	e-mail	None	received	n rates
those		AVR			Healthy	a part of		one third
who		every		c	Directions	an		chose
were		other	6	fortnightl	2 RCT	ongoing		SMS
able to	USA	week	MONTHS	y Ci l	staff	trial		compared
Study	Israel-	Question		Single	Staff of			Fecal
included	High	based		message	the		Standard	Occult
only	Income	behaviour	6 Months	sent at	National	NA	care	Blood
	en,	videoconf						HbA1 in
	Denmark.	erences			Health			interventi
	Higher	with			centre		Usual	on group
Nil	education	health	8 months	Monthly	nurse	Nil	care	by 0. 69%
								nal
	education			three				Consultati
	(>3 yr)			times a	mobile			on on
	Responde No		two years	day	арр		control	Incontine
	significant	A seit- tailored	FitBack	The FitBack			NO significant	FITBACK group
Low	Significant	cognitive-	group	interventi			Significant	showed
eHealth	difference	-	also	on is		No	difference	
literacy	s among	I	received	designed			s in	improvem
	the 3	annroach	weekly	to			sociodem	ent
criteria		operabilit						operabilit
was		, y and						, y and
based on		, whole					Standard	, whole
the	Polan	trial	6 Weeks		NA	NA	care	trial
	DIVII Was	d		пеанн			Stratineu	Only
	higher in	structure		coaches			randomiz	significant
	the	d mobile	12	called			ation	
	diabetes	phone-	months	patients			design:	difference
	group,	based		every 4			Heart	in waist
	hospital	phone		±0.6	administe		questionn	circumfor ce of
No	in South	questionn	NA	NA	red	No	aire	scores
		Eligible		everyday	PHC			85.7% of
	Puducherr	-		for 3	doctors/in			outpatien
	y state of	ts either		working	vestigator		Standard	ts in
None	India	received	11 days	days	S	None	care	interventi
	NO	Specially					me same	
	significant	designed					physical	healthcar
		glucomet	6 ,pnyhs				activity	e group,
	difference	er and					device	significant
	s in	activity					without	
	hiachamic	monitor						improvem

African	Baltimore	Participan		Weekly	TRIMM	Engageme	An initial	Weight in
American	, USA-	ts	12	goals	study	nt with	clinical	the
s, Aged	, High	received	months	with	, staff	the text	assessme	TRIMM
	0						Usual	reported
							cardiac	activity,
	New				Mobile		rehab	•
	Zealand							general
		• •			phone		care	health
	n Si li	provides					ts in the	SmartLoss
	Biomedic	the					Health	group
	al	ability to			- ···		Education	•
	Research	deliver			SmartLoss		control	ed
	Center,	intensive			study		group	significant
	Baton	behaviora	12 weeks	Weekly	staff	NA	(n=20)	ly greater
	Level of							subjective
	education							
								adherenc
	Secondar		not	not	Apple			е
,	y school		specified	specified	iPad		no control	w/o
patients	antly	automate			d using			responser
.i.e	female	d text			patient			ate to
people	(65%)	messagin			relationsh			text
with no	and	g for			ір			messagep
or little	Latino(65	appointm	9 months	N/A	managem	N/A	N/A	rompts
Yes.	Unscreen	3 text						Screening
Cross	ed	messages						status
cultural	AN/Als in	sent 1						was
issues	a tribal	month						ascertaine
	predomin	weekly			Calls		weekly	patients'
	antly	IVR calls			originated		IVR calls	IVR call
29.2%	female	including			from the		together	engagem
indigenou	(62%)	self-			IVR		with a	ent and
S	and	managem	4 months	weekly	platform	None	care	call
	77%	weekly	The		IVR		Involvem	completio
	white	IVR calls	median		systems		ent of	n
N/A	and 70%	including	number	weekly	were	None	Informal	rates,
		IVR calls			systems			er
	99% male	including			were			reported
	and 77%	self-	12		program			
N/A	white	managem	months	weekly	med to	None		measures
N/A	Patients	smartpho	Not	2-4	The	N/A	Received	individual'
	with type	ne based	mentione	contacts	smartpho		health	s health
	2	self-	d	monthly	ne		coahing	behaviour
	diabetes	monitorin		and one	software		without	,
		Cell		Every 2				
		phone		, weeks for	Phone		Control	
		based		patients	calls,		group-	
	Maryland	diabetes		and 4	Internet,		Usual	Change in
No			3 months					-
No	USA	managem	3 months	weeks for	Bluetooth		care	HbA1c

	patients	Messages	6 months	Δ	automate	N/A	the	cardiovas
	with CHD	contained	omontins	messages	d	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	control	cular risk
	from a	contained		/week	messages		group	
	tertiary	behaviour		(messages	using		received	
	baseline,	Monitorin		phone	phone-		monitorin	ng
	participan			based	based		g vs Fitbit	difference
N/A	ts were	g Technolog	6 months	group	interventi	None	VS	s in
	220	Internet	0 11011115	6, 12 and	IIILEIVEIILI	None	Groups	Mean
ts	participan	based		24 month	Internet		compared	
	ts from	lifestyle	24	assessme	based		by those	in weight
		interventi	months		DPP		had 4+	J
by a non-	across		monuis	nt	DPP			(lbs) and
	ts were	informati			6 10		were	
	75 years	on			Self		composed	
	(SD 6),	technolog		Once	monitorin		of (1) an	e and
Elderly Patients	predomin	y (IT)- The	12 weeks	(daily-life) daily	g	None	individual	Attrition
	Michigan				Ctudy		Standard	Fewer
	U	interventi	10 \//		Study	Nore	Standard	symptom
eligible if	USA	on group	10 Weeks		staff	None	care	s were
N/A	overweig	Personal	12 moths		dieticians,	N/A	Standard	weight
	ht and	digital	A	weeks),	Calf		care	loss at 6
	Participan	The	4 weeks		Self			change in
	ts' ages	interventi	(excluding		monitorin	N	N1 / A	self-
Elderly Not	ranged 11 men	on The	2 weeks	1	g Seflf	None	N/A The	reflective change in
	and 10	interventi		Once	monitorin		Lifestyle	physical
d		on design	2 months	(daily-life)		None		activity
	women—		5-111011(115	(ually-life)	g	None	group	
of		key					care with	reported
participati		elements			.		free	antihyper
ng	c l ·	of the			Communi		medicatio	tensive
villages in		interventi			ty health		ns only in	medicatio
	and India	on were	Daily	1 Year	workers	NA	India	n
setting		ne was						mean
has a	California,				Ophthalm			distance
dispropor	USA	estimate	8 Months	Monthly	ologist	None	NA	spectacle-
	middle-	study,					41	body
	aged	the	3-months		Self		participan	weight
mentione	white	Pounds	and 6-	Once	managem		ts were	assessme
	female	Off	months	(daily-life)	ent	None	randomiz	nt
	Above 55	The		four			Control	The
	mostly	complete		individual			group -	primary
	and	It's LiFe!		consultati	Practice		care as	outcome
	above	interventi	6 months	ons with	nurse	None	usual	measure
	DR	Patients		the	Open		Standard	After 2
Diabetic	0,	in the		average	source		care with	years, an
	Philippine		24	number	software		mobile	HbA1c <
	S,	on group	Months	of SMS	and web-	NA	phones	7.0% (53
N/A	Participan	SMS		several	а	N/A		
	ts were	contained		tmes a	nurse in			
					000			
	from the			week	DRC, a			

with		were		patients				patients
complex		provided		visited				(12 out
CO-		with the		the				of 17)
existing	Netherlan	accelero		practice				were
medical	ds	meter	12 weeks	three	Nurse	None	No	positive
N/A	participan	Participan	8 weeks	bi-weekly	Each	N/A	Patients	implemen
	ts with	ts were			participan		with	tation,
	cognitive	provided			t was		normal	and
	impairme	with the			assigned		cognition	safety
	nt	the			one		who	regardless
ns served	health	interventi		Daily			care with	primary
were	clinics in	on group		review of			нс	outcome
from a	Toronto,	was	6	participan	Health		support	was the
lower-	Canada	provided	MONTHS	t logs	coaches	None	but	difference
N/A	Participan	After	24 week	Daily	Health	N/A	N/A	glycosylat
	ts were	completio			coach			ed
	recruited	n of						hemoglob
	from the	baseline						in
age		in the		Daily	based		control	baseline
between		interventi		review of	physical		group	and 3-
60 and	Netherlan	on group		participan	activity		was	month
70 years,	ds	received	3 Months	t logs	program	None	•	follow-
		Twenty					Standard	Change in
		consecuti					care	% of
		ve	6		Study		patients	body
	Taiwan	gastrecto	MONTHS	Weekly	staff		reviewed	weight

Secondar			Method					
v	Negative		to					
outcome	outcomes		identify					
and	or		target				Represen	
changes	harmful	Individual	-	Inclusion	Exclusion	Participat	tativenes	Individual
observed	effects	level	n	criteria	criteria	ion rate	S	level
No		Equal	Participan	Outpatien	Other co-		At	Patients'
significant		number	ts were	t with	morbiditi		baseline,	medicatio
change		of	recruited	CVDs	es such		63.8%	n
in		participan	from	(either	as		participan	adherenc
Readiness		ts in the	cardiac	hypertens	Diabetes		ts had	e,
to Quit	None	3 groups	outpatien	ion or	Mellitus	88.88%	hypertens	
		- 8 1	nt was					
			done via					
			traditiona					
cholester		patients	participan	years of	medical/p		ts were	HbA1c
ol, low-		had	ts were	age,	sychiatric		all from	levels in
density	None	never	identified	diagnosis	, condition	87%	the same	PD and
Primary	Analyses			0 100				
outcome	were							
data	intention							
were	to treat.							
available	There							
for 1256 N/A	N/A	In total	through	(1) be	Not	85%	Not	Participan
14/7	1.177	196	employer	age 18 or	mentione	0370	mentione	ts'
		participan	or	older, (2)	d		d	receptivit
		ts	facebook	smokeat	u		ŭ	y on
adherenc			interventi	s were	у,			y on
e to self-			on took	eligible if	condition			
monitorin			place at	they	S	51.47%	white	
g of diet			the	, were	requiring	(210/408)		
Secondar			Participan	Individual	Exclusion	. ,	. ,	
у			tswere	s were	criteria			
outcomes			recruited	eligible if	included	66.1%	White	
included			fromthe	they	pregnanc	(39/59)	(84.62%)	
levels of								
tracker								
use (95%								
of days)								
and								
у			ts	18 and	criteria	PRISM	69.5%	
outcomes			diagnosed	older, 2)	for any	Condition,	African-	
of YMRS			with	outpatien	substance	mean	American	
and IIS			either	ts and	use	complianc	8.5%	
care			transplant	than 18	received		those	level self-
perceptio				years,	а		who	reporting
n and 2.		Individual	recipients	underwen	previous		underwen	
Rehospita	None	level	of UPMC	t	' transplant	75%	ta	stics

steps by		orginally	care	age>35	reported			
2551		assessed.	clinics	years;	diagnosis		Higher	Weight
compared		54 did	and	risk for	of		income	loss,
to	Nil	not	posting	diabetes	diabetes		and more	increased
decrease	reported	complete	studyflyer	(diabetes	or other	60%	females	teps.
uccicuse	reporteu	Participan	Electronic	•	Lack of	0070	All	Patients
		ts were	medical	ted	access to		participan	who
		either	records	active	at least		ts were	received
N/A	None	smokers	of	patients	one of	100%	from the	reminders
,			ts who	speaking,			ts were a	
			received	part of			part of	
			reminders	the HD2		Cluster	the HD2	Individual
None	None	Yes	for the	trial, not		RCT	trial	level
None	None	No	Nation	women	Non-	i i i i i i i i i i i i i i i i i i i	Represent	
		Populatio	wide	and men	HMO		ive of the	Populatio
None	None	n level	survey,	aged 50	members,	96%	age	n level
changes	None	agreed to	patients	speaking	criteria	5070	age.	significant
in BP, BP,		participat	recruited	inhabitant	were			effect on
Lipids,		e out of	from	s of the	terminal			H bA1c at
creatine,	Nil	859	University	City of	disease	19.20%	?	6m
Global	INII	000		City Of	uisease	15.2070	:	0111
			investigati on of a				y education	
Impressio n of			clinical	not	not			
			trial	not		100%	(>3 yr)	
Improvem FITBack	How self-		Inrough	specified	specified	100%	Responde	
group	guided		4	years		Low		
showed	mobile-		companie	USA		attrition		
greater	Web		S	resident,		and low		Yes
improvem	interventi		(trucking,	(2)		data loss		
ent	ons will		manufact	employed				
system			ts	18–65	allia, the		use cell	
modestly			diagnosed	years,	need to		phone	
improved			with	diabetes	rely on		and the	
glycaemic	NA	Yes	DM2	type 2	the	94%	sensors,	Yes
patients	41 patients		selected	dx at				
may be	withdrew		patients	least 3				
more	due to		from the	months,				
likely	unfamiliar		EHR	HbA1c				
than HD	ity with		avetam					
	Nil		attending	attending	who had			
Nil	repoted	NA	clinic	clinic	a history	Unknown	Unknown	IPSS Score
Number				All	Known	70%	Yes	
of			Outpatien	outpatien	patient	followed	participan	
patientsw			ts coming	ts (>30	with	up for	ts who	
howere	NA	Yes	to OPD	years) Ageu	diabetes Patients	definitive	came to	Yes
in				60+, DM	who		Reflects	results
decreasin				with	were		the	seem to
g				HbA1c	unable to	85%	digital	come
ь hypoglyce				7.0–10.5	use text		divide	from the
min				0/	massages		amac	increased

Engageme	No			African	selt-	84	Small	
nt with	adverse		Through	American	reported	participan	sample of	Individual
the	events	Yes	a church	adults	substance	ts ts	church	level
analyis -								
costs of								
implemen								
ting and								
ting anu				ام بر م ا ما				
				ht and	dieting;			
Satisfactio				obese	62 kg			
n				adults	weight		.	
questionn				(BMI 25-	change in		Small	
aire			Not	35 kg/m2)	the past		sample	
showed	NA	Yes	Provided	age 18 to	60 days	95%	size	Individual
Objective			Cardiac	must be			"Level of	
adherenc			patients	at least	previously		education	
е			were	60 yr	owned a			
(medicati			recruited	with a	smart		Secondar	
on			via local	minimum	phone	100%	y school	
of				18			antly	
responses				2) English			female	
correctly				or			(65%)	
formatted			Diabetes	Spanish			and	
by	None		registry	as first	N/A	N/A	Latino(65	
Increased			The	1) AN/AI				
CRC			authors	heritage				
screening			randomiz	document				
for AN/AI			ed to the	ed in				
patients'			Most	with		around	predomin	
likelihood			participan	diabetes	Refused	30%	antly	
of			ts were	and/or	consent,	(74/247) -	female	
reporting			initially	hypertens	Unable to	11	(62%)	
excellent	None		identified	ion	reach	calculated		
haracteris			patients	Englishsp	ineligible	HF- 57%	77%	
tics			were	eaking	if they	Depressio	white	
associate	None		initially	patients	had	n -95%	and 70%	
spent			were	eligible,	were			
helping			initially	patients	excluded		99% male	
with self-			, identified	had to	if they	Approx	and 77%	
care,	none		from	have a HF	had	25%	white	
	N/A	N/A		Patients	Not	Not	N/A	Participan
				with type	mentione	mentione		ts' ability
				2 diabetes		d		(who
								using
								HbA1c
								values
								declined
								significant
								ly among
								iy aniong

ucor/parti	N/A	Almost		had to	Not	87%	N/A	Darticipan
user/parti	N/A				mentione	0/70	N/A	Participan ts'
cipant		equal		have				
engagem		number		significant	d			willingnes
ent with		of		ly lower			1 1.	s to use
adherenc			ts were	criteria	ts were		baseline,	
e to self-			recruited	included	excluded	27%	participan	
monitorin			through	age	if they	(80/293)	ts were	
								Program
								Starters
								Weight
None	None							loss
Speed,			ts were	ts were	illness,		ts were	
effectiven			recruited	older	cognitive		75 years	
ess of the			by	adults	impairme		(SD 6),	
motivatio			, convenien	aged 65	nt,	N/A	predomin	
57% (83			two	Patients	Those		Participan	
of 145) of		Individual	communit	were	with		ts with	
eligible	NA	level	y cancer	eligible if	cognitive	85%	cancer in	Individual
weight	N/A		Participan		Recent	80%	N/A	
loss at 12			ts	mass	psychiatri	0070		
change in			From	hypertens	psychiatri	Not	Not	
lifestyle			elderly	ive or pre-			mentione	
modificati			communit		None	d	d	
mounicati			Healthy	Not	Not	u	u Not	
			adults (mentione	mentione	67%	mentione	
None			= 21)	d	d	(21/31)	d	
			- 21)			(21/31)		
was a				s who	CVD-		ts	
significant				were ≥40	related		belonged	
net				years of	complicati		to the	
increase		Individual		age with	ons that		village	
in the	None	level	d visit	a self-	cannot	87%	therefore	Individual
			s who	patients			study-	
		Individual	visited	with			Sample	
NA	NA	level	the	а	NA	100%	size not	Individual
3-							middle-	
monthqu			Not	Not	Not	Not	aged	
estionnair			mentione	mentione		mentione	white	
es			d	d	d	d	female	
Secondar			invited	between	presence	36.8%	Above 55	
y			250	40 and	of	(540	mostly	
, outcome			family	70 years	coexisting	patients	and	
measures			practices	old with	medical	a general	above	
In Kin-	all		Patients	diabetes.	mearcu	a Selleral	Represent	
réseau,	participan		visiting	Subjects			ativeness	
the	ts	Individual	-	were			is good	Individual
	showed a		participati		NA	54%	for this	level
percent		ievel	participati	engible		54/0		level
	N/A							

					11			
activity				over 40	with		study-	
significant			Those	years, five			Sample	
ly			who visit	of whom	со-		size not	
increased		individual	the GP	had type	existing		adequate	
by	NA	level	clinic	2	medical	85%	for	Individual
	N/A		Participan	1) age	individual		N/A	Participan
			t of the	60–85; 2)	s with			ts and
			cognitive	cognitive	normal			their
			impareme	impairme	cognition			study
			nt group	nt due to	was also			partners
es			Patients	were			represent	
between			who visit	eligible			ative as	
HbA1c		individual	the GP	for			only	Individual
				-		75%		
mean		level	clinics	participati			recruited	level
	N/A		Recruitme	patients	Participan		N/A	
			nt was	over 18	ts were	mentione		
			through	years old,	excluded	d		
			health	diagnosed	if their			
significant			ment in	age			ative of	
effect of			newspape	between			the age	
the		Individual	rs and	60 and	Not		group in	Individual
interventi	NA	level	press	70 years,	Available	91.20%	Netherlan	level
BMI, No			National	an age	experienc		This is a	
of			Taiwan	>20	ed		pilot	
outpatien			University	years,	difficulties		study	Individual
t clinic		Yes	Hospital	gastric	with		with very	level

	Intent-to-							
Measures				Organisat	Descriptio			Level of
		luciona		ional	-	Staff who		
/results	analysis	Impact	. .		n of			expertise
for at	used	on QOL	Percentag		interventi		Target	of
least 1		(quality	e of	(setting	on	interventi	delivery	delivery
follow-up	(Y/N)	of life)	attrition	and staff)	location	on	agent	agent
				N/A since	Interventi			
				the	on was			
				interventi	delivered			
				on	through a			
After 3		Not		delivery	program			
months	N	measured	11.11%	was not	med	N/A	N/A	N/A
					interventi			
					on was			
					delivered			
months		significant		and	education	prescribe		complete
and 10		change		nurses	sessions	d and		d 16-hour
months	Y	post-	13%	from the	took	changed	N/A	training
			10/10		took	enangea	,,,	
Only 1	N/A	Not	16%	N/A since	Interventi	N/A for	N/A for	N/A for
follow up		measured		the	on was	this study.	this study.	this study.
after 2				interventi	delivered			
months				on	through a			
(SD)					interventi			
absolute					on took	not	not	not
weight					place at	mentione	mentione	mentione
change	Y	NA	14.29		the	d	d	d
At 12					SM data			
weeks,					were		not	not
the			25.64%		download	research	mentione	mentione
outcome	Y		(10/39)		ed hourly	staff	d	d
			(104			therapist		master's
table 2 of		not	randomiz				not	trained
		not			not	was a	not	
manuscri	V	mentione	ed, 82		not	master's	mentione	family
pt??	Y	d	analyzed,	Test	specified	trained	S	therapist
monitorin		Assessed		Tertiary				
g, 		including		care				
adherenc		re-		hospital				
e to the	Y	hospitaliz	None	and		NA	NA	NA

			a alla a u a u a					
steps,			adherenc e to					
diet, hip circumfer			mobile					
ence, BP,			activity			Research		
Lipids,	Y	NA	diary	NA	NA	staff	NA	NA
			alar y	Process	Interventi	Nurses at	114	
				evaluatio	on	the clinic		
After 4				n not	delivered	made the		
weeks	N	N/A	0	done	through	phone	N/A	N/A
chosen					0			
SMS.								
Participan								
ts .	NA	NA	NA	NA	NA	NA	NA	NA
Fecal								
Occult				Not				
Blood	Y	NA	4%	reported	NA	NA	NA	NA
		SF36 no	16% at 6	Not	Not	Not		Not
NA	Y	change	months	reported	reported	reported	Not	reported
SF - mean		LUTSqol						
decrease		score			not	not	not	not
3.1 (95Cl		Responde	24.6%		mentione	mentione	mentione	mentione
2.0 - 4.2)	N	rs 34.2	(15/61)		d	d	d	d
Measures		Significant	Fithack					
at O, 2		Significant	8%; other					
and 4	Yes	improvem						
months		ent	2.5%					
monting		cite	2.370					
telehealth		Minor						
system		improvem						
dimensio		ents						
ns	NA	were	4%	NA	NA	NA	NA	NA
Reliability			0.400/					
of scores	No	NA	0.40%	NA	NA	NA	NA	NA
85.7% of								
outpatien ts in								
interventi	Yes	NA	31.30%	NA	NA	NA	NA	NA
merventi	Tes	INA	51.50%	INA	INA	INA	NA	N/A
Yes	No	No	15%					
			_0/0					

Weight in								
the								
standard-	Yes	NA	20%	NA	NA	NA	NA	NA
с. н								
SmartLoss								
group experienc								
ed								
significant								
ly greater	Yes	Yes	5%	NA	NA	NA	NA	NA
"subjectiv								
е								
adherenc					not	not	not	not
e					mentione	mentione		
w/o	N	N	0		d	d	d	d
sent over								
6500								
response					hama			
messages with	N	NI/A	NI/A		home based	NI/A	NI/A	N/A
WILLI	IN	N/A	N/A		Daseu	N/A	N/A	N/A
Participan								
ts were								
followed								
up for a	Nia	Nie	NI / A		home	N1/A	NI / A	N1 / A
total of 83%	No	No	N/A		based	N/A	N/A	N/A
completio			approx 5		home			
n	No	No	% overall		based	N/A	N/A	N/A
СР								
patients								
reported					home			
lower	N	None			based	N/A	N/A	N/A
	Not		Not	N/A since	Interventi	N/A for	N/A for	N/A for
	mentione		mentione	the	on was	this study.	this study.	this study.
	d		d	interventi	delivered			
				on	through a			
		Improvem						
		ent in						
		knowledg						
	NLA	e of food	1 40/					
	NA	choices,	14%					

Not	N	N/A	Not	N/A since	Interventi	N/A for	N/A for	N/A for
mentione	IN	N/A	mentione	the	on was	-	this study.	
						tills study.	tills study.	this study.
d			d	interventi	delivered			
demonstr				on	through a			
					h			
ated a	N 1 -	N 1/A	00((7 (00)		home	N1 / A	N1 / A	N1 / A
significant	No	N/A	8% (7/80)		based	N/A	N/A	N/A
			0.004					
	N		30%					
e across			control					
training			group					
plans			showed		home			
differed	No	N/A	41%		based	N/A	N/A	N/A
Of the 37				In all 12	N 4: al. 1	Church		
patients				Individual	Michigan	Study		
in the	NA	NA	15%	level	USA	staff	NA	NA
at 3, 6, 9	N	N/A	Not	N/A since	Interventi	N/A for	N/A for	N/A for
and 12			mentione	the	on was	this study.	this study.	this study.
The								
average					home			
score of	No	N/A	0%		based	N/A	N/A	N/A
After the								
onset of			00((0 (0 4)		home			
the	No	N/A	9% (2/21)		based	N/A	N/A	N/A
reported							medical	Trained
antihyper						Communi	students	communit
tensive						ty	in Tibet	У
medicatio					India and	Healthcar	University	
n	Yes	NA	13%	ty level	China	e workers		e workers
mean							the Santa	
distance				Individual		Ophthalm	Clara	Tertiary
spectacle-	NA	NA	NA	level	USA	ologist	Valley	education
participan								
ts in the			Not					
твр			mentione		home			
group	No	None	d		based	N/A	N/A	N/A
Directly		Physical			Family			For
after the		Compone			practice		Not	mastering
interventi		nt Score			and	Practice	mentione	the
on,	No	and	12.66%		home-	nurse	d	execution
After 2		Assessed.			The	communit		
years, an		The			studies	y-based	the	
HbA1c <		interventi		Individual	took	peer	respective	
7.0% (53	Yes	on did	46%	level	place	educator	centres	NA
			11.9% in					
			DRC,					
			14.5% in					
			Cambodia					
			Samooula					

patients					General			
(12 out					Practices			
•								
of 17)					in the			
were					Netherlan	•		
positive	NA	NA	15%	level	ds	staff	NA	NA
at 8	Ν	significant	Not	N/A since	Interventi	N/A for	N/A for	N/A for
weeks		positive	mentione	the	on was	this study.	this study.	this study.
		changes	d	interventi	delivered			
		in		on	through a			
		physical		delivery	program			
primary							degrees	degrees
outcome					Primary		in	in
was the				Individual	care	Healthcoa	kinesiolog	kinesiolog
difference	Yes	NA	25%	level	clinics	ch	y and	y and
24 week	Ν		Not	N/A since	Interventi	N/A for	N/A for	N/A for
			mentione	the	on was	this study.	this study.	this study.
			d	interventi	delivered			
				on	through a			
baseline								
and 3-								
month				Individual		Web		
follow-	Y	nA	9%	level	NA	based	NA	NA
Significant				Organisati	Tertiary	Medical		Qualified
results -				onal level-	care	Staff		medical
Арр				Medical	facility in	employed		professio
group	No	NA	NA	staff	, Taiwan	in the	NA	nals

Inclusion/						Assessed	Indicators	
exclusion	Adoption			Measures		outcome	of	Measures
criteria	rate of		Fidelity	of cost	Individual		program	of cost
of	delivery	Organisat	of the	of	and	months	level	of
-	-	ional		-				
delivery	agent or			implemen	•	post	maintena	maintena
agent or	setting	level	on (%)	tation	on level	interventi	nce	nce
	Process	The						
	evaluatio	interventi						
	n of the	on was			Process		No	
	interventi	delivered		Not	evaluatio	Only 3-	informati	
	on was	as		mentione	n not	month	on	Not
N/A	not done.	intended.	100	d	done.	follow-up	provided.	provided
		The		Not				\$314,264
		interventi		mentione				over 2
		on was		d				years
		The		reported	evaluatio			, cu. s
		interventi		in the	n done,	At 10	Not	Not
N/A	N/A	on was	100%	future	not yet	months	provided.	provided
N/A	N/A	UT Was	100%	Tuture	not yet	monuis	provided.	Although
								not
								reported
								here, the
								authors
								boliovo
N/A for	N/A for	The	100%	Not	Process	Only 1	No	Not
this study.	this study.	interventi		mentione	evaluatio	follow-up	informati	provided
,	,	on was		d	n not	after 2	on	
		delivered		-	done.	months	provided.	
				were			provident	
not	not		not	compensa		not	not	not
mentione	mentione		mentione	ted \$50		mentione	mentione	mentione
d							_	
u	d		d	per		d not	d not	d not
not	not		not	not		mentione		
mentione	mentione		mentione	mentione		d	d	d
d	d		d	d				
				ts were		interventi		
not	not		not	compensa		on	not	not
mentione	metnione		mentione	ted \$25		feedback	mentione	mentione
d	d		d	for each		was done	d	d
						and		
						Secondar		
NIA	NLΛ	ΝΙΛ	ΝΙΛ	ΝΙΛ	Individual	y		
NA	NA	NA	NA	NA	maividual	outcomes		

			No	Not	Not			
NA	NA	NA	repoted	reported	reported	5 months	NA	NA
		Interventi on was		No cost to clinic;		Only 4		
		delivered		USD16		month		
N/A	N/A	as	100	out-of-	N/A	follow-up	N/A	N/A
NA	NA	NA	NA	NA	NA	NA	NA	NA
	147.1	147.4	147.4	147.4	147.1			147.4
NA	NA	Yes	96%	NA	NA	NA	NA	NA
Not	Not	Not	Not		Not	Not	Not	Not
reported	reported	reported	reported	Nil	reported	reported	reported	reported
not mentione	not mentione		not mentione	not mentione		not mentione	not mentione	not mentione
d	d		d	d		d	d	d
NA	NA	NA	NA	NA	NA	NA	NA	NA
			Not	Net				
NA	NA	NA	Not reported	Not reported	NA	No	Nil	NII
NA	NA	No	NA	NA	NA	NA	NA	NA
NA	INA	NU	INA	INA	INA	INA	INA	INA
						No		

NA	NA	NA	NA	NA	Individual	NA	NA	NA
				Cost-				
				effective				
NA	NA	NA	NA	NA	NA	NA	NA	NA
					10,			
not	not		not	not		not	not	not
mentione d	mentione d		mentione d	mentione d		mentione d	mentione d	mentione d
				C.		focus	G	
						group with		
						small		
N/A	N/A		No	No		patients	No	No
N/A	N/A		No	No		No	No	No
N/A	N/A		No	No		No		No
N/A	N/A		No	No		No		No
N/A for	N/A for	The		Not	Process	N/A	No	N/A
this study.	this study.	interventi on was		mentione d	evaluatio n not		informati on	
		delivered			done.		provided.	

N/A for	N/A for	The	96%	Not	Process	N/A	No	N/A
this study.	this study.	interventi		mentione	evaluatio		informati	
		on was		d	n not		on	
		delivered			done.		provided.	
N/A	N/A		No	No		No	No	No
N/A	N/A		No	No		N/A	N/A	N/A
			All	Not				
		Individual	proposed	performe				
NA N/A for	NA N/A for	level	interventi		Individual			NA
-	N/A for this study.	N/A	N/A	N/A	N/A	N/A	N/A	N/A
this study.	this study.							
N/A	N/A		N/A	N/A		No	No	No
N/A	N/A		N/A	N/A		No	No	No
,	,		, proposed	,				
		Communi	interventi					
		ty-	ons were	Not				
		Individual	implemen	-				
NA	NA	level			Individual	NA	NA	NA
		Individual	proposed interventi					
NA	NA	level	ons were	d	Individual	NA	NA	NA
				-				
N/A	N/A		N/A	N/A		No	No	No
Not	Not		Not	Not		Not	Not	Not
mentione	mentione		mentione	mentione		mentione	mentione	
d	d		d	d		d	d	d
			All .					
		Individual	proposed	Not				
NA	NA	level	interventi ons were	d performe	Individual		NA	NA
				u l	inarriadal			

N/A for	NA N/A for this study.	level N/A	proposed interventi ons were implemen ted N/A	Not performe d N/A	Individual N/A	NA N/A	NA N/A	NA N/A
N/A for	NA N/A for this study.		proposed interventi ons were implemen N/A	performe	Individual N/A	NA N/A	NA N/A	NA N/A
NA	NA	Individual level Yes	NA All proposed interventi ons were	Not performe d Not performe d	Individual	NA	NA	NA

	Q2						
	Effective	Q3					
Q1	impleme	Lessons	Q4 Good	Limitation			
mHealth	ntation	learnt	evidence	s and	Lessons		
use (Y/N)	(Y/N)	(Y/N)	? (Y/N)	challenges	learnt	Comments	
				Daily text	SMS	A process	
				messages	reminders	evaluation	
				were	improve	of the	
				found to	medicatio	intervention	
				be boring	n	is needed to	
Y	Y	Y	Y	and	adherence	inform	
					nt of		
					mobile		
			Y L3		RCTs are		
				patient	y-based,	integrated	
				data could	peer	care	
Y	Y	Y	Y L2	not be	education	programs	
				АП			
				interactive			
Ν	Y	Y	Y				
	-	-	_	interventio			
				n does not			
N	Y	Y	Y L3	The small	The	To make a	
	-	-		size was	application		
				very small	smart	comparable	
				that	quit 2.0	inference,	
						,	
Y	Ν	Y	Y L3				
						shoulld we	
						exclude?	
						Since this	
Y	N	Y	Y L4			was a	
				recruiteme		integrated	
				nt		into a	
				mechanis		clinical	
				ms are		setting, hard	
Y	N	N	Y	unlcear		to place	
				not a	d mobile-		
				definitive	phone		
				trial and	interventio		
Y	Y	Y	Y L4	was not	n is		
				located		research in	
				from one		using this	
				transplant		technology	
Y	Y	Y	Y L4	centre,		in regular	

				о. ис. т. Г			
				over 5	look at		
				months.	longer	Castlet	
				Relatively	term	Good study	
N/	N/	N/	N/10	high	maintenan		
Y	Y	Y	Y L3	incomes	ce SMS and	duration.	
				Shortage	email		
				of vaccine			
v	Y	V	Y L3	availability	reminders		
Y	Ť	Y	1 L3	following	are	<i>c</i> , , , ,	
				criteria as	preferred	findings	
				English	-	cannot be	
				only,	SMS	generalized	
Y	Y	Y	Y	majority	preferred	as it is a part	
				Lean	U U	Authors	
				mode of	ve plus	investigated	
Y	Y	Y	Y	the	social	whether a	
				patiens		Good study.	
				were	in group	Short	
				vulnerable.	•	duration	
Y	Y	Y	Y	16%	glycaemic	follow up.	
				numbers,	important		
				no control	clinical		
				at 2 year	data are		
Y	Y	Y	Y	follow-up,	improvem		
				USA			
				trucking			
Y	Ν	Y	Y	industry			
				only			
				Ully			
				criteria of	definition	pilot study	
				ability to	for end	which needs	
				use the	users,	to be	
Y	Y	Y	Y	sensors,	assessmen	validated in	
				The low	кеан-сіппе	nawmone	
				inclusion	social	effect for	
Y	Y	Y	Y	criteria in	support	positive	
				terms	may help	changes in	
				HbA1c for	people to	both study	
				selection	(tay	groups	
Y	Ν	N	Y	bias, self	No	No	
				Short	Mobile	first	
				follow-up	reminders	randomized	
				period of	can work	trial in a	
Y	Y	Y	Y	three	at a	real-world	
						-	
				follow-up	particiapti		
Y	Ν	Y	Y	period	on rate		
				might not	indicatse		
				be long	older		
				onough to	nationte	l	I

				duration	tailored	Tailored		
				of the	text	text		
Y	Y	Y	Y	interventio		messages		
•	•		•			_		
				n may not	difference	Cost-benefit		
				have had	s in	analysis was		
				enough	physical	limited in		
Y	N	Y	Y	increasing	activity,	this case		
				only 12	promoted	sample and		
				weeks,	clinically	short		
				sample	meaningfu	duration		
				size small,	l weight	study, but		
				no formal	loss over	provides an		
Y	Y	Y	Y		12 weeks	insight into		
				medicatio	The			
				n intake	interventio			
				needed to	ns			
				be	improved			
Y	Y	Y	Y	confirmed	all the			
				more	Possible			
				patients	to			
				for longer	integrate			
				period	home			
Y	Y	Y	Y	would	based			
				Lack	Use of	Study	cultural	The
Yes	Yes	Yes	Yes	detailed	focus	sample	tailoring	findings
163	163	163	163	individual-	groups to	derived	is needed	of the
				level data		from a clinic-	for text	current
				1) reliance	-			
				on self-	providing			
				reported	feedback			
					to an			
Y	Y	Y	Y	could	informal			
				1) limited	, ,	HF		
				the	the	randomized		
Yes	Yes	Yes	Yes	multivariat	favorable	results are		
				study was	interventio			
					n			
				among VA	increased			
Yes	Yes	Yes	Yes	patients	CarePartn			
N	Y	Y	Y		smartphon			
					e-based			
					behavior			
					monitorin			
				1	WellDoc			
				Pilot study	System is			
				, with its	an			
Partially				own	effective	Very small		
Yes	Y	Y	Y		tool for	sample size		
	•			1			1	

Y	Y	Y	Y	the	patients			
	I	I		sample	with CHD			
				was	were			
				recruited	engaged			
				size was	demonstra			
				limited	te that			
Yes	No	Yes	Yes	2)	newer			
105		105	105	2) Non	Digital	Further		
				Randomize	-	investigation		
Partially				d	cs can	at a scale is		
Yes	Y	Y	Y	uncontroll	produce a	needed		
	_	-	-	sample	motivation			
				size. 2)	strategies			
				different	seemed			
Yes	No	Yes	Yes	recruitmen				
103		103	103	Measuring		Use of cell		
				-	interventio			
Y	Y	Y	Y	by self-	ns are	' increasing		
Y	Y	Y	Y	, recruited	The	Ŭ		
				sample	addition			
				1) The	1)			
				sample	Patients			
Yes	Yes	Yes	Yes	size was	who			
				1) small	1)			
				number of	including			
Yes	No	Yes	Yes	participant	gaming			
				not be	cardiovasc	simplified		
				generaliza	ular	cardiovascul		
				ble to	managem	ar		
				healthcare	ent	managemen		
Y	Y	Y	Y	settings	program's	t model		
				sample	utility of	studies are		
				size and	smartphon	needed to		
Y	Y	Y	Y	clinic	e based	assess the		
				study was	S			
				conductedi				
				n mostly	d the			
Yes	No	Yes	Yes	white	study with			
				the mean	Ideally, a			
				baseline	12-month			
				physical	follow-up			
Yes	Yes	Yes	Yes	activity	is			
					study did			
				High rates	not show			
				of Loss to	a benefit			
Y	Y	Y	Y	Follow-Up	of adding			
N	Y	Ν	Y	Limitations				
				was				
				related to				
				study				

					interventio	intervention	
				Small	n	tool appears	
				sample	stimulated	to be a	
				size and a	patients	feasible in	
Y	Y	Y	Y	pilot study	to	primary	
Ν	Y	Ν	Y	1) it	mHealth		
				was	technologi		
				designed	es such as		
				as a	internetco		
				feasibility	nnected		
					significant	coaching in	
					between-	primary	
				Reliability	group	care can	
Y	Y	Y	Y	on HbA1c	difference	improve the	
Y	Y	Y	Y	small	electronic	a study	
				sample	ally	design of	
				size, short	assisted	RCT with a	
				duration,	health	representati	
				bias could	potential	is a high	
				have been	of using	income	
				introduced	Web-	country	
Y	Y	Y	Y	in the	assisted	with high	
				App was	Provides	This is a	
				not	a feasible	pilot study	
				regulated	solution	which needs	
Y	Y	Y	Y	by	to the	to be	

												Care
					Study							setting
	Co-		Year of		type		No.	Informed	Power	Type of		(Prim,
Article	reviewe	Title of	publicat	Journal	(eg:	Study	groups	consent	calculat	interve	Disease	Sec,
no.	r	article	ion	name	RCT)	duration	/sites	(Y/N)	ed	ntion	group	Tert)
		section		вмс	section					support	Depressi	and
		al		Pyschiat	al,				Not	ive text	on and	seconda
3	Teng	survey	2016	ry	online,	6 months	1	N	done	messag	anxiety	ry
				Primary Care	observ ational		2		Not	mHealt	diabetes	
4	Teng	Improve	2015	Diabete	open	6 months	groups, 16	Y		h	&	OPD
					nainao				d	services	nyperte	
-	Manle	effect of	2017	ional	mised	mentione		V	0.0	care +		During a mar
5	Mark		2017		control	d	3	Y	0.8	text	CVD	Primary
6	Padma	ng obstruc	2014	of Biomodi	nary finding	mentione d	2	mentione d	Not done	hone-	ive	Drimony
0	Paulia	reasibili	2014	Biomedi	reasibili	u	2	u	uone	based	sleep Hyperte	Primary
		ty and		of	ity and					ive	nsion +/	Primary
		Prelimin		Medical	•					mobile	dyslipide	
7	Padma	ary Outcom	2016	Sustama	nary	6 months	1	Y	0.8	phone	mia +/ heart	seconda
/	Paulila	Conduc	2010	Systems	nanao	o monuis	1	T	0.8	app for	Heart	ry
		ting a		BMJ	mised							
		fully		Innovati								
8	Teng	mobile	2016	ons	trial		3	Y				
		ent		of the	mised				Net	only		Duiment
9	Tong	blood	2015	America n	led 3-	15 days	3	Y	Not done	group <i>,</i> ii) EMR	HTN	Primary
9	Teng	pressur Outpat	2015	Journal		15 uays	5	Ť	uone	i) EMR-		care
		ient		of the	mised				Not	only		Primar
9	Teng	blood	2015	Americ		15 days	3	Y	done	group,	HTN	y care
	TCHg	wireles	2015	es	label	15 0035	5	1	uone	Dulce		ycarc
		s		es Techno		30				- an		Primar
11	Dadma	s Tijuana	2016	logy &		months	3	Y	0.975	integra	T2DM	y care
	Fauna	Smartp	2010	Rheum		montifis	5	T	0.975	Descrip		y care
		hone		atology						tive	Rheum	
		applica		αισισβγ	r perce	5				Cross	atoid	Tertiar
15	Padma	tion	2015	Interna		Months	1	Consent	NA		Arthritis	
15		The	2015	The	Rando	wonths	-	N	Not	mHealt		y N/A
		Effect		Journal				N	mentio		NA	N/A
	Mahfu			for	contro				ned	decisio		
16	Z	Mobile	2014	Nurse	lled		3		neu	n		
	-	mobile	2014	. turse			3					
		Phone			atic,							
		Text			single- blind,						Hyperte	Primar
				Circula		12					nsion	y care
20	Tong	Messa	2016	Circula tion	3-arm	months	3	Y	Y			
20	Teng	ges to	2010	and	rando micod	months	5		T	LC.		Dringer
		mized, control		Alcoho	mised contro					EG:	N/A	Primar
	Mahfu				lled	2				Smartp		У
24			2014				2	V	0.0	hone		
24	Z	pilot	2014	Depen	pilot	months	2	Y	0.8	deliver		

										0.0		
		pment			ility					One	professi	
		and		Educati						hour	onals	
		usabilit		on and						intervi	dealing	Tertiar
25	Padma	•	2015	Counse		9 days	1	N/A	NA	ew	with	У
		Improv		Journal					Not	А	Asthma	Primar
	Mahfu	ement			ty	4			mentio	smartp		у
35	Z	in	2016	Allergy	and	months	1	Y	ned	hone		
		Postop			Feasib					Mobile		
		erative		Europe	ility					арр		Second
				an	of a			Y	Ν	for	Spine	
		monito		Spine	mHeal					postop		ary
39	Teng	ring	2016	Journal	th app	15 days	1			erative		
		nting		of	mised					alized		
		psycho		Affecti	contro					Real-	Bipolar	
	Jitendr	educati		ve	lled	6				TimeIn	disorde	Primar
41	а	on	2015	Disord	trial	months	2	Y	N	tervent		y care
		Rando		an	mised					ntion	of Lung	,
		mized		Journal						group-	Transpl	
		Control			lled					Pocket	ant	Tertiar
42	Padma		2016	Transpl					Yes	PATH-	recipien	
		T: An			ationa					Single	Stroke	,
		interna		tation	I	, depend				blinde	rehabili	Tertiar
45	Ben	tional	2015	and	' rando	ent on	2	Y		d RCT	tation	y
45	Den	Novel	2015	an	Rando		2	•		Diabet	tation	У
		Diabet		Journal								
				of						es		
		es Drevier		-	contro	4				preven		Comme
10	Maula	Preven	2015		lled	4	1	V		tion	N.C.I	Comm
49	Mark	tion	2015	tive	trial	months	1	Y	Y	session		unity
		The		Resear	Pilot					Daily	Diabeti	
		impact			rando					text	cs with	
_		of		Social	mised		_			-	HbA1c>	
54	Padma		2016	and	contro	90 days	2	Y	N	es for	8%	У
		The			Rando					Differe	DM/CH	
		effect			mised	-				nt	F/Asth	
	Jitendr				contro	4	-			types	ma/CO	Primar
55	а	various	2015	е	lled	months	6	N	0.8	of	PD/CAD	y care
		Motiva		of	sectio							
		ting		Diabet	nal			Y	N	NA	NA	NA
		Functio		es	survey							
60	Teng	n of	2016	Resear	of	NA	1					
		nic		Preven	r					or		
		remind		tive	rando					autom		
		ers for		Medici	mised	6			Incom	ated	Healthy	Primar
61	Padma	cancer	2012	ne	contro	months	2	Y	plete	voice	adults	y care
				Americ	rando					Арр		Tertiar
		Health		an	mised					providi	Atrial	у
		Techno		Journal	contro	4				ng	Fibrillati	hospita
62	Mark	logy	2017	of	lled	months	2	Y	Y	medica	on	I
	1	5.										

HarnesAmericAssessCompasinganment6rison63Padmathe2016Journalofmonths5YYesamong		
	I loolthu.	Duineau
63 Padma the 2016 Journal of months 5 Y Y Yes Jamong	Healthy	Primar
	adults	y care
Suppor Journal Qualit mobile		Primar
ting of ative app	HTN	y care
64 Teng the 2016 Human evalua 8 weeks N/A Y N/A on HT		y cure
consult an mised consult consult		ient
ations Journal contro ations ations		clinic
as add- of Iled 8 as add		of 3
65 Mark on to 2017 Endocr trial months 3 Y Y on to	T2DM	Tertiar
manag Obstet year		
	Urinary	
	incontin	
71 a stress 2017 ologica a months 2 Y done app	ence	
	cs Type	
es Medica contro 2	2	- ·
	diagnos	Primar
77 Padma s 2016 System trial 6 Weeks 2 Y Y	ed >6	У
onitori of Rando 3 for		
ng and Medica mised each phone	DM	Primar
mobile I contro diseas Y 0.8 with a	and	
Internelled 12	HTN	У
78 Teng phone- 2015 t trial months e PHR		
Effect Preven Rando Eligible		
of tive mised		
mobile Medici contro outpati	Healthy	Primar
81 Padma 2015 ne lled 11 days 2 Y Yes ents	adults	y care
pment Acto opme center		
and Oto- nt prospe	attendi	
evaluat Laryng and Five Single ctive	ng	Tertiar
82 Padma ion of 2015 ologica evalua Months group Yes NA non-	otolary	у
World es sectio sectio		,
Use Techno nal		Online
and logy & online N/A N NA	DM	comm
	DIVI	
Self-Therap383TengReport2017euticssurveymonths1		unity
83 Teng Report 2017 eutics survey months 1 Tailore The Rando Partici		
d, Americ mised 12 pants		
	BMI>27	NA
		IN/A
	Healthy	Morkel
	worker	Workpl
	workers	ace
y of g of a oss		
SmartL smart partici		
	Overwe	
a - were	ight/	
smartp Obesit based 12 prescri	obese	Tertiar
96 Padma hone- 2015 y weigh Weeks 2 Y NA bed a	people	у

		Feasibil		Gynec	Feasib					Mobili	Overwe	
		ity of a			ility					e APP	ight or	
		lifestyl		Oncolo						for	obese	Hospit
98	Mark	e	2015	gy		1 month	1	Y	N		patients	al
	IVIGIN	and	2013	tional	and	1 month		•		imple	adults	ui
		evaluat			evalua					mentat		
		ion of			tion					ion	fall risk	
		theory-		Medici	ofa					and		
100	Padma		2014		mobil	10 days	2	NA	NA	evaluat	and Iow	NA
100	Paulila	A	2014	ne	паот	10 days	2	INA	INA	Medica	IOW	INA
		mobile			Crosso					tion		Cardiac
		mobile			ver					Plan	Coronar	rehab
	Jitendr	annlica		Medici	usabili				Not	via	y heart	sports
103	а	tion	2016		ty trial		1	Y		Apple	disease	groups
105	u	A	2010	Journal	-		-	•	uone	Person	uiscuse	72 of
		spanis		of	mised	3				alizatio		99
		h				5 months	2	Y	No	n of		pats
104	Teng	pillbox	2014	I	lled	montins				prescri		(73%)
101	10118		2011	•			no utici					(7370)
		mobile			ility		partici			ated,bi		
		العام م			of		pants			directi		
	lite a se al se	health			integr	0	were			onaltex		Duineau
100	Jitendr		2014	Health	ating	9	recruit		NI / A	tmessa		Primar
108	а	ucture Text	2014	care	mHeal Rando	months	ed	Y	N/A	ging	S	y care
					mised							Duineau
		messag e			contro						Cancer	Primar
110	Teng	e remind	2017	Cancer								У
110	Teng	Develo	2017	Patient						Text		
		ping a			ative						DM	Primar
115	Teng	behavi	2013	Educati			N/A	Y	N/A	messag	DIVI	y care
115		Increas		Topics				•		e	Stroke	Drimar
		ing		-	tion					a	survivor	
		physica		Stroke	of					•		у
	Mahfu			Rehabil						hone	S	
120	Z	' activity	2016	itation	•	6 weeks	2		0.84	based		
120	<u> </u>	ofa	2010	Patient		o weeks			0.04	арр		Primar
		Smartp		Care	mised						HIV	
	Mahfu	-		and	clinica						infectio	У
122			2014	and STDs	l trial		2					
122	Z	Applica Structu	2014	Teleme			2			weekly	n Patients	
		red		dicine	mised					IVR	with	
		Caregiv		and	contro					calls	diabete	
	Jitendr	-		eHealt		4			Not	with	s	Primar
127	а	er Feedba	2016	h	trial	4 months	4	Y		autom	s and/or	y care
12/	a	Engage	2010		Patien	montins	4		uone	IVR	heart	ycare
	Jitendr			Medica		23				chronic		Primar
129	а	with	2013	l Care	experi	months	N/A	Y	N/A		depress	y care
125	u	WICH	2013	Curc	experi	months	- N/A			anscuse	acpress	ycurc

		Davida										
		Rando			mised					chronic		
		mized			comp					disease		
	Jitendr			Medica	arativ	12			Not	self-	Heart	Primar
130	а	of	2015	l Care	e	Months	2	Y	done	manag	failure	y care
		mobile		of	mised		2	Y	0.8	mHealt	Heart	
				Medica	comp					h	disease	
		health		I	arativ					suppor	(Heart	
		interve		Interne	е					t for	failure)	
	Mahfu	ntion		t	effecti					caregiv		
131	z	suppor	2015	Resear	venes					ers of		
		pant		of	ative				Not	smartp	Type 2	Primar
		experie		Teleme					mentio		diabete	
	Mahfu	•			tion	6			ned	based	S	y
134			2016		ofa		2	V	neu	health	5	
134	Z	in a WellDo	2016	and Diabet	or a Rando	months	2	Y		Cell		
		vvenD0 c™									Dationto	
		-		es Ta alva a	mised						Patients	
		mobile		Techno		2				based	with	D. i
126			2000	0.	lled	3				diabet	Diabete	
136	Padma		2008	Therap		months	2	Y	N	es 	S	У
		Factors			Parall				Not	Text	Coronar	
					el	6				-	y heart	У
		influen		PLOS	design	6			ned	ing	disease	
137	Z	cing	2016	ONE	,	months	2	Y		progra		
		study		tional	testin				Not	smart	N/A	N/A
		ofa		Journal	-				mentio	-		
	Mahfu	smartp		of	evalua				ned	based		
138	Z	hone-	2017	Medica		4 weeks	1	Y		interve		
		veness		Diabet	mised						ertensiv	
		of an		es	contro	12				Interve	es 120-	Primar
141	Padma	mHealt	2016	Endocr	lled	months	2	Y	Y	ntion	139	y care
		nces		an	ative				Not			
	Mahfu	of		Psychia	evalua				mentio			
142	z	remote	2017	try	tion			Y	ned			
		Long-		Journal	Outco		One			Preven	Healthy	
		term		of	mes		group			t'	adults	
		outco		Medica	of a	Two	but			Interne	Mean	Individ
145	Padma	mes of	2015	I	longit	years	analys	Y	NA	t	age	ual
		Qualita		of the	ative							
		tive		Associa	evalua							
	Mahfu	Study		tion of	tion							
149	z	Investi	2014	Nurses	of a							
		Feasibil		Oncolo						proof	Oral	Comm
		ity of a		gy	mised	10				of	cancer	unity
152	Padma	Text	2015	Nursin	contro	Weeks	2	Y	NA	concep	patients	care
	Mahfu	Integra		JAMA	Rando	12		N	Not	SMS	Obese	Primar
153	z	ting	2013	Interna	mised	months	2		mentio	and		у
		Design		Compu	Explor		Tsingh	Not	Not	Self-	hyperte	Elderly
	Jitendr	and		ters in	atory		ua	mention	mentio	monito	nsive	comm
154	а	evaluat	2016	Human	-	N/A	Elderly	ed	ned	ring	or pre-	unity
L	1				-		,					

		cluster			r					unity		
		cluster			' rando					Health	high	Comm
		- rando			mised					care	cardio-	unity
				Circula		27				Worke		based
157	Dadmaa	mized,	2015		contro		2	Vee	Vaa		vascula	
157	Padma		2015	tion	lled	months	2	Yes	Yes	rs	r risk	study
		hone-			ty of					Scope	ants	
		based			а	8				teleme	Ŭ	Tertiar
158	Padma		2016		smart	months	2	Yes	NA	dicine	oing	У
		lt's		Journal			Twent		Based	monito		
		LiFe!		of	r	Not	y four			ring	obstruc	. .
	Jitendr			Medica		mention	-		•	and	tive	Primar
164	а	and	2015	1	mised	ed	practic	Y	of	feedba	pulmon	y care
		The		Journal						Mobile		
		effect		of	mised						<u>.</u>	. .
1.5.5		of text			contro					phone	Diabete	
166	Padma	messag	2017	&	lled	2 years	3	Y	Y	for	S	У
		Proces		Journal						Diabet	N/A	N/A
		S .		of	S ,	4.2				es Self-		
		evaluat		Teleme		12			Not	Manag		
167	Z	ion of	2017	-	tion	months	3	Y	done	ement		
		study		of	testin					and		I
		ofa		Teleme	-					post		Practic
		tool to		dicine	evalua					interve		
		stimula		and	tion	3				ntion	s or	Primar
169	Padma	te	2014	Telecar	of a	months	1	NA	NA	study	COPD	У
		ity of a		of	Rando					Promo	Alzheim	Primar
		Memo		Alzhei	mised					ting	ers	У
		ry		mer's	crosso					Activit		
	Mahfu	Clinic-		Diseas	ver	16			Not	У		
170	Z	Based	2016	e	trial	weeks	2	Y	done	throug		
		coachi		of	tion					coachi	Diabeti	
		ng		Medica	of a					ng	cs with	
		reduce		I	health	6				with	HbA1c>	Primar
173	Padma		2015	Interne		months	2	Yes	yes	or	7.3%	У
		Smartp		Journal		24	1	Y	Not	smartp	Diabete	Primar
		hone-		of	opme	weeks			mentio	hone	S	у
	Mahfu			Medica					ned	based		
174	Z	d	2014	I	and					health		
		of a		of	mised,					t	adults	
		web-		Medica						progra	aged	
		based		I	waitlis	3	Two			m	60-70	
177	Padma	interve	2013	Interne	t-	months	groups	Yes	Yes	Philips	years	NA
		activity			rando					An	people	second
	Mahfu	in a		Health	mised				mentio	SMS-	with	ary
179	z	mobile	2016	&	contro		2	Y		assiste	depress	
		Tablet		Compu	Single-					A	Patients	
		PC-		ter	arm					tablet	who	
		enable		Metho	pilot				Pilot	PC	have	Tertiar
180	Padma	d	2015	ds and	study	6 weeks	2	Y	study	applica	underg	У

												compar
Wider						_						ator
health						Demogr						groups
promotio				No.	Access	aphic	Interve	Interve	Interve	Interve	Co-	(e.g.
n			Total	patient	or	profile	ntion	ntion	ntion	ntion	interve	control
program?	Mean	C -11	sample	s per	equity	&	descript		frequen	•	ntions	/placeb
Specify	Age	Sex	size	group	issues?	location Patients	ion Daily	n	су	d by	(if any)	o/other
	(31.3%)					with	support			ramme		
	>65	M & F				depress	ive text	180		d		
N/A	(7%)	83% F	4111	N/A	None	ion and	messag	days	Daily	online	N/A	None
a)monitor		97%	422	108 in	equitabl	16 DVA	a)monit	3 and 6	weekly:	Ann	Guidanc	
pts'	age	male	eligible,	3-mth,	e access	outpati	or pts'	months	Each	Arbor	e on	months
sx/self-	66.7±9.		301	193 in		ent	<u>sx/self-</u>		week	VA	self-mx	versus
		54.4%			patients		ted	3		ted	care,	group
N/A	54.94	М	180	60	had	cardiac	messag	months	Daily	softwar	which	which
	ages,				particip		ement	One-off		researc		
N/A	not	93% M	15	8 and 7	ants	medical	Of Meupia	test	N/A	hers	N/A	None
					, patients		n is a			messag		
		M & F			with	from	medicat			es and		
		78.6%			Android	two	ion	6		remind		
N/A	56	М	62	N/A	or iOS	clinics,	manage	months	Daily	ers	N/A	None
				1st		were	patients			remind		only BP
				group,		recruite	were			er		measur
N/A	60	M & F	123	33 in	None	d from	given a	15 days	Daily	messag	N/A	ement
,				47 in		Patient	All		,	The		EMR-
				1st		s were	patient	15		remind		only
N/A	60	M & F	123	group,		recruit	s were	days	Daily	er	N/A	BP
,,,,	00	101 00 1	125		patient		Dulce	10	during			control
		M & F			•				•	was		
N1 / A	F 4		201		s with		(PD)	month	1st	provid	NI / A	group
N/A	51	(67% F)	301	(CG),		DM	compri	S	month	ed by	N/A	receive
					Patient			_				
		_			S	Porto,		5				
		Female			diagno	- U	Intervi	Month		Study		
NA	57	s-91%	100	NA	sed	al	ews	S	NA	staff	NA	No
N/A		M & F;	363	Cohort	N/A							
		mostly		1=93;								
		female		cohort								
				2=								
					The alimic		Partici		Person	Partici		All
				ation-	clinic	(>21yrs		12	alized	pants	SMS	trial
no			1372	only	is)	allocat	month	SMS	allocat	text	staff
				SMS	within	attendi		S	text	ed to	messag	were
				text	walkin	ng the	the		messag	the	es	maske
N/A	41.5	M & F	196	98	a Not	Not	lt is a	Interve	N/A	N/A	N/A	Nation
10/7	+1.J	Male:	150	50	comple		self-	ntion	N/A			al
		47%			ting	ned	paced	duratio				Cancer
		(smart			baselin		interve	n				Institut

	.,		c			1							
	wider		female				profess				h tool		
	group		s and			profess		based			for		
	rovidin		one	_		ionals		stigma			Lung		
g	rehab.	20-50	male	8	NA	with a	g in a	reducti		daily	cancer	NA	NA
	N/A	50	M & F	60	N/A	N/A	Older	The	4		autom	N/A	N/A
							adults	smartp	month		ated		
							with	hone	S				
								The	We	Overall			
		42 (23-	F/M =					Mobile	analyz				
	No	77)	, 18/42	60				арр		satisfac			
		,	,					recove		tionwa			
								ry	accordi				
							69.5%			twice	t-		and
							African			a day	enable		pencil
		47.5%	58.5%				-		10	for 10	d		conditi
		(12.8)	Female	82	41		Americ		weeks	weeks	smart	none	on
P	art of				PATH-	pants	Uni.	hone		2, 6	ttsburg		
	the				99,	who	Pittsbu	with	12	and 12	h		Usual
U	niversit		Males-		Usual	receive	Ŭ	custom	month	month	Medica		care
	y of	62	55%	201	care-	d	Medica		S	S		NA	group
					augme		rehab	red	depen		therapi		group
			40%		nted		centres	use of	ding	feedba	sts,		receive
		62	female	125	feedba		in 11	augme	on	ck	sensor		d the
	to						Francis	session			trained		eter
re	educed						co and	in			non		only
fa	ace to				30 Int		Berkley	person	5		medica	See	withou
	face				31				month		I.	interve	t step
р	rogram	55	33% M	61	control		Califor	progra	S	daily	researc	ntion	goals
						Diabeti	Subject	Tailore					Control
						CS	S	d text					group-
								messag	90				Usual
	No	46	M & F	48	24		treatm	es	days	Daily	NA	None	care
						Partici		Subgro			Nurse		Subgro
						pants	pants	ups 1a			via		ups
							were	and 1b	4		phone,		1b, 2b
	N/A	> 40	M & F	1380	230	be	recruit uisease	-	weeks	Weekly	SMS	None	and 3b
							uiscuse						
	N/A	58.3	M & F	93	NA	None	duratio	NA	NA	NA	NA	NA	NA
	1,7,7,7	50.5	69% M	55	1.07.1	None	n c 11	1.07.1	1.17.	1.07.1	1.17.1	147.1	117.1
							Noarc						
					SMS=	those		vs AVR			Health	was a	
			59.3%		167,	who		every	6		У	part of	
			female		AVR=	were		other	MONT	fortnig	Directi	an	
		50.8	S	598	431	able	USA	week	HS	htly	ons 2	ongoin	
					Interve			Арр					
					ntion;			which	3		self		
					96			contai	month	Contin	admini		Usual
	N/A	67	58% M	205	Usual	No	China	ned	S	uous	stered	Nil	care

Yes,		51.1%			Study	Israel-	Questi	6	Single	Staff		
part of		female			include		on		messag	of the		Standa
the	60.44	S	50000	10000		Income		S	e sent	Nation	NA	rd care
Yes,	F	Female		51	,	4	3	daily		21st		
regular	58yrs	s (n =	intervi	patient		differe	compo	self-		Centur		
follow-	(46–72	23)	ewed	s		nt	nents:	reports		y		
1011011	(10 / 2		eneu	Interv		hagen,	y	1000103		,		
				83		Denma	, videoc	8		Health		
		M & F		Control		rk.	onfere		Monthl			Usual
N/A	58	64% M	165	82	Nil	Higher	nces	S	y	nurse	Nil	care
,	ders	• .,•		group		sity			7			
	44.2			= 61		educati			three			
NCT0184				control		on (>3		two	times	mobile		
8938	(10.3)	F	123	= 62		yr)		years	a day	арр		control
0550			125	- 02		y')		years	auay	app		control
	ntion-	ntion-			0n critoria		onerah					
	59.9, Control	Female			criteria		operab					Stende
	Control		60	20	was	Dalas	ility	6				Standa
NA Health	- 59.0	43%,	60	30	based	Polan	and a	Weeks	пеанн	NA	NA	rd care
coaches	patient	majorit		heart		was	structu	42	coache			ed
and	s was	y of	547	patient		higher	red	12	s			rando
patients	69.1	patient	517	s and		in the	mobile	month	called			mizatio
can see	(SD	s were		250		diabet		S	patient			n
Yes,	Inteve	mon in Interve		diabat Interve		Puduch	nhono Eligiblo		everyd	PHC		dociant
Outpatie		ntion-		ntion=			LIBIDIE		ay for	doctor		
nts	ntion-					erry	outpoti	11	ay 101			Standa
	46.5,	Female	268	233, Control	Nono	state of	outpati			s/inves	Nono	
attenum	Control	S-	208	Control	None	01	ents	days	workin	tigator	None	rd care
							pants	5		AudCal		
		E a un a la					under	-		AudCal		
Nie	42.0	Female	110		N1.0	Curain	went	Month		iOS	N 1 A	
No	43.9	s-55%	110	NA	NA FOI	Spain	two Mobile	S Decaus	NA	device	NA	NA
		74.00/	memb	had	childre	Hispani		е				
	41	74.8%	ers of	diabet	n, the	c		Nightsc				
NA	years	female	CGM	es in	most	whites	tions	out				
		S	in the	the	comm	(92.1%	were	enable				
	Interve	Interve	Cloud	housob	Âfrican		Partici	- <u>74 h</u> 12	Weekly	TRIMM	Engage	An
	ntion-	ntion-		ntion=	Annean	ore,	pants	month	goals	study	ment	initial
NA	Age	Female	124	63,	Americ		receive	S	with	staff	with	clinical
	1.80	. emaie	127	Interv	7 uniene	College		12	d to	Resear	with	medica
				and		concee	printed		CVD	ch		I
Nil	61	58% M	589	147	NA	educati		S	risk	team	Nil	report
	01	5070 101	505	/	101	gton	OSS	3	1131	ceum	i vii	· ·
						Biome	provid					pants in the
						dical	es the			SmartL		Health
		Fomala				Resear	ability					Educati
		Female s-				ch	to	12		oss study		
NIA	44.4		40	20					Mookly		NIA	on control
NA	44.4	82.5%	40	20		center,	deliver	weeks	Weekly	staff	NA	control

						Akron	Partici					
						NE	pants			Not		
						Ohio,	were	4		report		
N	58	F	50	NA	No	US,	then	weeks	Daily	ed	Nil	Nil
	evaluat	Initial		Initial		00,	theory-	Weeks	Duny			
	ion-	evaluat		evaluat			inform					
	Mean-	ion-		ion-9,			ed app					
	74.6	Female		Follow-			was	7-10		Study		
NA	Follow	s-45%	23	up- 14	NA	USA	design	days	Daily	staff	NA	No
	10110	3-4370	25	up- 14		Level	uesign	uays	Dany	31411		NO
						of						
						educati		not	not			
	73.8					on		specifi	specifi	Apple		no
	yr (7.5)	M & F	24	24				ed	ed	iPad		control
	, (- /			48	Control	Exp						
		45%	a a	control		group:						
		female	99	s, 51	receive							
				experi	d oral	(43%)						
chronic					net	minant	autom			ated		
disease	40.6%				patient	ly	ated			using		
manage	in age				•	<i>,</i> female	text	9		patient		
ment in	group				people	(65%)	messag	month				
safetyne	50-59	M & F	135	135	with	and	ing for	S	N/A	relatio	N/A	N/A
	40-45	The	2386	Identifi	Yes.	Unscre	3 text					
	yrs:	HR	AN/AIs	ed 808	Cross	ened	messag					
	Control	estima	aged	eligible	cultura	AN/Als	es					
		tes	40 to		l issues	in a	sent 1					
	three-	female	18	56		61%						
	quarte	(67%)	African	patient		had						
	rs	. ,	-	S		comple						
N/A	56	M & F	23	l: n=15		а	а	6	Daily	autom	N/A	stroke
		12		C: n=8		sample		weeks		ated		survivo
		wome				of	hone			text		rs but
		n				stroke	based			messag		didn't
	16	N4 0 -	20			survivo	арр	-		es	N1/2	receive
N/A	46	M & F	28	l: n=17		Partici	an	3		autom	N/A	individ
		26		C:		pants	augme	month		ated		uals
		men		n=11		were	nted	S		softwa		were
	62.5%			27		recruit predo	version weekly			re Calls		provid weekly
	02.5% Of			z ر (standa		minant	IVR			origina		IVR
	patient			rd		ly	calls	4		ted		calls
	s					female		4 month		from		togeth
N/A	above	M & F	72	h)+45(ous	(62%)	ng self-	s	weekly	the	None	er
	above	AVI OCT	72	1).43(003	(02 <i>%</i>) 77%	weekly	The	weekiy	IVR	None	Involve
						white	IVR	media		system		ment
	60.9	M & F	1173	N/A	N/A	and	calls	n	weekly	-	None	of
	00.5		11/5			and	cans		neekty		none	0.

							11/17					
				groups		male	IVR	10		system		
				-		and	calls	12		s were		
				Standa		77%	includi	month		progra		
	67.9	M & F	369	rd	N/A	white	ng self-	S	weekly		None	
N/A	67.8	M & F	331	1:	N/A	Patient	The	12	weekly	autom	N/A	receive
	years			n=165,		s were	mHealt	month	; Up to	ated		d only
				C:		recruit	h+CP	s	nine	softwa		mHealt
				n=166		ed	interve		call	re		h
						from	ntion		attemp			interve
						VA	was		ts per			ntion
N/A	Male=	M & F,	11	N/A	N/A	Patient	smartp	Not	2-4	The	N/A	Receiv
,	63.5	F=9		,	,	s with	hone	mentio		smartp	-	ed
	Female					type 2	based	ned	ts	hone		health
	=55.8					diabet	self-	neu	monthl			coahin
	Interve	Males				ulabet	Cell			Phone		coariiri
	ntion								Every 2			Control
		Interve					phone	2		calls,		Control
	Age	ntion					based	3	weeks	Interne		group-
• •	55-64	n=4,	•			Maryla	diabet	month	for	t,		Usual
No	n=5,	Control		13	No	nd USA		S	patient			care
N/A	58	M & F;	710	1:		patient		6	4	autom	N/A	the
		83%		n=352		s with	ges	month	messag			control
		male		C:		CHD	contai	S	es/wee	messag		group
				n=358		from a	ned		k	es		receive
N/A	Partici	M & F	32	N/A	N/A			4	one		N/A	N/A
	pants							weeks	messag			
	age							(28	es/day			
	betwe							consec				
		Interve		ntion-		pants	У	12	y calls	calls		group-
		ntion		316		from	motiva	month	and	and		Usual
Ν	43	47%	637	Control	No	three	tional	S	weekly	SMS		care
			21	N/A		Patient	Under	Not	10	Autom	N/A	N/A
						s with	AMoSS	mentio	times	ated		
						bipolar	study	ned	daily	softwa		
		Males		Starter	Partici		Interne		6, 12	Interne		Groups
		n		s (4+	pants	partici	t	24	and 24	t		
		(%)=38		lessson	recruit	pants	based	month	month	based		compa
No	43.6	(17.3)	220	s) =	ed by	from	lifestyl	S	assess	DPP		red by
				N/A	N/A	HIV-	interve	6	weekly	Autom	N/A	N/A
						infecte	ntion	month	sms	ated		
		M & F				d	involve	s		softwa		
	46	80% F	25			clients	da	-		re		
					Patient		The		daily			
		Female			s were	Michig	interve	10	texts	Study		Standa
NA	58.5	s-60%	80	40		an USA		Weeks	for	staff	None	rd care
N/A	57.7	M & F	69	35	N/A	overw	Person	12	daily	dieticia		Standa
.,	years		adults		,	eight	al	moths		ns,		rd
	, 5015					Partici	The	4		Self		
						pants'	interve	weeks		monito		
	59.2	M & F	19	19	Elderly		ntion	(exclud	1	ring	None	N/A
	JJ.Z		19	19	Lideny	ages	ntion	leveluu	-	ing	None	N/A

-				lind i	und of C		l.e.			C • • •		
To		S		Interve			key			Comm		rd
improve		Interve		ntion-	partici		eleme			unity		care
cardiac		ntion-		1095,	pating	China	nts of			health		with
health	50.7	65.4%,	2006		villages		the	D. I	4) (= = = =	worker		free
status	59.7	Control	2086	-991	in	India	interve	Daily	1 Year		NA	medica
					setting	Califor	hone	8		Ophth		
		Female			has a	nia,	was	Month	Monthl			
NA	60.5	s-58%	50	NA	dispro	USA	used	S	У	gist	None	NA
monitori				Group		Above	The		four			Control
ng and			199	1		55	comple		individ			group
feedback				(n=65),		mostly	te It's	month	ual	Practic		- care
tool	57.8	M & F	S	Tool &	Disketi	and	LiFe!	S			None	as
Part of		Female			Diabeti		Patient	24	the	Open		Standa
the		S		ntion-	C	Congo,	s in	24	averag			rd
wider	50	Interve	704	401,	popula	Dhilinai	the	Month	e	softwa		care
TEXT4DS	58	ntion-	781	Control		Philippi Domini		S	numbe		NA	with
N/A	DRC=6	M & F	1470	TEXT4	N/A	Partici	SMS		several	а	N/A	
	2;			DSM		pants	contai		tmes	nurse		
	Cambo			group=		were	ned		a week	in		
	dia =			505		from	inform			DRC, a		
					s with		s were		patient			
					comple		provid		S			
					х со-		ed		visited			
		Female			existin		with	12	the			
NA	60	s-45%	20	20	g	lands	the	weeks	practic		None	No
N/A	Cogniti	M & F	30	2	N/A	partici	Partici	8	bi-	Each	N/A	Patient
	vely			cohort		pants	pants	weeks	weekly	partici		s with
	impare			s;		with	were			pant		normal
	d			group		cogniti	provid			was		
	group=			with		ve	ed			assigne		cogniti
				ntion-	tions	у	interve		review			rd
				48	served	health	ntion	6	of	Health		care
		Female		Control	were	clinics	group	MONT	partici	coache		with
NA	53.2	s-72%	97	-49	from a	in	was	HS	pant	s	None	HC
N/A	55.6	M & F	21	N/A	N/A	Partici	After	24	Daily	Health	N/A	N/A
						pants	comple	week		coach		
						were	tion of					
						recruit	baselin					
	ntion-	ntion-		ntion-	age		s in		review	based		control
	64.7	Female		119	betwe		the	3	of	physica		group
	and	-		and	en 60		interve	Month	partici	I		was
NA	Control		235	Control		lands	ntion	S	pant	activity		placed
N/A	43.38	M & F	41	1:	N/A	individ	а	4	weekly	autom	N/A	didn't
				n=21,		uals	manual	month		ated		receive
				C:n=20		with	izedgro	S				any
							Twenty					Standa
								6				rd
		M & F					consec	MONT		Study		care
NA	61	60% M	40	20		Taiwan	utive	HS	Weekly	staff		patient

				Method						Measur	Intent-
Primary	2ndry	Negativ		to						es/resul	to-
outcome	outcome	e		identify						ts for	treat
&	and	outcom		target	Inclusio	Exclusio	Particip	Represe		>1	analysis
changes	changes	es or	Individu	populat	n	n	ation	ntative	Individu	follow-	use
observed	observed	harm	al level	ion	criteria	criteria	rate	ness	al level	up	(Y/N)
			N/A	hnoug	N/A	N/A		Survey	N/A	N/A	N/A
				h news, advertis				respond ents			
N/A	N/A	None		ements,			21.70%	were			
Time	As	None	Good	Throug	ICD-9	cognitiv	422	VA	Efficaci	Weekly	Yes
associated	interventi		from	h DVA	diagnosi	e	eligible,	populat	ous	measur	with
with	on		<u>qualitati</u>	OPD	Succession	impair	301	ion	with	ements	linear
-	significant		number	ants	ent	CO-		baseline	1.1	After 3	
8-item	change	None	of	were	with	morbidi	88.88%	, 63.8%	medicat	months	N
ypoapnoe			subjects	s were	specifie	specifie	details	with	s'		
a index	N/A Osability	None	were	recruite	d	d	about	OSA	oxygen	N/A	N/A
to	of and		were	ants	ent for	having		had	patients		
	satisfactio		manage	were	heart	a		HTN,	found	(control	
n - no	n with		d	recruite	failure	smartp		dyslipid	the app	phase)	
significant	the	None	across	d from	and/or	hone,	67.74%	emia,	design	and 6	N
_				mont							
				ment							
				was done							
measurem			patients	were	one	Not		were	of BP		
ent of BP			were	recruite		mentio		not	recordi	After 2	
twice a	None	None	manage		al BP	ned	73.17%	evenly	ngs	weeks	N/A
Self-			All	Patient	At	Not		Patient	Succes		,
measure			patient		least	mentio		s were	s of BP	After 2	
ment of	None	None	s were	recruit	one	ned	73.17%		recordi	weeks	N/A
level	choleste		patient	al	years	medica		pants	ed	month	,
(significa	rol, low-		s had	partici		l/psych		were	HbA1c	s and	
nt	density	None	never	pants	diagno		87%	all	levels	10	Y
Disease	uchisty	None	never	patient	_		0770	Partici		Of the	•
related,			Individ	S	S	S		pants		98	
Treatmen			ual	diagno	diagno	were		with	Individ	patient	
	NA	NA	level	sed	sed	exclud	100%	RA	ual	s that	NA
		11/1		JCu	The	CACIUU	10070		uui	3 that	N/A
manage ment					minim						
of											
					um						
obesity Primary	Primary	Analys			patient						
outcome	outcome	es									
data	data	were									
were	were	intenti									
available	available	on to									
for 1256	for	troat									
Among	N/A	N/A	In	throug	(1) be	Not	85%	Not	Partici	Only 1	N/A
the user			total	h teir	age 18	mentio		mentio	pants'	follow	
of smart			196	emplo	or	ned		ned	recepti	up	
quit app,			partici	yer or	older,				vity on	after 2	

gamo	oustom				ted to			Health			
game	system,		المطنيناط						Was		
was	Compreh		Individ		Lung			care	found		
found to	ension,		ual		cancer		4.000/	profess	to be		
be	acquisiti		level		throug	NA	100%	ionals	believa	NA	NA
control		N/A					Not	N/A			N
over							mentio				
asthma							ned				
(n =					All	patient					
8/60)					patient	s who					
were					s who	require					
very					had	d					
satisfied,					failed	urgent					
outcome	secondar			pants	aged	criteria	PRISM	69.5%		table 2	
of	у			were	18 and	for	Conditi	African		of	
MADRS	outcome			out	older,	any	on,	-		manus	
Total	s of			patient	2)	substa	mean	Americ		cript??	Y
monitori	care			transpl	than	receive		those	ual	monito	
ng	percepti		Individ	ant .	18	da		who	level	ring,	
percenta	on and		ual	recipie	years,	previo		under	self-	adhere	
' ges-	2.	None	level	nts of	under	us	75%	went a	reporti		Y
daily	15-	signific		admitt	ed	al		repres	g	sifgnifi	
walking	meter	ant		ed	stroke	prior		entativ	time;	cant	
J	walk	differe		patient		stroke	97%	eness	15	differe	No
weight	steps by	untere	orginall		25	report	5770	CIIC33	Weight		
loss	2551		_	clinics	(BMIZ2	-					
		NI:I	У		3 for					steps,	
comp;are	compare	Nil	assess	and		diagno			increas	· · ·	
d to	d to	report	ed. 54	posting		sis of	600/		ed	hip	
0.3kg	decrease	ed	did	<u></u>	Pacific	diabet	60%	Good	teps.	circum	Y
Change	Changes			Electro	Diabeti			Only		No	
from	in			nic	CS	attack/		diabeti	Individ	signific	
baseline	health			databa	with	stroke/		CS	ual	ant	
in	beliefs	NA	Yes	se	HbA1c	CHF,	90%	with	level	differe	N
Pneumoc			Partici	Electro	Unvacc			All	Patient		
occal			pants	nic	inated	of		partici	s who		
vaccinati			were	medica		access		pants	receive		
on rates	N/A	None	either	I	patient	to at	100%	were	d	weeks	N
patients'	⊓ign level of				ntanian, affecte						
perceptio	T2DM				d by						
• •						cogniti					
n and	patients				type 2	ve					
than one				pants	ALSB OF			pants		had	
third				who	speaki			were a	Individ	chosen	
chose				receive	ng,		Cluster	part of	ual	SMS.	
SMS	None	None	Yes	d	part of		RCT	the	level	Partici	NA
	friendly.				patient	uals			dge		
, knowledg	Patients		Not	Not	s aged	aged	Not		and	3	
e, drug	in usual		report	report	>18	<18		Not	drug	month	
aherence	care	Nil	ed	ed	years	years,	ed	clear	adhere		No
anerence	Cale	INII	eu	eu	years	years,	eu	Ciedi	aunere	3	NU

Fecal			No	Nation	wome	Non-		Repres	Popula	Fecal	
Occult			Popula	wide	n and	НМО		entive	tion	Occult	
Blood	None	None	tion	survey,	men	memb	96%	of the	level	Blood	Y
For	system				>30						
patients	perceive				years,						
self-	d as				taking						
HbA1 in	changes		agreed	patient	speaki	on			signific		
interventi	in BP,		to	S	ng	criteria			ant		
on group	BP,		partici	recruit	inhabit	were			effect		
by 0.	Lipids,	Nil	pate	ed	ants of	termin	19.20%	?	on H	NA	Y
onal	Global			up				rsity		UI SF -	
Consultat	Impressi			investi	not	not		educati		mean	
ion on	on of			gation	specifi	specifi		on (>3		decrea	
Incontine	Improve			of a	ed	ed	100%	yr)		se 3.1	Ν
operabilit	system			ients	18–65	allia,		to use		telehe	
-	modestly			diagno	years,	the		cell		alth	
, whole				sed	diabet	need		phone		system	
trial	improve	NA	Yes	with	es	to rely	94%	and	Yes		NA
Only	Diabetes	41		Kanuo							
significan	patients	patient		mly	es dx						
t	may be	S it la al a		selecte	at						
differenc	more	withdr		d	least 3						
e in	likely	ew		patient	month						
85.7% of	Number	aun to		Outpat	Âll	Known	70%	Yes		85.7%	
outpatien	of			ients	outpati		follow	partici		of	
ts in	patients			coming	ents	patient	ed up	pants		outpati	
interventi	whower	NA	Yes	to	(>30	with	for	who	Yes	ents in	Yes
randomly					18	under		s from		40	
			Individ		years,	18	Not	otolary		rando	
generate			ual		inactiv	years,	provid	ngolog	Individ	mly	
	NA	NA	level	NA	е	active	ed	yclinics	ual	genera	NA
ut user	ut			of				renres			
	enables	users report		CGM				repres entativ			
reported checking	enables 24-h	using		in the				e of	NA	NA	NA
their BG	access	unappr		Cloud				poor			
Weight	Engagem	No		Throug	African	self-	84	Ŝmall	Individ	Weight	
in the	ent with	advers		ha		report	partici	sample	ual	in the	N/
TRIMM	the	e	Yes	church			pants	of	level	standa	Yes
in CVD	in svetalia	Nil	Not	no o cli o c	45–75	No	Not	of	year		
risk: The	systolic	report	report	medica	years	known	report	work	CVD	1.46.5.7	V
reduction	blood	ed	ed	I	and	CVD, a	ed	units	risk	1 year	Y
SmartLos	S Satisfacti				eight	dieting				SmartL	
• •	Satisfacti				and	; 62 kg				OSS	
experienc	on			Nict	obese	weight		Creacil		group	
ed	question			Not Drovid	adults	change		Small	امراني الم	experie	
significan	naire	NIA	Vec	Provid	(BMI	in the	059/	sample	Individ	nced	Vec
tly	showed	NA	Yes	ed	25-35	past	95%	size	ual	signific	Yes

pre- and				Cancer	aged	non-			BMI,		
post-		Nil		registr	18 to	English			nutriti		
interventi	Nil	report		y dta	75	0 -		Unkno	on,	1	
onweight	reported	ed		, used	years	speaki	33%	wn	physica	month	N
n				existin	over				1 /	y of	
participa				g	age 60					theory-	
nts			Individ	comm	from	Not		Small	Individ	based	
assessed			ual	unity-	rural	Availab		sample		motiva	
	NA	NA	level	based	and	le	NA	size	level	tional	NA
subjectiv	Objectiv		level	Cardiac	must	previo		"Level	level	"subjec	
e	e				be at	usly		of		tive	
adherenc	adheren			patient	least	owned		educati		adhere	
e	се			s were	60 yr	а		on		nce	
w/o	(medicat			recruit	with a	smart	100%	-		w/o	N
better	ALICE		Designi		Spanis		23	No,			
	Significa		ng		h for		pats	sample			
	ntly		apps		elderly		and 7	too	Y/N	N	N
	reduce		for		patient		health	small			
response	of				Above			minant		s sent	
rate to	response			Diabet	18			ly		over	
text	s			es	2)			female		6500	
message	correctly			registr	English			(65%)		respon	
prompts	concerty	None		-	or	N/A	N/A	and		semess	N
Screening	Increase	None		y The	1)			anu		30111033	IN
status	d CRC			author	AN/AI						
was	screenin			S	heritag						
ascertain	g for			rando	e						
ascertain	5101			Tunuo	adults	had					
					with	been					
						hospita					
physical	sedentar	N/A	Partici	With	person		Not	N/A	Physica	after 3	N
activity	y time,		pants	the	had		mentio		1	and 6	
	heart		were	help	to	ned	ned		activity		
	rate,		distrib	of	have				of the		
	blood		uted	local	had a				stroke		
Adherenc	perceive	N/A	The	Accord	Individ	Not	Not	N/A	patient	at	N
e to Anti	d		sample	ing to	uals	mentio	mentio		s'	baselin	
retro-	understa		size	the	were	ned	ned		adhere	e, 1	
viral	nding		was	inclusi	eligible				nce to	month	
patients'	patients'			Most	with	Refuse	around	predo		Partici	
IVR call				partici	diabet	d	30%	minant		pants	
engagem	likelihoo			pants	es	consen	(74/24	ly		were	
ent and	d of			were	and/or	t,	7) - JJ	female		follow	
call	reportin	None		initially	hypert			• •		ed up	No
completi	haracteri			patient	-	ineligib		77%		83%	
on	stics			s were	speaki	le if	57%	white		comple	
rates,	associate	None		initially	ng	they	Depres	and		tion	No

ner	spent			s were	eligible	s were		male		h+CP	
reported	helping			initially		exclud		and		patient	
	with self-			,	, patient		Approx			S	
measures		none		identifi	-	they	25%	white		report	N
change		N/A		Potenti				N/A			
in HF-		,,,		ally	rtners						
specific				eligible							
quality				-	to live						
of life					outside						
between				s	the						
			N/A	5	Patient	Not	Not	N/A	Partici		Not
individual 's health		N/A	N/A					N/A			
					s with		mentio		pants'		mentio
behaviou					type 2	ned	ned		ability		ned
r,					diabet				(who		
									HbA1c		
									values		
									decline		
Change									d alaristis		N 1 A
in HbA1c		N. / 2			h		070	N1 / 2	signific		NA
cardiovas	user/par	N/A	Almost		had to	Not	87%	N/A	Partici	Not	N
cular risk	ticipant		equal		have	mentio			pants'	mentio	
	engagem		numbe		signific	ned			willing	ned	
	ent with		r of	lus alterial	antly	Net	Nat	N1 / A	ness	aftan A	
participa	Not	N/A		Individ	aged	Not	Not	N/A	Patient s'		Ν
nts'	mention			uals	betwe		mentio			weeks	
ability og	ed			were	en 18- 35	ned	ned		abililty		
usability, in	woight			recruit	35				to		
	weight,								ntion		
systolic and	intake of high								did		Y
			Aaula	Deenvit	Net	le els ef	Nat		not	often	
Behaviou	Not	N/A	A sub-			lack of		N/A		after	N/A
r change	mention		set of	ment		capacit				12	
Mean	ed		21	into	ned	y to	ned			weeks	
reduction									Drogra		
in									Progra		
weight	None	None							m Starter		N
medicati	Not	N/A	N/A	nornos	at	Not	Not	N/A	Starter	N/A	N
on	mention	N/A	N/A	porpos ive	least		mentio	NA		NA	IN
adherenc	ed			sampli	14	ned	ned				
e and	eu				years	neu	neu				
Fewer	57% (83		Individ	ng two	Patient	Those		Partici		Of the	
symptom	-		ual			with		pants	Individ	37	
s were	of 10,	NA	level	unity	eligible		85%	with	ual	patient	NA
weight	weight	N/A		Partici	a body	Recent		N/A		at 3, 6,	N
loss at 6	loss at	,		pants	mass		3070			9 and	
change	change			From	hypert		Not	Not		The	
in self-	in			elderly	ensive			mentio		averag	
reflective	lifestyle			comm	or pre-	None	ned	ned		e	No
					J. J. C						

reported	was a				uals	having		pants		-	
antihyper	-				who	CVD-		belong		report	
tensive	nt net		Individ	House	were	related		ed to		ed	
medicati	increase		ual	hold	≥40			the	Individ	antihy	
on	in the	None	level	visit	years	compli	87%	village	ual	perten	Yes
mean			Individ	uals	patient			study-		mean	
distance			ual	who	s with			Sample	Individ	distanc	
spectacle	NA	NA	level	visited	а	NA	100%	size	ual	e	NA
The	Seconda			invited	betwe	presen	36.8%	Above		Directl	
primary	ry			250	en 40	ce of	(540	55		y after	
outcome	outcome			family	and 70	coexist	patient	mostly		the	
measure				practic	years	ing	s a	and		interve	No
After 2	In Kin-	all		Patient	diabet			Repres		After 2	
years, an	réseau,	partici	Individ	s	es.			entativ	Individ	years,	
HbA1c <	the	pants	ual	visiting	Subject			eness	ual	an	
7.0% (53	percent	showe	level	the	s were	NA	54%	is	level	HbA1c	Yes
		N/A									
		,									
	+ : - : +			These				a tradici			
patients	activity			Those	over	s with		study-		patient	
(12 out	significa			who	40	comple		Sample		s (12	
of 17)	ntly		individ	visit	years,	х со-		size		out of	
were	increase		ual	the GP	five	existin		not	Individ	17)	
positive	d by	NA	level	clinic	of	g	85%	adequa		were	NA
impleme		N/A		Partici	1) age	individ		N/A	Partici	at 8	N
ntation,				pant	60–85;	uals			pants	weeks	
and				of the	2)	with			and		
safety				cogniti	cogniti	normal			their		
regardles				ve	ve	cogniti			study		
primary	es			s who	s were			repres		primar	
outcome	between		individ	visit	eligible			entativ	Individ	у	
was the	HbA1c		ual	the GP	for			e as	ual	outco	
differenc	mean	NA	level	clinics	partici	NA	75%	only	level	me	Yes
glycosylat		N/A		Recruit	patient	Partici	Not	N/A		24	Ν
ed				ment	s over	pants	mentio			week	
hemoglo				was	18	were	ned				
bin				throug	years	exclud					
baseline	significa			semen	age			entativ		baselin	
and 3-	nt		Individ	t in	betwe	Not		e of	Individ	e and	
month	effect of		ual	newsp	en 60	Availab		the	ual	3-	
follow-	the	NA	level	apers	and 70	le	91.20%	age	level	month	Y
depressiv		N/A		after	age	Patient		N/A		after 1	N
e				attendi	betwe	s were	mentio			week	
symptom				ng a	en 18-		ned				
Change	BMI, No			Nation	an age	experie		This is		Signific	
in % of	of			al	>20	nced		a pilot	Individ	ant	
body	outpatie			Taiwan		difficul		study	ual	results	
weight	nt clinic		Yes		gastric	tieswit		with	level	- App	No
					0.000					- 1 1 1	

		ational		Staff		Level	n/ovclu	n rato			Measur	
		level	Descrip	who		of	n/exclu sion	n rate of		Fidelity	es of	Individu
Impact	Percent	level	tion of	delivere		expertis		delivery		of the	cost of	al and
on QOL	age of	(setting	interve	d	Target	e of	of	agent	Organis		implem	organis
(quality	attritio	and	ntion	interve	delivery		delivery	-	ational	ntion	entatio	ation
of life)	n	staff)	location	ntion	agent	agent	agent	setting	level	(%)	n	level
Most	N/A	N/A	Interve	N/A	N/A	N/A	N/A	N/A	The	100	5 cents	Progra
respond	,	since	ntion	,	,	,	,	,	interve		per	m
ents		the	was						ntion		messag	subscrib
Partly	261	interve DVA	US VA	Should	do the F	E-AIM as	sessment	using	Not	<40%	e per Interve	Quadrat
with	(87%)	outpati	health				. Aikens,	0	reporte			ic
MCS	patients	ent	system				nt suppor		d here	chose		analyse
not	patients	,,,,	interve	Diabett		inagemen			inc	chose	1101	11000035
measur	11 110/	since	ntion			NI / A	N1 / A	evaluati	interve	100	mentio	evaluati
ed	11.11%	the	was	N/A	N/A	N/A	N/A	on of	ntion	100	ned	on not
		since	since					evaluati			cost	evaluati
N/A	N/A	the	this	N/A	N/A	N/A	N/A	on of	N/A Tho	N/A	compar	on not
ed		healthc	since						The	patients		of
using		are	interve						interve		Not	patients
EQ-5D,		provide	ntion						ntion was	reporte	mentio	
no	32.26%	rs were	was	N/A	N/A	N/A	N/A	N/A	was delivere	d	ned	wanted
			since						The		Not	
			interve						interve		mentio	
			ntion						ntion		ned	
		researc	since	researc	Not	researc			The	patient	Not	evaluati
		h	interve	h	mentio	h			interve	in the	mentio	on not
N/A	26.83%	assistan	ntion	assistan	ned	assistan	N/A	N/A	ntion	2nd	ned	done.
	20.8378	A	N/A	A	Not	The	N/A	N/A		1	Not	Proces
		researc	-		mentio				The		mentio	s
N/A	26.83%	h		h			N/A	N/A	interve	in the		s evaluat
-	20.65/6		interve		ned	h	N/A	N/A	ntion	mule	ned	
signific		ans		physici		ans			The		report	S
ant		and	educati			comple			interve			evaluat
change	13%	nurses	on	were	N/A	ted a	N/A	N/A	ntion	100%	the	ion
		Individ										
		ual	Portug									
NA	NA	level	al	NA	NA	NA	NA	NA	NA	NA	NA	NA
				N/A	N/A	N/A	N/A	N/A	The	100%	Not	Proces
				for	for	for	for	for	interve		mentio	S
				this	this	this	this	this	ntion		ned	evaluat
				study.	study.	study.	study.	study.	was			ion
				orday.	otaay.	otady.	otady.	otady.				1011
Not	16%	N/A	Interve	N/A	N/A	N/A	N/A	N/A	The	100%	Not	Proces
measu		since	ntion	for	for	for	for	for	interve		mentio	S
red		the	was	this	this	this	this	this	ntion		ned	evaluat
			deliver	study.	study.	study.	study.	study.	was			ion
		interve	activer	study.	study.	study.	study.	study.	**43			1011

									mente			
									d at			
									the			
									organiz			
	Not	N/A	Interve	N/A	N/A	N/A	N/A	N/A	The		Not	Proces
	mentio	since	ntion	for	for	for	for	for	interve		mentio	S
	ned	the	was	this	this	this	this	this	ntion		ned	evaluat
	1101											
	(104			therapi		's					pants	
not	rando		not	st was	not	trained		not		not	were	
	mized,		specifi	a	mentio	family		metnio		mentio	compe	
ned	82		ed	master	nes	therapi	ned	ned		ned	nsated	
Assess		Tertiar										
ed		y care										
includi		hospita										Individ
ng re-	None	land		NA	NA	NA	NA	NA	NA	NA	NA	ual
		rehab,	site	Rehab			Not	Not	unit	Not	Not	
			interna	-		Unclea			level,	addres		
N/A	N/A	therapi	tional -	sts	r	r	sed	sed	but	sed	sed	N/A
	adhere											
	nce to											
	mobile									No	Not	Nor
				Resear						repote	report	report
NA	activity	NA	NA	ch staff	NA	NA	NA	NA	NA	d	ed	ed
N/A	10%											
			Interve						Interve		No	
		S	ntion	at the					ntion		cost to	
N 1/0	0	evaluat		clinic	N1 / A	N1 / A	N1 / A	N1/A	was	100	clinic;	NI / A
N/A	0	ion	ed	made	N/A	N/A	N/A	N/A	deliver	100	USD16	N/A
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ed	attritio											
QoL	n in	Not .	Not	Not .	Not	Not	Not	Not	Not .	Not .	Not .	Not
(EuroQ			report	report	repore	report	report	report	report	report	report	report
ual	ntion	ed	ed	ed	d	ed	ed	ed	ed	ed	ed	ed

		Not										
NA	4%	report ed	NA	NA	NA	NA	NA	NA	Yes	96%	NA	NA
SF36 no change	16% at 6 month s	Not report ed	Not report ed	Not report ed	Not	Not report ed	Not report ed	Not report ed	Not report ed	Not report ed	Nil	Not report ed
LUTSq ol score Respon	24.6% (15/61)		not mentio ned	not mentio ned	not mentio ned	not mentio ned	not mentio ned	not mentio ned		not mentio ned	not mentio ned	
Minor improv ement s were	4%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NA	31.30%	NA	NA	NA	NA	NA	NA	NA	No	NA	NA	NA
NA	NA		Not Mentio ned	NA	NA		NA		Individ	propos ed interve ntions	Not	Individ
Yes	NA				media is a critical tool						and easy to install,	story of Nightsc out
NA	20%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Individ ual
Not report ed	27.50%	•	al and Workpl ace	Not report ed	Not report ed	NA	NA	NA	NA	Not report ed	Nil	Not repore d
Yes	5%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

No												
change				Not		Not				Not		
in				report		report				report		
FACT	30%	NA	NA	ed	NA	ed	NA	NA	NA	ed	Nil	NA
NA	NA	Individ ual level	Comm unity based	NA	NA	NA	N	NA	Individ ual level	propos ed interve ntions were	Not perfor med	Individ ual
N	0		not mentio ned	not mentio ned	not mentio ned	not mentio ned	not mentio ned	not mentio ned		not mentio ned	not mentio ned	
N		N	N	N	N	N	N	N	N	N	N	N
N/A	N/A		home based	N/A	N/A	N/A	N/A	N/A		No	No	
Increas ed physica I activity	mentio	since the	Interve ntion was deliver ed	N/A for this study.	N/A for this study.	N/A for this study.	N/A for this study.	N/A for this study.	The interve ntion was deliver	100%	Not mentio ned	Proces s evaluat ion not
N/A	Not mentio ned	N/A since the interve	Interve ntion was deliver	N/A for this study.	N/A for this study.	N/A for this study.	N/A for this study.	N/A for this study.	The interve ntion was		Not mentio ned	Proces s evaluat ion
No	N/A		home based	, N/A	, N/A	, N/A	N/A	, N/A		No	No	
No	approx 5 % overall		home based	N/A	N/A	N/A	N/A	N/A		No	No	

			home									
None			based	N/A	N/A	N/A	N/A	N/A		No	No	
		N/A	Interve	-	N/A	N/A	N/A	N/A	The		N/A	Proces
		since			for	for	for	for	interve			S .
		the	was	this	this	this	this	this	ntion			evaluat ion
		ntion	deliver ed	study.	study.	study.	study.	study.	was deliver			not
			throug						ed as			done.
	Not	N/A	Interve	N/A	N/A	N/A	N/A	N/A	The		Not	Proces
	mentio	since	ntion	for	for	for	for	for	interve		mentio	s
	ned	the	was	this	this	this	this	this	ntion		ned	evaluat
		interve	deliver	study.	study.	study.	study.	study.	was			ion
Improv												
ement												
in												
knowle	4.40/											
dge of	14%	NI / A	Intonio	NI / A	NI/A	NI / A	NI / A		The	96%	Not	Proces
N/A	Not mentio	N/A since	Interve ntion	N/A for	N/A for	N/A for	N/A for	N/A for	The interve		mentio	s
	ned	the	was	this	this	this	this	this	ntion		ned	s evaluat
	neu		deliver		study.	study.	study.	study.	was		neu	ion
N/A	Not	N/A	Interve	N/A	N/A	N/A	N/A	N/A	The		Not	Proces
	mentio	since	ntion	for	for	for	for	for	interve		mentio	S
	ned	the	was	this	this	this	this	this	ntion		ned	evaluat
		interve	deliver	study.	study.	study.	study.	study.	was			ion
ant												
reducti	14%											
on in N/A	Not	N/A	Interve	N/A	N/A	N/A	N/A	N/A	The	Not	Not	Proces
N/A	mentio	since	ntion	for	for	for	for	for		mentio		S
	ned	the	was	this	this	this	this	this		ned	ned	evaluat
	30%		-									
N/A	25%	N/A	Interve	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		since	ntion	for this	for this	for thic	for this	for thic				
		the interve	was deliver	study.	study.	this study.	study.	this study.				
		Individ	uciver	study.	study.	study.	study.	study.	Individ	All	Not	
		ual	Michig	Study					ual	propos	perfor	Individ
NA	15%	level	an USA	staff	NA	NA	NA	NA	level	ed	med	ual
N/A	Not	N/A	Interve	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	mentio	since	ntion	for	for	for	for	for				
			homo									
N/A	0%		home based	N/A	N/A	N/A	N/A	N/A		N/A	N/A	
N/A	070		based	N/A	N/A	N/A	N/A	N/A		N/A	N/A	

					d	d			Comm	propos		
		<u> </u>			medica				unity-	ed		
			India	care	1	unity			Individ	interve		
	1.20/	unity	and		studen		N1.0	N1 A	ual		perfor	Individ
NA	13%	level	China	S	ts in	are	NA	NA	level		med	ual
		Individ		•	of the	У			Individ	propos		
		ual		almolo		educati			ual	ed	perfor	Individ
NA	NA	level	USA	gist	Clara	on	NA	NA	level	interve	med	ual
Physica			Family practic		Not	For master	Not	Not		Not	Not	
Compo			e and	Practic			mentio				mentio	
nent	12.66%		home-	e nurse		executi		ned		ned	ned	
Assess	12.00%		The		Staff	executi	neu	neu		All	neu	
ed.		Individ	studies		of the				Individ	propos	Not	
The		ual	took	based	respect				ual	ed	perfor	Individ
interve	46%	level	place	peer	ive	NA	NA	NA	level	interve	•	ual
	11.9%		P	P								
	in											
	DRC,											
	14.5%											
			1							propos		
			Practic							ed		
		Individ	es in						Individ	interve	Not	
		ual	the	Nursin					ual	ntions	perfor	Individ
NA	15%	level	Nether	g staff	NA	NA	NA	NA	level	were	med	ual
signific	Not	N/A	Interve	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
ant	mentio	since	ntion	for	for	for	for	for				
positiv	ned	the	was	this	this	this	this	this				
е		interve	deliver	study.	study.	study.	study.	study.				
change		ntion	ed									
					or's	or's				propos		
		Individ	Primar		degree	degree			Individ	ed	Not	
		ual	y care	Health	s in	s in			ual	interve	perfor	Individ
NA	25%	level	clinics	coach	kinesio	kinesio	NA	NA	level	ntions	med	ual
	Not	N/A	Interve	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	mentio	since	ntion	for	for	for	for	for				
	ned	the	was	this	this	this	this	this				
		interve	deliver	study.	study.	study.	study.	study.				
		Individ							Individ		Not	
		ual		Web					ual		perfor	Individ
nA	9%	level	NA	based	NA	NA	NA	NA	level	NA	med	ual
Not	Not	N/A	Interve	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
mentio		since	ntion	for	for	for	for	for				
ned	ned	the	was	this	this	this	this	this				
		Organi	Tertiar	Medica		Qualifi				All	Net	
		sationa	-	l Staff		ed				propos	Not	
NIA	D L A		facility	emplo		medica			N/-	ed	perfor	N L A
NA	NA	Medica	in	yed in	NA				Yes	interve	med	NA

4	Indicat			Q2						
d outcom	ors of	Measur		QZ Effectiv		Q4				
e ≥ 6	progra	es of	Q1	e	Q3	Good				
months		cost of	- mHealt	implem	Lessons	evidenc	Limitations			
post	mainte	mainte	h use	entatio	learnt	e?	and	Lessons		
interve	nance	nance	(Y/N)	n (Y/N)	(Y/N)	(Y/N)	challenges	learnt	Comments	
Only 6-	No	Not					were	for	on of the	
week	informa	provide					generic and	replacem	survey and	
follow-	tion	d	Y	Y	Y	N	not tailored	ent of	data	
Compar	Part of	Not	-	-	-		Did not	Develop	May be	
ed 3		reporte	У	У	У	Ν	assess long-	mHealth	more	
and 6	provisio	d					term	apps and	<u>effective to</u>	
month	informa	provide					messages	reminder	evaluation	
follow-	tion	d	Y	Y	Y	Y	were found	s .	of the	
							application	nes have	describes	
N/A	N/A	N/A	Y	Y	Y	N	is limited to	the A system	implementat	
months'	informa						limited to	that	of adverse	
follow-	tion	Not					iOS and		events and	
up post-	provide						Android	ally	other	
interve	d.	d	Y	Y	Y	Ν	interfaces,	collects	chronic	
		\$314,26						ent of		
		4 over						mobile		
		2 years				Y		RCTs are		
day	informa	Not				-	outcomes		evaluation	
follow-	tion	provide					were not	l text	is needed to	
up	provide	d	Y	Y	Y	N	investigated	messagin	understand	
Only	No	Not					Clinical	Bi-	A process	
15 day	inform	provid					outcomes	direction	evaluation	
follow-	ation	ed	Y	Y	Y	Ν	were not	al text	is needed	
At 10	inform	Not					patient	ity-	integrated	
month	ation	provid					' data could	-	care	
s	provid	ed	Y	Y	Y	Y	not be	peer	programs	
	P .				-		Cross		more	
							sectional	ss of a	research is	
							study,	smartph	required	
NA	NA	NA	Y	Y	Y	?	Patients	one	ranging	
	N/A	Not	Y	Ý	Ŷ	N	program	mHealth	00	
	11/7	provid					director	DSS was		
		ed					emphasis	efficacio		
		eu					on the NP	us for		
		Aithou								
		gh not								
		report								
		ed	Ν	Y	Y	Y				
		here,								
		tho								
Only 1	No	Not	N	Y	Y	Y	The small	The	To make a	
follow-	inform	provid					size was		significant	
up	ation	ed					very small	on	comparabl	
after 2	provid						that	smart	е	

								<u> </u>		
							small	usability		
							sample,	can be		
							testing a	achieved		
			Y	Y	Y	Ν	prototype	among		
N/A	No	No	Ν	Y	Y	Ν	underrepr	smartph	Need to	
	inform	inform					esentation	one	consider	
	ation	ation					of	apps are	the group	
							Questions	Patients	Aware of	
							were	generall	ease of	
			Y	Y	Y	Ν	based	y have a	use and	
							primarily	, positive	care safety	
							on a	attitude	of eHealth	
interve							not a	ed	or cricatin	
ntion	not	not					definitive	mobile-		
	mentio						trial and	phone		
			v	X	v	v		•		
ck was	ned	ned	Y	Y	Y	Y	was not	interven		 ┝───┤
y and							located		research in	
Second							from one		using this	
ary							transplant		technology	
outco			Y	Y	Y	Y	centre,		in regular	
							ceased	may	be	
							when no	highlight	conceptuali	
N/A	N/A	N/A	Y	Y	Ν	Ν	difference		sation of	
							over 5	look at		
							months.	longer	Good	
5							Relaively	term	study but	
month							high		short	
s	NA	NA	Y	Y	Y	Y	rincomes	ance	duration.	
3	1473	10/1	•	•	•	•	Subjects	SMS can	durution.	
							drawn	be		
							from	effective	Small	
			Y	Y	Y	N	health	but		
Only 4			T	T	T	IN	Shortage	SMS	sample	
-							of vaccine			
month								and		
follow-	NI (A	NI (A	X	X	N/		availability	email		
up	N/A	N/A	Y	Y	Y	Y	following	reminde	Patient	
									Health	
			Y	Y	Y	Ν			Engagemen	
									t Scale	
							criteria as	the	findings	
							English	preferre	cannot be	
							only,	d mode,	generalized	
NA	NA	NA	Y	Y	Y	Y	majority	but SMS	as it is a	
			-	-			measure			
		Not					clinical			
Not	Not	report					outcomes			
			Y	Y	N	N	such as	Nil	Nil	
known	known	eu	ſ	ſ	IN	IN	SUCH dS		INII	

							Lean	Interrog	Authors		
							mode of	ative	investigate		
N 1.0		NLA	v	V	v	v			-		
NA	NA	NA	Y	Y	Y	Y	the	plus	d whether		
							Small				
			Y	Y	Y	N	qualitative				
							r study,				
							patiens	adheren	study.		
Not	Not	Not					were	ce in	Short		
report	report	report					vulnerable.	group	duration		
ed	ed	ed	Y	Y	Y	Y	16%	with	follow up.		
							numbers,	importa			
not	not	not						nt			
mentio		mentio					at 2 year	clinical			
ned	ned	ned	Y	Y	Y	Y	follow-up,	data are			
neu	neu	neu		•							
							criteria of	definitio	pilot study		
							ability to	n for	which		
							use the	end	needs to		
NA	NA	NA	Y	Y	Y	Y	sensors,	users,	be nawmome		
							inclusion	time	effect for		
			Y	Y	Y	Y	criteria in	social	positive		
							terms	support	changes in		
							HbA1c for	may	both study		
							Short	Mobile	first		
							follow-up	reminde	randomize		
							period of	rs can	d trial in a		
NA	NA	NA	Y	Y	Y	Y	three	work at	real-world		
		NA	•	•	•	•	standardiz	could	the first		
							ed				
								become	mobile		
							calibration		device-		
NA	NA	NA	Y	Y	Y	Y	was not	tool for	based	me	
							process	es in		majorit	
							ensures		responses	y of	
			Y	Y	Y	Ν	that the	rwere	or	users	
							sample of	quite	behaviour	(69.2%	
							•	· .		103.270	
							duration	tailored	Tailored		
							of the	text	text		
NA	NA	NA	Y	Y	Y	Y	interventio	messagi	messages		
	Not	Not					and text				
	report	report					messages.				
Yes	ed	ed	Y	Y	Y	N	Also	NA	NA		
							only 12	ss	sample		
							weeks,		and short		
							sample	d	duration		
							size small,	-	study, but		
							no formal	meaning	•		
NIA	NIA	NIA	V	Y	Y	V		-			
NA	NA	NA	Y	Y	Y	Y	evaluation	ful	an insight		

							Small non	older	Small		
							random	patients	study		
							sample.	used	without		
NA	NA	Nil	Y	Y	N	N	No	the app.	control.		
							s in the		sample		
							initial and	narrative	and short		
							follow-up	data	duration		
							evaluation		study, but		
NA	NA	NA	Y	Y	Y	Y	may not	d that	provides		
INA	NA	NA	1	T	T	T	medicatio	The	provides		
							n intake	interven			
not	not	not					needed to	tions			
mentio							be	improve			
ned	ned	ned	Y	Y	Y	Y	confirmed	d all the			
neu	neu	neu	•	•	•	•	committee	Designin	Elderly		
							Too little,	g apps	patients		
Ν	N	N	Y	Y	Y	Ν	too short,	for	with no		
								elderly.	previous		
iust a							more	Possible	previous		
just a focus											
							patients	to intograto			
group with							for longer	integrate home			
	No	Na	v	Y	Y	Y	period would	based			
small	No	No	Y	T	T	T	Lack	Use of	C+udu	cultura	The
							detailed	focus	Study		finding
			Yes	Yes	Yes	Yes	individual-		sample	ı tailorin	-
								groups	derived		
							level data Limited	to these	from a African-	g is	the
			Yes	Yes	Yes	No	sampling,		American		
			Tes	Tes	Tes	NO	Brief		patients		
N/A	No	No	N	Y	Y	N	Participant	gies can			
N/A	inform		N				s were	interven	age group of the		
	ation	ation					s were relatively	tion	participant		
	provid	provid					young &	using	s need to		
	ed.	ed.					recruited	the	consider		
N/A	No	N/A	N	Y	Y	N	Participant	1	CONSIDER		
N/A	inform	11/1					s might	augment			
	ation						have	ed			
	provid						underesti	applicati			
	provid						1) reliance	1)			
							on self-	rovidin			
							reported	g			
							outcomes	в feedback			
No	No	No	Y	Y	Y	Y	could	to an			
	110	110	•	•	•	•	1) limited	1)	HF		
							the	_, Despite	randomize		
No		No	Yes	Yes	Yes	Yes	multivariat	-	d results		
		110		105	105	.05					

							study was	interven		
							conducted	tion		
							among VA	increase		
No		No	Yes	Yes	Yes	Yes	patients	d		
N/A	No	No	N	Y	Y	N	1)	health		
	inform	inform					Possibility	systems		
	ation	ation					, of	using		
	provid	provid					patients	mHealth		
	ed.	ed.					being	approac		
	eu.	eu.					biased			
							Diaseu	hes		
N/A	No	N/A	Ν	Y	Y	Y		smartph		
	inform							one-		
	ation							based		
	provid							behavior		
								WellDoc		
							Pilot study	System		
							with its	is an		
			Partiall				own		Very small	
			y Yes	Y	Y	Y	limitations	tool for	sample size	
N/A	No	N/A	Y	Ŷ	Ŷ	Ŷ	the	patients	Sumple Size	
IN/A			T	T	T	r		with		
	inform						sample			
	ation						was	CHD		
	provid						recruited	were		
N/A	No	N/A	Y	Y	Y	N	small	Happy is		
	inform						sample	usable		
	ation						size and	and		
	provid						study	might		
							not	is a	research	
							adjusted	promisin	into the	
			Y	Y	Y	?	for	g	individual	
N/A	No	N/A	Ν	Y	Y	N		Mood		ľ
	inform							and		
	ation							activity		
							Non	Digital	Further	
							Randomize	-	investigatio	
			Partiall				d	utics	n at a scale	
			y Yes	Y	Y	Y	uncontroll	can	is needed	
N/A	N/A	N/A	Y	Ŷ	Ŷ	Ŷ	1)	the use	There was	
N/A	N/A	N/A					1) selection	of the	no	
							bias; 2)	WelTel	mention	
							generalisa Moasuring	SMS	abouy Use of cell	
							Measuring	Text		
			N/	N/	N/	N		interven	phones is	
NA	NA	NA	Y	Y	Y	Y	by self-	tions	increasing	
N/A	N/A	N/A	Y	Y	Y	Y	recruited	The		
							sample	addition		
							1) The	1)		
							sample	Patients		
No	No	No	Yes	Yes	Yes	Yes	size was	who		

	1							1		
							not be	d	simplified	
							generaliza	cardiova	cardiovasc	
							ble to	scular	ular	
							healthcare	manage	manageme	
NA	NA	NA	Y	Y	Y	Y	settings	ment	nt model	
							sample	utility	studies are	
							size and	, of	needed to	
NA	NA	NA	Y	Y	Y	Y	clinic	smartph	assess the	
			-	-	-	•	the mean	Ideally,		
Not	Not	Not					baseline	a 12-		
mentio		mentio					physical	month		
ned	ned	ned	Yes	Yes	Yes	Yes	activity	follow-		
neu	neu	neu	105	105	105	105	activity	study		
							High rates	did not		
							of Loss to	show a		
	NA	NA	Y	Y	Y	Y	Follow-Up	benefit		
			N	Y	N	Y	Limitations			
			IN	1	IN					
							was			
							related to			
							study			
								interven	interventio	
							Small	tion	n tool	
							sample	stimulat	appears to	
							size and a	ed	be a	
NA	NA	NA	Y	Y	Y	Y	pilot study	·	feasible in	
N/A	N/A	N/A	Ν	Y	Ν	Y	1) it	mHealth		
							was	technolo		
							designed	gies		
							as a	such as		
							feasibility	internetc		
								significa	coaching	
								nt	in primary	
							Reliability	between		
NA	NA	NA	Y	Y	Y	Y	, on HbA1c	-group	improve	
N/A	N/A	N/A	Y	Y	Y	Y	small	electroni	· ·	
.,	.,,,,	.,					sample	cally	design of	
							size, short	assisted	RCT with a	
							duration,	health	representat	
							bias could		s is a high	
							have been	of using	income	
							introduced	-	country	
NA	NA	NA	Y	Y	Y	Y	in the	assisted	with high	
N/A	N/A	N/A	Ŷ	Ŷ	Ŷ	N	selection	people	Participant	
,/	,/						bias, small	with	s' ability to	
							sample	severe	receive the	
							App was	SEVELE	This is a	
							not	Provides	pilot study	
							regulated	a	which	
NIA	NIA	NIA	Y	Y	Y	v	-			
NA	NA	NA	T	T	T	Y	by	feasible	needs to	

	Indiaston
RE-AIM	Indicator
dimension	
Reach	Individual level
	Method to identify target population
	Inclusion criteria
	Exclusion criteria
	Participation rate
	Representativeness
Efficacy/effectiveness	Individual level
	Measures/results for at least 1 follow-up
	Intent-to-treat analysis utilized
	Quality-of-life (QOL) or potential negative outcomes
	Percent attrition
Adoption	Organizational level (setting and staff)
	Description of intervention location
	Description of staff who delivered intervention
	Method to identify staff who delivered intervention (target delivery agent)

	Level of expertise of delivery agent	
	Inclusion/exclusion criteria of delivery agent or setting	
	Adoption rate of delivery agent or setting	
Implementation		
	Organizational level	
	Intervention duration and frequency	
	Extent protocol delivered as intended (%) Measures of cost of implementation	
Maintenance	Individual and organization level	
	Assessed outcomes ≥ 6 months post intervention	
	Indicators of program level maintenance	
	Measures of cost of maintenance	

RE-AIM internal and external validity indicators.

Description

The number, proportion, and representativeness of participants.

Describe the process by which the target population was identified for participation in the intervention.

Explicit statement of characteristics of the target population that were used to determine if a potential participant was eligible to participate.

Explicit statement of characteristics that would prevent a potential participant from being eligible to participate.

Sample size divided by the target population denominator.

Explicit statement of characteristics of the study participants in comparison to the target population.

The measure of the primary outcome, quality of life, and on avoiding unintended negative consequences.

The study variable(s) are measured at a time point after baseline.

Analyzing participants in trials in the groups to which they were randomized, regardless of whether they received or adhered to the allocated intervention.

QOL: Includes a measure of quality of life with some latitude for coding articles that refer to well-being or satisfaction with life.

Negative outcomes: To evaluate unanticipated consequences and results that may be a product of the intervention and may have caused unintended harm.

The proportion that was lost to follow-up or dropped out of the intervention.

The number, proportion, and characteristics of adopting organizations and staff.

The explicit statement of characteristics of the location of the intervention.

The explicit statement of characteristics of the staff who delivered the intervention.

Describe the process by which the staff was identified for participation in the study.

Training or educational background in of those delivering the intervention.

The explicit statement of characteristics of the setting/agent that were used to determine if a potential setting/agent is eligible to participate.

The number of participating delivery settings or agents divided by the number of eligible and approached delivery settings or agents.

The degree to which the intervention is delivered as intended.

Duration: length the intervention over days, weeks, and months as well as the length of each intervention contact.

Frequency: number of contacts with participants Description of fidelity to the intervention protocol. The ongoing cost (eg, money, time) of delivery across all levels of the intervention.

The measure of behavior at the individual level and sustainability of the intervention at an organizational level.

Description of follow-up outcome measures of individuals available at some duration after intervention termination.

Description of program continuation after completion of the research study.

The ongoing cost of maintaining delivery across all levels of the intervention.

Importance

Helps investigators develop an approach to determining who may be suitable for the intervention. Examples ir

Inclusion criteria should be as inclusive as possible to improve the external validity of findings [40]. should also avoid excluding individuals based on criteria that could be related to SES (eg, ability to travel to intervention site), comorbidities,

or other factors that could influence an externally valid depiction of intervention effects [40].

Provides information on the acceptability of the study and interventions from the perspective of the target po

Identifies disparities in participation and informs the degree to which the study results are generalizable to the

To evaluate whether the intervention outcomes were statistically significant or changed (positively/negatively

Reduces bias from omitting individuals who were lost to follow-up and improves generalizability [63].

Provide a metric to compare across interventions with different behavioral targets and provides a better sense

Allows for the weight of the harms and benefits of an intervention [26].

High attrition lowers statistical power and treatment-correlated attrition of participants from conditions threa

Provides an understanding of resources needed for future researchers [26].

Provides information on the characteristics may be needed to deliver an intervention and assist with retentior

Helps investigators develop an approach to identify and engage staff that may be suitable for intervention deli

Allows for the assessment of generalizability of those delivering an intervention to typical practice settings del

Inclusion criteria should be as inclusive as possible to improve the external validity of findings. Exclusion criteri

Provides information on the acceptability of the study and interventions from the perspective of the setting ar

Useful for replication and comparison of resources needed to resources available in a practice setting [26]. This provides insight into the feasibility of delivering all components of an intervention at the pre-determined

This is helpful for future researchers to be able to determine if conducting a specific intervention has economi

Provides information on the maintenance of intervention outcomes over time [26].

Provides information on whether the intervention can be integrated into an existing system/organization [26].

Sustainability costs provides information for practice settings to determine the resources needed for long-terr

nclude using an electronic medical record query or mass media approaches [20].

pulation [26].

e target population [26].

) [26].

e of the impact that the intervention on the participants' perceptions of health [26].

tens internal validity [42].

ι of participants [35].

ivery [35].

ivery [35].

ia should not systematically remove potential settings or staff that typical in the practice domain [20]

nd staff that will ultimately be responsible for intervention delivery [26].

date and time [26].

cally feasible delivery [35].

n intervention delivery [28].

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No.	Database	Search syntax (3rd November 2017)	Results
		mHealth or "mobile health"	
1	MEDLINE	"healthy ageing".mp.	89
		"aged care".mp.	
		reach	
		effectiveness	
		adoption	
		implementation.mp.	
		maintenance	
		RE-AIM.mp.	
		limit 9 to (english language and yr="2007 - 2017")	
		limit 10 to ("middle age (45 to 64 years)" or "middle aged	
		(45 plus years)" or "all aged (65 and over)" or "aged (80	
		and over)")	
		mHealth or "mobile health"	
2	EMBASE	"healthy ageing".mp.	374
2	LIVIDAJE	"aged care".mp.	5/4
		reach	
		effectiveness	
		adoption	
		implementation.mp.	
		maintenance	
		RE-AIM.mp.	
		limit 9 to (english language and yr="2007 - 2017")	
		limit 10 to ("middle age (45 to 64 years)" or "middle aged (45	
		plus years)" or "all aged (65 and over)" or "aged (80 and over)")	
_		mHealth or "mobile health"	
3	Global Health	"healthy ageing".mp.	137
		"aged care".mp.	
		reach	
		effectiveness	
		adoption	
		implementation.mp.	
		maintenance	
		RE-AIM.mp.	
		limit 9 to (english language and yr="2007 - 2017")	
		limit 10 to ("middle age (45 to 64 years)" or "middle aged	
		(45 plus years)" or "all aged (65 and over)" or "aged (80	
		and over)")	
		mHealth or "mobile health"	
4	PsycINFO	"healthy ageing".mp.	150
		"aged care".mp.	
		reach	
		effectiveness	
		adoption	
		implementation.mp.	
		maintenance	
		RE-AIM.mp.	
		limit 9 to (english language and yr="2007 - 2017")	
		limit 10 to ("middle age (45 to 64 years)" or "middle aged	
		(45 plus years)" or "all aged (65 and over)" or "aged (80	

		(ALL ("mobile health" OR mhealth) AND ALL ("healthy				
5	Scopus	ageing" OR "aged care" OR re-aim OR reach OR	415			
		effectiveness OR adoption OR implementation OR				
		maintenance) AND PUBYEAR > 2006 AND PUBYEAR < 2				
		018) AND (LIMIT-TO (PUBYEAR, 2017) OR LIMIT-				
		TO (PUBYEAR, 2016) OR LIMIT-				
		TO (PUBYEAR, 2015) OR LIMIT-				
		TO (PUBYEAR , 2014) OR LIMIT-				
		TO (PUBYEAR, 2013) OR LIMIT-				
		TO (PUBYEAR, 2012) OR LIMIT-				
		TO (PUBYEAR , 2011) OR LIMIT-				
		TO (PUBYEAR , 2010) OR LIMIT-				
		TO (PUBYEAR , 2009) OR LIMIT-				
		TO (PUBYEAR, 2008) OR LIMIT-				
		TO (PUBYEAR, 2007)) AND (LIMIT-				
		TO (LANGUAGE, "English")) AND (LIMIT-				
		TO (EXACTKEYWORD, "Middle age") OR LIMIT-				
		TO (EXACTKEYWORD, "Middle aged") OR LIMIT-				
		TO (EXACTKEYWORD, "All aged") OR LIMIT-				
		TO (EXACTKEYWORD , " Aged				
		") OR EXCLUDE (EXACTKEYWORD , "Young Adult				
		") OR EXCLUDE (EXACTKEYWORD, "Adolescent				
		") OR EXCLUDE (EXACTKEYWORD, "Child"))				
		"mobile health" OR mHealth				
6	ScienceDirect	"healthy ageing" OR "aged care" OR RE-AIM OR reach OR	1630			
		effectiveness OR adoption OR implementation OR				
		maintenance				
		Limit: 2007 to Present				
		Sciences: Medicine and Dentistry, Neuroscience, Nursing				
		and Health Professions, Pharmacology, Toxicology and				
		Pharmaceutical Science, Psychology, Sports and Recreation				
		"mobile health" OR mHealth				
7	CINAHL	"healthy ageing" OR "aged care" OR RE-AIM OR reach OR	30			
		effectiveness OR adoption OR implementation OR	-			
		maintenance				
		Filters: Date published: 20070101-20171231, English,				
		middle aged: 45-64 years, aged: 65+ years, aged, 80 & over				
		"mobile health" or mHealth				
8	Cochrane	"healthy ageing" OR "aged care" OR RE-AIM OR reach OR	58			
	Library	effectiveness OR adoption OR implementation OR				
		maintenance				
		Filter: Publication year from 2007 to 2017				
-	Total number of records identified from search of the above 8 databases 2883					